COMBAT STUDIES INSTITUTE

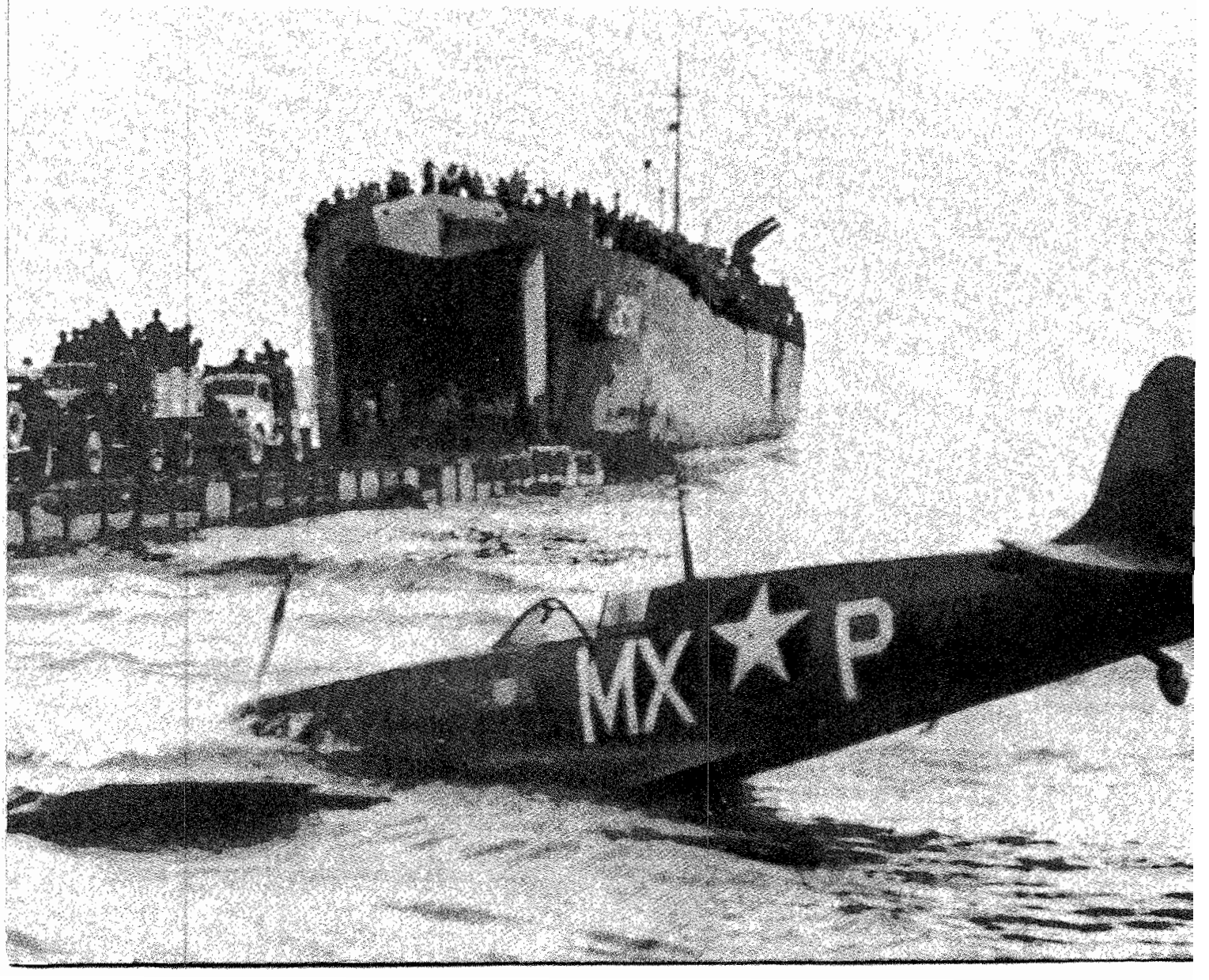
Research Survey No. 1

Amicicide:

The Problem of Friendly Fire in Modern War

by Lieutenant Colonel Charles R. Shrader, U.S. Army

December 1982



COMBAT STUDIES INSTITUTE

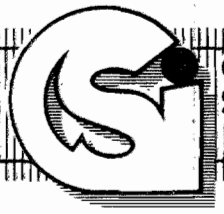
Mission

The Combat Studies Institute was established on 18 June 1979 as a department-level activity within the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. CSI has the following missions:

1. Conduct research on historical topics pertinent to doctrinal concerns of the Army and publish the results in a variety of formats for the Active Army and Reserve components.
2. Prepare and present instruction in military history at USACGSC and assist other USACGSC departments in integrating military history into their instruction.
3. Serve as the U.S. Army Training and Doctrine Command's executive agent for the development and coordination of an integrated, progressive program of military history instruction in the TRADOC service school system.

CSI *Research Surveys* are doctrinal research manuscripts, thematic in nature, that investigate the evolution of specific doctrinal areas of interest to the U.S. Army. *Research Surveys* are based on primary and secondary sources and provide the foundation for further study of a given subject. The views expressed in this publication are those of the author and not necessarily those of the Department of Defense or any element thereof.

Cover: This Department of Defense photograph shows a wrecked Spitfire that was shot down by Allied antiaircraft fire over Paestum beach in Italy.



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CONTENTS

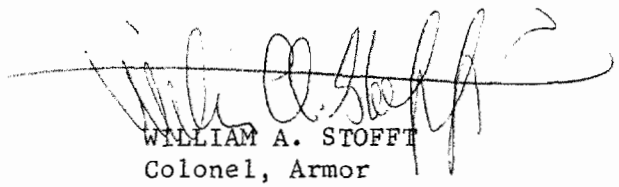
FOREWORD

War is often depicted in the textbooks as a well-orchestrated, albeit violent, exercise in which opposing units strive to achieve tactical and strategic objectives. That each side will suffer casualties in the process is taken for granted; they are the inevitable, if regretable, consequence of such a deadly undertaking. That each side is almost certain to suffer casualties inflicted by its own forces is not generally taken for granted. Yet, in each of America's wars, especially those of the twentieth century, a significant number of soldiers have been killed or wounded as the result of friendly fire. The fact that the percentage of casualties resulting from friendly fire from World War I through Vietnam has been extremely low does not make the accidental killing or wounding of one's own troops any less tragic or unpalatable. Nor does it offer much consolation to the commander responsible for the lives of his troops or to the soldier who runs the risk of falling victim to the fire of his own forces. It may well be that in the "fog of war" friendly fire casualties are inevitable, but this solemn observation does not absolve the armed forces from doing everything in their power to eliminate the problem.

To be sure, each branch of the Army and each of the Armed Services employ measures calculated to prevent incidents of friendly fire. But such measures offer only partial solutions, especially on the modern battlefield where joint and combined forces operate under often obscure conditions. A more comprehensive study of the causes and consequences of friendly fire is needed. That one has not yet appeared is attributable to several factors, foremost among them being the nature of the evidence on which such a study must rely. The required raw data are scattered throughout a variety of primary and secondary, official and unofficial sources. Before one can undertake a serious and comprehensive analysis of friendly fire, these data must be found and brought together in one place.

In Amicicide: The Problem of Friendly Fire in Modern War, LTC Charles R. Shrader has taken a major step toward the compilation of these data. From his survey of much of the existing literature on World War I, World War II, the Korean War, and the Vietnam War, he has extracted examples of friendly fire involving U.S. ground forces and has categorized them according to types of incidents. In his well-informed narrative, he draws tentative conclusions about the causes and effects of friendly fire and offers recommendations for those who expect to study the subject

further. He has, in short, produced a superb reference book and a springboard for a deeper and more comprehensive analysis of this grim and complex problem. The Combat Studies Institute is pleased to present this work as the first in its series of Research Surveys.



WILLIAM A. STOFFT
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INTRODUCTION

The "fog of war" is an oft-mentioned, if imperfectly understood, factor in combat. Noise, smoke, faulty communications, tension, hyperactivity, and fear all conspire to mask from the soldier and his leaders the true situation on the battlefield. When accurate information regarding the location and activity of both friendly and enemy forces is lacking, one result is often the unintentional placement of fire on one's own troops. A less serious problem in the days of small armies, circumscribed battlefields, and line-of-sight weaponry, the engagement of friendly forces by friendly fire has become important in the present era of large and highly mobile field armies, enormous battle areas, and weapons of greatly increased range, lethality, and complexity employed in the indirect fire role.

While there is reason to believe that the casualties attributable to friendly fire in modern war constitute a statistically insignificant portion of total casualties (perhaps less than 2 percent) and have generally only a transient effect on the progress of major operations, numerous specific instances can readily be cited in which friendly fire has inflicted serious casualties on friendly units and has significantly disrupted or otherwise caused the failure of specific, local operations. Beyond the immediate loss of life and materiel, with its direct degradation of combat power, such incidents often have a devastating effect on troop morale and the confidence of ground combat forces in their supporting air, artillery, and armored forces. Friendly fire incidents often disrupt the close and continuous combined arms cooperation so essential to success in modern combat, especially when that combat is conducted against a well-armed, well-trained, and numerically superior opponent.

This study, by presenting selected examples in their historical settings, is intended only to explain a few of the most obvious types of friendly fire incidents and some of the causative factors associated with them. By directing the attention of commanders and staff officers responsible for the development, training, and employment of combat forces to the hitherto little explored problem of friendly fire incidents, I hope this study will generate interest in and solutions for the problems outlined.

The methodology of this study is primarily historical, narrative, and highly selective. In the analysis of the available data, time and resource constraints precluded the use of proven mathematical techniques and forward-looking war-gaming methods, both of which may be legitimately and

fruitfully applied to this problem.[1] Time and resources have also limited the scope of this study to incidents involving US forces in World War II and Vietnam, although some evidence available from other conflicts in the twentieth century has also been considered. In sum, this study can claim to be no more than a narrative exposition of selected examples. Although its conclusions must be considered highly speculative and tentative in nature, this study can be of substantial value to an understanding of the problem of friendly fire in modern war.

The first problem in a study of this sort is to define in clear and concise terms the topic under consideration. The phrase "friendly casualties due to friendly fire," although accurately describing the type of events we wish to investigate, is both clumsy and subject to misinterpretation. Another term, commonly used to describe the type of incidents with which we are concerned, is fratricide. Although common and handy, the word fratricide has a well-known technical usage with respect to artillery projectiles and has connotations of intent and civil conflict inappropriate for the types of incidents we shall undertake to investigate. In the interest of clarity, brevity, and convenience of usage, the resort to a neologism seems desirable. The noun amicicide, derived by the legitimate combination of the Latin noun amicus, -us (friend) with the common latinate suffix for killing (-cide), provides a single word that adequately describes without distracting connotation the incidence of human casualties (both dead and wounded) incurred by military forces in active combat operations as a result of being fired upon unintentionally by the weapons of their own or allied forces.

Instances of amicicide may be conveniently divided for the purpose of our study into several descriptive categories, each of which may be further subdivided. One category, artillery amicicide, includes all incidents in which friendly ground forces are subjected to the fire of friendly artillery weapons, mortars, and rockets, as well as guns and howitzers, employed in either direct or indirect fire. Also included in this category are instances in which friendly ground forces are struck by spent projectiles or fragments from friendly weapons directed at aircraft. A second category, air amicicide, includes all incidents in which friendly ground forces are bombed, strafed, or rocketed by friendly aircraft, either fixed or rotary-wing, of whatever service. A third category, antiaircraft amicicide, incorporates those incidents in which friendly aircraft are taken under fire by friendly surface forces (both ground and naval) employing either small arms, automatic weapons, missiles, or anti-

aircraft artillery. The final category that we shall consider here is ground amicicide, incidents in which friendly ground troops and variously armed armored vehicles fire upon other friendly ground forces or armored vehicles. Such incidents may be further divided into those involving infantry against infantry, infantry against tanks and vice versa, antitank weapons against tanks and vice versa, and tanks against tanks.

There are, of course, several other obvious categories of amicicide that are excluded from this study. These involve air-to-air engagements, air-to-naval vessel incidents, and incidents involving the engagement of one friendly naval vessel by another. In a few cases we shall discuss incidents involving friendly air and ground fire attacks on friendly boats (as opposed to ships). Naval gun fire incidents are included here under the category of artillery amicicide. A few bizarre instances involving aircraft will also be considered.

There are also a number of other types of incidents in which friendly casualties may be inflicted by friendly weapons. Most of these are excluded from our definition of amicicide. Cases of homicide (both intentional and unintentional), suicide, and self-inflicted wounds (whether intentional or not) are excluded, as are what may be termed pure accidents, for example, the explosion of a gun due to faulty ammunition or unintentionally walking in front of a gun being fired. We shall also exclude from our definition of amicicide so-called disciplinary actions and the intentional calling-in of fire on one's own position *in extremis*. The former category includes legally prescribed executions, the shooting of recalcitrant troops in battle by their officers, and the rare, but not unknown, practice of firing upon friendly troops as punishment for failure to advance or for some other infraction of military discipline such as mutiny or riot.

There appear to be no thorough, systematic studies of the general problem of amicicide either in official or unofficial literature. A few limited studies of certain types of amicicide incidents, such as those involving Allied air strikes on friendly positions during Operation COBRA (the St. Lô breakout, 1944) and the Allied bombing of Switzerland in World War II, are available.[2] The literature of ground combat, however, is devoid of even such limited studies. Despite a reasonably thorough bibliographical search using a variety of appropriate key words, only two works dealing specifically with the problem of amicicide come to hand. A post-World War I polemic by the French General Alexandre

Percin, Le Massacre de notre Infanterie, 1914-1918, is directed against the French high command and the doctrine of heavy artillery employment followed in World War I.[3] General Percin alleges that some 75,000 French soldiers lost their lives to friendly artillery fire in World War I.[4] Although Percin cites numerous specific cases of artillery amicicide, his book and his conclusions are somewhat suspect because of their obviously polemical purpose.

The other work takes the form of historical reportage in which a single case of artillery amicicide during the Vietnam conflict provides the occasion for a study of the reaction of one American family to the loss of their son in Vietnam. Although based on fact and containing a detailed reconstruction of an amicicide incident involving members of Company C, 1st Battalion, 6th Infantry, 198th Light Infantry Brigade (Americal Division), on 18 February 1970, C. D. B. Bryan's Friendly Fire focuses on the subsequent radicalization of Cpl. Michael E. Mullen's family, their involvement in the antiwar movement, and their inability to accept the fact of their son's death due to a friendly artillery round.[5] Useful as an indication of the effect of amicicide on a victim's family, Bryan's book offers little in the way of general analysis of the problem of amicicide.

Given the dearth of literature on the topic, the researcher must collect and analyze the scattered, often cryptic, references to amicicide found in general operational military histories or in the available official documents of combat units. Such a search is fraught with misleading, usually incomplete, and often erroneous data, already preselected by another historian or by accident of preservation, and scattered across the full range of multitudinous operational histories, both official and private, and thousands of linear feet of official records.

The disarray of source materials for the study of amicicide is understandable. The conditions of active combat in which cases of amicicide occur are scarcely conducive to thorough, accurate reporting of what at the time may seem relatively minor incidents. Furthermore, commanders at various levels may be reluctant to report instances of casualties due to friendly fire either because they are afraid of damaging unit or personal reputations, because they have a misplaced concern for the morale of surviving troops or the benefits and honors due the dead and wounded, or simply because of a desire to avoid unprofitable conflicts with the personnel of supporting or adjacent units. In many cases, of course, the victim's commander may never know that a particular casualty was due to friendly fire. Moreover,

the commanders and soldiers of units responsible for inflicting friendly casualties are seldom in a position to evaluate their handiwork, even if they wished to do so.

In most cases recognizable incidents of amicicide do require some sort of formal investigation and report if the circumstances permit. In the past, special investigations and reports were common only when the incident resulted in a high number of casualties or was remarkable in some way. The surviving reports of such investigations provide fertile ground for the historian's plow. Official casualty reports, on the other hand, while seemingly comprehensive in their identification of all casualties, are singularly sterile for use in the study of amicicide. In most cases it is all but impossible to decipher official casualty statistics without the direct assistance of the person responsible for categorizing the data in the first place. No casualty reporting system used by the US Army has made adequate provision for the clear, separate identification of casualties due to friendly fire. The current Army casualty reporting regulation, AR 600-10 with change 1, does provide for identification of the inflicting force as enemy, US forces, allied, or other on line 47 of the standard casualty reporting format, but does not highlight such information or provide any guidance regarding special reporting procedures applicable to instances of amicicide.[6]

While it is possible to discern cases of amicicide in individual casualty reports, the composite statistics for World War II, Korea, and Vietnam are of little use for the study of the problem of amicicide without a knowledge of how cases of amicicide were categorized in each conflict.[7] Even then it is likely that the criteria varied from statistician to statistician at the various reporting levels. This brief study has not produced a magic key. A major investigation of casualty reporting methods would be required to do so.

An extremely detailed historical study of the casualty reporting system in use during the Korean War, for example, does not allude to casualties caused by friendly fire.[8] A statistical study of Korean War casualties, which presents detailed breakouts of both KIA and WIA by causative agent and type of ground operation, offers only the cryptic entry, "Accidents in the Use of Own Weapons," to tantalize the historian. What types of accidents were or were not included?[9] Casualties due to accidents in the use of own weapons--a category which may include cases of amicicide--in the Korean War included 112 killed and 1,377 wounded out of a total of 18,498 KIA and 72,343 WIA (.61 percent and 1.9 per-

cent respectively).[10] Whether these in fact represent the Korean War figures for amicicide remains for the moment a matter of pure conjecture.

The official casualty statistics for US forces in Southeast Asia between January 1961 and March 1975 are only slightly less mysterious.[11] Causative agent rather than identification of the inflicting force (despite separation of hostile and nonhostile casualties) appears to be the primary basis of categories. Accidental self-destruction, suicide, homicide, and accidental homicide, however, are listed separately. The great tantalizer in these reports is the category "Misadventure" under the heading "Hostile." Of a total of 46,397 hostile deaths in Southeast Asia during the reporting period, 1,326 (2.85 percent) are attributed to misadventure.[12]

Curiously, two vagrant clues are available. General Percin alleged that 75,000 of the 4,945,470 French casualties in World War I were due to amicicide.[13] If his figures are correct, amicicide thus accounted for about 1.5 percent of total French casualties in the war. Secondly, a survey of the first one hundred men wounded in the Korean War reports two casualties (2 percent) due to friendly fire.[14] The percentage is (coincidentally?) close to that just mentioned for casualties in the Korean War "Accidents in the Use of Own Weapons" category (1.6 percent) and the Southeast Asian "Hostile-Misadventure" category (2.85 percent). Inasmuch as speculation on such slim and slippery data is likely to be misleading, it is perhaps better to turn our attention to the less finite, but more satisfying, narrative description of specific instances of amicicide. The study of specific cases can provide some definite information as to the causes of amicicide incidents and thus suggest to today's commanders and staff officers ways in which such occurrences may be prevented in the future.

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ARTILLERY AMICICIDE

Introduction

The development in the late nineteenth century of long-range, rapid-fire artillery capable of delivering a high volume of extremely lethal explosive shells on targets out of sight of the gun positions greatly increased the probability that friendly troops might be subject to the fire of their own supporting artillery. The concurrent development of tactical doctrines designed to capitalize on the technological advances in artillery served only to add to the problem. Tremendous artillery preparations, the rolling barrage and close defensive concentrations utilizing guns and shells of frequently unpredictable performance in indirect fire techniques of still primitive efficiency, and the absence of dependable, instantaneous battlefield communications posed significant hazards to friendly troops in both the attack and the defense.

In time both weapons and ammunition have become much more dependable, and techniques for controlling indirect artillery fire have been improved in both sophistication and reliability. Communications on the battlefield have also improved dramatically. Nevertheless, friendly artillery fire continues to fall on friendly troops in combat. While artillery amicicide may be attributed to a wide range of discrete causes, the incidence of such events seems to respond, for good or ill, to technological improvements in guns, ammunition, communications, and position determination devices; to changes in tactical doctrine; and, above all, to changing levels of competence on the part of the people responsible for manipulating the devices. Changing levels of competence are, of course, a reflection of native intelligence, training, and discipline. The key factor in artillery amicicide, as in other types, is that ever-present element in war, human error.

It must again be emphasized that the available information is far too sparse and uncertain to permit a definitive appreciation of the problem of artillery amicicide. An understanding of the causes and effects of artillery amicicide, however, even in broad outline, is an important first step toward preventing such occurrences. The narrative depiction of selected examples may thus provide better

insight into the overall problem of artillery amicicide than does the manipulation of the uncertain statistical data.

World War I

By 1914 artillery weapons had reached their technological adolescence but were still far from consistent in accuracy and reliability. Communication, an essential element of indirect fire control, was also of limited perfection. Tactical doctrine for the employment of indirect fire artillery weapons, however, had evolved more rapidly and threatened to outstrip the available technology. Incidents of artillery amicicide due to inadequate communications, poor survey and fire control, and the sheer volume of artillery fire called for by the prevailing tactical doctrine became so common in World War I as to be an almost unremarkable aspect of the war on the western front. Postwar memoirs of participants on both sides attest to the frequency with which troops were fired upon by their own artillery. Indeed, when estimating the probable human cost of an offensive operation, the thorough staff planner usually included an allowance for casualties due to a friendly barrage.[1]

The result, according to one French general, was nothing less than the outright massacre of friendly infantry by its own artillery.[2] Although the true number of such incidents, the actual number of casualties incurred thereby, and the practical effect of artillery amicicide in World War I are perhaps unknowable, General Percin's calculations of 75,000 French casualties,

> . . . as a result of a misunderstanding of the principle of the offensive, as a result of a lack of coordination of the artillery and the infantry, as a result of an irrational use of the heavy artillery. . .[3]

are perhaps not totally unreasonable. The 75,000 casualties attributed by Percin to artillery amicicide constitute only about 1.5 percent of the total 4,945,470 casualties suffered by the French army in World War I.[4]

It may be supposed that the other armies engaged on the western front fared little better. The Germans certainly experienced similar problems, and one particularly guilty German field artillery regiment, the 49th, was wryly known as the "48½th" because of its persistently short shooting.[5]

The direct effect on combat power of so many casualties due to friendly artillery fire was probably exceeded by the deleterious effect of such incidents on morale and on the willingness of soldiers to leave the comparative safety of the trenches. Artillery amicicide was also probably one contributor to the well-known distaste of the frontline soldier for the denizens of the staff and rear area, among whom the artillerists were (in view of their exposure to counterbattery fire) perhaps unjustly included. In any event, shelling by friendly artillery, although routine, was seldom accepted, and the World War I infantryman was always "prepared to damn the gunners without reflecting on the difficulty of their task."[6]

World War II: Europe

By 1939 artillery weapons and ammunition as well as communications and fire control procedures were somewhat improved, and tactical doctrine had changed significantly for the better with respect to amicicide. But artillery amicicide continued to be a problem. Technological and tactical advances appear to have been offset by continued heavy use of artillery and the lack of significant improvements in the means for accurate location of friendly troops on the ground. The enormous scale and scope of the Second World War also had its effect by requiring the frequent employment of inadequately trained personnel in combat operations conducted in a variety of climates and terrain. In every case the results were similar: dead and wounded comrades, delayed or stifled offensive actions, confusion, and a general degradation of combat effectiveness.

Surprisingly few artillery incidents have survived into the published official histories of combat in North Africa. Considering the greenness of American troops in the North African campaign and the relatively high mobility of combat forces, one would expect the record to be replete with instances of artillery amicicide. The apparent lack of such incidents is no doubt due to the disarray of the sources rather than to any real lack of casualties due to friendly artillery or mortar fire, although the comparatively better visibility afforded by the flat, open desert terrain may have been a factor.[7]

The conquest of the Italian peninsula, however, was not without its share of friendly casualties due to friendly artillery fire. The rugged terrain and stubborn German defense from prepared positions made the employment of

supporting indirect artillery and mortar fire both heavy and at times inaccurate. The mountainous terrain of central Italy also made the positive location of friendly troops somewhat uncertain.

The assault of elements of the US 85th Infantry Division on the Gothic Line at Monte Altuzzo in the Northern Apennines between 10 and 18 September 1944 illustrates in detail the problems encountered by the small unit leader in maintaining cohesion following the shelling of friendly troops by their supporting artillery. It also illustrates the difficulties faced by battalion commanders and their attached artillery liaison personnel in identifying the culpable unit and controlling their fires satisfactorily.[8]

In the short period of three days (14-17 September 1944) the 1st Battalion, 338th Infantry (85th Infantry Division), suffered six killed and three wounded in four separate incidents of artillery amicicide on the steep slopes and peaks of Monte Altuzzo. Misplaced fire from supporting mortars and artillery served on several occasions to delay or halt the assault, disrupt the defense against German counterattacks, and adversely affect the battalion's morale and fighting spirit. In addition, the fear of striking friendly troops hampered the full employment of available firepower.

Forced by violent and repeated German counterattacks to withdraw from advanced positions on Monte Altuzzo on the evening of 14 September, Company B, 1/338th Infantry, commanded by Capt. Maurice E. Peabody, Jr., was ordered to withdraw to the battalion CP at Paretaio. Under cover of darkness Captain Peabody began to move his men off the mountain, but before they had reached the safety of Paretaio they were subjected to fire from American artillery being used to stop a counterattack against the 2d Battalion's Company E. Fortunately, Company B suffered no casualties as a result of this shelling, nor was the withdrawal significantly affected thereby.

The following day, 15 September, fire from friendly artillery or direct fire weapons (tanks or tank destroyers) landed on the southwest slopes of Knob 2, then occupied by the 1st Platoon, Company C, 1/338th Infantry. The first shell struck a few yards below the platoon's position, but a few minutes later a second shell landed squarely in the middle of the 2d Squad. The second shell killed six men, including the squad leader, and wounded two others. The survivors were badly shaken by concussion and withdrew precipitately to the platoon CP. The platoon leader, 1st Lt. William S. Corey, was sure the fire was American and

attempted to have it lifted, but the shells had cut his telephone lines to the Company C CP. After some difficulty the supporting artillery units were notified. Although Lieutenant Corey's riflemen were certain the rounds were from a friendly 105-mm or 240-mm howitzer or 8-inch gun, the liaison officer of the supporting 329th Field Artillery Battalion conjectured that they came from either a tank or tank destroyer. The actual source was apparently never determined.

Although only one round actually struck the platoon, the resulting confusion and the belief that it was from friendly artillery had a demoralizing effect on the survivors. The dazed and angry men had quickly scattered down the hillside and Lieutenant Corey had an extremely difficult time reorganizing his position to face the expected German counterattacks. The shaky men were scarcely capable of maintaining a stubborn defense. Fortunately, the platoon was not immediately tested; it later withdrew spontaneously and apparently without authorization.

The memory of 1st Platoon's misfortune served to restrict the use of available firepower in subsequent attempts to take the mountain. Further assaults later in the day by both Companies A and C went unsupported by the companies' 60-mm mortars for fear their fire would hit the attacking elements. Two days later, on 17 September, the 3d Platoon of Company C moved out in the assault again. The platoon had proceeded about fifty yards along the main trail just below and west of the main Altuzzo ridge, when friendly supporting fire fell fifty yards to its front. The platoon halted and quickly called for the fire to be lifted. The platoon leader, 2d Lt. Albert J. Krasman, held his platoon for more than an hour to insure that the shellfire had stopped. During that time, one man was slightly wounded by fragments from the friendly shells.[16]

As soon as he was notified of the incident, 1st Lt. Dawson L. Farber, Jr., the 329th Field Artillery Battalion liaison officer, queried the supporting division and corps artillery units to determine the source of the shells falling on 3d Platoon. Unable to determine the offending unit (or even whether the fire was from artillery, tanks, or tank destroyers) all II Corps artillery units were ordered to cease firing for half an hour in the Altuzzo area and 1,000 yards either side of the main ridge. The fire continued, however, and ceased only after the artillery no-fire line was pushed 1,000 yards north of the crest of Monte Altuzzo. Company C resumed its advance at 0200, 17 September, after a delay of about three hours.

Subsequently, on 18 September 1944, the 1/338th Infantry took Monte Altuzzo and continued its advance up the rugged Italian peninsula. The memory of the destruction, confusion, and delay occasioned by friendly fire on Monte Altuzzo receded as replacements joined and new leaders took command. The long-range effect of this incident of artillery amicicide is problematical, but its negative effects on combat power probably outweighed the positive ones if on each future occasion the use of available firepower was a little more hesitant and the confidence of the infantrymen in their supporting artillery a little weaker.

Operation OVERLORD and the subsequent advance of the Allied armies across France and Belgium into Germany brought no noticeable improvement in the problem of artillery amicicide. The progress of offensive action continued to be disrupted from time to time by friendly artillery fires, and occasionally friendly artillery caused the temporary withdrawal of friendly forces, as it had on Monte Altuzzo. In some respects the conditions of combat in the European theater complicated the accurate delivery of indirect fires. The greater number of troops and units in the line, extensive and irregular frontages, the dense hedgerows of Normandy, and heavy forestation of parts of Belgium and Germany, coupled with frequent fog conditions and heavy rain and snow, served to intensify the difficulties in correctly locating friendly troops and coordinating supporting fires. The great confusion accompanying the German Ardennes offensive in December 1944 also contributed to several incidents of amicicide, by both indirect and direct fire weapons. The German forces, too, were subject to the same conditions and also experienced instances of artillery amicicide.

On 5 July 1944 Maj. Gen. Robert C. Macon's 83d Infantry Division was ordered to attack in the Carentan Peninsula to seize the town of Santeny. The attack by the division, which had been badly handled by the enemy the previous day, began inauspiciously when several rounds from the ten-minute artillery preparation landed on friendly troops, causing a regimental executive officer to report frantically that the artillery was "slaughtering our 3d Battalion."[9] The incident did not precipitate disaster, but less than two weeks later, shortly before the St. Lô breakout, the CP of one of the 83d Infantry Division's infantry battalions was nearly obliterated by 155-mm howitzer rounds fired by the 957th Field Artillery Battalion. The incident occurred when one of the computers* in the 957th's Fire Direction Center

*a soldier, not a machine

(FDC) relayed the wrong charge (he said, "Charge 4," when the mission was computed "Charge 5") to the firing battery. Corrective action was subsequently taken to avoid such human errors: computers were to repeat aloud to the battalion S-3 the instructions given to the batteries by telephone.[10]

The lines of the opposing forces in Normandy were frequently so close that the use of artillery was limited so as not to strike friendly forces.[11] Nevertheless, several units experienced cases of artillery amicicide during the early weeks of the fighting on the Continent. A nighttime raid by a platoon of the 117th Infantry (30th Infantry Division) in late June 1944 into the town of Pont-du-St. Fromond near Airel on the Vire River was disrupted by friendly artillery fire, demonstrating the difficulty of coordinating fires at night in the hedgerow country.[12] Similarly, the attack of a battalion of the 8th Infantry (4th Infantry Division) on the town of La Chapelle-en-Juger following the Operation COBRA bombing of 25 July 1944 was brought to a halt by friendly artillery fire.[13]

Misplaced American artillery fire also played a role in the ill-fated battle of Schmidt in early November 1944. Beginning in the early morning hours of 6 November 1944 elements of the 28th Infantry Division's 2d Battalion, 112th Infantry, began to withdraw individually and without orders from their defensive positions in the village of Vossenack.[14] With great difficulty the battalion officers had managed by 1030 to reestablish in the vicinity of the battalion command post a defensive line of about seventy men. All American infantrymen capable of leaving the eastern portion of Vossenack had done so, although some American tanks remained behind. Despite their presence a call for artillery support was made, but the first four volleys fell short among the defenders at the newly established battalion CP line. One round hit a barn in which men from the 1st Platoon of Company E had taken shelter. One man was killed and three others seriously wounded. The platoon sergeant, T. Sgt. Donald Nelson, and another surviving member of the platoon immediately withdrew to the battalion's rear aid station in Germeter.

The Company E commander, 1st Lt. Melvin Barrilleaux, and several of his men were also fully exposed to the friendly artillery fire. Barrilleaux rushed into the battalion CP to try to stop the firing, and just as he left the CP another round exploded nearby, killing his first sergeant and wounding the lieutenant himself in the face and leg. He, too, moved back to the aid station in Germeter, as did one of his lieutenants, 1st Lt. Clifton W. Beggs, who had been only

slightly wounded in the shelling. Beggs later discounted the seriousness of his wounds and returned to his platoon in Vossenack.

Calls to the supporting artillery lifted the friendly fire after only four volleys, but the surviving officers found that, by virtue of casualties, their position was weaker than ever. The retreat was stopped, and at noon American infantry still held half the town of Vossenack. But the tenuous defense had been little helped by the friendly artillery fire on the American positions.

The difficulties posed by terrain, weather, and many units operating in close proximity to each other contributed to many of the cases of artillery amicicide in the European theater. On 14 December 1944 troops of the 9th Infantry in the vicinity of Wahlerschied were fired on by friendly artillery during the attack of the 2d Infantry Division toward the Roer River dams. The problems in registration due to dense forest, clinging fog, and a lack of specific information on enemy positions were cited as contributing factors.[15] The Wahlerschied incident reinforced an earlier comment of Maj. Gen. Raymond O. Barton, commanding general of the 4th Infantry Division, that, "Positive measures must be taken to insure the supporting artillery knows where you are."[16]

The problem of coordinating the fires of different units operating in the same area is well illustrated by an incident involving the assault of the 2d Battalion, 11th Infantry, on Fort St. Blaise from the 5th Infantry Division's bridgehead across the Moselle River at Dornot on 8 September 1944. In order to permit the supporting artillery to shell Fort St. Blaise before the final assault, Companies F and G were pulled back 400 yards. They were struck by three rounds of friendly artillery that fell short, killing three men and wounding several others.[17] The regimental commander, Colonel Lemmon, later related that checks made by his liaison officers from both the 5th Infantry Division and 7th Armored Division artilleries revealed that the short rounds had been fired by a 7th Armored Division artillery unit on call from his 7th Armored Division artillery liaison officer, who had the fires lifted immediately.[18]

The confusion engendered in defending American forces during the great German offensive in the Ardennes in December 1944 also led to several instances of artillery amicicide. Representative of those incidents is the case of the confused withdrawal of the 2d Battalion, 394th Infantry, and 1st Battalion, 393d Infantry, of the 99th Infantry Division from the vicinity of Murringen on the night of 18 December 1944.

Lost, badly mauled, and greatly confused, the two battalions were withdrawing toward Wirtzfeld when they were fired on by the artillery of the 2d Infantry Division and suffered several casualties.[19] The tired and hungry men nearly panicked, but the officers and NCOs managed to restore order while a squad leader ran ahead to an American observation post and managed to stop the artillery. Most of the 2/394th and 1/393d reached Elsenborn in the early hours of 19 December, somewhat the worse for their handling by the Germans and the 2d Division artillery.

Not all cases of artillery amicicide in the ETO can be blamed on American forces alone. Some cases reported as amicicide may have been due to German fire. In April 1945 an Army ground forces observer reported two cases in which deceptions by the enemy gave the appearance of friendly fire incidents.[20] In the first case an attack by the 3d Infantry Division in the vicinity of Osheim on 23 January 1945 was preceded by a twelve-minute artillery preparation. The fires were suspended when the commander of the leading infantry battalion reported that friendly fire was falling on his troops. After a quick check the preparation was resumed with increased range but again was reported to be falling short. An order to cease firing was issued, and about a third of the preparation's value was lost. An investigation disclosed that the fire was coming from German tanks on the east flank. The 3d Infantry Division subsequently developed the SOP to continue scheduled preparations until completed, regardless of reports from the front lines, a procedure which probably contributed to future cases of genuine artillery amicicide.

In another case, a patrol from the 11th Armored Division came under intense German small arms fire and radioed for artillery support. The enemy monitored the radio transmission, and when the American artillery reported "on the way" the German artillery promptly opened fire on the patrol. Mistaking the enemy fire for friendly artillery falling short, the patrol called for "cease fire," thus saving the Germans from a heavy artillery barrage.[21]

The Germans did not, however, escape occasional incidents of artillery amicicide among their own troops. During the attack of the US 30th Infantry and 2d Armored Divisions against the West Wall at Uebach on 4 October 1944, the attacking German forces of the 49. Infantry Division were fired upon by their own artillery and forced to break off their assault.[22] And again in the so-called Sad Sack Affair on 28 December 1944 near Sadzot, Belgium, the attacking 25. Panzer Grenadier Regiment (2. SS Panzer Division)

became confused and put mortar fire on its own positions during the course of a night engagement with elements of the US 3d Armored and 82d Airborne Divisions.[23] Neither side in the war in Europe had an exclusive claim on human fallibility.

World War II: The Pacific

With respect to artillery amicicide, the war in the Pacific did not differ substantially from that in Europe. Difficult terrain, heavy vegetation, weather, and hard fighting against a competent and determined enemy conspired to mask the location of friendly troops and to complicate coordination. Nor were the effects of artillery amicicide any different: the reduction of friendly combat power through the loss of friendly troops dead and wounded, confusion, and the inevitable degradation of morale, all of which contributed to slowed or broken offensive operations and to the weakening of defensive positions. Almost every major operation in the Pacific Islands was punctuated by instances of misplaced friendly artillery fire, the usual problems of weather, terrain, and troop location being further complicated by the presence of both Army and Marine Corps units and the frequent use of naval gunfire, which demanded increased coordination.

The Buna Campaign has been called "A Leavenworth Nightmare"; it certainly was with respect to the coordination of artillery fires.[24] On 25 November 1942, an 81-mm mortar shell fell short on the command post of Company L, 3d Battalion, 126th Infantry (32d Infantry Division), during the advance along the Sanananda Road toward Buna in Papua. The nephew of an Australian general, Cpt. Jack M. Blamey, a company commander of the 2d/2d Australian Infantry Battalion, and one of his men were killed, and six other Australians and Americans, including the Company L commander, Capt. Bevin D. Lee, were wounded.[25]

On Carlson Island (Kwajalein) in the Marshalls, the late advance of the 2d Battalion, 32d Infantry (7th Infantry Division), on 1 February 1944 delayed until twilight the registration of the 49th Field Artillery Battalion, and the first shells of the preparatory fires fell on the 2/32d Infantry's positions.[26] On 15 June of the same year the 1st Battalion, 162d Infantry (41st Infantry Division), found itself pinned down most of the afternoon by friendly artillery and mortar fire, thereby slowing the progress of its attack to capture Mokmer Drome on the island of Biak.[27] The same problem faced the 43d Infantry Division's 172d Infantry, attacking toward Hill 351 on Luzon on 11 January 1945.[28]

Such incidents were frequently very costly in terms of human suffering. On 7 August 1944 the elements of the 124th Infantry composing TED Force (Col. Ted Starr) of PERSECUTION Task Force lost one KIA and three WIA to Japanese forces in the battle of the Driniumor River in New Guinea.[29] On the same day, however, eight men were killed and fourteen wounded as a result of faulty mortar ammunition, and the following day, 8 August, misplaced artillery fire from the 120th Field Artillery Battalion killed four men and wounded twenty-two others in the 1st Battalion, 124th Infantry.[30]

Naval gunfire could and did prove especially damaging to friendly forces when poorly placed. Smoke and dust from the preliminary air and naval bombardment of Parry Island (Eniewetok), which began at dawn on 22 February 1944, soon masked the target for some of the supporting ships. The landing craft started ashore at 0845 and three of the LCI(G)s that went in with the first wave to fire rockets were hit by 5-inch shells from the destroyer Hailey, killing thirteen and wounding forty-seven.[31] Later the same day the 1st Battalion, 22d Marines, called for naval gunfire to suppress Japanese artillery. Five salvos from 5-inch naval guns eliminated the Japanese artillery and broke enemy resistance, but proved damaging to friendly troops and tanks as well.[32]

The campaign of the 77th Infantry Division on Guam in August 1944 also saw several cases of artillery amicicide. Ordered to withdraw from their exposed position 200 yards north of Barrigada at 1430, 2 August 1944, the men of 2d Platoon, Company B, 1st Battalion, 307th Infantry, had to make their dash for safety through an unintentional barrage of American artillery fire.[33] The following day, 3 August, the advance of the 2d Battalion, 307th Infantry, was slowed by short artillery rounds that disrupted communications and killed some men in the CP area and wounded others, including the battalion commander, who had to be replaced.[34] On 7-8 August the 2d Battalion, 306th Infantry, was fired on by Marine pack artillery of the 3d Marine Division near Mount Santa Rosa.[45]

Dense jungle, inadequate maps, and frequent overcast conditions made the location of friendly units on Guam extremely difficult, and unit commanders rarely knew their exact position, with one result being American artillery fire on friendly positions. Even when the fire was Japanese, the men of the 77th Division were inclined to believe it was friendly, and the division commander, Maj. Gen. Andrew D. Bruce, had to remind his troops that the Japanese, too, had artillery and that they frequently masked its sound by firing at the same time as the friendly guns. He finally had to warn

the infantrymen to "stop accusing our own artillery of firing on [our] own troops until the 'facts are known.'"[34]

The discovery of additional cases of artillery amicicide during the World War II campaigns in the Pacific is probably limited only by the researcher's time and perseverance in reviewing the available records. One additional instance, however, is both interesting and instructive in that it clearly outlines the problems of coordinating artillery fires between units of different services engaged in hard fighting on difficult terrain and also sheds some further light on one of the most famous general officer reliefs of the Second World War.

Operation FORAGER, the invasion of Saipan, began with the amphibious assault of the 2d and 4th Marine Divisions on 15 June 1944. By 25 June Lt. Gen. (USMC) Holland M. Smith's V Amphibious Corps, including the US Army's 27th Infantry Division under the command of Maj. Gen. Ralph Smith, were pressing against the Japanese forces in the mountainous terrain in the central portion of the island. The 27th Division occupied the center of the corps zone in the area that came to be known as Death Valley. The 2d Marine Division was on its left, on and around Mount Topatchau, and the 4th Marine Division was on its right. The terrain was extremely steep and heavily wooded with numerous cliffs, which made the maintenance of contact with flanking units especially difficult. The Japanese defenders were particularly tenacious and frequently mounted violent counterattacks, which pushed back friendly forces and further added to the problem of accurately finding friendly lines.

Dissatisfied with the late and uncoordinated attack of the 27th Division on 23 June, which he felt had jeopardized the entire operation, Holland Smith relieved Ralph Smith of his command on the afternoon of 24 June.[35] After briefing his regimental commanders on attack plans for the following day, Major General Smith outlined the situation for his successor, Maj. Gen. Sanderford Jarman, and subsequently departed Saipan for Hawaii by seaplane at 0530 on 25 June. General Smith's relief subsequently became a cause célèbre and "Smith vs. Smith" remains one of the more debated reliefs of a general officer in World War II.[36]

The attack planned by Major General Smith got underway at 1630 on 25 June, as Companies E and G, 2d Battalion, 106th Infantry, supported by Company B, 762d Tank Battalion, moved out up the right side of Death Valley.[37] The supporting artillery preparation by Battery A, 106th Field Artillery (155-mm), and Battery B, 249th Field Artillery (105-mm),

which had been in position and firing on the cliffs since about 1530, was halted about 1715, because friendly shrapnel was landing on the 2d Battalion, 8th Marines (2d Marine Division), on Mount Topatchau.[38] Both the attack and the inadvertent shelling of the Marines continued on the following two days with the 2/8th Marines continually requesting, and often demanding, better control of the artillery and mortar fires supporting the 106th Infantry.[39]

On 29 June the regiments of the 27th Division experienced their own problems with their uncoordinated artillery fires.[40] Maj. Gen. George W. Griner, the new division commander, ordered the 3d Battalion, 105th Infantry, to take up position on the right, completing the cordon around the enemy forces in Death Valley. Meanwhile the 2d Battalion, 165th Infantry, was to finish the conquest of Purple Heart Ridge by taking Hill Able. In order to accomplish its mission the 2/165th would first have to recapture Hill King, which had been retaken by the Japanese.

The day's events began inauspiciously when friendly artillery fire struck the 3/105th before it could jump off. Capt. Alexander C. Bouchard's Company K finally left the battalion assembly area at 0700 and proceeded to skirt the west slope of Purple Heart Ridge en route to the line of departure. Informed by a guide from the 106th Infantry that Hill King was clear (it was not) and offered an easy route, Captain Bouchard's men had climbed halfway to the crest when they came under intense Japanese rifle fire. In The 27th Division, Love relates what happened next:

> The company commander then assumed that the fire was coming from a small party of stragglers and dispatched a squad under Staff Sgt. Carl A. Neidt to circle the hill and clean them out . . . . As Neidt started out on his patrol the [friendly] artillery preparation [for Company E, 2/165th Infantry, attacking from the other side] began landing on Hill King. The first fifteen shells landed squarely in the midst of K Company, wounding nineteen men. Captain Bouchard looked around, saw the crest of the hill, and figured that if he could get his men on the reverse slope of it he would be safe from the artillery. Without any further ado he ordered his men to get over the top of the hill, rifle fire or no rifle fire. They were just in the act of following out the order when the full force of the concentration struck and the dispersal which the scramble up the hill had effected acted to cut down the casualties.[41]

As it was, Company K found itself in the middle of a sizable Japanese force, but hard fighting by Company K, assisted by the assaulting Company E, finally cleared the hill of Japanese. Company K had to stop to reorganize, and it was not until 1300 that it was finally able to take its position closing the line around the enemy forces in Death Valley. Despite the delay, by 1530 the 27th Division had restored contact with the 2d Marine Division on its left flank, successfully completing at least an important part of the day's mission.[42]

During the remaining days until Saipan was declared secure on 9 July 1944, reports continued to flow into the 106th Infantry CP (and presumably into the other regiments) requesting cease-fires of friendly artillery falling on American troops.[43] Even the planes dropping surrender leaflets to the Japanese proved inaccurate. On 30 June the leaflet aircraft managed to drop two batches of leaflets behind and two batches of leaflets in front of friendly lines.[44] The Marines continued to experience serious cases of artillery amicicide as well. Advancing on Garapan on 2 July, the 8th Marines were temporarily disorganized when friendly artillery fire fell into their lines, causing forty-five casualties.[45]

The relief of Army Maj. Gen. Ralph Smith by USMC Lt. Gen. Holland Smith on 24 June and the constantly erratic artillery fire of the 27th Infantry Division into the Marine units on its flanks during the campaign aroused animosities between the Army and Marines that soured their relations in the subsequent months.[46] Although Ralph Smith's relief was ostensibly based on the slow and uncoordinated advance of his division on 23 June, there can be little doubt that Holland Smith's decision was influenced by the unwarranted shelling of his marines by the 27th Division's artillery.

The Korean War

The Korean War was fought with the weapons of World War II using similar fire direction techniques and troop location aids. Tactically it was somewhat different in its greater emphasis on small unit defensive positions, numerous small patrol actions, and a greater reliance on artillery firepower to break large enemy assault formations. The rough terrain of the Korean peninsula also made the accurate delivery of artillery fires more difficult. In the frequent night battles for platoon-size positions perched on steep ridges and isolated from the main lines, a position could and did

change hands several times in the course of a single night, and cases of artillery amicicide were almost inevitable. The confusion created by tenuous communications and by defending isolated positions at night meant that friendly troops would frequently retake a defensive position from the enemy using small arms, automatic weapons, and hand grenades before requested artillery support could be called off. The result was that concentrations fired by friendly artillery units frequently struck the very troops they were intended to support.

The records of the Korean War have not been reviewed systematically in this study for incidents of artillery amicicide, and a single case must serve as an example. On the night of 16-17 April 1953 various elements of the 31st Infantry Regiment (7th Infantry Division) participated in the defense of Pork Chop Hill.[47] The battle in the darkness was extremely confused, with first one side, then the other, and sometimes both at the same time occupying the trenches, bunkers, and slopes of the hill. At 2307 the position (or parts of it) was in the possession of elements of the 1st and 3d Platoons of Company E, 31st Infantry, when "Flash" fires were called for. One battery fired the protective barrage using VT fuzes. Pfc. Richard Long of the Company E CP group failed to see or heed the flare signaling the imminent "Flash" fire and was hit by the friendly protective shelling.

Shortly before dawn (about 0530) on 17 April the 1st Platoon of Company L, attempting to regain possession of the hill, had just fired accidentally on elements of Company K when they themselves were struck by friendly artillery fire. One salvo wounded the platoon sergeant (Sgt. Horace Ford) in the arm and sent a sliver of shrapnel through the helmet of one private, who was miraculously unharmed. Another salvo landed in a communications trench occupied by fourteen members of Company L, getting them all. For many of these men it was their second or third wound of the night. One man of this group, Private Williams, was sent to the rear of the hill to attempt to stop the artillery. There he found three medium tanks parked, and as Williams was trying to communicate with the tankers, two more friendly rounds landed among the tanks. Williams ducked under the hull of a tank and escaped further injury. The sergeant of the tanks apparently then radioed and got the fire lifted.

About 0600, 17 April, shortly after 1st Lt. Joseph G. Clemons, Jr., commander of Company K, reached the CP bunker on Pork Chop Hill, three rounds of what were apparently shorts from friendly artillery exploded in the CP area. One, landing directly in the doorway of the bunker, rewounded

Lieutenant Attridge of Company E, and the other two, exploding about twenty-five yards away, wounded three KATUSAs of Company K.

A thorough examination of Korean War records would probably reveal many similar instances. The rather unique terrain and tactical situations encountered by the contending forces in Korea made artillery amicicide almost unavoidable.

Vietnam

By the 1960s artillery and ammunition technology, FDC and troop location procedures and aids, and battlefield communications had all been significantly improved over what was available in World War I, World War II, and the Korean War. Improvements in technology were complemented in the Vietnam War by an increased awareness at all levels of the need to protect friendly soldiers and noncombatants from unintentional exposure to friendly fire. US Forces in Vietnam were directed by the commander of the United States Military Assistance Command Vietnam to observe scrupulously an elaborate set of rules and procedures for the employment of firepower.[48] The MACV Rules of Engagement were intended specifically to prevent amicicide and were so specific and complex that some officers and men claimed the rules unduly limited the successful application of superior American firepower. American artillery units in the field also adopted numerous procedures designed to insure accuracy and to preclude friendly casualties.[49] Among the safety measures employed generally were:

1. Firing a smoke shell set for a 200-meter height of burst as the first round for most observed missions.

2. Double- or even triple-checking all firing data at each echelon from the forward observer to the gun.

3. Conducting periodic gunner (firing) inspections and drills.

4. Separating and segregating, by lot, projectiles and powder for separate-loading ammunition.

5. Boresighting guns at least twice daily.

6. Registering guns at least twice weekly.

7. Conducting frequent staff inspections to insure compliance with safety policies.[50]

Despite both improved weaponry and greater attention to safety procedures, Free World Military Forces in the Vietnam conflict continued to suffer frequent and destructive incidents of artillery amicicide. A few incidents can be attributed to mechanical malfunction of guns or ammunition, and only one of the incidents identified for this study seems to have been caused by misidentification of friendly for enemy troops or by a lack of technological aids. The available data do suggest, however, that the weapons and procedures of modern indirect fire artillery have become so complex as to exaggerate and compound the most persistent cause of artillery amicicide: human error. Errors attributable to forward observer mistakes, FDC miscalculations and failures to follow established procedures, and gun crew errors account for the great majority of all artillery amicicide incidents in Vietnam.[51]

It should be noted that the data on artillery amicicide incidents in the Vietnam War used in this study are much more detailed than those available for other conflicts. Whether this occurs by chance or simply because of a difference in reporting and collection techniques is uncertain, but it does permit a somewhat more finite classification of incidents according to causative factors and pushes forward the element of human error as an explanation of artillery amicicide in Vietnam.[52]

The tactical aspects of the Vietnam War as well as the often densely jungled or mountainous terrain contributed to incidents of artillery amicicide. The frequent very close support of night defensive positions by heavy artillery concentrations fired from distant fire bases, and the night and day operation of small units on rough terrain, made some cases of misplaced artillery fire inevitable. As in earlier conflicts commanders and operations officers were not unprepared to accept some casualties from friendly artillery fire as the price for the close and continuous fire support needed to overcome enemy resistance in the assault or to break up heavy enemy attacks on defensive positions, and fires on own position, not included in this study, were not uncommon.[53] This rather pragmatic approach to the problem was--and is--neither unusual nor unwarranted and was certainly recognized in earlier conflicts. The commander of the 2d Battalion, 9th Infantry, for example, told an Army Ground Forces observer in Normandy on 1 July 1944, "We must teach our soldiers to remember that when they follow the artillery barrages and air strikes closely, they eventually suffer fewer casualties even though an occasional short may fall on them."[54] That the ordinary soldier understood and accepted this principle is perhaps revealed in the comment of one

soldier to his commander on the morning following the hard-fought battle of Prek Klok I on 28 February 1967. When asked, "What did you think of the artillery and the air strike--were they coming in a little close?" the soldier replied with a big grin, "Sir, I was getting sprayed all over. But God it felt good!"[55]

The incidents of Vietnam-era artillery amicicide range from the deeply tragic to the almost comical. Because of a lack of central fire control and coordination compounded by enemy deception, the 1st and 3d Battalions, 15th Infantry Regiment, Army of the Republic of Vietnam (ARVN), lost more than 150 men killed and wounded (to both enemy and friendly fire, including small arms, artillery, and aircraft) in an engagement in Cao Lanh Province in May 1965. At the other end of the scale, friendly artillery fire blasted the tail off a CV-7A Caribou aircraft on short final approach to the 1st Cavalry Division airfield at An Khe around 1966-67. Not considered in this study are training incidents, not all of which were restricted in the 1960s to US units. For example, on 9 April 1965 at the Bergen-Hohne NATO training area in Germany, five 81-mm mortar rounds fired in a demonstration by 5. Company, Armored Infantry Battalion 92, hit the observer group of the 6th German General Staff Course, killing ten men and wounding twenty others.

As a result of C. D. B. Bryan's popular book, Friendly Fire, and the television drama based upon it, perhaps the best known incident of artillery amicicide in the Vietnam War is that which Bryan meticulously reconstructs and which serves as the initiating event for his story focusing on the tragic aftereffects of such an incident on one American family.[56] On 17 February 1970, Company C, 1st Battalion, 6th Infantry, of the Americal Division's 198th Light Infantry Brigade, established a night defensive position on a wooded hilltop in the vicinity of Tu Chanh, South Vietnam. Because of priority missions the supporting artillery, consisting of four 105-mm howitzers located on another hilltop some distance away, did not begin registering Company C's defensive fires until the early morning hours of 18 February. The defensive targets (or DTs) were correctly planned and plotted 400 meters from the company perimeter, or about 1,300 feet from the nearest soldier. The first registration round (WP--Airburst--50 meters) was right on target, but the second round (HE) exploded directly over the 1st Platoon area after striking a tree. Two men were killed (including Acting Sgt. Michael Mullens, one of the principals of Bryan's story) and six were wounded. Later investigation disclosed that the FDC of the supporting artillery unit had failed to calculate correctly for the height of the trees on the target hill.

The first registration round (airburst) had cleared the trees, but the second (HE--Impact) had not. It hit a tree, exploded, and caused the friendly casualties.[57]

Two similar incidents of treetop explosions of friendly artillery rounds, perhaps due to the same cause, occurred in 1968. In April of that year a combined US Special Forces and Free Cambodian task force on an operation west of Song Be lost three to four men killed and more than fifteen wounded when a friendly 8-inch projectile exploded in the treetops over their position. The following month on Mother's Day, 10 May 1968, Company A, 1st Battalion, 327th Infantry (101st Airborne Division), suffered two to four men killed and eight wounded when one of six rounds with delay fuzes, fired in support by the 1st Battalion, 320th Field Artillery, struck a tree, and deflected downward into the company CP near Duc Pho.

Artillery fire direction centers were frequently capable of other errors as well. In September 1970, incorrect computation of adjustment data by the FDC of a 105-mm battery supporting Troop A, 1/7th Cavalry, resulted in a Battery One Round falling on the troop's position. Fortunately, the resultant explosions were loud and frightening but not very effective; only one man was lightly wounded. Earlier, probably in 1967 or 1968, one friendly infantryman was killed when struck by friendly artillery fired on the wrong coordinates. This was the result of a transposition of the target grid coordinates during telephonic transmission of the fire mission between the tactical operations center (TOC) of the infantry division artillery and the operations center of the firing artillery battalion and a subsequent failure to double-check the elements of the fire request.[58]

Less obvious but equally fatal errors were also made. Three men of Company B, 4th Battalion, 31st Infantry, of the Americal Division's 196th Light Infantry Brigade, received minor wounds when their position was struck by six short rounds of 105-mm artillery on 8 January 1968 in the Que Son Valley. The combat situation required the delivery of close-in artillery fire to cover the withdrawal of a platoon to align an assault formation. The supporting artillery was requested to "Drop 50" and the resulting rounds fell 200 yards short of the target and in the center of the supported unit. Investigation revealed a calculation error in that the "Drop 50" request should have caused the firing unit to go from Charge 3 to Charge 2, minimum quadrant at Charge 3 having been reached. The rounds were fired with Charge 3, however, and friendly casualties resulted. A number of friendly casualties were caused in another incident when an

unknown number of 105-mm rounds hit a friendly position. The incident occurred when a ground forward observer (FO) started the fire mission but, unable to observe the rounds, passed the mission to an aerial FO, who made shifts along the gun-target (GT) line, while the FDC continued to plot using the observer-target (OT) line.[59]

Artillery FDCs were also responsible for cases of artillery amicicide when they failed to follow established procedures for obtaining clearance to fire on certain areas. Such incidents of incomplete or inadequate coordination frequently resulted in friendly civilian as well as friendly military casualties. In January 1967 a platoon from the 1st Battalion, 27th Infantry (25th Infantry Division), in Hau Ngia Province lost about twenty men wounded when hit by eighteen rounds fired by 173d Airborne Brigade artillery. An aerial observer from the 1st Infantry Division had reported an enemy platoon in the open and the 173d's artillery, OPCON to the 1st Division, received the fire mission. The 1st Division Fire Support Element (FSE), however, failed to coordinate with the 25th Infantry Division, in whose sector the target lay, and consequently the firing unit was unaware of the presence of friendly troops in the area.

Again, the failure of an Americal Division 155-mm artillery battalion to clear its fires properly with units responsible for the area of operations resulted in one killed and five wounded in Company C, 4th Battalion, 21st Infantry, when the artillery unit fired an uncleared interdiction mission at night along the road between Landing Zone (LZ) Ross and LZ Baldy near Chu Lai in August 1968. A similar incident occurred, also in 1968, when a 105-mm artillery battery fired an unobserved trail runner mission resulting in the injury of one ARVN soldier and three Vietnamese civilians. The mission had been passed from one artillery battalion to another because of a boundary change in two brigade areas of operations (AO). When questioned, the fire direction officer (FDO) of the original firing battalion declared the area to be cleared. The FDO of the receiving artillery battery assumed that all required area clearances had been obtained, but in reality targets had been cleared only within the AO of the old firing battalion.

Gun crew errors also proved to be the cause of many incidents of artillery amicicide in Vietnam. Two US soldiers were wounded in 1968 as a result of a 100-mil deflection error by a howitzer section of a firing battery. In the same year, a 200-mil deflection error by the gunner of a 4.2-inch mortar resulted in one registration round falling within a friendly battalion defense perimeter, killing four soldiers and wounding ten.

Earlier, in September 1967, Battery B, 3d Battalion, 82d Field Artillery, decided to secure a helicopter pickup zone (PZ) for Company C, 3d Battalion, 21st Infantry, 196th Light Infantry Brigade, by continuous fire around the PZ and 1,000-2,000 meters from it. The infantry company commander declined the artillery support but was overridden. Battery B fired the mission with a 1,000-mil error, dropping a "Battery Six" on the friendly PZ. Fortunately, the rounds landed in an open rice paddy, which absorbed most of their force, and no friendly casualties resulted. Company D, 2d Battalion, 502d Airborne Infantry (101st Airborne Division), was not so fortunate south of Phu Bai in March 1969, when a 155-mm howitzer firing at 12,000 meters with a 100-mil deflection error dropped two rounds on the company, killing two men and wounding seven.

Incorrect handling and counting of powder charges by gun crews also caused several amicicide incidents. In June 1968 near Quang Tri, the 1st Cavalry Division's 2d Battalion, 19th Field Artillery, wounded one friendly soldier while firing an 8-inch howitzer with an incorrect charge. Also in 1968 a newly assigned member of a 175-mm gun crew selected different lots of powder during the course of a fire mission. One round landed on a friendly position causing several casualties. In April 1970 a 155-mm howitzer battery at Fire Support Base (FSB) Birmingham near Hue failed to count charges properly while firing harassment and interdiction (H and I) fires at night. As a consequence one round landed in a fire base occupied by Company A, 2d Battalion, 501st Infantry (101st Airborne Division), and one man was killed and five were wounded.

One of the most serious incidents of artillery amicicide in Vietnam occurred in late 1967 as the result of just such a gun crew error in handling powder charges. A US artillery unit firing H and I fires at night applied Charge 7 rather than the computed Charge 4. The rounds landed in a US base camp, killing one man and wounding thirty-seven. The victims' unit initiated counterbattery fire that proved unfortunately accurate and killed twelve men and wounded forty on the offending fire base. The entire incident lasted twenty-three minutes and resulted in a total of ninety casualties among, and entirely caused by, friendly troops.[60]

Infrequently, artillery amicicide incidents in Vietnam could be attributed to mechanical failure or defect in guns or ammunition. A few days before the main incident described in Bryan's Friendly Fire, the same artillery battalion had wounded several men in Company B, 1/6th Infantry (198th Light Infantry Brigade, Americal Division) when using a howitzer

with missing teeth in the elevating gear mechanism, the mechanism thus indicating a higher elevation than was actually on the tube.[61]

The 81-mm mortar proved exceptionally prone to ammunition malfunctions, three incidents involving faulty 81-mm mortar ammunition being reported in 1968 alone. In January 1968 the 1st Battalion, 27th Infantry (25th Infantry Division) was under attack by a North Vietnamese Army (NVA) regiment in a defensive position thirty kilometers southwest of Cu Chi. The battalion commander ordered his 81-mm mortars to shift their fire to blunt an enemy penetration, and one 81-mm round hit the battalion CP, killing one man and wounding eight others, including the battalion commander and the supporting artillery liaison officer/fire support coordinator. The LNO/FSCOORD personally verified the cause of the short round as a wet powder increment before being evacuated. In addition to the one man killed and eight wounded, seven M-16 rifles and three PRC-25 radios were destroyed.

Later the same year a US infantry company in a night defensive position was registering its planned defensive fires when the first 81-mm mortar round fell short, thirty-five meters from the tube. Three soldiers were wounded, one of whom later died from his injuries. The man who died of wounds, on being warned "Short round!" by the platoon sergeant, ran rather than taking cover. The incident was attributed to faulty ammunition.[62] An almost identical incident occurred near Dong Xoai in December 1968. Company B, 1st Battalion, 5th Cavalry, and Companies A and B, 2d Battalion, 5th Cavalry (all of the 1st Cavalry Division), occupied a night defensive position with A and B, 2/5th, on the perimeter and B, 1/5th, in linear formation across the position's diameter. Company A, 2/5th Cavalry, initiated 81-mm H and I fire to the west of the night defensive position (NDP). The first round did not clear the perimeter and detonated in some cut and stacked brush about ten feet forward of the B, 1/5th, Cavalry, position. The round burst about one meter above the ground and proved exceptionally lethal, killing six men and wounding at least fourteen others. Again, the probable cause was defective ammunition.

Only a few incidents in Vietnam involved properly cleared artillery fire falling on friendly troops not known to be in an area, but lack of coordination and the failure to follow established procedures often had tragic consequences. In late July or early August of 1966 in Len Than Province the headquarters element of the 4th Battalion, 503d Infantry, was hit by friendly H and I or registration rounds while on a search and destroy mission. The rounds hit a rock outcrop-

ping and killed one man and wounded five others. In August 1968, Troop A, 3/5th Cavalry (9th Infantry Division), OPCON to the 3d Brigade of the 1st Cavalry Division as part of a "pile on" operation in Quang Tri Province, was establishing a cordon when struck by an 8-inch round. Troop A lost two men killed and two men wounded, and an attached infantry squad from 1/9th Cavalry also lost two killed and two wounded. The 8-inch battery was apparently unregistered and had fired its first round "HE on the deck" using aerial adjustment, which failed to locate the friendly troops. At LZ Ike in Tay Ninh Province in September 1969 the 2/8th Infantry (1st Cavalry Division) lost one man killed and one wounded by the direct fire of Battery A, 2/19th Field Artillery. The 2/8th had established listening posts (LPs) on the perimeter of the fire base and reported their location to Battery A. The actual location of the LP hit, however, was 600 mils from the position given to the artillery.

The errors of forward observers in correctly plotting their own position and correctly shifting supporting artillery fires added significantly to the number of artillery amicicide incidents experienced in Vietnam. Forward observer error has been perhaps the most persistent cause of artillery amicicide in every conflict, being, as it usually is, a function of human performance under conditions of severe stress. A proportional number of amicicide incidents due to this cause have no doubt occurred in every conflict, and the problem is hardly amenable to corrective or preventive action other than adequate training, experience, and the inculcation of individual coolness under fire.

In several cases of artillery amicicide in Vietnam the proximate cause appears to have been an error by the forward observer in correctly locating his own position or that of the target when calling in supporting fires. On 12 April 1969 five men of the Aero Rifle Platoon, Troop B, 2/17th Cavalry (101st Airborne Division), were killed and four wounded on a hilltop night defensive position near Hue when a radio-telephone operator made a 4,000-meter error when calling for fire support. In another incident in Darlac Province in November 1970 two Regional Force soldiers were wounded when a misoriented FO called for fire <u>behind</u> his position. A US advisor (NCO) to a Vietnamese Regional Force/Popular Force (RF/PF) platoon in the vicinity of FSB Black Horse in December 1969 was adjusting the fires of Battery B, 2/40th Field Artillery. The observer-target azimuth given by the advisor to the FDC was 1,600 mils (90°) off, and the correction he gave brought the friendly artillery rounds down on his hilltop position. Ten soldiers were wounded, including the advisor. A more unusual incident

occurred in Rach Gia Province in January 1965 involving the 3d Battalion, 15th Infantry Regiment (ARVN). The forward units of the battalion identified their positions along a major canal by using the canal name on a 1964 US map. The FO requested fire on the grid coordinates of the position taken from a pre-1954 French map. A one-kilometer difference in the placement of the canal on the two maps resulted in the strike of the artillery on the forward unit, killing two men and wounding four.

The confusion of FOs under fire has also led to friendly casualties. In one 1968 case a squad leader of a US patrol became disoriented during the conduct of a "Danger Close" fire mission. He unconsciously faced his second marking (WP) round as it struck, estimated 150 meters to the target, and gave a correction of "Left 150" instead of "Add 150." The FDC, having no way of knowing the FO had unconsciously changed his observer-target (OT) azimuth by 1,600 mils, accepted the "Left 150," and the firing battery fired the correction with "HE, Fuze Quick." The round landed near the squad, wounding three men. In another case a battery of US artillery fired fifteen 105-mm rounds that detonated near a bridge guarded by US and Vietnamese Popular Force (PF) soldiers, wounding one US and one PF soldier. A PF soldier called in the fire mission through the ARVN district chief, who misplotted the target by 1,000 meters and incorrectly gave the observer-target direction as 3,200 mils rather than 320 degrees. An incompetent observer and language difficulties contributed to the incident.

In several other cases, failure of the FO to follow established procedures or the dictates of common sense contributed to the death and injury of friendly troops. In one case an FO with an infantry company requested a 100-meter shift away from a defensive concentration, which had been previously fired in thick growth during darkness, and which was apparently much closer to the friendly position than estimated. The FO's target description misrepresented the criticalness of the situation, and the FDC ordered the defensive concentration to be fired as a contact mission not requiring safe fire adjustment of the battery. As a result, three US soldiers were killed and nineteen were wounded. In one final instance, one round of 155-mm artillery fire hit friendly troops during a contact mission when the airborne artillery liaison officer in a command and control helicopter foolishly attempted to adjust the fires of four batteries at one time, became confused, and gave a correction that caused the round to fall left and short of the intended target.

Conclusion

The evidence of modern cases of artillery amicicide remains too incomplete and uncertain. Our examination of ninety-eight separate cases of artillery amicicide (see table 1) does, however, suggest several tentative and partial conclusions as well as directions for future investigation.

Certain factors, such as visibility and type of tactical operation, seem to have little importance.[63] Direct human error (see table 2), particularly that of forward observers, fire direction center personnel, and gun crews under the stresses of combat, seems to be the most significant causative factor in artillery amicicide.[64] It is also the least amenable to preventive measures or dramatic improvement, not to say elimination. There is little that can be done to avoid incidents of artillery amicicide due to human error other than thorough training, careful selection of personnel, and experience.

Modern technology offers some expectation of reduction of this type of error, as for example the use of lasers to mark targets and digital read-out devices for indicating position. Improvements in the accuracy and mechanical dependability of artillery weapons and production of explosive charges consistently free of erratic ballistics have greatly reduced the proportion of artillery amicicide incidents due to mechanical failures. We have at least reached a point where the round goes to its intended point on the earth's surface contingent upon proper pointing by the humans in charge.

The use of high technology electronic or laser-based position locators down to squad or even individual level, fed directly to fire direction computers equipped to block fires on positions displaying a distinctive signature, is state of the art. The deployment of such aids is limited only by time, money, and human perception of their need. But we must be alert to the fallacy of relying too heavily on advanced technology and complex procedures that outstrip the ability of the average human to comprehend or master.

The influence of tactical doctrine on the incidence of artillery amicicide remains too complex to be properly understood at this time. Clearly, the lavish employment of artillery and other indirect fires will continue to be a major factor in future war, and to obtain their full value, maneuver forces will continue to be required to operate close to their supporting fires. Some friendly casualties, perhaps

the prevalent 5 percent, thus will continue to be accepted and acceptable as the price of close fire support. To avoid completely the engagement of friendly troops by friendly artillery firing indirectly over great distances with extremely lethal munitions is probably impossible. Nevertheless, in view of the potentially drastic negative effects of artillery amicicide on friendly combat power, it should remain a goal actively sought.

TABLE 1

Artillery Amicicide Incidents by Conditions of Visibility, Type of Operation, and Type of Error

A. Conditions of Visibility

Conflict	Visibility Normal	Visibility Reduced	Visibility Unknown	Total Incidents
WW II (Eur)	9	7	4	20
WW II (Pac)	18	4	6	28
Korean War		3		3
Vietnam War	2	11	34	47
	29	25	44	98
	(30%)	(25%)	(45%)	(100%)

B. Type of Operation

Conflict	Defensive	Offensive	Patrol	Retro-grade	Type Unknown	Total Incidents
WW II (Eur)	3	13	1	2	1	20
WW II (Pac)	5	21	1	1		28
Korean War	3					3
Vietnam War	16	5	3		23	47
	27	39	5	3	24	98
	(28%)	(40%)	(5%)	(3%)	(24%)	(100%)

C. Type of Error

Conflict	Misident-ification	Mechan-ical	Coord	FDC	Crew	FO	Type Unknown	Total Inci-dents
WW II (Eur)			10	1			9	20
WW II (Pac)	2	1	13				12	28
Korean War			2				1	3
Vietnam War	1	4	7	4	9	9	13	47
	3	5	32	5	9	9	35	98
	(3%)	(5%)	(33%)	(5%)	(9%)	(9%)	(36%)	(100%)

TABLE 2

1969 USARV Study*

Section I
Incident/Accident Profile

Occurrence--Time of Day	Artillery	Mortar	Aviation
Morning	20%	13%	27%
Afternoon	23%	20%	40%
Night (before midnight)	31%	47%	21%
Night (after midnight)	26%	20%	12%
Clearance Causes	15%	15%	7%
Materiel Causes	15%	25%	8%
Fire Direction Center Causes	26%	18%	
Firing Battery (Mortar Platoon) Causes	21%	19%	
Forward Observer Causes	11%	11%	
Location Errors	11%	11%	
Indefinite Target Location			21%
Fire Too Close to Friendly Locations			18%
Improper Employment by Ground Element			13%

*David Ewing Ott, Field Artillery, 1954-1973 (Washington, DC, 1975), p. 178.

2

AIR AMICICIDE

Introduction

The armed military airplane made its formal debut on the battlefield in World War I and has subsequently proved a weapon of enormous significance, as increasing aviation technology has extended its range, speed, ordnance load, and general sophistication. These very characteristics that make the airplane such a potentially useful and destructive weapon have also made it a significant threat to friendly troops. As the speed and range of military aircraft have increased, the difficulties of control and coordination have increased accordingly. Indeed, the present technological sophistication of military aircraft, both fixed and rotary wing, like that of modern artillery weapons, threatens to outstrip the capabilities of its human operators to control its employment adequately.

Among the 269 cases of amicicide identified in this study, incidents of air amicicide exceeded artillery incidents in frequency. Ninety-nine of 269 cases (37 percent) involved the engagement of friendly troops by their own aircraft. More significant, in terms of the number of friendly casualties caused, air incidents clearly predominate, both as to total casualties and casualties per incident. In one World War II incident alone, 111 friendly troops lost their lives and 490 were wounded.[1]

The effects of air amicicide on friendly combat power and the conduct of operations are the same as those of artillery incidents, but they are magnified by the greater destructive power of air-delivered ordnance. Death and wounds, as well as confusion, result from the bombing and strafing of friendly troops by their own air forces, and such incidents can and do have adverse effects on combat power, the progress of offensive operations, the viability of defensive positions, and the morale and confidence of troops. Indeed it appears that morale and confidence in supporting arms are more seriously affected by incidents of air amicicide than by artillery incidents. While ground troops may grudgingly acknowledge that an artillery strike might have been perpetrated by the enemy rather than by friendly guns, or even that the friendly artillery could not, for whatever reason, know their location, they are far less able to under-

stand why friendly aircraft, which they could see perfectly well, could not see and recognize them.[2]

Although as a result of previous study and analysis, the available data on air incidents are somewhat more complete and detailed than that for artillery amicicide, they too remain sketchy and generally unreliable. They do suggest, however, that the incidence of both types of amicicide respond to the same three general factors.

Technological advances in aircraft design have increased speed, range, and ordnance load. These improvements have complicated the problem of adequately controlling the placement of aerial fires, speed alone serving to make enormously more difficult the correct identification of ground troops. Concurrent improvements in communications and electronic methods for locating both friendly troops and friendly aircraft have offset somewhat the problems of control brought on by advancing aviation technology.

The development of close air support doctrine in World War II and the subsequent heavy and frequent use of armed aircraft in support of ground combat forces made the occurrence of air amicicide inevitable, given the available identification and location technology. The addition of very close support by armed rotary wing aircraft in Vietnam and the use of extremely fast, high performance jet aircraft in the close air support role only served to increase the hazard. Continued use of tactical doctrines calling for close support of ground forces by air forces will, of course, do nothing to reduce the possibility that friendly troops will fall victim to the fires of their supporting aircraft, just as they may be subject to their own close artillery fires.

Just as in the case of artillery incidents, air amicicide in the final analysis is usually the result of some human error. The rapid advance of aviation technology, even with a corresponding increase in communications and position location technology, threatens to overwhelm the capability of even the most competent and best trained human beings to cope. It is too much to hope that a pilot, diving at 600 mph through smoke while taking evasive action and attempting to deliver area-type ordnance accurately, could instantaneously and correctly identify camouflaged friendly ground troops making maximum use of available cover and concealment. As was noted in the "Lessons Learned" section of HQ, Advanced Allied Expeditionary Air Force, letter of 20 July 1944:

> In all air support operations conducted extremely close to the friendly troops, there will be the danger of bombing and strafing behind the friendly front lines. In case of air preparation close to friendly troops, this hazard must be recognized and accepted by the requesting agency.[3]

World War I

Although the armed military airplane became a significant weapon of war in the course of World War I, its slow speed and light armament, as well as the existence of clearly defined front lines and the absence of a true close air support doctrine, rendered incidents of air amicicide few and relatively insignificant. Friendly troops on both sides in World War I were bombed and strafed by their own aircraft, but rarely did such incidents have any major impact on the course of combat operations. Amid the tremendous casualties incurred by ground weapons, the deaths and wounds attributable to friendly air strikes went almost unnoticed.

One curious World War I incident of air amicicide, however, did have some influence in stifling the development of a particularly frightful method of aerial bombardment. At the very beginning of the First World War, in August 1914, the French invented a device consisting of a large metal can filled with minuscule steel flechettes and designed to be dispersed from aircraft. The use of this weapon was discontinued by the French (although the Germans copied and used it) when an aviator dropped some of them in error on a detachment of Zouaves.[4] It was found that the flechettes were poisonous because their fall through the air was not rapid enough to clear them of the oil in which they were packed, and the resultant wounds became infected.

World War II: North Africa and Europe

The development of a doctrine of close air support and the frequent employment of large numbers of friendly aircraft in the battle area in World War II caused the problem of air amicicide to grow to significant proportions. The danger posed to friendly ground troops by supporting aircraft was recognized early in the war, and various procedures, at first visual and later increasingly electronic, were developed to reduce the occurrence of such incidents. The slow but steady

progress achieved through better communications and improved air-ground coordination procedures up to June 1944 was temporarily undone by the greater intensity of tactical air operations in northern Europe and the repeated, and mostly unsuccessful, attempts to employ heavy bombers for close air support in the months immediately following the Normandy invasion. Eventually, technology and technique once more began to overcome the problem, but despite such improvements in all theaters, air amicicide incidents throughout the war continued to exact a heavy toll on friendly ground forces as well as friendly, or at least neutral, civilian populations. The primary factors involved in World War II air amicicide, other than the adolescent state of the art of close air support and its technological handmaidens, were clearly human ones not amenable to technological solutions. Lack of coordination, the failure to identify ground troops as friendly, and direct pilot or navigator errors predominate as the causes of most World War II incidents.

American air operations in support of advancing ground forces faced their first real test during the campaign in North Africa in 1942-43 and in Sicily in 1943. Until adequate systems of air-ground coordination were worked out, US Army forces had to endure several attacks by friendly aircraft due to poor coordination or misidentification as the result of inadequate marking systems.

Although the British, for their part, faced severe problems in communications and in identification of friendly ground troops, by 1942 Air Vice Marshal Coningham's Western Desert Air Force (RAF) had developed usually effective methods for avoiding air amicicide. Tactical air support at the battle of El Alamein on 30 October 1942 is a case in point. Despite a restricted (nine-mile square) area in which the bomb line constantly shifted, none of the ninety-five tons of bombs delivered by more than 300 sorties fell on friendly forces.[5] The results of three years' experience by the RAF could not be immediately absorbed by US air forces, however, and many hard lessons had to be relearned by the Americans on their own.

On 9 November 1942, the 1st Battalion, 60th Infantry, commanded by Maj. Percy DeW. McCarley, Jr., failed to mark its position with the prescribed identification panels during a pause before the final advance on French positions around the airfield at Mehdia-Port Lyautey, Morocco. A US Navy plane dropped two bombs among the troops, and the resultant disorganization delayed preparations for the attack until approaching darkness made it necessary to postpone the advance until the following day.[6]

The 701st Tank Destroyer Battalion, allocated to the US 1st Armored Division, was among those units repeatedly hit by friendly air strikes during the North African campaign. One company of the 701st TD Battalion was attached to the British 11th Brigade in the vicinity of Medjez-el-Bab, 22-30 November 1942. The company operated successfully against German Mark IV tanks on 23 November 1942, but the following day was attacked by US P-38s and "practically all its vehicles were temporarily put out of action."[7] The disabled vehicles were cannibalized, and three tank destroyers were soon returned to service with another three subsequently repaired. Less than two weeks later on 2 December 1942, during the battle of the Zaid Pass, the 1st and Reconnaissance Platoons of Company B, 701st TD Battalion, were strafed at 1020 by one of a flight of four P-38s that flew over their position. Three men were killed and two were severely wounded. The author of the unit's North African campaign diary commented:

> This case of mistaken identity was inexcusable and highly demoralizing to us. The explanation was that our vehicles were too far out, that is, outside the bomb line. As a matter of fact, our vehicles had been drawing enemy artillery fire from the vicinity of the pass; had they been any closer in the pass they could not have performed their assigned mission.[8]

Portions of the 701st TD Battalion were also among the 1st Armored Division units bombed by US B-25s near Station de Sened, Algeria, on the late afternoon of 3 February 1943.[9]

On a few occasions it was absolutely impossible from the air to identify a target as friendly. A German ship was loaded with Allied POWs in Tunis on 4 May 1943 and lay anchored off Cape Bon for three days before the Germans abandoned it. During that time at least forty Allied fighters strafed the ship and aimed 100 bombs at it. Fortunately, the fighter pilots proved somewhat unskilled, only one of the bombs, a dud, hit the ship, and only one of the Allied POWs was killed.[10]

Procedures for the positive identification of friendly ground forces from the air had not noticeably improved by the time of the Allied invasion of Sicily in July 1943. The movement of a company of tanks from CCA, 2d Armored Divison, toward Canicatti was briefly delayed on 11 July 1943 when its march column was attacked by a P-38.[11] The incident resulted in no casualties or equipment loss, but it was only the first of several such attacks during the week of 11 July that cost CCA fourteen vehicles and seventy-five men, as friendly pilots, alert for the 15. Panzer Grenadier Division,

repeatedly mistook the armored vehicles of CCA for enemy ones. The prominent display by CCA of yellow smoke, the agreed identification signal for friendly troops, did little to alleviate the problem. In fact, one pilot, 1st Lt. R. F. Hood of the 86th Fighter-Bomber Group, who was shot down by CCA's antiaircraft fire, admitted he had seen the yellow smoke, but did not know its meaning. The 15th Army Group subsequently changed from smoke to pennants as the means of identification, and thereby reduced the problem.

Unfortunately, timely improvements in recognition procedures did not entirely close the gap in air-ground coordination. On 12 August 1943, Lt. Col. Lyle A. Bernard, commanding the 3d Infantry Division's 2d Battalion, 30th Infantry, ordered his Company F down from Monte Cipolla to relieve Company E in defense of the Brolo River line.[12] Delayed by German fire, Company F did not reach the flats and move toward the river until almost 1600. Its arrival coincided with a prescheduled air strike. Seven A-36s arrived over Monte Cipolla about 1600 and, probably as a result of pilot misorientation to the ground, dropped two bombs on the battalion CP, causing nineteen casualties. They dropped the remainder of the bombs on the supporting howitzer positions of Battery A, 58th Armored Field Artillery Battalion, destroying the remaining four howitzers. Although Company F was unharmed, Lieutenant Colonel Bernard, deprived of his remaining support for the two companies along the river, was forced to withdraw his troops onto Monte Cipolla in anticipation of a final stand against the opposing elements of the 71. Panzer Grenadier Regiment.

Interviews conducted by Army Ground Forces observers in Sicily during and after the campaign testify to frequent bombing and strafing of friendly troops by Allied aircraft despite the supposedly agreed upon use of panel markers and yellow smoke as recognition signals. Although yellow smoke was probably difficult for the pilots to distinguish from dust and smoke from fires on the ground, the opinion of ground troops was clearly that the pilots were unfamiliar with the meaning of yellow smoke despite the understanding of the ground forces that it was to be the primary recognition signal.[13] Some improvements in air-ground coordination were made during the Sicilian campaign, however. Noticeable advances in the use of radio communication and mobile air control parties would prove of tremendous value as the war moved onto the continent.[14]

The destruction of one of the oldest centers of Western Christian monasticism, the venerable Abbey of Monte Cassino, by Allied aerial bombardment in March 1944 is still viewed by

many as not only a clear-cut case of amicicide but a crime against civilization itself. Whether the abbey was occupied by the Germans has little bearing on the fact that the 15 March bombardment of Cassino resulted in the first major air amicicide incident of World War II. Between 0830 and 1200 on 15 March 1944 some 435 Allied heavy and medium bombers dropped more than 1,100 tons of 1,000-pound HE bombs in the Cassino area.[15] Some of the bombs from the heavies fell on Italian civilians and Allied troops in the area, demolished the HQ trailer of the British Eighth Army commander three miles away, and among the Allied soldiers caused casualties of 28 killed and 114 wounded.[16] At the same time Allied aircraft bombed friendly troops (including a French corps headquarters) in the town of Venafro, ten miles from Cassino, killing 57 Allied soldiers and friendly civilians and wounding 179.[17]

The mistaken bombings at Cassino and Venafro were due to several causes. General Mark Clark attributed the tragic errors to "poor training and inadequate briefing of personnel," and the commander of the 6th New Zealand Brigade later stated:

> Heavy bombers operating from 14,000 feet are not accurate enough for this class of close support. Medium and light bombers are excellent. If the air force could have used more medium bombers and still kept up the weight of the attack, the results would have been better.[18]

The malfunction of a bomb rack on one lead aircraft had resulted in the dropping of forty bombs on friendly positions, and investigation revealed that poor air discipline, obscuration of the target by smoke and dust, and the lack of specific aiming points also had contributed to the fiasco.[19] Regardless of the causes, the effects were noticeable. Confusion reigned, friendly troops and civilians were killed and injured, and the planned ground attack proceeded slowly and unsuccessfully.

The greater scale and intensity of both air and ground operations in Western Europe after the Normandy invasion in June 1944 increased both the number and seriousness of air amicicide incidents. And to the hazards of being strafed by fighter aircraft or bombed by attack planes was added the even greater hazard of serious heavy bombing by medium and heavy bombardment aircraft employed in the close support role, as at Monte Cassino.

As a result of detailed wartime and postwar analyses of air operations in the European theater, the occurrence of air amicicide, its causes and effects, and the measures taken to prevent it are much better documented than are events in other theaters.[20] Thanks to the efforts of both official agencies and civilian historians, only a brief review of the most significant incidents need be made in this study.

It should be pointed out that during the course of the campaign in Europe, constant attention was given to the problem of properly coordinating air-ground operations. Procedures for marking friendly positions, ground-to-air radio communications, and radio/radar position location aids were all improved. They reduced, but did not eliminate, the number of amicicide incidents. Until the very end of the war in Europe, pilot and navigator/bombardier errors continued to result in friendly casualties, broken attacks, and the degradation of friendly combat power.

Allied ground forces on the Continent were not the only victims of Allied air power. Friendly civilians as well as neutral populations were occasionally the unintended targets of massive air operations. Before proceeding to describe incidents of purely military significance, a brief, separate account of representative incidents involving the bombing of friendly or neutral territory may be instructive.

The US Army Air Forces bombed neutral Switzerland several times between 1943 and the end of the war in 1945, causing severe diplomatic repercussions, as well as death, suffering, and heavy property loss among the presumably unintended victims. Helmreich has attributed these incidents to a number of causes including bad weather, faulty equipment, and incompetence or excess zeal on the part of air crews; but he also suggests that the bombings may have been other than accidental.[21]

On 1 April 1944, fifty American planes bombed the Swiss city of Schaffhausen, causing serious fires and property damage and killing or wounding more than 100 civilians. On 22 February 1945, even as presidential aide Laughlin Currie was laying a wreath on the graves of the Swiss victims of the Schaffhausen bombing, US planes took part in thirteen separate attacks on Swiss territory, the most serious of which was at Stein-am-Rhein, only twelve miles from Schaffhausen. The 22 February incidents killed or wounded more than thirty Swiss citizens.[22]

On 4 March 1945, six B-24Hs dropped 12.5 tons of high explosives and 12 tons of incendiaries on Zurich, and nine

others dropped 16.5 tons of high explosives and 5 tons of incendiaries on Basel.[23] The incidents, attributed to faulty equipment, bad weather over France and haze over Switzerland, navigational errors, and misplaced zeal, resulted in heavy damage to the main Basel railway freight station, seven civilians injured in Basel, and five civilians killed, twelve hospitalized, and twenty-two families left homeless in Zurich.[24] The pilot and the navigator of the lead plane in the Zurich raid were subsequently tried and acquitted of violating the 96th Article of War. Their court-martial was held at HQ, 2d Air Division, 8th Air Force, at Horsham St. Faith, England, on 1 June 1945, and was presided over by Col. James M. (Jimmy) Stewart.[25]

Friendly civilians in towns closer to the battlefront also suffered severely from Allied air bombardment. As a result of a "gross error--due to poor navigation, poor headwork and misidentification of target" one group of medium bombers of the 9th Bombardment Division hit the Belgian town of Genck, twenty-eight miles west of the assigned target, on the morning of 2 October 1944, killing thirty-four civilians and wounding forty-five.[26]

Two of the best documented incidents of this type occurred at Malmedy, Belgium, on 23 and 25 December 1944.[27] At 1526 on 23 December 1944, six B-26s of the 322d Bomb Group (9th Bombardment Division, Ninth Tactical Air Force), flying in support of the 30th Infantry Division, then heavily engaged with Kampfgruppe Peiper (1. SS Panzer Division) near La Gleize, dropped eighty-six 250-pound General Purpose bombs on Malmedy. At least thirty-seven American soldiers from the 120th Infantry Regiment of the 30th Infantry Division and a considerable number of civilians lost their lives, the town was set on fire, and a mass panic of the civilian population was averted only with great difficulty.[28] The assigned primary target for the bombers had been Zulpich, the railhead for the German Seventh Army, thirty-three miles away, which, unlike the hilly and forested terrain around Malmedy, lay in the open. Both ceiling and visibility during the mission were unlimited, and enemy counterair activity was minimal. The pilots realized they had not hit Zulpich, but believed they had bombed Hammersum, a town six miles northeast of Zulpich, and reported excellent results. Flight cameras had operated 100 percent during the mission, and a photo-interpreter later identified the bombed town as Malmedy. The reason given for the mistake was personnel error.

Two days later, about 1600 on 25 December, four B-26s of the 387th Bomb Group dropped sixty-four 250-pound General

Purpose bombs on Malmedy. Again, the pilots realized they had made an error and believed they had bombed the town of Born rather than the assigned target of St. Vith, and again the photo-interpreter disclosed the actual site of the bombing. Plane-to-ground visibility in this case was three to four miles, and again the apparent cause of the incident was listed as personnel error. In both cases poor navigation and inability to properly identify the target resulted in significant friendly military and civilian casualties.

From the beginning of close air support operations on the Continent, the Allied air forces received mixed reviews. Although grateful for the assistance provided by Allied fighter-bomber aircraft in the hard fighting against the German defenders, many ground soldiers subscribed to the opinion of the 1st Infantry Division staff officer who made the following entry in the division G-3 journal for 7 July 1944:

> Wish you would tell the Air Corps we don't want them over here. Have them get out in front [and] let them take pictures [but] no strafing or bombing.[29]

The attitude changed somewhat as air-ground coordination improved, amicicide incidents declined, and close air support proved its value in the battles across France and Belgium and into Germany.

During the attack on Cherbourg on 22 June 1944, ground forces (primarily the US 9th and 79th Infantry Divisions) undertook to mark the front lines by yellow smoke and the bomb line, 1,500 yards in advance, by white smoke fired from mortars.[30] The results were uniformly poor. No yellow smoke was visible, and every few minutes a mortar would fire two or three shells, the smoke from which quickly dissipated in the wind and dust of battle.[31] The result of poor marking was inevitable. Some planes of the British 2d TAF (RAF) and the American Ninth Air Force attacked the wrong area and caused friendly casualties. The proportion of the aircraft so doing was relatively small (perhaps only ten out of 700 fighter-bombers involved) but the small proportion did little to alleviate the pain and destruction in the units hit. Ironically, Generals Schlatter and Nugent from HQ AAEAF were strafed by the RAF en route to Lt. Gen. J. Lawton Collin's VII Corps HQ to witness the air attack.[32]

An Army Ground Forces observer, Col. Charles H. Coates, was present on 22 June in the CP of the 314th Infantry Regiment (79th Infantry Division), which was strafed by P-47s and which reported casualties in the regiment's front lines as well. Colonel Coates commented:

> The artillery was called upon to mark the bombline with WP but the WP shells were lost in the smoke of bombing. There may be a need for air burst smoke for marking bomblines or bombing observation so that the marking can be seen above the smoke of previous bombing.[33]

The executive officer of the 2d Battalion, 314th Infantry, Maj. D. D. Hoggsdon, also commented to Colonel Coates:

> We have got to have a better way to identify our front lines to the air. Before we jumped off on the high ground before Cherbourg, the smoke of bombing drifted on us and even though we were firing WP from artillery the air people could not see it and dropped some bombs on my battalion.[34]

Although in general the ground forces commanders in the Cherbourg operation were satisfied that the use of smoke as a marker was "moderately effective and should be continued in air support operations," the air forces were not so well satisfied, and they remarked:

> Smoke should be continued to mark targets, friendly boundaries, and the bombline in air support operations until a better marking method is devised. It is believed, however, that yellow and white smoke are the least desirable of all colors for the purpose. Both tend to blend with the smoke and dust of battle. The British are using brilliant colored smokes (red, blue, purple) which can be distinguished both from smoke and dust and from the natural ground colors. Smoke is not entirely satisfactory, but it is the most practicable solution to the problem of marking found to date.[35]

The other major alternative available at the time, using display panels, was not much more effective. Six weeks after the Cherbourg operation the G-3 of the 4th Infantry Division noted:

> Once our own planes started strafing our CPs and everybody started putting out panels, then the air never did know where the front lines were.[36]

HQ AAEAF concluded that the great majority of gross bombing errors (those causing heavy losses to friendly troops) in the Cherbourg operations resulted from misidentification of the target by the bombardier due to a lack of obvious reference points and noted that the OBOE bombing method (using radio beacons and radar positioning) would pre-

clude such errors.[37] Eventually, electronic marking systems would indeed alleviate the problem of air amicicide, but before such aids could be fully developed, Allied ground forces would suffer the most severe friendly air attack of all time.

The St. Lô breakthrough of 24-25 July 1944, code-named Operation COBRA, has been characterized as "a well-planned and successfully executed attack by combined air and ground forces," as indeed it was when viewed in general perspective. COBRA was the most massive close air support effort ever attempted and was properly exploited by ground forces that subsequently destroyed German resistance, caused their withdrawal behind the Seine, and paved the way for the rapid advance of Allied forces to the German border.[38] COBRA also resulted in the most devastating incident of amicicide ever to occur.

The detailed story of the planning and execution of Operation COBRA and the accompanying close air support operations is set forth by Martin Blumenson in Breakout and Pursuit (chapters 11 and 12). The details of the supporting air operations are also recounted in part 1-C of The Effectiveness of Third Phase Tactical Air Operations in the European Theater, 5 May 1944--8 May 1945. The essence of the breakthrough plan was a massive, short, and violent attack by medium and heavy bombers on a rectangular target 7,000 yards wide and 2,500 yards deep immediately to the south of the Périers-St. Lô highway. This was the prelude for the main attack on a narrow front between Périers and St. Lô by the US VII Corps, supported by the US VIII Corps on its right and the US V Corps on the left, with the US XIX Corps prepared to exploit the breakthrough. The operation was carefully planned, and presumably adequate provisions were made to avoid bombing friendly troops in the course of the preparatory air bombardment. To that end, friendly troops were to be withdrawn 1,200 yards from the target area, while the heavy bombers would bomb no closer to the friendly troops than 1,450 yards, the 250-yard gap to be covered by more accurate fighter-bombers. The relatively straight and well defined Périers-St. Lô highway was to form the no-bomb line; in the absence of direct ground-to-air communications, artillery was to mark the northern limit of the heavy bomber target with red smoke at two-minute intervals; the ground troops were to mark their positions after withdrawal with identification panels; and the Allied white star insignia on all vehicles of participating units were to be repainted.[39]

The air operations were to be divided into three main phases.[40] Three divisions of heavy bombers (1,500 aircraft

from the US Eighth Air Force) were to bomb the target for one hour from H minus 60 minutes. Ten groups of medium bombers (396 aircraft from the 9th Bombardment Division) would then attack specified targets within the box from H-Hour to H plus 30 minutes. Finally, fifteen groups (700 planes from the IX and XIX Tactical Air Commands) of fighter-bombers would attack the 250-yard strip north of the heavy bombing area in two twenty-minute phases, one immediately before and one immediately after the heavy bomber attacks. Although General Omar Bradley, the First Army commander, desired that the bomb runs be made parallel to the front lines, the Eighth Air Force insisted that the approach be at right angles to the target (and consequently the run-in would be over friendly positions) to minimize German counterair and to speed passage of the aircraft over the target area.[41]

Operation COBRA was scheduled to begin on 18 July, but poor weather caused several postponements. The attack was subsequently rescheduled for 1300 on 24 July, and many of the planes were already in the air when poor visibility over the target again caused the cancellation of the mission. Many of the aircraft could not be recalled in time, however, and 484 of the heavy bombers and 378 of the medium bombers, as well as the first increment of fighter-bombers, in fact attacked the target.[42] Not only did the abortive air attack alert the Germans to the coming ground attack, but the results of the partial aerial bombardment were generally poor. Only 15 percent of the bombs from the heavies landed in the target area, and only twenty-one of the thirty attacking medium bomber units placed their bombs in their target areas.[43] Results achieved by the fighter-bombers were somewhat better.

More significant, however, the confused bombing in poor visibility resulted in several instances in which friendly troops and equipment were destroyed. One of these incidents proved extremely costly. One fighter-bomber pilot made a mistake in landmark identification and inadvertently bombed an American ammunition dump.[44] When one of the heavy bombers was hit by a packet of chaff, the bombardier in a reflex action hit the bomb release toggles and dropped his bombs on the American airfield at Chippelle, destroying two manned planes on the ground and damaging others.[45] The lead bombardier of another heavy bomber had mechanical difficulty with his bomb release mechanism and prematurely released his bombs on 30th Infantry Division positions 2,000 yards north of the Périers-St. Lô highway, the other fifteen planes in his group also dropping on his lead.[46] Five medium bombers of the 9th Bombardment Division released their bombs seven miles north of the target, also on troops of the 30th Infantry Division.[47]

The effect of the abortive air attack and short bombings was disastrous. The 30th Infantry Division suffered twenty-five men killed and 131 wounded.[48] Most of the casualties were from the 2d Battalion, 120th Infantry Regiment, which had been in the open waiting to lead the attack.[49] Even men in foxholes were buried by near misses or obliterated by direct hits. Confusion reigned as commanders at various echelons attempted to determine whether the ground operation was to continue as planned. It did not. Both the full aerial bombardment and the ground attack were rescheduled for the next day.

Improved weather on 25 July permitted the preparatory bombing and ground breakthrough to take place as planned, but short bombing took an even heavier toll and nearly wrecked the offensive. In three instances on 25 July heavy bombers dropped their loads on friendly positions.[50] In the first case a lead bombardier made a visual release after failing to synchronize his bomb sight, and twelve B-24s thus dropped 470 100-pound HE bombs behind friendly lines. Eleven B-24s dropped 352 260-pound fragmentation bombs on friendly troops when another lead bombardier failed to identify the target properly and dropped at the point where the bombs of a previous strike, made in error, were seen to explode. In the final instance, a command pilot ordered bombs away while his bombardier was still sighting for range, in the belief that the bombing was to be by wing rather than by group. Forty-two medium bombers of the IX Bomber Command also failed to identify their targets properly through the thick smoke and dropped their bombs on friendly positions.

Again, the results of these bombing errors were disastrous. The leading battalion of the 47th Infantry (9th Infantry Division) and the 30th Infantry Division's 120th Infantry Regiment and 743d Tank Battalion were particularly hard hit, and the 92d Chemical Battalion, attached to the 30th Infantry Division, was completely knocked out of action.[51] The quick substitution of less damaged combat units and the grim determination on the part of ground force commanders and the troops permitted the planned assault to take place with only a minimum delay. The hard hit 120th Infantry jumped off only thirty minutes behind schedule.[52] The 957th Field Artillery Battalion, which had nearly thirty casualties and lost its entire Fire Direction Center when a B-17 dropped a string of bombs through the CP area, transferred its fire direction functions to one of its batteries and still fired all its planned fire missions for the day.[53]

The 30th Division alone suffered 662 casualties from friendly bombing on 25 July: 64 killed, 374 wounded, 60

missing, and 164 cases of combat fatigue induced by the stunning effects of the heavy bombardment (for a two-day total of 814 casualties). Unknown to most of the participants, air or ground, was the death of Lt. Gen. Lesley J. McNair, former commanding general of Army Ground Forces, who was killed instantly in the bombing while observing with the assault elements of the 2/120th Infantry.[54]

The total friendly casualties from the second day of erroneous bombing were 111 killed and 490 wounded.[55] Aside from the human errors already mentioned, contributory factors to this frightful toll included improper briefing on the bombline and poor visibility due to dust and smoke that obscured reference points and the Périers-St. Lô road, causing a parallel road three miles to the northeast to be mistaken for the bomb line.

Despite the devastation of friendly forces, Operation COBRA proved a resounding success. Although perhaps as few as 3 percent of the enemy troops were killed by the bombing, the massive air attack stunned and demoralized the German survivors and severely disrupted their defense, making possible the successful breakthrough of Allied forces and precipitating what eventually developed into a general withdrawal of German forces to the Rhine.[56]

The mistaken bombing in Operation COBRA did have some positive effects. The demonstrated inadequacies of smoke and panels as aids for target identification in close air support operations caused great attention to be focused on the development of good technical methods, a highly effective marker system was subsequently developed, and air-ground communications improved.[57] As a result of Operation COBRA the concept of close air support by heavy and medium bombardment aircraft was nearly abandoned altogether by ground force personnel. General Eisenhower in fact swore never to use heavy bombers in close support operations again, but later relented.[58] Until better procedures were developed for controlling the heavies, however, ground force commanders generally preferred to have their close air support provided by fighter-bombers, which were not only more accurate, but boosted ground force morale by visibly delivering their ordnance on enemy positions.[59]

The lessons learned at so high a price in Operation COBRA did not, however, bring about even a temporary cessation of the use of heavy and medium bombers in the close air support role. Several additional serious amicicide incidents unfortunately occurred before substantial improvements in remote bombing, troop marking, and air-ground communications

technology were forthcoming. The use of bombers in Operation TOTALIZE (Caen II) on 7-8 August 1944 resulted in Canadian and Polish casualties of twenty-five killed and 131 wounded, including a division commander, when they were mistakenly bombed by two groups of bombers. Most of the casualties were in the 1st Polish Armored Division.[60] The errors were attributed to: heavy enemy antiaircraft fire during runs parallel to the front lines when only light antiaircraft fires were anticipated; inability to see the colored smoke markers from the air and the obscuration of landmarks by smoke and dust from bombing; inexperienced crews; and the continued lack of adequate procedures and equipment for certain identification of safety lines in the target area.[61]

During the main effort of Canadian and Polish ground units against Falaise on 14 August 1944, more than 800 RAF and RCAF heavy and medium bombers supported the attack by dropping 3,700 tons of bombs in the target area. Canadian and Polish units suffered almost 400 casualties when several bomb loads fell short of target, but the attack nevertheless advanced to within three miles of Falaise on the first day.[62]

The reduction of Fortress Brest between 25 August and 18 September 1944 proceeded much more satisfactorily in terms of air amicicide losses. No Allied casualties were attributed to friendly aircraft, but the Ninth Tactical Air Force Operational Research Section nevertheless recommended on 28 September that medium bombers be used only on specialized targets and not in direct support of ground troops and that Petro-gell (napalm) be used sparingly in close support missions by fighter-bombers because of its unpredictable trajectory characteristics.[63]

After the disastrous COBRA, TOTALIZE, and Falaise bombings of friendly troops, great emphasis was placed on development of an effective system of close cooperation between ground forces, particularly tanks, and the presumably more accurate fighter-bombers. The system that evolved relied on the exchange of liaison officers and more efficient air-ground communication equipment and proved a vital ingredient in the rapid advance of the US Third Army across France.[64] But the utilization of fighter-bombers, primarily the P-47 Thunderbolt, did not eliminate attacks on friendly troops by their own supporting aircraft. Human errors continued to result in significant damage to the bodies, equipment, and morale of Allied ground forces.

Indeed, in its early versions tank-fighter coordination left much to be desired. At sunset on 9 July 1944 six medium

tanks of CCB, 3d Armored Division, fresh from a serious encounter with an American tank destroyer outfit, were strafed by US aircraft at Hill 91 near Hauts-Vents (Normandy). The air strike, which had been requested earlier in the day and was delayed by bad weather, fortunately caused no friendly casualties.[65]

About 1900 on 26 July 1944, Company A, 1st Battalion, 66th Armor (CCA, 2d Armored Division), attached to the regiment's 2d Battalion, was moving through the town of Canisy in an attack toward St. Martin de Bon Fosse (Normandy) when it was dive-bombed by an Allied P-47 and lost one tank. The incident occurred despite the use of identification panels on the American tanks and, presumably, the use of the standard yellow smoke signals.[66] The veteran tankers of CCA no doubt recalled the "bad old days" in Sicily for their newly joined comrades.

Fighter-bombers also inadvertently bombed and strafed several units of the already badly used 30th Infantry Division near Troisgots on 29 July.[67] During the same division's desperate defensive battle at Mortain in early August, supporting US P-47s and rocket-firing RAF Typhoons often hit friendly positions, one regiment (the 120th Infantry) being hit by friendly aircraft ten times on 7 August alone. On the same day CCB, 3d Armored Division, operating in support of Company I, 3d Battalion, 119th Infantry, in the same battle, lost two tanks to Allied dive-bombing.[68]

Even the Army Air Forces' own advanced headquarters were not immune from air attack by Allied planes. On 15 August American fighters strafed the headquarters of the US Third Army and XIX Tactical Air Command near Laval, as well as friendly troops southwest of Carrouges. Friendly antiaircraft gunners around Laval proved resentful and downed one fighter from the VIII Fighter Command.[69]

The concept of close air support by heavy and medium bombers was revived in the fall of 1944 as Allied units approached the borders of Germany. The 2d Armored and 30th Infantry Divisions found themselves preparing to cooperate in the breaching of the West Wall north of Aachen in late September and early October 1944. The 30th Infantry Division was to cross the Wurm River three miles above Aachen and penetrate the German defensive line. The 2d Armored Division was then to exploit the penetration. The operation, codenamed CISCO, was originally to be supported by "the greatest concentration of planes in close support of American ground troops since the 'carpet' bombing along the Périers-St. Lô

road in Normandy."[70] To the great consternation of the 30th Division planners, the air support was to involve more than 3,300 planes, including more than 1,000 heavy bombers. Fortunately, the heavies did not become available, and the entire air operation was greatly reduced in scale. Eventually only 360 A-20 and B-26 medium bombers of the 9th Bombardment Division and 72 P-38 and P-47 fighter-bombers of the IX Tactical Air Command were scheduled to take part.

The concern of the 30th Division planners for troop safety, greatly heightened by their memories of the COBRA fiasco, was further increased after a flight of P-38s dropped four napalm bombs within the division lines, destroying an ammunition dump and six vehicles and killing two men and wounding four during an abortive attack on the West Wall on 22 September. The division commander, Maj. Gen. Leland S. Hobbs, and his staff insisted that the Operation CISCO bomb runs be made over enemy territory parallel to the Wurm River and that the target areas be marked with the traditional smoke. The air planners for their part insisted on a perpendicular approach to avoid enemy flak and refused the use of smoke for fear it might obscure the target and/or friendly lines as had occurred in Normandy.

Although no friendly troops were hit, the air strikes that began at 0900 on 2 October under a scattered overcast proved a failure, in part perhaps because of excessive caution in planning and execution. The bomb runs were made perpendicular to the front lines. Many of the bombers overshot the target, but none released their bombs over friendly positions. The fighter-bombers were more accurate but had little effect. Even the napalm dropped in the woods east of Runburg was not particularly effective because the woods were wet and failed to ignite. The attack went practically unnoticed by the Germans; when interrogated later, one German prisoner even went so far as to inquire, "What bombing?"

Yet another attempt to employ heavy and medium bombardment aircraft in close support of ground troops was made in conjunction with efforts of the US First Army to breach the Roer River line on 16 November 1944. Operation QUEEN, as the breakthrough attempt was called, was carefully planned and demonstrated the recent advances made in marking devices and other safety and technical aids.[71] The plan called for the employment of more than 4,500 aircraft, making Operation QUEEN the largest air attack in direct support of ground troops in World War II. More than 1,200 heavy bombers of the US Eighth Air Force, a like number of RAF heavies, 600 medium bombers from the US Ninth Air Force, 750 fighter-bombers of

the IX and XXIX Tactical Air Commands, and 800 escort fighters for the heavy bombers were scheduled to participate in opening the way for the main breakthrough attempt by the US VII Corps in the Eschweiler area.

The earlier catastrophic bombing errors in Normandy were clearly in the minds of the Operation QUEEN planners, and elaborate, detailed precautions were taken to avoid a repetition of the previous disasters. Among the aids used to designate the target areas and the position of friendly troops were giant panel markers (one of which was located nineteen miles to the rear of the front line), captive balloons flown parallel to the front line, bright-colored panels in the immediate vicinity of frontline troops, and marking fire by 90-mm antiaircraft guns. The Eighth Air Force also employed a system of radio beacons close to the front lines and a radio fan marker transmitting a thin vertical signal over the row of balloons in addition to prescribing that bomb bay doors would be opened and locked over the English Channel to prevent any damage should bombs be released accidentally in the process.

The multiple safety precautions indeed prevented any major tragedy. The new marking systems proved satisfactory, and pilots had no trouble in identifying the locations of friendly troops. The new safety aids demonstrated that visual bombing by heavy and medium bombers was possible with a 2,000-yard safety zone without damage to friendly troops. And yet Operation QUEEN was not completely flawless. A faulty bomb release mechanism caused an Eighth Air Force heavy bomber to drop four bombs on the 391st Armored Field Artillery Battalion of the 3d Armored Division, killing one man and wounding two. The same unit was later dive-bombed by a P-38, but no casualties resulted. The 1st Infantry Division reported five incidents of stray bombs falling near its troops, but only one human casualty resulted, although one bomb exploded within 150 yards of the division artillery CP, and another knocked the wings off a liaison plane and destroyed the division artillery airfield. Such minor events were clearly no repetition of the St. Lô-Périers Road, Caen, or Falaise disasters.

In any event, the safety precautions proved perhaps too restrictive. The excessive withdrawal of ground troops before the air strike delayed the subsequent ground attack, over-bombing caused few of the enemy frontline troops to be affected, and the wide extent of the target area somewhat dissipated the psychological shock of the heavy bombardment. Operation QUEEN clearly demonstrated that the effectiveness of close air support was contingent upon the confidence of

ground troops in their air support and a willingness of commanders to accept the necessary risk of short bombing in order to capitalize on the effects of aerial bombardment of the enemy front lines.

Although the new and more effective procedures and technical aids were sufficient to reduce the number of catastrophic incidents of air amicicide by bombers, they could not totally prevent the degradation of friendly combat power as the result of air strikes on friendly units. Two air amicicide incidents during the ill-fated attack of the 28th Infantry Division on Schmidt in early November 1944 demonstrated that the supposedly more accurate fighter-bombers were also capable of gross errors with tragic consequences for friendly ground forces. Five fighter-bomber groups of the IX Tactical Air Command were scheduled to isolate the battlefield from counterattacking enemy armor.[72] On the first day of the battle, 2 November, only one group actually participated directly in the operation and one of its squadrons mistakenly bombed an American artillery position near Roetgen, killing seven men and wounding another seventeen.[73]

On 7 November just as elements of Company B, 707th Tank Battalion, had successfully penetrated to the far edge of the village of Vossenack, they came under direct fire from enemy positions on the nearby Brandenberg-Bergstein ridge, and the tank company commander requested an air strike against the enemy positions. Most of the twelve P-47s of the 365th Fighter-Bomber Group assigned to conduct the strike bombed and strafed the enemy position, but two planes mistakenly bombed and strafed the town of Vossenack, then occupied by friendly troops. One plane dropped two bombs and machine-gunned the town; the other also strafed and dropped its two bombs, one of which hit a house sheltering an American tank crew and some of the accompanying engineers, killing one man, seriously wounding another, and inflicting slight wounds on three others.[74] The maneuverability and low-level attack characteristics of the P-47 were not proof against the human error of its pilot, who all too often was improperly briefed on the target and location of friendly troops and who was more likely than not to become disoriented during the conduct of a mission.

Brigadier General Boudinot's CCB, 3d Armored Division, also continued to have problems with its friendly air support. CCB began its attack in the Huertgen forest in mid-December with sixty-four medium tanks and, in less than three days of heavy fighting (16-18 December 1944), took its four objectives (Werth, Koettenich, Hastenrath, and Scherpenseel). The effort, however, cost CCB 42 of its

medium tanks plus 7 light tanks: German antitank guns destroyed 24; Panzerfausts, 6; mines, 12; artillery fire, 6; and one tank (2 percent) was destroyed by American bombing.[75]

The following week, during the battle between the Salm and Ourthe rivers, the same unit suffered even more heavily at the hands of friendly fighter pilots. Task Force McGeorge, consisting of a company of armored infantry and a company of medium tanks from CCB, arrived west of Grandménil in the early afternoon of 25 December 1944 with the mission of restoring blocking positions in Grandménil.[76] Just as the task force was beginning its attack, eleven P-38s from the 430th Fighter Squadron, being controlled by the 7th Armored Division, mistook the Americans for Germans and bombed their wooded assembly area, killing three officers and thirty-six men (and presumably wounding a proportionate number of others). The attack had to be rescheduled for 2000 that same day, and a reconstituted TF McGeorge entered Grandménil only to be successfully counterattacked by the Germans. The incident was due as much to failure in coordination between the 3d and 7th Armored Divisions as to confusion among the pilots. The TF McGeorge assembly area was located almost exactly on the no-bomb line established by the 7th Armored Division, and the display of orange panel markers on TF McGeorge vehicles did nothing to deter the attacking P-38s. The result, as always, was death and disruption of the operation.

The role played by Allied air power in the desperate Battle of the Bulge is well known. The confusion caused by the German drive in the Ardennes and consequent American efforts to hold their positions and restore the integrity of the lines involved amicicide incidents of all types, including air strikes on friendly positions. One of the few good flying days of the period, 24 December 1944, saw several incidents. One American officer was killed and another was wounded when a squadron of P-38s attacked the village of Buisonville, which had just been taken by CCA, 2d Armored Division, as part of VII Corps's effort to blunt the German salient. At embattled Bastogne, P-47s of the XIX Tactical Air Command's 512th, 513th, and 514th Fighter Squadrons made good use of the fair weather on 24 December to work around the Bastogne perimeter. The disputed village of Marvie was hit by P-47s during the afternoon, and the fighters bombed so close to American lines in the Noville sector that the 101st Airborne Division frantically signaled VIII Corps to call off the mission.

The difficulties of controlling close air support by heavy and medium bombers were continually reduced in the European Theater of Operations by better planning and the development of technical aids for blind bombing and marking of friendly positions. Experience, better training, and improved air-ground communications and coordination procedures also greatly improved the amicicide record of fighter-bombers during the course of the campaign. Despite the tragic incidents in Normandy and the numerous occasions on which American units were bombed or strafed by their own fighter-bombers during the campaign in Europe, ground commanders and soldiers alike acknowledged the high value of close air support and, as better procedures and technical aids were developed and experience gained, were increasingly willing to place confidence in their air support and follow it closely. Units that seldom asked for air strikes closer than 1,000 yards from the front lines in the early days of the campaign later requested air strikes on targets as close as 300 yards from their positions.[77] Lt. Gen. J. Lawton Collins, commander of the US VII Corps, acknowledged, "We could not possibly have gotten as far as we did, as fast as we did, with as few casualties, without the wonderful air support that we have consistently had."[78]

World War II: The Pacific

As was the case with the employment of artillery, the war in the Pacific posed different, and, in some ways, more difficult challenges to the coordination and control of close air support operations. Distant airfields, more difficult terrain that reduced both visibility and communications, and the requirement to coordinate Navy and Marine Corps aircraft, as well as Army Air Corps planes, complicated and intensified the problem of avoiding friendly air strikes on friendly troops. Although the combat operations in the Pacific did not witness any major disaster such as occurred in Operation COBRA, serious incidents involving both medium bombers and fighter-bomber aircraft were not uncommon and served, as in Europe, to cause suffering, loss of combat power, delay or halting of offensive operations, and lowered morale on the part of ground troops.

The frequent use by both Allied and Japanese forces of small boats and coastal vessels in the island campaigns of the Pacific war posed special problems of identification for Allied pilots, in that such craft could be extremely difficult to identify properly from the air. In mid-October 1942 during the Papua Campaign on New Guinea a ferry-shuttle

service for men and supplies was established by Allied forces between Wanigela and Pongani. On its second day of operation, 18 October 1942, two newly arrived luggers were mistaken for enemy boats and bombed by a Fifth Air Force B-25 off Pongani.[79] Lt. A. B. Fahnestock, a well-known explorer and yachtsman in charge of the small boat operations for the Combined Operational Service Command, and Byron Darnton, a New York Times correspondent, were killed, six men were wounded, and one of the boats was so severely damaged that it had to be withdrawn from the shuttle service.[80] Later investigation revealed that the Army had failed to notify the Air Corps about the ferry service, and the pilot of the B-25 had not bothered to insure that his target was Japanese before attacking.[81] Under similar circumstances three months later, on 5 January 1943, four American P-47s strafed two American LCMs off Saidor, New Guinea, but fortunately caused no casualties.[82]

The dense vegetation and uncertain location of friendly troops in the Papuan jungle during the Buna campaign posed other problems. On at least six occasions during the campaign, Fifth Air Force planes were responsible for friendly casualties.[83] The assault of the 32d Infantry Division's Task Force URBANA on the Buna Mission on the morning of 19 December 1942 received close support by B-25 and A-20 aircraft. Their accuracy left something to be desired, however, and four bombs landed within fifty yards of the bivouac area of the 127th Infantry. A chaplain visiting troops in Buna Village was also wounded by machine gun fire intended for the Japanese at Giropa Point.[84] Two days later a B-25 dropped a bomb on friendly positions in the area, killing several Allied soldiers.[85]

The inherent confusions and uncertainties of amphibious assault landings also contributed to a number of air amicicide incidents. During the landing on Attu in the Aleutians on 24 May 1943, an Eleventh Air Force B-24 inadvertently bombed elements of the 32d Infantry Regiment (7th Infantry Division). No casualties were caused, and the Eleventh Air Force remarkably had no other incidents to mar its record.[86] The experience of the Marines on Tarawa was more typical. On the morning of 20 November 1943 the 3d Battalion, 2d Marines (2d Marine Division), commanded by Maj. John F. Schoettel, landed on RED Beach 1 on Betio. During the morning several requests for air strikes against the main Japanese beach positions were made, and about 1120 one air strike was delivered but was cancelled almost immediately when Company K, 3/2d Marines, complained of being strafed.[87]

As friendly troops moved off the assault beaches and inland into the often dense jungle and mountainous terrain of the Pacific islands the difficulties of correctly locating their positions and providing accurate close air support were increased. Accurate close air support of ground troops was often impossible in the dense jungle which masked the positions of friend and foe alike. For example, on New Georgia in the Central Solomons aerial observers were unable to report a single case of enemy movement during the entire operation, and close air support of ground troops proved impractical because of the dense jungle and close proximity of the opposing forces.[88]

Even vehicles and tanks were hard to identify correctly. In the coconut grove along the eastern edge of the West Tank Barrier on Butaritari (Makin) four tanks supported the attack of the 2d Battalion, 165th Infantry (27th Infantry Division), on 21 November 1943. The tank officer in charge, 1st Lt. Edward J. Gallagher, and two enlisted men were killed and several others were wounded when a Navy bomber made a low-level pass and dropped a 2,000-pound fragmentation bomb about twenty-five feet from one of the tanks.[89]

Even close control by air liaison parties on the ground could not prevent all incidents of poor communications and pilot confusion. The 12th Air Liaison Party (GANGWAY), headed by Cpt. George F. Frederick, attempted to control bombing by four squadrons of B-25s on both sides of Porharmenemen Creek, southwest of Momote on Los Negros in the Admiralties, on the afternoon of 2 March 1944. Two squadrons (the 498th and 501st) hit their assigned targets, but two others (the 499th and 500th) dropped their bombs into an area recently occupied by friendly troops. Two men were killed and three were wounded before GANGWAY could call off the attack.[90]

On Saipan a total of 115 close support air missions were requested, but fifteen missions requested were disapproved because friendly troops were too close. Of the seventy missions actually flown, several resulted in casualties to friendly troops. At 1444 on 26 June 1944, for example, a bombing and strafing mission flown in support of the 165th Infantry Regiment (27th Infantry Division) missed the target and endangered friendly troops.[91] The only casualties suffered by the Marines in the area south of Garapan in Central Saipan on 28 June 1944 were from an American air strike on Garapan in which three misdirected rockets fell in the lines of the 1st Battalion, 2d Marines, causing twenty-seven casualties.[92]

The campaign on Guam in July and August 1944 was plagued from beginning to end by friendly air strikes on American ground troops. On the first day of the invasion of Guam (21 July 1944) the 22d Marine Regiment had captured Agat and were just moving out when hit by a misplaced American air strike, which caused some casualties. On the morning of 24 July 1944 two battalions of the 21st Marines attempted to attack out of the beachhead up a ravine on Bondshu Ridge. The Marines encountered heavy Japanese machine gun fire and called for air support from US Navy planes. The attacking Navy pilots had to drop their bombs so close to the Marine lines that seventeen marines were killed or wounded. On 4 August the command post of the 3d Battalion, 21st Marine Regiment, was hit by two B-25s, which then strafed other marines along the Finegayan-Barrigada road.

The Army, too, fell victim to friendly air power on Guam. By 0815 on 28 July 1944, Company A, 1st Battalion, 305th Infantry (77th Infantry Division), had successfully reached the summit of Mount Tenjo on southern Guam and waited to be relieved. During the wait Company A was bombed and strafed by American planes, disaster being averted only by the quick action of Pfc. Benno Levi who braved the fire of the attacking planes and spread out the appropriate identification panels. American planes hitting Mount Santa Rosa on 7 August 1944 mistakenly dropped a bomb on Company F, 2/305th Infantry, about 1500, causing some casualties. About the same time the same planes strafed the 3/307th Infantry in the vicinity of Yigo.

As Allied forces advanced through the islands of the Pacific, they continued to be plagued by their own air support. On 28 January 1945 the 37th Infantry Division's 129th Infantry Regiment attacked from the vicinity of Culayo to take Clark Field on Luzon. Elements of the 129th had reached the outskirts of barrio Tacondo on the southeast corner of Fort Stotsenburg by about 1000, when they were halted by Japanese fire and a misplaced strike by Fifth Air Force planes.[93] The next day, 29 January, P-51s strafed friendly troops along the Pampanga River.[94] Two days later General Krueger, the US Sixth Army commander, complained to General Kenney, commander of the Allied Air Forces, of the attacks by Fifth Air Force planes on troops of the US I and XIV Corps and noted that the ground forces were rapidly losing confidence in their air support.[95]

On 4 February 1945 six Fifth Air Force B-25s made an unscheduled strafing run across the front of the 1st Infantry Regiment (6th Infantry Division), which at 1330 had just secured its objectives in the attack on San Jose (Luzon).

The friendly strafing attack killed one man and wounded seven others; the regiment had lost only one KIA and eighteen WIA to Japanese fire in the attack.[96] The San Jose incident prompted a more direct and forceful radio message from General Krueger to General Kenney:

> I must insist that you take effective measures to stop the bombing and strafing of our ground forces by friendly planes. . . . These repeated occurrences are causing ground troops to lose confidence in air support and are adversely affecting morale.[97]

As was the case in the European theater, the experience of three years of close air support operations and the development of better air-ground coordination and control procedures did bring some improvement and reduction in the number of air amicicide incidents in the Pacific theater. Until the end of the war, however, such incidents, attributable for the most part to pilot errors in target identification, continued to plague air commanders and to incense ground leaders.[98] As in Europe the benefits of close air support came to be widely acknowledged by ground troops and their commanders, despite the numerous air amicicide incidents. Despite his heated messages to General Kenney, General Krueger judged the overall support provided by the Fifth Air Force "superb," as did most of his subordinate ground commanders.[99] Maj. Gen. J. M. Swing, commander of the 11th Airborne Division, wrote to the commander of the 8th Fighter Group on 4 May 1945, "We of the division are proud that our confidence in Air Support has reached the point where we are willing to remain within 400 yards of 1000 pound bombs."[100] Major General Mudge of the 1st Cavalry Division expressed the usual opinion after a strafing incident on 11 February 1945, when he said, "We understand that accidents will happen. We have short rounds in our artillery. Investigation was necessary to prevent repetition of error. We bear no grudge or ill feeling."[101]

The Korean War

This study did not undertake an examination of air amicicide incidents in the Korean War. That such incidents occurred, with the predictable results in casualties, lowered morale, reduced combat power, and disrupted operations may be taken as certain. The Korean War also saw the introduction of two types of aircraft that were to play an important role in close air support operations in Vietnam: the high perfor-

mance jet fighter-bomber and the helicopter, both of which were to be the agents of numerous air amicicide incidents in Southeast Asia.

Vietnam

The traditional causes of air amicicide incidents (mechanical malfunction, misidentification of target, pilot disorientation, and problems associated with the location and marking of friendly troops on the ground) continued to play a role in the inadvertent engagement of friendly troops by their own supporting aircraft in the Vietnam War.[102] As in the case of the island campaigns in the Pacific in World War II, the dense jungle and otherwise difficult terrain of parts of South Vietnam contributed to difficulties in correctly locating friendly troop positions. The employment of high performance jet aircraft and helicopters added to the peculiar problems of air-ground coordination, and the volume of close air support used in Vietnam, as well as the nature of tactical operations, which involved requests for air strikes very close to friendly troops, made a certain number of air amicicide incidents unavoidable. Technological advances made since 1945 in air-ground communications, technical location aids, and accuracy of ordnance were offset in part by the higher speed of attacking jet aircraft, which demanded of the pilot extremely quick reactions susceptible to error. Helicopters, while providing a presumably more stable weapons platform and a hovering capability that gave the pilot sufficient time to properly identify his target, also possessed certain unique flight characteristics that contributed to amicicide incidents.

Mechanical malfunctions continued to play only a minor role in air amicicide incidents. While turning to attack a target, an F-4C flying in support of friendly troops in contact with the enemy near Ban Me Thuot in 1968 accidentally dropped an unfinned napalm canister on a nearby church, killing thirteen civilians and wounding six.[103] The cause of the incident was later determined to have been a mechanical malfunction of the bomb rack. The technical characteristics of helicopters and peculiarities of their tactical employment as practiced in Vietnam also resulted in an amicicide incident near Go Vap, five to ten kilometers north of Saigon on 3 March 1968. Company C, 4th Battalion, 9th Infantry (25th Infantry Division), was caught in an NVA ambush on one side of a canal. Soldiers of the 3d Platoon, Company D, 4/9th Infantry, attempted to cross the canal to aid the embattled Company C. A UH-1 helicopter attempting to support

the friendly ground units inadvertently placed two 2.75-inch aerial rockets in the 3d Platoon area, wounding three men. The flight path of the helicopter was perpendicular to the line of the canal (and of friendly troops), and the accident apparently occurred when the helicopter hit an air pocket, causing the nose of the aircraft to dip just as the rockets were fired.

The difficulties of properly marking friendly positions by visible means were greatly increased by the often thick vegetation and the usual very close proximity of friendly and enemy troops. In 1968 two B-57s were diverted in the KLAMATH FALLS area of operations to support a Vietnamese Civilian Irregular Defense Group (CIDG) company in contact with the enemy. Because dense jungle vegetation prevented visual sighting of friendly troop locations from the air, the friendly ground troops marked their position with green smoke. Before the attack, the ground commander, the airborne forward air controller (FAC) controlling the strike, and the attacking B-57s made several changes in the target and in the attack headings. One B-57 strafed the suspected target area with 20-mm cannon fire and some of the rounds hit the friendly positions. Four CIDG soldiers were killed and twenty-eight were wounded, as were two US advisors. Heavy vegetation, the close proximity of friendly troops to the target (100 meters), and too many changes given to the pilot of the attacking aircraft were cited as contributory causes in the incident.

Airborne FACs frequently marked targets for high performance aircraft with white phosphorous (WP) rockets. Any inaccuracy on the part of the FACs' marking rocket placement could result in firing on nearby friendly troops. In 1968 an FAC controlling an F-4D aircraft armed with an M-117 Low Drag bomb attempted to mark a target 225 meters west of a US Army brigade in close, heavy contact with the enemy. The friendly position was not marked by smoke and the FAC's target-marking rocket landed seventy-five meters west of its intended point. The pilot of the F-4D was thus required to drop his bomb on the target, which lay between the marking rocket (seventy-five meters west) and the friendly troops (225 meters east). He apparently misinterpreted the FAC's verbal description of the friendly troop position and incorrectly estimated the distance of the target from both the marking rocket and the friendly troops. The bomb struck the friendly forces, wounding twelve men and apparently killing three others who were subsequently listed as missing in action. In another 1968 incident the pilots of two F-100s supporting a US division were improperly briefed on the location of friendly forces by the FAC, and one F-100 consequently strafed the friendly position, wounding five men.

Even when the FAC properly marked the target and briefed the attacking aircraft, errors could still occur. One of a flight of three Vietnamese F-5s dropped two BLU-1B napalm bombs on an element of a US infantry division in contact with Vietcong forces in Binh Dinh Province in 1968. Two US soldiers were killed and eighteen were seriously wounded. An investigation of the incident revealed that, while the US FAC and the VNAF flight leader understood each other, the Vietnamese pilot of the offending aircraft did not understand the FAC's instructions, consequently did not know the exact location of friendly ground troops, and could not visually identify them from the air because of smoke and haze in the target area.

On another occasion two F-100s were flying an immediate air strike in support of two companies of a US infantry division in close and heavy contact with the enemy. The strike was controlled by a USAF FAC, and each F-100 successfully delivered four bombs on target, 250 meters northeast of a reference point, in this case burning napalm from a previous strike. As the ground battle became more intense the ground commander requested strafing runs along the western edge of the burning napalm. The two F-100s made two strafing passes each about sixty-five meters from friendly positions. Darkness was approaching and one pilot became disoriented on his last strafing pass, fired short, and hit the friendly position, killing two men and wounding seven. In a similar incident the pilot of an F-100 dropped a Cluster Bomb Unit (CBU) about 1,000 meters southeast of the target correctly marked by the FAC. Two US soldiers were wounded. It was later determined that the pilot momentarily lost sight of the target while reversing his direction of flight after the first pass and lined up for his second run on smoke laid down by a helicopter rather than on the FAC's marker.

Because of their explosive characteristics Cluster Bomb Units (CBUs) were especially hazardous when used near friendly troops. When their use was coupled with faulty coordination the results were disastrous. Twenty-three friendly troops were wounded in 1968 when an airborne FAC failed to clear a target area properly and permitted an F-100 pilot to dump two CBU-2As in what the FAC presumed to be the authorized jettison area.

Aerial rockets could be equally dangerous to friendly troops. In August 1968 a Navy A-7D fired two 5-inch aerial rockets into the HQ CP of Company D, 2d Battalion, 327th Infantry (101st Airborne Division), during an operation in the A Shau Valley. Fifty-five casualties resulted. The entire operation was plagued with amicicide incidents of

various types, and one participant estimates that the US brigade involved lost far more men to friendly fire than to enemy action in this operation.

On a few occasions, close proximity of friendly and enemy troops, lack of adequate marking of friendly positions, and pilot inexperience combined to cause incidents of amicicide. Two F-100s armed with MK-82 High Drag General Purpose bombs conducted a preplanned strike on a North Vietnamese Army (NVA) headquarters in support of a US infantry division in 1968. The main friendly element marked its position with smoke, but the forward elements closest to the target did not, for fear of disclosing their location to the enemy. The FAC gave the fighters a verbal description of the friendly positions, and the lead attack pilot successfully hit the target with all four of his bombs in three passes. The second pilot accurately dropped two bombs, but on his third pass one bomb fell 1,200 to 1,300 meters short, killing one US soldier and wounding four others of the forward friendly element. The primary cause of the incident was determined to have been the accidental thumbing of the bomb release button on the stick grip by the pilot while he was trying to trim the aircraft with the stick trimmer button.

Occasionally the tactical situation in Vietnam demanded the air-delivery of ordnance so close to friendly positions that some friendly casualties could not be avoided. Four US Marines were killed and two were wounded in a 1968 operation south of Hue when fragments from a properly placed bomb scattered into friendly lines. Two companies of Marines were in very heavy contact with NVA forces and were provided air support by two Marine A-4s under the control of a USAF FAC. The FAC correctly determined that the ground tactical situation warranted hazardously close support. The aircraft in fact made three such passes with all weapons on target. The bombs dropped on the fourth pass were also on target, but fragments hit friendly troops.

The armed helicopter, used extensively for the first time during the Vietnam conflict, offered significant advantages in mobility and accurate firepower, but it also had several peculiar characteristics that contributed to incidents of air amicicide. Many amicicide incidents involving helicopters resulted from the causative factors commonly associated with fixed wing aircraft. Helicopter pilots as well as fixed wing fighter and bomber pilots were capable of mistaking friendly ground troops for the enemy. In early 1968 helicopter gunships of the 187th Assault Helicopter Company, operating in War Zone C, engaged a company-size force west-northwest of Go Da Hau. The personnel on the ground were unidentified, and a

check with the base at Cu Chi revealed that no friendly forces were reported in the area. The UH-1Cs took the ground formation under fire and wounded several men before the ground force was able to identify itself as a unit of the 25th ARVN Infantry Division.

Sometimes the errors of the pilot were even more blatant. Two US soldiers were killed and three were wounded near Pleiku in August 1969 when fired upon by the crew of a UH-1H helicopter from Company A, 4th Aviation Battalion (4th Infantry Division). The Company A commander was providing a new crew an orientation flight when smoke was spotted coming through some trees. The crew chief and gunner were directed to fire on the unidentified smoke and did so, hitting an American unit with the usual results of such ill-considered firing.

Faulty communications, poor coordination, and lack of accurate information regarding the whereabouts of friendly ground troops also contributed to several incidents. One US soldier was killed and nine others were wounded when their infantry platoon was fired on by helicopter gunships in 1968. The US infantry platoon, conducting a mounted combat patrol, had established an ambush position near a district headquarters compound and during the night became engaged with an enemy force. A light fire team (LFT) was requested and upon arrival on station was directed by the subsector advisor to fire on the wood line north and west of the district headquarters compound. The LFT fired on the friendly patrol as a result of a misunderstanding between the subsector advisor and the LFT as to the exact location of friendly troops. Clearance to fire had not been given by the commander of the victimized ground troops. Another incident occurred in August 1968 when helicopter gunships from Troop D, 1st Squadron, 4th Cavalry (1st Infantry Division), operating in the III Corps Tactical Zone fired rockets that hit a friendly armored personnel carrier, killing two men and wounding three. The gunships had found an enemy unit at night and the friendly ground forces were attempting to adjust the fire of the helicopters onto the target but caused the rocket fire of the helicopters to fall on their own position.

The haste and confusion of combat air assaults, a characteristic feature of the Vietnam War, also contributed to a number of amicicide incidents. Several soldiers from Company A, 3d Battalion, 7th Infantry (199th Light Infantry Brigade), were wounded during an airmobile assault in Long An Province in July 1968. After dismounting from their helicopters, the ground troops moved rapidly to establish a perimeter around

the landing zone (LZ). The door gunners of the troop-carrying helicopters attempted to place machine gun fire beyond the perimeter as the helicopters left the LZ, but were unable to change the direction of their fires as the helicopters changed attitude, altitude, and heading. Thus, friendly machine gun fire hit several of the infantrymen on the ground. Similarly, in 1970 near Chu Lai one man was killed when soldiers from an infantry unit inserted in an LZ ran into the suppressive fires of the accompanying 21st Assault Helicopter Company.

In the spring of 1970 helicopters of the 158th Aviation Battalion (101st Airborne Division) were called upon to conduct an emergency extraction of a platoon of the 1st ARVN Infantry Division near Dong La Ruong Mountain, fifteen kilometers north of Khe Sanh in northern I CTZ. During the course of the extraction, the pilot of a supporting Cobra gunship became confused and, believing the pickup zone (PZ) to be clear, made a firing run on it, wounding five of the six ARVN soldiers remaining on the PZ. The wounded soldiers were immediately picked up and evacuated to a hospital ship.

Several unusual incidents involving helicopters were also reported. On 27 August 1967 one man of the 2d Battalion, 12th Infantry (25th Infantry Division), was killed when he was hit by machine gun fire from a CH-47 helicopter. The doorgunner of the CH-47 had been hit and killed by enemy ground fire. His death grip on the trigger of the M-60 machine gun caused it to strafe the defensive position of a company of the 2/12th Infantry, resulting in the casualty. An even more bizarre incident occurred in 1966 or 1967 when the extension rod (which limits traverse of the gun) on an M-60 door gun broke, and the doorgunner, tracking a target, inadvertently fired into the cockpit, wounding the aircraft commander.[104]

Conclusion

Although much better studied, the evidence for attacks by friendly aircraft on friendly ground troops, like that for artillery amicicide, is still incomplete and vague, but does permit some tentative conclusions as to its meaning and the ways in which such incidents might effectively be prevented.

As in the case of artillery incidents, cases of air amicicide are influenced by a wide range of causative or contributory factors (see table 3). Unlike indirect artillery fires, the cases of air amicicide reviewed in this study

were influenced by visibility conditions. In thirty-two of the ninety-nine cases, the visibility conditions could not be determined. Of the remaining sixty-seven incidents, thirty-six occurred under conditions that may be characterized as normal and thirty-one under conditions of reduced visibility (night, fog, smoke, haze, etc.). This statistical division is somewhat misleading, because with few exceptions, the incidents occurring in normal visibility in fact involved transient smoke and dust from previous air strikes and the ongoing ground battle. In the case of the seven identifiable Vietnam incidents, six occurred in conditions of reduced visibility.

With respect to the type of ground tactical operation in progress when air amicicide occurred, the available information leads to the same conclusions as in the case of artillery incidents: the type of ground tactical operation is not significant and simply reflects the dominant type of combat in each conflict. Thus sixty-two incidents occurred during offensive operations, seven during defensive operations, one during retrograde operations, and one during patrolling actions. In twenty-eight cases, the type of ground combat operation could not be determined.

It is also interesting to note the type of air operation, or rather the weapon employed by the aircraft pilot, that caused friendly casualties. In only six of the ninety-nine cases could this not be determined clearly. In fifty-two incidents, the friendly troops were bombed, and in thirty they were strafed. In seven cases friendly troops were both bombed and strafed. Four incidents involved air-to-ground rockets.

With regard to the type of error leading to the incidents examined, eleven cases involved friendly ground troops being mistaken for enemy soldiers. Six incidents clearly involved mechanical malfunctions, but twenty-three could be attributed to a lack of adequate coordination. The remaining twenty-three classifiable incidents could be attributed directly to pilot, crew, or FAC (human) error. These can be further subdivided into incidents attributable to navigation errors (five), disorientation (six), physical manipulation problems (five), and failure to see, recognize, or otherwise observe ground recognition markings (seven). In thirty-six incidents, the type of error could not be determined.

The striking factor with regard to air amicicide is the degree to which human error has been the chief cause of most incidents. The failure of a ground commander to mark or to

report his position, the failure of a staff officer to coordinate with supporting air forces, the inaccuracy of a FAC's marking of the target, and the confusion and disorientation of a pilot have caused far more incidents of air amicicide than have purely mechanical failures or the lack of any technical aid. For almost forty years intensive efforts to solve the problem of air amicicide through the development of sophisticated technical devices have been undertaken but have failed to eliminate the problem. Electronic means of locating ground troops, positioning and directing aircraft, and improving air-ground communication have alleviated but not eliminated air amicicide. The human factor remains impervious to technological remedies.

Technological advances in safety devices have been offset in large measure by the increasing complexity of the aircraft themselves. The high speed and heavy instrumentation of the modern high performance jet fighter-bomber demands almost too much of its human operator. The late stages of the Second World War saw what was probably to be the best mix of man with machine. Since 1945 the capabilities of aircraft have seemingly outstripped the ability of their pilots to control them accurately enough to avoid the occasional destruction of friendly ground troops, even when operations are carefully planned and coordinated. The evidence of air amicicide forcefully suggests the value of slower, propeller-driven aircraft for close air support missions.

The serious effect of air amicicide on friendly ground combat certainly warrants a continued search in every direction for adequate preventive measures. Whether these lie in sophisticated electronic devices or in simpler and less expensive improvements in human training and procedures remains to be seen. The destructive power of modern air-delivered ordnance demands that the attempt be made.

TABLE 3

Air Amicicide Incidents by Conditions of Visibility, Type of Ground Operation, Type of Air Operation, and Type of Error

A. Conditions of Visibility

Conflict	Visibility Normal	Visibility Reduced	Visibility Unknown	Total Incidents
WW II (Eur)	18	25	10	53
WW II (Pac)	17		7	24
Vietnam War	1	6	15	22
	36	31	32	99
	(37%)	(31%)	(32%)	(100%)

B. Type of Ground Operation

Conflict	Defensive	Offensive	Patrol	Retrograde	Type Unknown	Total Incidents
WW II (Eur)	5	39			9	53
WW II (Pac)		18			6	24
Vietnam War	2	5	1	1	13	22
	7	62	1	1	28	99
	(7%)	(63%)	(1%)	(1%)	(28%)	(100%)

C. Type of Air Operation

Conflict	Bomb	Strafe	Rocket	Bomb & Strafe	Type Unknown	Total Incidents
WW II (Eur)	32	12		5	4	53
WW II (Pac)	11	8	1	2	2	24
Vietnam War	9	10	3			22
	52	30	4	7	6	99
	(53%)	(30%)	(4%)	(7%)	(6%)	(100%)

D. Type of Error

Conflict	Misident-ification	Mechan-ical	Coordination	Pilot-Crew-FAC	Type Unknown	Total Incidents
WW II (Eur)	8	4	10	13	18	53
WW II (Pac)	1		3	3	17	24
Vietnam War	2	2	10	7	1	22
	11	6	23	23	36	99
	(11%)	(6%)	(23%)	(23%)	(37%)	(100%)

3

ANTIAIRCRAFT AMICICIDE

Introduction

The number of antiaircraft amicicide incidents uncovered in the course of this study was unexpectedly small. Only fifteen specific incidents were identified, although it would appear that the engagement of friendly aircraft by friendly antiaircraft weapons was probably much more common in past conflicts than the surviving data seem to suggest. Nevertheless, antiaircraft amicicide appears to be a relatively insignificant problem when compared to the other types in terms of frequency and human casualties.

With one exception all of the antiaircraft amicicide incidents examined in this study occurred in the Second World War. It should be noted that both aircraft and antiaircraft weapons and their associated identification and safety systems were much more primitive than are those in use today. The comparatively short range of World War II antiaircraft artillery, for example, usually required a visual sighting of the target before engagement. The slower speed of airplanes and the shorter range and lesser destructive power of antiaircraft weapons no doubt served to reduce the number of incidents due to misidentification and to attenuate the effects when they did occur. Then, too, in Korea and Vietnam our forces enjoyed near total air superiority and friendly antiaircraft artillery activity was reduced accordingly. Such may not be the case in future war where the almost instantaneous acquisition, identification, and engagement of high-speed targets at long range will be the rule rather than the exception. Visual sightings will probably be rare if not absent altogether, and the burden will be placed on electronic systems. Such systems proved of great value in World War II, and present and future systems may thus serve to reduce in part the effects of that most common cause of antiaircraft amicicide, human error. Although in this area technology may be of great value, it cannot bear the burden alone. Training and experience will also be key components of any solution.

World War II: North Africa and Sicily

In view of the greenness of both American ground troops and aircrews it is truly surprising that so few incidents of antiaircraft amicicide during the North African campaign in 1942-43 have been recorded in the published record. The official US Army and US Air Force histories of the North African campaign, for example, mention only two incidents worthy of note.

On 20 February 1943 German forces broke through the American positions at the Kasserine Pass and precipitated a confused and desperate fighting withdrawal of the defeated American forces. Despite rain and fog on 21 February, fighter-bombers of the XII Air Support Command, based at Youk-les-Bains, attempted to assist friendly ground troops in blocking the enemy advance toward Thala and Tebessa. The cooperation of Allied aircraft with CCB, 1st Armored Division, on 21 February was marred by American antiaircraft fire that damaged five American planes beyond repair and turned back two friendly air missions.[1] The next day friendly antiaircraft guns shot up five American P-38s despite their distinctive double fuselage and specific instructions to ground troops to be alert for low-flying friendly aircraft over friendly positions. The American planes were also instructed to rock their wings as they flew over friendly positions, and the attention of ground troops was called to the dark noses of American planes in contrast to the yellow or white ones of the enemy.

In view of the distinctive shape and marking of the American planes and specific instructions to ground forces to expect them, the loss of aircraft to friendly antiaircraft fire on 21-22 February cannot be attributed to mistaken identification. Lack of training and fire discipline on the part of American ground troops coupled with the confusion and nervousness caused by the German breakthrough and subsequent withdrawal are more likely causes of these incidents. To preclude such incidents the commander of the XII Air Support Command issued an order that prohibited ground troops from firing on any aircraft until after it had attacked.

The number of incidents in North Africa in which ground troops fired on their own planes was apparently much larger than the few noted incidents would suggest. General references to the problem of antiaircraft amicicide occur elsewhere in the records of the North African campaign, and at least one observer noted that such incidents could be attributed to the lack of uniform policy for both ground and

air units regarding the engagement of aircraft by ground fire.[2] Such policy eventually evolved but did not become effective before the most tragic antiaircraft amicicide incident of the war occurred.

On the morning of 11 July 1943 Maj. Gen. George S. Patton, Jr., ordered the reinforcement of the Allied beachhead at Gela, Sicily, by more than 2,000 men of the 1st and 2d Battalions, 504th Parachute Infantry Regiment; the 376th Parachute Field Artillery Battalion; and Company C, 307th Airborne Engineer Battalion.[3] The paratroopers were scheduled to be dropped by 144 aircraft of the US 52d Troop Carrier Wing on a drop zone in the Gela-Farello area at 2245 on 11 July. Because the weather was good and the approach was over friendly territory, an easy operation was expected. Ground commanders on Sicily were notified to expect the drop, and naval vessels of the invasion fleet off the coast of Sicily were alerted.

The airborne force departed from Tunisian airfields at 1900, and its flight was uneventful except for some light antiaircraft fire from Allied ships north of Malta, which caused no damage. Hitting the Sicilian coast the troop carriers turned to the northwest, flying along a two-mile wide corridor at an altitude of 1,000 feet over friendly lines. The lead elements jumped five minutes ahead of schedule, but as the second flight neared the final checkpoint a lone machine gun began firing. Suddenly every Allied antiaircraft gun on shore and on the naval vessels offshore began firing at the slow, vulnerable troop carrier aircraft. Control over both Army and Navy antiaircraft gunners vanished. Even the crews of tanks took the hapless troop carriers under fire with their .50-caliber machine guns. The commander of the 504th's Headquarters Company, Capt. Adam A. Komosa, later recalled:

> It was the most uncomfortable feeling knowing that our own troops were throwing everything they had at us. Planes dropped out of formation and crashed into the sea. Others, like clumsy whales, wheeled and attempted to get beyond the flak which rose in fountains of fire, lighting the stricken faces of men as they stared through the windows.[4]

Several planes were hit before they could drop their paratroopers and others attempted to escape by turning out to sea. The paratroopers managed to jump from some planes before they were hit, but they were widely scattered, and some were shot at in their chutes and even on the ground. The planes attempting to escape the maelstrom suffered

heavily from the antiaircraft fire of the naval vessels off the coast. The destroyer Beatty fired on a ditched airplane for several seconds with 20-mm guns before recognizing it as American and dispatching a boat to pick up survivors. One pilot who survived stated with justifiable irony, "Evidently the safest place for us tonight while over Sicily would have been over enemy territory."[5]

In short, the operation was a total disaster. By the afternoon of 12 July Col. Reuben H. Tucker, the commander of the 504th Regimental Combat Team, could count as effective only 37 officers and 518 men of his 2,000-man force. In all, the paratroopers suffered casualties of 81 dead, 132 wounded, and 16 missing, and the 52d Troop Carrier Wing reported 7 dead, 30 wounded, and 53 missing and a 16 percent loss of aircraft (23 destroyed and 57 badly damaged). Friendly fire had caused 319 casualties and totally disrupted the operation.

A thorough investigation of the incident was quickly ordered by General Eisenhower, but the board of officers appointed to investigate the tragedy was unable to reach any definite conclusions as to its causes. In the end, a lack of training and discipline on the part of both ground and naval antiaircraft crews was probably the primary factor. Some ground and naval units professed never to have received the warning regarding the drop, and thus a portion of the catastrophe must be attributed to a failure in coordination. In a 2 August 1943 letter, Maj. Gen. Matthew B. Ridgway, the commander of the 82d Airborne Division, elegantly concluded:

> The responsibility for the loss of life and material resulting from this operation is so divided, so difficult to fix with impartial justice, and so questionable of ultimate value to the service because of the acrimonious debates which would follow efforts to hold responsible persons or services to account, that disciplinary action is of doubtful wisdom.
>
> Deplorable as is the loss of life which occurred, I believe that the lessons now learned could have been driven home in no other way, and that these lessons provided a sound basis for the belief that recurrences can be avoided.
>
> The losses are part of the inevitable price of war in human life.[6]

The furor caused by the tragic amicicide incident at Gela did not preclude the occurrence of an almost identical incident in the British zone on the east coast of Sicily only two

nights later. A British airborne assault to seize the Primosole Bridge over the Simeto River and the establishment of a bridgehead on the river's north bank as a prelude to a breakthrough to Catania seven miles to the north was mounted on the night of 13 July 1943. Operation FUSTIAN was successful in the end but was nearly aborted by friendly antiaircraft fire. The American and British troop carrier aircraft loaded with 1,900 men of the British 1st Parachute Brigade encountered heavy antiaircraft fire from Allied ships off the southeastern coast of Sicily.[7] The fire intensified as the air column neared the Sicilian coast. More than half the planes reported receiving fire from friendly naval vessels off Cape Passaro, and additional damage was caused by both friendly and enemy antiaircraft batteries once the planes were over Sicily.[8] Only thirty-nine out of the eighty-seven planes that got through the fire managed to drop their paratroopers within a mile of the four designated drop zones, and four planes dropped their parachutists twenty miles away on the slopes of Mount Etna.[9]

The margin of victory in Operation FUSTIAN was extremely narrow, in part because of the uncoordinated and ill-controlled friendly antiaircraft fire. Of the 124 planes on the mission, 11 were destroyed, 50 were damaged by friendly fire, and another 27 were forced to return to base with full or partial loads.[10] In all, only about 300 men and three antitank guns reached the Primosole Bridge, which they captured intact nevertheless.[11]

The disastrous airborne operations on Sicily nearly spelled an end for Allied airborne operations in the European theater. Only three of the four major airborne drops in Sicily could be rated as tactical successes, and none was satisfactory from a technical or operational viewpoint.[12] Of 666 troop carrier sorties flown, 42 aircraft were destroyed, at least 34 (or 5 percent) of them by friendly naval and ground antiaircraft fire, and only 40 percent of the 5,000 paratroopers dropped had landed near their assigned drop zones.[13] Investigations and analyses concluded, however, that airborne assaults were a viable tactical tool, provided there were centralized early planning and continued close coordination of air, naval, and ground forces; adequate safeguards to keep aircraft away from friendly naval vessels; and better training for all units in navigation, recognition, and fire discipline.[14] The improvements generated by the unsuccessful drops on Sicily paved the way for larger and more successful airborne operations in Italy, Normandy, and southern France.

The troop carriers and paratroopers were not the only victims of friendly antiaircraft fire on Sicily. Still green American ground troops continued throughout the Sicilian campaign to engage their own airplanes. As one corporal of an armored field artillery battalion put it, "Every plane that comes over us was fired upon because we could not identify it."[15] Some such incidents might be ascribed more to righteous indignation than to misidentification. 1st Lt. R. F. Hood of the 86th Fighter-Bomber Group, for instance, was shot down by antiaircraft fire of CCA, 2d Armored Division, after failing to observe the tankers' yellow smoke recognition signals.[16] The basic problems of training and experience would be resolved in time, but Allied pilots and aircrews paid in the meantime.

World War II: The Pacific

Reports of antiaircraft amicicide incidents from the Pacific Theater of Operations in World War II are somewhat more plentiful than those from the European and Mediterranean theaters. Fortunately, however, there were no major incidents of the type experienced over Sicily. Nevertheless, fighter and bomber pilots in the Pacific also took a beating from friendly antiaircraft fire, both naval and ground-based.

Amphibious landings, frequently opposed by heavy concentrations of Japanese aircraft, were the setting for most of the incidents reported from the Pacific. The amphibious assault accompanied by heavy naval and ground-based air support was the characteristic tactical operation of the Pacific war and was also the scene of great confusion and activity. The Arawe-Cape Gloucester (New Britain) invasion of late 1943 was typical. The secondary attack, against Arawe, began on 15 December 1943. In the next twenty-three days the two Army 40-mm antiaircraft artillery batteries on Arawe were credited with shooting down eight Japanese planes and one American P-47.[17]

The main landing on Cape Gloucester took place on 26 December 1943. Between 1430 and 1510 on D-Day the expected Japanese air attack on the beachhead took place, involving twenty-five Japanese Navy Val dive bombers escorted by thirty to sixty fighters. There were eighty-one Allied fighters in the area, and in the ensuing fifteen-minute aerial combat the Japanese lost twenty-two dive bombers and probably more than twenty-four fighters.[18] Antiaircraft fire from the Allied naval vessels and deck-loaded Marine 40-mm, 20-mm, and .50-caliber machine guns accounted for one Japanese dive

bomber but also brought down two American B-25s and seriously damaged two others, killing at least one man.[19] The confusion of the Japanese attack and the great number of aircraft (more than 150) in the confined air space over the beachhead account for the mistaken hits. The Vals made their attack just as the B-25s were going in to strafe Hill 250 and in fact the Vals flew through the B-25 formation.[20] A few minutes after the B-25 engagement, a P-39 was ineffectively engaged by one 20-mm gun. In both cases the commander of the air task force stated the fault was clearly that of his airmen.[21] In any case the Allied antiaircraft gunners cannot be condemned too severely in view of the obvious confusion and fear in which the incidents took place.

At 1715 the same day fifteen Japanese Betty torpedo bombers attempted to attack an LST convoy but were intercepted by twenty-six P-47s from the 341st and 342d Fighter Squadrons, which downed all of the Bettys and two Japanese fighters. One P-47 of the 342d Fighter Squadron, however, was shot down by antiaircraft fire from the friendly ships.[22] Later in the operation, during the hours of darkness, an Allied B-24 not showing identification friend/foe (IFF) approached the beachhead area about an hour after a Japanese attack and was promptly illuminated and engaged. Fortunately, the pilot started evasive action as soon as he was illuminated, and his plane and crew escaped injury. A night fighter in the area was also driven from its base by friendly antiaircraft fire and crash-landed elsewhere.[23]

Although the coordination of air, naval, and ground forces in the Cape Gloucester operation was found in retrospect to be quite satisfactory, the incidents of antiaircraft amicicide revealed the need for additional recognition and fire discipline training for both naval and ground antiaircraft gunners and aircrews.[24] The Navy antiaircraft gun crews in particular were found to fire on "anything that was not a P-38."[25] Army antiaircraft artillery commanders also admitted that "after two years of war we frequently fail to distinguish between friend and foe" and noted that reliance on visual recognition alone would not solve the problem.[26] Fortunately, additional training and experience proved successful in reducing, but not in eliminating, such incidents in future operations.[27]

On the day (27 May 1944) of the landings at Bosnek (Biak, New Guinea), friendly antiaircraft gunners, trigger happy from Japanese attacks, made direct air support by light and medium bombers from the 17th Reconnaissance Squadron (B-25s) and 3d Bombardment Group (A-20s) hazardous. On 28 May a 17th

Reconnaissance Squadron B-25, cleared to drop its photographs on the beachhead, was shot down by friendly fire. Similar instances probably continued to occur until the end of the campaign in the Pacific but have gone unrecorded. Additional training and experience of both aircrews and antiaircraft gunners as well as the development of better technical aids and coordination procedures did, however, reduce the frequency of such incidents and prevent any repetition of the disastrous Sicilian turkey shoot.

Vietnam

Near total Allied air superiority over South Vietnam and the consequent absence of heavy concentrations of friendly antiaircraft weapons precluded significant incidents of antiaircraft amicicide during the Vietnam War. Unlike their fathers in North Africa, Sicily, and the Pacific in World War II, American ground combat troops in Vietnam came to assume that any aircraft overhead, either fixed or rotary wing, was friendly.

Only one instance of friendly fire on a friendly aircraft was noted in the survey of Vietnam amicicide conducted at the US Army Command and General Staff College in January 1980. In 1971, an American UH-1H helicopter from the 21st Assault Helicopter Company was shot down at night by American infantry at Fire Support Base Mary Ann near Chu Lai. The troops at FSB Mary Ann engaged the helicopter (probably on a lark resulting from indiscipline), which returned fire before being destroyed in a crash landing. Fortunately, the helicopter crew escaped injury.

Conclusion

The number of recorded incidents of antiaircraft amicicide has been small and, with the exception of the tragic airborne operations in Sicily, the loss of life, injury, and degradation of combat power resulting from such incidents have been minuscule (see table 4). Here, more than in the case of artillery, air, or ground amicicide, technological aids for the positive identification of friendly forces have worked to keep the number of incidents and casualties low. The most common cause of incidents of antiaircraft amicicide seems to have been the lack of training and fire discipline combined with the usual confusion of active combat operations. Seven of the fifteen incidents discussed can be

attributed to that cause. Five other incidents had as their primary cause a lack of adequate coordination and foresight between air and ground planners. In only three incidents could the cause be identified as misidentification of friendly for enemy aircraft. There were no cases noted involving mechanical malfunctions. Thus, just as in the case of artillery and air amicicide, the basic cause is intimately connected with the human element rather than with mechanical malfunction or the presence or absence of technological identification systems. Visibility and the type of operation, air or ground, do not appear to be significant factors. Training, experience, and the development of better planning and coordination procedures thus appear to be the most efficacious solutions.

Although the almost complete absence of an enemy air threat in Korea and Vietnam served to arbitrarily reduce the number of incidents to almost nil, some credit for the favorable record in those conflicts must also be given to the development in and after World War II of adequate air-ground-naval coordination procedures and improved technological aids. The experience of Korea and Vietnam, however, should not deceive us with regard to the future probability of serious incidents of antiaircraft amicicide. Any future conflict in which US forces are involved, especially one in Central Europe, will involve an enemy active in the air and hitherto unseen numbers of very destructive antiaircraft missiles and guns. In such a conflict a lack of training, experience, or coordination will likely produce the same unwanted results as they did in World War II: friendly aircrews and planes destroyed by friendly antiaircraft fire.

TABLE 4

Antiaircraft Amicicide Incidents by Conditions of Visibility, Type of Ground Operation, Type of Air Operation, and Type of Error

A. Conditions of Visibility

Conflict	Visibility Normal	Visibility Reduced	Visibility Unknown	Total Incidents
WW II (Eur)		4	2	6
WW II (Pac)	4	2	2	8
Vietnam War		1		1
	4 (27%)	7 (46%)	4 (27%)	15 (100%)

B. Type of Ground Operation

Conflict	Defensive	Offensive	Retrograde	Type Unknown	Total Incidents
WW II (Eur)	1	3	2		6
WW II (Pac)		7		1	8
Vietnam War	1				1
	2 (13%)	10 (67%)	2 (13%)	1 (7%)	15 (100%)

C. Type of Air Operation

Conflict	Close Air Support	Airborne Assault	Other	Type Unknown	Total Incidents
WW II (Eur)	4	2			6
WW II (Pac)	5		2	1	8
Vietnam War				1	1
	9 (61%)	2 (13%)	2 (13%)	2 (13%)	15 (100%)

D. Type of Error

Conflict	Misidentification	Coordination	Training & Discipline	Total Incidents
WW II (Eur)	1	1	4	6
WW II (Pac)	2	4	2	8
Vietnam War			1	1
	3 (20%)	5 (33%)	7 (47%)	15 (100%)

4

GROUND AMICICIDE

Introduction

While amicicide incidents arising from the engagement of one friendly ground unit by another have not involved the same destructive force as either artillery or air incidents, they have nevertheless constituted a serious threat to the continuity of ground operations and have resulted in death, wounds, and loss of friendly equipment. Active combat operations involving large numbers of infantry troops and armor units are particularly difficult to coordinate. The lack of proper coordination, the inability to distinguish friend from foe, and the usual stresses of combat on nervous or ill-disciplined troops have on occasion led to friendly soldiers or tanks firing on one another with predictable consequences. None of the fifty-eight incidents identified in this study were related to any mechanical problem. The incidents were all due to some human failure.

It should be pointed out that the weapons involved in the noted incidents of ground amicicide were direct-fire weapons of limited range and required visual acquisition and identification of the target. In World War II and in Vietnam there were no technical, electronic aids to assist in the identification process, and the pressures of combat usually demanded, or seemed to demand, a "shoot first and sort 'em out later" policy. Most of the fifty-eight incidents examined involved small arms and automatic weapons fire of one infantry force against another. Sixteen of the fifty-eight incidents involved tanks, but most were cases in which tanks fired with both machine guns and main armament on infantry forces. Only two major incidents involved friendly tanks engaging other friendly tanks, and one additional incident involved a protracted engagement of tanks with friendly tank destroyer forces. All three incidents occurred in the European theater during World War II. Two of the incidents are described in detail in this study.

World War I

The well-fixed defensive lines and planned, coordinated attacks characteristic of warfare on the western front in

World War I were not proof against frequent incidents of ground as well as artillery amicicide. The great confusion of offensive operations and the serious disruption of communications that accompanied such attacks sometimes resulted in one group of friendly troops battling another. The limited visibility and confusion of a disputed trench was often the scene of such incidents. Typical of these was the experience of the Australian 50th Infantry Battalion on 24 April 1918 during the second battle of Villers-Bretonneux.[1] Despite heavy enemy fires, the Australians advanced steadily toward the German trenches under cover of the darkness. As they neared the German position, several shots were fired at them from close in front, someone yelled "Bomb the bastards," grenades were thrown, and a rush of the trench was made.[2] The trench proved to be occupied, not by the Germans, but by remnants of the 2d Devon and 1st Worcester Battalions, who had not been informed of the Australian counterattack and thought the Germans were attacking them from the rear.

World War II: Europe

The more fluid conditions of combat in World War II, both in Europe and the Pacific, only intensified the problems of locating and coordinating friendly units in order to preclude incidents of amicicide. Although communications were greatly improved, the greater area of dispersion, higher mobility, and, particularly in the Pacific, more difficult terrain offset any gain in ease of communication. Surprisingly, there appear to have been no incidents of ground amicicide during the North African campaign of 1942-43 worthy of being recorded in the more obvious sources. The inexperience of US forces was amply revealed in several incidents of artillery, air, and antiaircraft amicicide, but cases of misplaced ground fires that may have occurred do not appear in the published histories of the campaign.

The ill-fated airborne reinforcement of the Gela beachhead by the 504th Regimental Combat Team on the night of 11 July 1943 has been described above. Friendly antiaircraft fires were not the only hazard for the paratroopers of Operation HUSKY 2. Several of the American paratroopers were hit by friendly small arms and automatic fire while still in their parachutes, and a few were shot after they landed. For example, Chaplain Delbert A. Kuehl (HHC, 504th Parachute Infantry) and several other men landed in the 45th Infantry Division area, well to the southeast of Gela, and immediately began to receive fire from American troops.[3] Shouting the password only caused the fire to increase, so while the other

men fired their weapons into the air, Chaplain Kuehl crawled around to the rear of the American position and succeeded in stopping the fire.

Both the 171st and 158th Field Artillery Battalions of the 45th Infantry Division reported engagements with American paratroopers on the night of 11 July, the 171st's report stating that:

> Since no news of the American paratroopers had reached this headquarters, they were assumed to be hostile and the Battalion was deployed for all around defense.[4]

The nervous artillerymen even managed to kill one of their own men who was mistaken for a German parachutist.[5] The entire Gela-Farello fiasco prompted an investigation which, however, came to no firm conclusions.[6] Both the antiaircraft and ground amicicide incidents connected with Operation HUSKY 2 did bring improvements in coordination that went far toward avoiding such incidents during later airborne operations.

Both the pace and scale of combat operations on the Continent after 6 June 1944 made the avoidance of ground amicicide difficult if not impossible. The fire and maneuver of many large units, often in a confined area, against a determined and skillful enemy frequently resulted in the engagement of one friendly unit by another. Such incidents were particularly common during the periods of active offensive operations (the Normandy breakout; the breaking of the West Wall) and during the confused retrograde and holding actions in the Ardennes in December 1944.

Amicicide began to occur almost as soon as the first Allied troops crossed the Normandy beaches in June 1944. Within the first four or five days after the invasion, the green troops of the 25th Cavalry Regiment (4th Armored Division) shot up another American unit while attempting to straighten their lines in a defensive position near the Normandy beachhead.[7]

The data on amicicide incidents of all types is particularly good for at least one unit that fought in the European theater. The US 30th Infantry Division took part in some of the hardest fighting on the Continent and appears to have carefully recorded its share of both the receipt and delivery of misplaced fires. The experiences of the 30th Division were by no means unique and thus may serve as examples of the problems faced by all Allied units during the advance into Germany.

Between 1 and 6 July 1944 the 30th Infantry Division, commanded by Maj. Gen. Leland S. Hobbs, as part of Lt. Gen. Charles H. Corlett's XIX Corps, held defensive positions north of the Vire-et-Taute Canal and east of the Vire River and prepared to continue the attack to the south with an assault crossing of the canal-river line in the vicinity of Airel. Active patrolling was conducted as the division prepared for the coming river crossing operation. Although the relatively quiet course of static defensive operations brought no major amicicide incidents, some liaison officers and messengers reported that they were "more afraid of nervous sentries in the rear areas than of Germans."[8]

At 0430 on 7 July 1944 XIX Corps attacked with the 29th and 30th Infantry Divisions and the 113th Cavalry Group (Mechanized) to secure the high ground north of St. Lô. The 30th Division successfully assaulted westward across the Vire River in the vicinity of Airel and southward across the Vire-et-Taute Canal to seize the high ground in the vicinity of Pont Hebert with the main effort in the direction of St. Jean de Daye, St. Giles, and St. Lô. By nightfall on 7 July the division had secured its bridgeheads and was preparing to resist German counterattacks and continue the attack to the south on 8 July.[9] Late on 7 July the corps commander, Lieutenant General Corlett, sought to exploit a possible breakthrough situation by committing elements of the 3d Armored Division through the small and still developing 30th Infantry Division bridgehead over the Vire River. Combat Command B of the 3d Armored Division was ordered to cross the Vire River at Airel and attack southward on the morning of 8 July with the 30th Infantry Division. The commitment of CCB through the confined 30th Division bridgehead served to increase enormously the confusion and turmoil already present in the still tenuous position and was to result in several serious incidents of ground amicicide before the units broke free to the south toward St. Lô.

Problems began as soon as CCB attempted to cross the crowded Vire River bridge at Airel and move into assembly areas in the bridgehead on the night of 7-8 July. Chaos prevailed as both tankers and infantrymen competed to cross the bridge and find space for assembly areas. In the confusion men from both units fired indiscriminately with small arms and machine guns, partially from fear and confusion and partially out of frustration and anger over the actions of their supposed comrades-in-arms.[10] The following day Major General Hobbs complained to corps headquarters that his division had suffered sixteen casualties as a result of uncontrolled shooting by the CCB tankers.[11] Casualties among the tankers were apparently not reported.

The attempt to advance on 8 July saw no substantial improvement. Most of the day was spent trying to sort out the jumble of tanks and infantrymen now faced by counter-attacks and strong resistance from the recently arrived 2. SS Panzer Division (Das Reich).[12] General Hobbs subsequently complained bitterly of the inactivity and lack of movement by CCB which prevented his own regiments from moving forward and which hampered efforts to support the 30th Division units with close artillery fires for fear of hitting the friendly armor elements.[13] On the afternoon of the eighth the artillery commanders of the 3d Armored Division and the 30th Infantry Division met in an effort to coordinate their fires and to prevent the artillery of one unit from firing on the troops of the other.[14] At 2045 Major General Hobbs and Maj. Gen. Leroy H. Watson (commanding general of the 3d Armored Division) discussed both the problem of CCBs not moving out and the problem of possible additional amicicide incidents:

> Watson: Do you mean I am holding you up?
>
> Hobbs: Yes.
>
> Watson: I don't see how I am.
>
> Hobbs: If you don't move those people will shoot into each other. We have had 16 casualties from the situation as it is now.[15]

A few minutes later General Hobbs told his artillery chief that

> . . . as far as fires are concerned tonight [I want] it clearly understood that first of all it should be prepared to protect our troops as they are now, wherever they are, irrespective of armor or anything else, and if they call for it, they get it.[16]

Fortunately, there were no major incidents of misplaced artillery fire, but the resumption of the attack on 9 July was to see a significant incident of ground amicicide involving the two commands.

In an effort to relieve the congestion and confusion in the Airel bridgehead caused by the presence there of two major units under separate command, on the evening of 8 July CCB was attached by Lieutenant General Corlett to the 30th Infantry Division, despite the protests of Major General Hobbs, who was convinced his division could proceed in the advance without further "assistance" from the pesky armor

unit.[17] Nevertheless, Hobbs received attachment of CCB and plans were made for the tankers to continue the attack to the southwest on 9 July to seize the dominant terrain of Hill 91 at Hauts-Vents, slightly more than three miles ahead.

On the morning of 9 July Brigadier General Bohn, the CCB commander, attempted to pass his trailing task force in column through his leading elements. The always difficult maneuver was further complicated by the heavy hedgerow terrain and extremely muddy conditions caused by several days of heavy rain. The advance of the armored forces was soon bogged down and also stymied the attempts of 30th Division units to move forward. Dissatisfied with CCB's slow progress, General Hobbs pressed General Bohn, telling him to take his objective by 1700 or surrender command of his unit.[18] In an effort to give his impatient superior some sign of progress, Bohn ordered one of his tank companies to strike ahead without pause, cross the St. Jean de Daye-Pont Hebert highway, and move southwestward to Hill 91. The company of eight Sherman tanks soon moved off toward Hauts-Vents spraying the ditches and hedgerows with machine gun fire.

Meanwhile Bohn attempted to get the remainder of his mired combat command underway and the various elements of the 30th Infantry Division braced themselves against expected counterattacks by the 2. SS Panzer Division from the west and the Panzer Lehr Division from the east. As the day wore on the 30th Division's infantry and attached armor (743d Tank Battalion) came under increasing German pressure. Although the division generally stood firm in the face of the German counterattack, isolated units withdrew precipitately after learning of the virtual destruction of the 743d Tank Battalion in a German ambush on the division right flank.

The 823d Tank Destroyer Battalion (Towed) was attached to the 30th Infantry Division in April 1944 and landed at OMAHA Beach on 24 June 1944. Equipped with thirty-six 3-inch or 76-mm towed antitank guns, the 823d was considered a well-trained unit with high morale even though on 9 July it was still in its shakedown period. Later the battalion would hold the US Army record for tanks destroyed by a tank destroyer battalion for the period 6 June 1944--8 May 1945 on the Continent, having knocked out 111 enemy tanks and other armored vehicles.[19]

Company C, 823d Tank Destroyer Battalion, had crossed the Vire River on 7 July and had supported the 30th Infantry Division's abortive attempts to continue the attack out of the bridgehead on 8 July. Its main role, however, had been

to counter the German counterattacks that mounted in intensity on 9 July. By late afternoon on the ninth the company was in defensive direct-fire positions south of the St. Jean de Daye crossroads astride and east of the main highway to St. Lô.[20] Shortly after 1635 1st Lt. Ellis W. McInnis's 1st Platoon shifted positions slightly in anticipation of an expected German armored counterattack north up the St. Lô highway.[21] By about 1715 1st Platoon's guns were in position covered by the bazookas and small arms of the 1st Reconnaissance Platoon, 823d TD Battalion, led by 1st Lt. Thompson L. Raney.

While Lieutenant McInnis's platoon moved into position, stragglers from the 117th Infantry Regiment streamed northward along the St. Lô highway reporting that the German armor was not far behind. Air bursts from unidentified artillery over the tank destroyer positions lent credence to the imminence of a German assault. About 1800 Lieutenant McInnis spotted a tank about 1,000 yards to his front which moved back and forth several times to look over the hilltop in hull defilade. He immediately radioed the Company C commander to ascertain whether there were any friendly tanks in the area and received the reply that "what you are looking for is in front of you."[22]

Almost immediately the tank moved north along the highway spraying the hedgerows, ditches, and 1st Platoon positions with .30-caliber machine gun fire. It was soon joined by several other tanks which also fired their machine guns and 75-mm tank guns. Unable to visually identify the advancing tanks because of the drizzle and fog which had restricted visibility all day, Lieutenant McInnis could only conclude that the tanks firing on his position constituted the long-awaited German counterattack and gave the order to his platoon to open fire.[23]

Sergeant Malery Nunn, who had already received a graze on the face from one of the tank machine gun bullets, issued the fire commands for his gun to engage the lead tank at an estimated range of 500-600 yards. The gunner, Corporal Clement, scored a dead center hit with the first round, and the lead tank stopped as smoke poured from it. Two additional rounds were fired, but their effect could not be observed because of smoke. The other tanks continued to advance firing, and Sergeant Nunn's gun was hit, and Corporal Clement was wounded in the leg. Sergeant Nunn assumed the gunner's position and Lieutenant McInnis loaded. Three more rounds were fired, but no hits were observed, and the remaining tanks continued to roll forward.[24]

As the tanks closed, the tank destroyer personnel were forced to take cover in the ditches where they were pinned down by the machine gun fire from the tanks. When the tanks were about 400 yards away, Sergeant Nunn recognized them as friendly mediums, called for a cease-fire, and stood up waving at the tanks in an attempt to halt their firing. His brave attempt had no effect, and the 1st Platoon hugged the ground as several tanks, only three of which were not firing, passed through the position and continued out of sight to the north, all attempts by the tank destroyer personnel to identify themselves having failed.[25]

Sgt. Carl Hanna, Private First Class Hardin, and Pfc. Ernie Jacobs of Lieutenant Raney's recon platoon were in the process of establishing a bazooka position in a ditch when the tanks appeared. They were pinned down by fire from the tanks, and when it became unbearably heavy, Sergeant Hanna ordered his men to take cover in the ditch on the other side of the hedgerow. As they attempted to do so, Private First Class Jacobs was hit in the head by a 75-mm tank round, which killed him instantly and knocked out Sergeant Hanna, who was hit in the back of the head by fragments of Jacob's skull.[26]

Company C's 2d Platoon, led by 1st Lt. Francis J. Connors, also fell victim to the tankers' fire. A tank rolled up to within fifteen yards of Connors's uncamouflaged halftrack, which could scarcely have been mistaken for anything other than a US vehicle, and fired point-blank, severely wounding the halftrack's assistant driver in the chest.[27] Lieutenant Connors identified the tank as a 3d Armored Division tank (No. 25) and Sgt. Joseph A. Chustz, the 2d Platoon Security Sergeant, identified another by the name on its hull, BE-BACK.[28]

During the course of the fray Lieutenants McInnis and Raney and several of their men took cover on the north side of a stone building. One of the tanks fired an HE round into the building from twenty feet away and five feet from where the party was standing. The next tank in column turned its turret toward the group but did not fire when Lieutenant McInnis waved his arms and shouted. Shortly after the offending tanks had rolled northward out of the Company C area, 1st. Lt. Neil P. Curry of the 30th Reconnaissance Troop arrived from the north and reported that the tanks had also fired on his M-8 halftrack and showed the hole in the turret ring mount.[29]

The results of the twenty-five-minute engagement were serious but not catastrophic. Two US medium tanks were

destroyed, and one 3-inch antitank gun was damaged by machine gun fire striking the recoil mechanism but was returned to service within twenty-four hours.[30] The 823d TD Battalion suffered casualties of one man killed and three wounded (two seriously); the tankers lost six men.[31] In his daily report for 9 July the 823d TD Battalion S-3, Maj. Ashby I. Lohse, reported the unit's combat efficiency as "satisfactory but mad as hell" and added that the unit

> took two prisoners which were its first, suffered its first fatal casualties, was shot up by its own Infantry and Armored Force and in turn shot up our own Infantry and Armored Force but under all circumstances came through their first critical engagement in fairly good shape and without too serious losses.[32]

On 10 July Major Lohse was appointed a board of one officer to investigate the incident. He identified the offending tanks as belonging to the 3d Armored Division and concluded that the US tanks were fired upon because:

> (1) enemy tanks were reported both by Higher Headquarters and withdrawing Infantry to be in the immediate front of the 3" guns,
>
> (2) poor visibility prevented recognition of type and nationality of tank,
>
> (3) no friendly tanks were known to be in that area,
>
> (4) because tanks were firing upon gun positions and friendly positions generally and,
>
> (5) because tanks were moving north while the direction of attack was south.[33]

Despite the poor visibility and obvious stress of being under heavy fire, the tank destroyer personnel did recognize the tanks as friendly and ceased firing when the tanks were about 400 yards away. They then attempted, often at very personal risk, to identify themselves. Under the circumstances the continued firing by the tankers is difficult to excuse. Every effort was made by the tank destroyer personnel to identify themselves, but whether out of confusion, fear, or simply lack of discipline, the tanks moved through the friendly position and well to the rear, firing continuously.

As the reader has probably already surmised, the offending tanks were the company from CCB, 3d Armored

Division (probably a company of the 33d Armored Regiment), earlier dispatched by Brigadier General Bohn to proceed expeditiously to Hauts-Vents. Apparently the tank company commander either misunderstood his instructions or became confused. In any event, upon reaching the north-south St. Lô highway he turned right (north) rather than left (south) and blundered into the 823d TD Battalion position. The commander personally suffered the consequences of his error. His tank was the one knocked out at the beginning of the engagement by Sergeant Nunn's gun. Just at the moment the lead tank was hit, General Bohn was attempting to contact his wayward unit by radio and over the open radio channel heard the tank company commander's cry of pain and anguished statement, "I am in dreadful agony."[34]

After their pass through the 823d's position, the remaining six tanks reversed direction and proceeded to the objective, Hill 91 at Hauts-Vents, which they somehow managed to reach shortly before dark. Ironically, the six tanks reached the objective just in time to be hit by an American strafing attack requested earlier but delayed by bad weather. Fortunately, there were no casualties and the remnants of the tank company spent the night on Hill 91 only to be withdrawn the following morning (10 July) when it proved impossible to reinforce them. The Hauts-Vents objective was finally secured by CCB on the afternoon of 11 July.[35]

Despite the tragic amicicide incident, Lieutenant General Corlett, the XIX Corps commander, congratulated Major General Hobbs on the 30th Infantry Division's performance on 9 July, and Hobbs replied that he, too, thought that the division had done a good job and that

> . . . there were a few upsets but things like that will happen. In one case our own tanks turned the wrong way and went up the wrong road, but all in all it was a good show.[36]

The unfortunate engagement of CCB, 3d Armored Division, and the 30th Infantry Division's 823d Tank Destroyer Battalion south of the St. Jean de Daye crossroads on 9 July 1944 was representative of the problems of identification and control faced by ground forces commanders in the difficult hedgerow terrain of Normandy as Allied forces plagued by often foul weather attempted to break out of the Normandy enclave against strong German opposition. Given the difficult terrain, poor visibility, and confusion generated by crowded Allied units and skillful German resistance, the occurrence of incidents of amicicide of all types is not

surprising. On 10 July, the very morning following the St. Jean de Daye crossroads incident, 30th Infantry Division units were again reporting friendly tank fire falling on their troops.[37] But the 30th Infantry Division was not the only American unit to experience ground amicicide incidents in the Normandy fighting. The attack of the 29th Infantry Division to seize St. Lô 15 July 1944 got off to a dismal start when lack of proper coordination with the adjacent 35th Infantry Division resulted in a misunderstanding and exchange of fire among US troops. A panicky withdrawal by an infantry company of the 115th Infantry Regiment (29th Infantry Division) was averted only by the prompt action of an artillery liaison officer who took charge and restored order and discipline.[38] Such incidents would continue to occur as the Allies pressed forward on the Continent.

In late July as Allied forces broke out of the Normandy lodgement and raced toward Avranches, mission-type orders were common and operations often took place in great confusion. On one occasion two tank battalions of the 4th Armored Division engaged in a shooting match while trying to occupy the same night assembly area. A short time later the two US battalions were joined by a German tank battalion also attempting to use what must have been a really choice assembly area. The German tanks parked unchallenged and it was some time before all parties realized what was happening. The upshot was a frantic melee in which the German and American tanks engaged each other at ranges of eight to twenty-five feet.[39]

Some American tanks posed a hazard to friendly troops merely by virtue of their construction. In September 1944 the 1st Infantry Division cautioned its units that extreme care should be exercised in firing the bow machine gun with which some US tanks were equipped because the gun was mounted in a low position and was impossible to aim accurately, thereby creating a serious hazard for infantry in front of the tank.[40]

By late November 1944 American units were pressing against the prepared German West Wall positions in the Saar-Moselle triangle. In foul weather on 23 November 1944 the 90th Infantry Division's 2d and 3d Battalions, 358th Infantry Regiment, were ordered to attack Muenzingen and Sinz, 3,000 and 4,000 yards respectively behind the Orscholz Switch Line, in hopes of opening the way for CCA of the 10th Armored Division (to which the 358th Infantry was then attached) to drive through and secure a crossing over the Saar River at Saarburg. Planning and coordination of the attack proved faulty, however. As the 2/358th Infantry

crossed the line of departure and moved into the attack it was taken under heavy short-range 75-mm fire by the tanks of CCA's TF CHAMBERLAIN, bogged down in the mud on the flank. Almost simultaneously the supporting 344th Field Artillery Battalion, mistaking the location of the friendly infantry, showered the unfortunate infantrymen with a hail of shells. Caught unaware by friendly fire from flank and rear, many of the infantrymen were killed or wounded, control was lost, and the attack stalled. The 3/358th Infantry suffered less damage than its sister 2d Battalion and quickly reorganized and continued the attack, clearing Campholz Woods of the enemy. The 2/358th Infantry, however, was seriously disorganized and was unable to reform and resume the attack until late in the afternoon and then with only meager success.[41]

The infantrymen of the 358th were justly enraged by the careless firing of the CCA tankers. Ill will between the two units persisted for some time. Fights broke out in the hospitals where casualties of the two units were confined, and there were numerous altercations between the infantrymen and tankers later in the rest area behind the lines.[42] Friendly troops paid a heavy toll for the failure of commanders and staff officers to adequately coordinate the operations in progress.

The unexpected and violent German attack in the Ardennes in December 1944 scattered American units and seriously disrupted the coordination and cooperation of the hard-pressed American soldiers. Struggling to reorganize and hold the powerful German offensive thrust, several units found that in the confusion and uncertainty of the moment their fires found friendly rather than enemy troops.[43]

On 16 December 1944 the 4th Infantry Division attempted to jam the southern shoulder of the German penetration. That morning Company B, 1st Battalion, 12th Infantry, and ten tanks from the 70th Tank Battalion mounted a limited attack to relieve the 2d Battalion's Company F, then encircled at the north end of the village of Berdorf. The tanks, with infantrymen on their decks, reached the northeastern edge of the town just before noon and began shelling the Parc Hotel, which proved to be occupied by men of Company F, who quickly found in the hotel an American flag, which they displayed on the roof. Having relieved the battered infantrymen of Company F, the attacking force attempted to clear the town but German resistance proved strong, and the attempt was abandoned at night fall.

The same day (16 December) found the 28th Infantry Division resisting the attack of the 2. Panzer Division in the vicinity of Weiler and Wahlhausen. Small elements of US armor and infantry were committed piecemeal in the area, and coordination was difficult. In the early afternoon a platoon of medium tanks from Company A (or B), 707th Tank Battalion, attempted to drive the Germans off the road linking the villages of Holzthum and Consthum. The tankers were informed that there were no friendly troops on the road, but just outside Holzthum the tanks engaged and knocked out an antitank gun placed there by Company I, 3d Battalion, 110th Infantry. After a short delay while the infantry and tankers identified themselves, the tanks rolled on to the south to complete their mission.

At several times American units were forced to withdraw and in the resulting confusion were fired upon by their own troops. On the night of 17-18 December elements of the 2d Battalion, 38th Infantry (2d Infantry Division), and the 395th Infantry Regiment (99th Infantry Division) were forced to withdraw from the village of Rocherath. The 395th Infantry elements took up new defense positions on the 2d Infantry Division left flank northeast of Rocherath and waited for the expected enemy advance. In the withdrawal from Rocherath the 324th Engineer Combat Battalion (99th Infantry Division) had been left behind on Rath Hill. On the morning of the eighteenth, the engineers moved west to rejoin their fellows, but before reaching safety they came under fire from both the enemy and the 395th Infantry and suffered some casualties.

Also on the morning of 18 December Major General Barton, the 4th Infantry Division commander, dispatched the 2d Battalion, 22d Infantry, to strengthen the right flank of the 12th Infantry near the village of Osweiler. As the battalion approached the village, the American tanks there, mistaking them for Germans, opened fire. After two hours and several casualties, a patrol under a white flag managed to make contact with the tankers in Osweiler and establish identification, and the tank company in Osweiler was augmented by the somewhat worn 2/22d Infantry.

The following day (19 December) the 423d Infantry Regiment (106th Infantry Division) attempted to mount a counterattack against the German forces in the vicinity of Schoenberg in the Schnee Eifel. The 3/423d jumped off at 1000, but one company was soon cut off and captured. The other two rifle companies nearly reached Schoenberg, but were forced to withdraw. The 1/423d managed to get one company in the advance, but it was eliminated by mid-afternoon. The

fate of the 2/423d was even less inspiring. Attempting to advance to the northwest on the regiment's right flank, the 2/423d became separated and was taken under fire by the left flank elements of the neighboring 422d Infantry, 400 yards to the north. The 422d men mistook the 2/423d's advance for a German flanking attack and fired into the draw up which the 423d men were moving. A brief fire fight ensued, and both units became considerably disorganized. At 1630, with control gone, ammunition spent, and many wounded men untended, the commander of the 423d Infantry surrendered his regiment to the Germans. Eventually, all but 150 men of the 422d Infantry were forced to surrender as well.

The attacking Germans in the Ardennes were not immune from ground amicicide incidents either. On the morning of 23 December 293. Regiment (18. Volks-Grenadier Division) worked its way through the Führer Begleit Brigade around Rodt (near St. Vith) and proceeded along the road to Poteau, intending to outflank CCA, 7th Armored Division, to the east. The German situation was as confused as the American, however, and the 293. Regiment ran into the infantry and assault gun screen of the 9. SS Panzer Division, which mistook them for a withdrawing American column and delivered a heavy flanking fire. Several hours later, after the Americans had escaped from the trap, the 293. entered Poteau.

The American forces in the Bulge weathered the Ardennes storm and soon resumed their steady advance toward Germany. That advance continued to be accompanied by occasional amicicide incidents that caused casualties and disrupted the continuity and pace of offensive operations. In the 6th Armored Division attack toward Wardin on 2 January 1945, the 9th Armored Infantry Battalion attempted to replace the 44th Armored Infantry Battalion, but was caught in an artillery barrage during the passage of lines and was seriously disorganized. The 9th was unable to resume the advance until noon and soon thereafter was subjected to the misplaced fire of the 134th Infantry (35th Infantry Division) which further retarded its progress.

One final incident will conclude our survey of ground amicicide in the European theater. It merits detailed description because it is one of the very few incidents in which friendly tanks were fired upon by other friendly tanks.[44] At the end of February 1945, the 30th Infantry Division was advancing, steadily opposed by elements of the 9. and 11. Panzer Divisions, along the Roer River. The flat, open terrain dotted with villages afforded little cover and concealment for a conventional daylight attack, and so most of the bounds forward from town to town were made by

coordinated night attacks lit by moonlight.[45] The incident with which we are concerned involved elements of the 30th Infantry Division in a night attack north of Oberembt, Germany, on 26-27 February 1945.

On the night of 25-26 February the 117th Infantry attacked successfully and seized the towns of Lich and Oberembt. On the twenty-sixth, the 117th consolidated its position and planned the next phase of the operation: a coordinated night attack to seize the villages of Kleintroisdorf and Kirchtroisdorf and the town of Putz farther on. The day was spent in reconnaissance and detailed planning and coordination, and at 1800 the regimental plan was issued. The plan called for the 3/117th to move up from Steinstrass, pass between the 2d and 1st Battalions, and attack on the left at 2230 to seize Kleintroisdorf. The 1st Battalion would attack simultaneously on the right to seize Kirchtroisdorf. Then the 2d Battalion would be committed through the 3d Battalion to seize Putz.[46] The attack would be supported by tanks from Companies B and C, 743d Tank Battalion, and a company of British flail tanks (Troop A, 1st Lothian and Border Yeomanry) to be used for breaching minefields.[47]

Despite the obvious problems of a night passage of lines (by the 3d Battalion), the attack jumped off smoothly at 2230. By midnight the 1st and 3d Battalions had taken Kirchtroisdorf and Kleintroisdorf respectively, and three hours later the 2d Battalion passed through and took Putz before daylight in a short but stubborn fight.[48] Only one incident marred the generally well coordinated and successful moonlit attack. The platoon of British flail tanks (four tanks) detailed to follow the 1/117th in the attack on the right toward Kirchtroisdorf strayed left into the 3/117th zone. After proceeding several hundred yards the platoon leader realized his mistake and turned his platoon around. As his tanks again approached the 3d Battalion axis of advance, they were spotted by elements of the 3d Battalion, which had jumped off ten minutes late. The 3/117th and its accompanying armor (B-743d Tank Bn and Troop A, 1st Lothian and Border Yeomanry (-)) and tank destroyer elements (one platoon of C-823d TD Bn) assumed that the tanks were German and took the hapless flail tanks under fire, destroying the entire platoon.[49] In an otherwise well planned, well coordinated and well executed attack, chance, an error, and reduced visibility making identification difficult resulted in a serious case of ground amicicide, as it had so many times before in the European battle area.

Numerous incidents of ground amicicide occurred in the Pacific theater and for the same reasons prevalent in Europe: green troops, confusion, lack of coordination, and misidentification due to poor visibility, dense jungle, and the excitement of battle. If anything, small-scale incidents of indiscriminate firing at night were an even greater problem in view of the reputation of the Japanese enemy as a wily night fighter.

An attack by Company K, 127th Infantry (32d Infantry Division), on the Buna Mission on 28 December 1942 was stifled by spontaneous and uncontrolled firing by American troops, and the attack had to be halted while a reorganization took place.[50] Lt. Gen. Robert L. Eichelberger, the commanding general of the Buna Force, also reported:

> Excitedly firing at noises during the night was a common fault and seriously restricted the use of patrols and other important movements after dark.[51]

The problem of indiscriminate firing at night was a serious one everywhere in the Pacific. It was addressed in some detail in a report worth quoting in its entirety:

> PART 2.
>
> Killing or wounding our own troops.
>
> During recent operations a number of officers and enlisted men have been killed or wounded at night by our own troops who fired with the belief, or from the fear, that the Japs were infiltrating into their areas. The majority of cases reported occurred among troops bivouaced well to the rear of the front line infantry battalions. Some of the men and officers were sleeping in their jungle hammocks when shot. The majority of this 'trigger happy' firing, although not restricted to troops which had not been previously in action, was among newly arrived units.
>
> Officers with battle experience in this theater are of the opinion that this condition is contributed to by the overemphasis placed on the ability of the Jap to infiltrate into our rear areas and by the oftenheard statement "stay in your slit trenches after dark, assume that everything that moves is a Jap".

> That attitude is, of course, essential for patrols and observations posts remaining outside the 'perimeter' at night and for the small units forming that 'perimeter'. In the rear of this line, even in the areas of the battalions in contact, commanders, staff officers, messengers and wire communications personnel must move around at night. Further to the rear, back of the artillery areas for instance, such personnel should be able to move with more freedom.
>
> Those officers also believe that, while there will continue to be incidents of this nature in the forward area, training prior to arrival in the theater in the withholding of fire until it is established that the target is an enemy will obviate these losses in the rear areas. They feel that such training, together with a judicious use of passwords or recognition signals, will reduce these casualties in the forward areas.[52]

The danger of uncontrolled firing by ill-disciplined green troops was clearly demonstrated in the events on the Aleutian island of Kiska on 15-16 August 1943. Expecting fanatical Japanese resistance, 35,000 US and Canadian troops, most of whom had not seen combat before, invaded Kiska on 15 August 1943. By nightfall on 16 August, twenty-eight men were dead and fifty were wounded despite the fact that there was not a single live Japanese soldier on the island.[53] Although a few (four killed and several wounded) fell victim to booby traps and mines left by the Japanese, most were shot by mistake by their own comrades in the heavy Kiska fog.

Immediately upon landing on 15 August, the inexperienced troops fanned out through the fog. The columns frequently engaged each other in the reduced visibility, and the night of 15-16 August brought even more firing by the nervous soldiers. One participant, US Army Lt. Brian Murphy, later recalled that, "the troops were shooting at anything that moved."[54] One infantryman attacked what he believed to be an enemy patrol. The patrol members shouted for him to stop, but he began to throw hand grenades and was promptly shot down.

The Kiska landing was an embarrassing and costly mistake in several respects, not the least of which was the uncontrolled gunfire of the inexperienced troops. The invasion commander, Vice Adm. Thomas C. Kincaid (commander, North Pacific Force), proved somewhat disingenuous when he later stated that "of course we had no way of anticipating our men would shoot each other in the fog."[55]

Inadequate coordination between units was another cause of ground amicicide incidents in the Pacific. In May 1943, three months before the ill-fated Kiska landings, US troops on Attu, another of the Aleutian Islands, experienced delays and casualties from their own fires. As one platoon leader on Attu later commented,

> "Staff work must equal small unit work in quality if there is to be success. Lack of coordination will cause units to fire into the area held by friendly units, and, as I actually saw, attack friendly units. I cannot stress this too much, as I saw the lack of it too much."[56]

A major obstacle to the quick capture of Butaritari Island (Makin) on 20 November 1943 was the West Tank Barrier, a trench six feet deep and more than fourteen feet wide, which extended north and south across the island about 3,400 yards east of the RED landing beaches.[57] The planners of the 27th Infantry Division decided that the best method of eliminating the obstacle would be to envelop it, and because this would involve two units moving toward each other, great care was taken to avoid the danger of a fire fight between friendly units. The measures proposed to coordinate the two assaulting units involved colored smoke signals and constant radio contact between the two units.

In the event, the coordination measures proved inadequate. On D-Day (20 November) the 1st Battalion, 165th Infantry, landed and advanced eastward toward the West Tank Barrier, while the 2/165th Infantry moved westward toward it. No direct radio communication between the two units was established, and the frantic attempts of the 1/165th commander, Lt. Col. Gerard W. Kelley, to determine the whereabouts of the 2/165th were futile. About 1400 the 1/165th was pinned down by friendly fire from the front, but Kelley was ordered by 27th Infantry Division Headquarters to press on to a junction with Lt. Col. John F. McDonough's 2d Battalion. The men of the 1/165th pressed on, but not without some anxious moments due to the continuing fire of the 2/165th Infantry.

Japanese sniper fire and ruses on the night of 20-21 November provoked uncontrolled firing by the jumpy American troops, who blasted away all night, wasting ammunition and drawing Japanese counterfire. Daylight on the twenty-first brought a resumption of incidents attributable to poor coordination and lack of strong fire discipline. Two hulks on the reef near On Chang's Wharf (YELLOW Beach), which had been heavily attacked by air and naval gun fire, were again

thought to harbor the enemy. Landing craft coming in to YELLOW Beach machine-gunned the hulks, many of their rounds landing amidst the American troops on shore. Between 0818 and 1630 several air strikes were directed against the hulks, and at 0920 several medium tanks were brought up to the beach and shelled the hulks with their 75-mm guns. Many of their "overs" fell into the boat lanes in the lagoon, making the approach to YELLOW Beach a very uncomfortable one indeed.

The 27th Infantry Division's problems with ill-coordinated and downright indiscriminate ground fire on Butaritari were neither unique nor particularly costly. They did, however, interrupt operations and adversely affect the discipline and morale of the men ashore. Given other conditions, they may have proved costly indeed.

Amphibious assaults, the dominant tactical form in the Pacific war, were very difficult to coordinate and control, and amicicide incidents were frequent for both the Army and the Marines. During Operation FLINTLOCK, the assault on Kwajalein Atoll on 1 February 1944, the 2d and 3d Battalions, 24th Marines, landed on Namur Island beginning at 1145. Enemy fire was light, but the Marines were greatly annoyed and suffered several casualties as a result of fires by friendly armored amphibians offshore that raked the Marines moving inland from the beach. The Army forces on Kwajalein had problems of their own. The greatest danger to the 32d Infantry Regiment (7th Infantry Division) advancing on the east side of the island on 3 February 1944 was friendly small arms fire from the 184th Infantry to the west.

Green troops and confusion were not exclusive characteristics of American forces. In the attack on Myitkyina, Burma, on the night of 20 May 1944, unseasoned infantrymen of the Chinese 150th Regiment (Chinese 50th Infantry Division) assisting Merrill's Marauders became confused, fired on their own men, and ran away in panic.[58]

Some incidents of ground amicicide in the Pacific were almost bizarre. During the campaign on Saipan the 27th Infantry Division had great difficulty controlling its artillery fires.[59] The tanks of the 27th Division were also occasionally guilty of firing on the adjacent Marines, but proved equally dangerous for the 27th's infantrymen.[60] During an attack on Hill Able on the morning of 27 June 1944 two platoons from the 762d Tank Battalion supported the assault. Soon after the attack began it started to rain, and the tanks became covered with mud, which obscured the vision of the drivers and caused them to lose their sense of direction. As a consequence, the tanks fired in the direc-

tion of the 3d Battalion, 106th Infantry, disrupting the coordination of the attack and halting it. The 3/106th was forced to regroup and effect further coordination. They finally jumped off at 1250 and accomplished their mission by 1342.[61]

The stiff Japanese resistance and difficult terrain on the island of Guam made the coordination of all arms difficult during the campaign in July and August 1944.[62] Typical of the problems caused by the dense Guamanian jungle was that faced by the 22d Marines attempting to take Orate on 28 July. The Marines swept through the barracks grounds and moved on to the outskirts of the village of Sumay, where they were held up by Japanese fortified in coconut-log pillboxes. Marine tanks were called up to eliminate the pillboxes but made little progress because the dense brush restricted observation and frequently made it impossible to fire without danger to friendly troops. Fortunately, no friendly troops were injured, but the Japanese had to be winkled out by the infantry in a slow and dangerous operation.

The Army and Marines on Guam, as on so many other islands of the Pacific, found it extremely difficult to maintain contact with adjacent units and to keep their operations adequately coordinated. The attack of the 77th Infantry Division to secure Mount Barrigada resumed on the morning of 4 August 1944. In order to reduce Japanese roadblocks and reestablish contact with the 3d Marine Division on the division's flank, a platoon from the 1st Battalion, 307th Infantry, and one tank from Company A, 706th Tank Battalion, set out along the Finegayan Road about 0645. Three hours later the small task force had broken two strongly held Japanese roadblocks, and shortly before 1100 it came to a third. The American tankers opened fire at once on what they assumed to be another Japanese position. This roadblock, however, turned out to be manned by Company G, 9th Marines, who had been warned by the 3d Marine Division to expect the Army patrol. The Marines did not fire and were apparently unaware that the Army troops expected friendly positions to be signaled by red smoke grenades. Capt. Francis L. Fagan, the Marine company commander, was able to stop the Army firing only by running down the road toward the Army troops waving his helmet. Before he was able to stop the firing, seven of his Marines were wounded. Contact between the Army and Marines was reestablished, but at some cost to the Marines.

Several days later it was the Army's turn to come under fire from the Marines. Troops of the 2d Battalion, 306th Infantry, moving along the Salisbury Road in the attack on

Mount Santa Rosa, began receiving rifle and machine gun fire about 1215. They suspected the fire was coming from the 3d Marine Division elements in the area. About 1245 the trailing company, Company F, 2/306th Infantry, was engaged in a short fire fight at the junction of the Chaguian Trail and Salisbury Road by what they were convinced was a force of US Marines. Complaints were lodged with the 3d Marine Division, which denied that its troops were in the area. Shortly thereafter the 306th Infantry Regimental CP came under artillery fire that was conclusively shown to be from Marine pack howitzers, and a short time after the mistaken shelling an Army motor column on the Salisbury Road was machine-gunned by what again was believed to be the Marines.

The confused situation along the Salisbury Road and the attendant incidents of amicicide resulted from a lack of adequate coordination between Army and Marine units in the area. Once ad hoc action had been taken to stop the mistaken firing, the 306th was able to complete its mission with relative ease, and by 1715 the regiment had dug in across the northern face of Mount Santa Rosa.[63] The eighth of August ended for the troops of the 77th Infantry Division in a grand finale of amicicidal firing. At sunset the 1/306th Infantry, west of Lulog, and the 3/307th Infantry, to the south on Mount Santa Rosa, engaged in a prolonged and costly fire fight. About 1830 each battalion began receiving mortar fire coming from the general direction of the other. Although it might have been Japanese fire, it was more likely from American weapons being registered for night defensive fires. Both battalions reported a Japanese counterattack and opened up with small arms fire in the direction of the presumed attack. This fire only increased the illusion in each unit that they were under attack, and the tanks with the 306th Infantry began firing toward the 307th's position. Both battalions called for artillery fire, and the 902d Field Artillery Battalion fired a brief barrage. Fortunately, it soon became apparent that friendly troops were firing on one another and the firing was stopped. The costs of the mistake were high: the 3/307th Infantry had at least ten casualties, and the 1/306th and the 306th Regimental CP suffered a smaller number.

The Korean War

Two of the first one hundred men wounded in the Korean War received their wounds as a result of friendly fire. Both incidents, however, more resembled a true accident than they did a correctly designated case of ground amicicide. They

are included, however, because they both meet our definition of amicicide and presaged an all too common event of the next conflict (Vietnam): one green and nervous soldier shooting another.

Pvt. Robert J. McCoy, 21st Infantry (24th Infantry Division), suffered a severe shrapnel wound of the left arm at 0900 on 10 July 1950, when he was mistaken for an enemy soldier by his buddy, who threw a hand grenade at him.[64] At 2220 on 2 August 1950, Pfc. Norman A. Yoder, Battery B, 15th Field Artillery Battalion (2d Infantry Division), was shot in the right arm by a .30-caliber carbine fired by a sergeant guarding the battery CP north of Pusan.[65] The sergeant mistook Private First Class Yoder for a North Korean infiltrator. Yoder spent the next thirty hours in pain at the battalion aid station "waiting for another casualty to be put in the ambulance."[66]

Such "accidents" involving individual soldiers were probably not uncommon in Korea. More serious results followed ground amicicide incidents of greater scale. The tactical situation of US forces in the Korean War frequently involved the loss and subsequent recapture of defensive positions at night. Sometimes the same position changed hands several times in the course of a single night. Ad hoc attacks and counterattacks mounted in darkness and great confusion bred ground amicicide incidents arising from a lack of coordination. Two examples can suffice.

One of the most gallant episodes of the Korean War was the stubborn defense of the British 29th Brigade along the Imjin River north of Seoul in April 1951.[67] Faced by a massive Chinese Communist attack beginning on 22 April 1951, the 29th Brigade held its positions until the early morning of 25 April when it was ordered to withdraw. The battered remnants of the 1st Battalion, Royal Northumberland Fusiliers, an attached battalion of Belgians, and the 1st Battalion, Royal Ulster Rifles, were able to retire in good order. The 1st Battalion, The Gloucester Regiment, was not so fortunate. Surrounded, exhausted, and with ammunition and rations nearly expended, the Glosters left their dead and wounded in the care of their battalion commander, sergeant-major, surgeon, and chaplain and attempted to break out after sixty hours of continuous fighting.

The only element of the Glosters to escape death or capture was Company D, under the command of Capt. Michael Harvey, and Company D paid a heavy price to both enemy and friendly fire for its ultimate survival. Pursued closely by the Chinese, Harvey and his men had almost reached the safety

of American lines by running and crawling the length of a narrow valley when they encountered a line of American tanks drawn up across the valley 500 yards ahead and firing at the Chinese pursuers. As the surviving Glosters rushed forward, the American tanks mistook them for the enemy and produced a devastating fire from main guns and machine guns. Six of the hapless Glosters were killed. After several agonizing minutes, during which the Chinese continued to bayonet the stragglers, Captain Harvey succeeded in identifying his force to the American tankers. The surviving Glosters were brought under the meager protection of the US tanks, and the combined force conducted a three-mile fighting retreat out of the valley to safety. Captain Harvey and thirty-eight men of the Glosters made it to safety; they were the only men of the regiment to do so.

Two years later American troops found themselves the victim of their own fires. Pork Chop Hill was occupied by a succession of Red Chinese and American troops on the night of 16-17 April 1953.[68] Shortly before dawn on 17 April, Companies K and L, 31st Infantry (7th Infantry Division), attacked from opposite sides of the hill to retake it. Neither company knew that the other was to attack from the other side. Company K, commanded by 1st Lt. J. G. Clemons, had just reached the top of the hill near the CP bunker when they came under intense machine gun fire. They immediately returned fire. The fire on Company K was coming from the right-hand finger of the hill where Sgt. Horace Ford of 1st Platoon, Company L, had found a machine gun and two boxes of ammunition and had ordered Pvt. Columbus Jackson to fire on the crest of Pork Chop Hill, believing it to be held by the Chinese. As S. L. A. Marshall expressed it, "King's men tried to signal Love to shut it off, but the fire was too intense to stand against. It died only after Love had been bled into silence."[69]

The Dominican Republic

Even the brief intervention by US forces in the Dominican Republic in 1965 produced at least one incident of ground amicicide. Two companies of the 82d Airborne Division were assigned to secure a bridge, one company at either end. Neither company could be said to have been seasoned, and when someone fired a shot, a fire fight between the two units broke out. The firing halted only after both company commanders called to the same field artillery battalion for support. Two men were wounded.[70]

Vietnam

Ground amicicide incidents of various types occurred among US troops with disconcerting frequency during the ten years of US involvement in Vietnam. Most were precipitated by nervousness and lack of fire discipline or by inadequate coordination.[71]

As in other conflicts, green troops in Vietnam took their toll of their fellow soldiers by firing nervously before properly identifying their target. One man was killed in October 1966 near Bong Son during a five-man patrol sent out by Troop D, 2d Squadron, 12th Cavalry (1st Cavalry Division, Airmobile). The patrol stopped for a break and one man left the trail to relieve himself. When he attempted to rejoin the patrol he was "mistaken for the enemy" and shot to death by his best friend. A similar incident occurred in the 1st Battalion, 46th Infantry. A soldier from Company B, 1/46th, was killed by a comrade in the summer of 1971. The victim left the company's night defensive perimeter and became disoriented. Returning to the perimeter at the wrong location, he scared another man from Company B, who shot and killed him.

Aside from possible enemy action, night defensive positions often proved to be dangerous places. In 506 Valley, south of Bong Son, on 16 December 1966, Company A, 1/12th Cavalry (1st Cavalry Division, Airmobile) had established a defensive position at night, when the battalion commander ordered another company (probably Company B, 1/8th Cavalry, OPCON at the time to the 1/12th Cavalry) to pass through A-1/12th and take up a position on the other side. During the passage of lines a soldier from B-1/8th shot one of the platoon leaders from A-1/12th, wounding him severely. In November 1971 an infantry rifle platoon of Company C, 1/506th Infantry (101st Airborne Division), found itself in a night defensive position in I CTZ. A new member of the platoon was pulling night perimeter guard for the first time. He was Spanish-speaking and could barely understand English. As the relief guard approached to relieve him, the Spanish-speaking soldier turned in fright and killed the relief with a shot from his M-16 rifle.

The limited quantities of armor employed in Vietnam served to make amicicide incidents involving tanks rare. No incidents involving tank against tank or infantry against tanks were recorded. On one occasion, however, an armored vehicle fired on friendly troops with devastating effect. In

September 1969 soldiers of the 758th Supply and Service Company and the 546th Ordnance Company (both of the 610th Maintenance Battalion, 1st Cavalry Division, Airmobile), manning the perimeter at Quan Loi base camp, were fired upon by a 1st Cavalry Division M-551 Sheridan using a beehive round. Seven of the soldiers were killed in and on their bunker.

Although tanks were relatively rare in Vietnam, armored personnel carriers equipped with .50-caliber machine guns were not, and the mechanized infantry forces were fond of reconning by fire. On 25 February 1967 just before the battle of Prek Klok the 1st Battalion, 16th Infantry (1st Infantry Division), commanded by Lt. Col. Rufus C. Lazzell, was fired upon in the early hours of darkness by a friendly mechanized unit conducting reconnaissance by fire with their .50-caliber machine guns. Fortunately, the only damage was to an 81-mm mortar.[72] In I CTZ in 1971 Company C, 1/506th Infantry (101st Airborne Division), also narrowly escaped injuries when fired upon at night by .50-caliber machine guns mounted on friendly armored personnel carriers. The APCs were "returning fire" after having received "sniper fire."

The confusion and disorientation that affect even seasoned troops in active combat often produced amicicide incidents, especially when previous coordination was less than adequate. In September 1968 Company A, 3/7th Infantry, 199th Light Infantry Brigade, established a night ambush position along the edge of a village in Long An Province. The perimeter of the ambush was irregular, with village huts separating the various platoon positions. As the expected Vietcong squad approached the ambush site, one platoon opened fire as planned. During the ensuing fire fight another platoon to the right of the first began firing on the first platoon's position, hitting several of the friendly soldiers with rifle and machine gun fire.

A similar incident involving a single platoon, 3d Platoon, Company D, 4/12th Infantry (199th Light Infantry Brigade), occurred near Dinh Quan (Long Kanh Province) in October 1969. The platoon established a perimeter defense for the night in dense jungle. During the night the platoon received a few rounds of enemy fire at close range and returned fire. One of the platoon machine guns was observed firing across a portion of the friendly perimeter, and following the enemy attack one man was discovered in the area fired across by the friendly machine gun with a mortal wound in the back of his head. Presumably he had been killed by the friendly machine gun.

Incidents involving confusion and inadequate coordination also happened to units on the move. In August 1969, Company A, 1/22d Infantry (4th Infantry Division) was on the move across a sparsely wooded plain with high brush south of Pleiku. First Platoon led, followed by the 2d and 3d Platoons. Three enemy mortar rounds fell to the left of the company, and enemy sniper fire was received from the left front. The 2d Platoon returned fire on the suspected sniper location, forgetting in the heat of battle that the 1st Platoon was ahead. A Kit Carson Scout with the point squad of the 1st Platoon received a wound in the groin from a friendly M-79 grenade launcher HE round.

The difficult terrain of Vietnam often made even well planned operations the scene of amicicide incidents when units were unable to maintain contact and coordination. In Pleiku Province in June 1966 the commander of Company C, 1/35th Infantry, prescribed specific routes for each of his three platoons on a search and destroy mission. The unit had had recent contact in the area, and the men were quick to fire. During the course of the operation one platoon became disoriented and strayed into the path of another platoon. The two platoons engaged in a fire fight that resulted in two men wounded in each platoon before the firing was stopped.

On 2 September 1969 Company A, 1/50th Infantry (Mech), made a combat assault ten kilometers north of LZ Sandy. On landing, the troops dispersed on the rice paddy dikes and almost at once received fire from the brush nearby and observed what they believed to be the enemy on the horizon to the east. Company A returned fire and then received fire from the wood line to the southeast in the general direction in which the "enemy" had been observed. The troops on the horizon to the east turned out to be friendly; fortunately, no casualties were caused in either unit.

In August 1970 the 1st and 2d Platoons of Company A, 1/7th Cavalry (1st Cavalry Division, Airmobile), conducted clearing operations. The two platoons inadvertently crossed paths and engaged in a five-minute fire fight, which resulted, surprisingly, in no casualties. One platoon's M-60 machine guns laid down a heavy and effective suppressive fire, which, although it fortunately did not hit anyone, did force the other platoon to the ground and limit their fire.

Such "coordinated" operations were even more hazardous when conducted at night and when the plan involved close cooperation between US and ARVN forces. Company A, 3/7th Infantry (199th Light Infantry Brigade), was on a night operation near a Vietnamese village in Long An Province in

August 1968 when fired upon by an ARVN security force. One US soldier was killed and several were wounded. The ARVN element was located on the edge of the village with the mission of security and ambush. The US company was moving to a pickup zone. The leading platoon leader of the US company was told by his company commander that the ARVN security force had been informed of the company's movement and that a strobe light displayed at a certain trail intersection would bring an ARVN soldier to the passage point and that he would guide the unit through the village. Fifteen meters from the passage point, the US platoon leader could hear the ARVN security force and see the guide. Suddenly the ARVN soldiers fired a flare and took Company A under fire. After some time, the leading platoon leader was able to establish direct voice communication with the ARVN security force and to have the firing stopped. The incident was the product of incomplete coordination on the part of the ARVN security force. Their US advisor had indeed informed the ARVN platoon leader of the US company's movement, but the latter had not passed the information on to the security squad that did the firing.

Neither the US nor the ARVN forces were immune from mistaken engagements during night operations. In early 1969 two US patrols, one of which was from Company B, 5th Transportation Battalion (101st Airborne Division), met and engaged in a fire fight at night outside the perimeter of Camp Eagle (Phu Bai). One American soldier was wounded. In the spring of the same year (1969) two Regional Force/Popular Force platoons were conducting a night operation in a contested area in Binh Tranh District, Dinh Tuong Province. The plan called for the two units to operate on opposite sides of a canal during the patrol, but mistakes were made, and the two platoons engaged each other in the dark. As was so often the case, one man was killed and one was wounded.

Conclusion

There is nothing at all mysterious about either the causes of ground amicicide or the measures necessary to prevent it. Incidents of friendly ground troops firing on one another are natural products of the fog of battle. In every war, inexperienced and nervous soldiers, poorly planned or inadequately coordinated operations, and occasionally poor fire discipline or true mistaken identification result in friendly forces inadvertently engaging each other with weapons ranging from rifles and hand grenades to tanks and antitank guns.

As was the case with air amicicide incidents, visibility seems to have been a significant factor in most incidents of ground amicicide (see table 5). Nearly half (twenty-seven) of the fifty-eight incidents examined in this study took place under conditions of reduced visibility, mostly during the hours of darkness. The natural increase of fear, misorientation, and nervousness during reduced visibility perhaps played as great a role as the inability to see and distinguish clearly other ground forces in the vicinity.

The type of tactical operation in progress at the time of an incident seems to have followed the dominant tactical employment in each conflict. In World War II most incidents (twenty-six out of thirty-four) took place during offensive operations in which the necessary fire and maneuver of forces against often strong enemy opposition made coordination and identification much more difficult. In Vietnam, on the other hand, most of the incidents identifiable as to type of operation (sixteen) occurred in defensive situations at night (seven) or during patrols (eight).

By far the most significant causative factor in all ground amicicide incidents appears to have been some lack of adequate coordination between units. In twenty-six of the fifty-eight incidents studied, lack of coordination was the primary cause. This was especially true of incidents that occurred in the Pacific during World War II (twelve out of sixteen) and in Vietnam (ten out of twenty), where the natural difficulties of coordination and accurate location of friendly forces were further complicated by difficult terrain. The misidentification of friendly for enemy troops was also a frequent cause. In fifteen of the fifty-eight incidents misidentification was the major factor, and it was an element in many of the incidents attributable mainly to faulty coordination as well. Proportionately, misidentification seems to have been a greater problem in Europe during World War II (twelve out of eighteen incidents) than in either the Pacific theater in World War II (none out of fifteen incidents) or in Vietnam (only two out of twenty incidents). The employment of green troops and lack of fire discipline and proper control of firing by leaders were also an important factor (eleven incidents).

The results of such incidents have always been killed and wounded soldiers, disrupted operations, and a general degradation of cohesion, morale, and combat power. The measures required to prevent them are also simple in concept if not so easy in achievement. Adequate training and battle indoctrination accompanied by tight fire discipline imposed by calm and capable leaders are essential. Operations must

be planned and thoroughly coordinated with detailed attention given to the possible occurrence of amicicidal engagement. Even the best planned operations conducted with well-seasoned troops will probably continue to result in occasional amicicide incidents, given the frightening and confusing atmosphere of the battlefield. While human error cannot be eliminated from war, its incidence and effects can be attenuated somewhat if due attention is given it by those charged with the lives of men and the fate of their nation.

TABLE 5

Ground Amicicide Incidents by Conditions of Visibility, Type of Operation, and Type of Error

A. Conditions of Visibility

Conflict	Visibility Normal	Visibility Reduced	Visibility Unknown	Total Incidents
WW II (Eur)	7	8	3	18
WW II (Pac)	8	5	3	16
Korean War	1	2	1	4
Vietnam War	2	12	6	20
	18 (31%)	27 (47%)	13 (22%)	58 (100%)

B. Type of Operation

Conflict	Defensive	Offensive	Patrol	Retrograde	Type Unknown	Total Incidents
WW II (Eur)	6	11		1		18
WW II (Pac)	1	15				16
Korean War	1	2		1		4
Vietnam War	7	1	8		4	20
	15 (26%)	29 (50%)	8 (14%)	2 (3%)	4 (7%)	58 (100%)

C. Type of Error

Conflict	Misident-ification	Green Troops/ Discipline	Coordination	Type Unknown	Total Incidents
WW II (Eur)	12	1	3	2	18
WW II (Pac)		4	12		16
Korean War	1	2	1		4
Vietnam War	2	4	10	4	20
	15 (26%)	11 (19%)	26 (45%)	6 (10%)	58 (100%)

5

CONCLUSIONS

Even the most cursory examination of the problem of amicicide in modern warfare is sufficient to suggest some conclusions regarding the causes, effects, and prevention of incidents in war involving the engagement of one friendly military force by another. We have examined in greater or lesser detail some 269 amicicide incidents of all types. Most were drawn from the record of the US Army in World War II, the last full-scale, global, high technology war to be fought. A few incidents of more recent occurrence have been identified and described from the personal recollections of participants in the Vietnam conflict. This study, limited though it has been by the time available for its preparation and the inadequacies of the available evidence, nevertheless permits some tentative conclusions to be drawn, and each incident, standing by itself, provides some insight into the problem of amicicide.

The incidents examined in this study suggest that in the past, incidents involving friendly aircraft mistakenly engaging friendly ground forces were, by a small margin, the most frequent type (99 out of 269 incidents, or roughly 37 percent). Attacks by friendly artillery on friendly ground forces were almost as common (98 out of 269 incidents, or roughly 36 percent). The engagement of friendly aircraft by friendly antiaircraft weapons proved to be a relatively minor problem (only 15 out of 269 incidents, or about 5 percent). A fair number of incidents involved the direct engagement of friendly ground troops by other friendly ground troops (58 out of 269, or 22 percent). Of the latter category, only three incidents were seen to involve the mistaken engagement of friendly tanks by other friendly tanks or antitank weapons. Given the obvious weaknesses of the sample, these proportions cannot be viewed as anything more than a rough approximation of the order of magnitude. They can, however, perhaps suggest the priority of efforts to reduce amicicide incidents.

The number of casualties in past wars attributable to friendly fire is impossible to determine with any accuracy from the available data. Our sample of 269 incidents involved a total of nearly 4,000 friendly casualties, with most incidents (81) involving fewer than 5 casualties per incident. It appears that amicicide incidents account for something less than 2 percent of all casualties in battle. American casualties in the Second World War were about 774,000. If 2 percent is a reasonably accurate estimate of the total casualties attributable to amicicide, then about 15,480 Americans, or the equivalent of one full infantry

division, fell victim to friendly fires in World War II. Similarly, out of 57,000 US casualties in Vietnam more than 1,100 could thus be counted as victims of amicicide.

Whether the loss, permanent or temporary, of 2 percent of the nation's military manpower in a given conflict is significant and thus demands an extraordinary application of resources to avoid is a question that must be answered at the highest policy levels. It should be noted, however, that the impact of amicicide on combat power is geometric, not linear. Each amicicide incident that results in friendly troops killed or wounded has an adverse effect on morale and confidence in supporting arms, disrupts the continuity of friendly operations, and represents one bomb, shell, or bullet that should have fallen on the enemy to reduce his combat power rather than our own.

In terms of the number of casualties produced, air amicicide incidents clearly predominate as the most destructive, both in total and per incident.[1] Artillery incidents are nearly as destructive in the aggregate but usually involve only small numbers of casualties per incident.[2] Although frequent, ground incidents are not often heavy casualty producers, even though they can significantly disrupt the flow of combat operations.[3] Antiaircraft amicicide is perhaps the least significant type, resulting only in rare incidents in more than a few casualties per incident.[4] Again, the relative priority for investigation and application of resources for prevention is suggested; that is, we would do well to concentrate our efforts on understanding and trying to prevent air and artillery amicicide first.

Some contributory factors were found in this brief study to be relatively insignificant. For example, the type of combat operation in progress when an amicicide incident occurred had little or no bearing on the occurrence. While it may be seen from the narrative that amicicide incidents were slightly more frequent during withdrawals and patrol actions, the pattern generally conforms to the dominant type of tactical operation in each conflict.

Visibility plays a role in some types of amicicide incidents and not in others. In cases of air and ground amicicide there appears to be a relatively high correlation between reduced visibility (night, fog, smoke) and the occurrence of incidents. On the other hand, visibility was apparently not a significant factor in cases of artillery or antiaircraft amicicide.

The evidence examined in this study points clearly to one factor as the primary cause of most amicicide incidents:

direct human error. Only rarely were such incidents due to mechanical failure, but in innumerable cases the incident resulted from some identifiable human failure. The nervousness of green troops, a lack of control or of fire discipline imposed by calm and decisive leaders, the lack of adequate coordination of operations by commanders and staff officers, and disorientation, confusion, and carelessness of pilots, gunners, or crewmen were the predominant causes of most incidents. Fear and the fog of battle have conspired to produce the amicicide incidents described in this study. Surprisingly few incidents can be traced to a genuine misidentification of friendly for enemy troops. Almost always a lack of coordination or some more direct human error was responsible for the engagement of friendly forces by their supporting air, ground, or artillery weapons.

Sometimes incidents resulted from human failures as simple as the inadvertent pushing of a button at the wrong time, the transposition of a series of numbers, or a mistake in arithmetic. On other occasions, the human failure was more complex in its origins, and commonly the fear and confusion so prevalent on the battlefield played a major role. As the author of a report on friendly fire casualties in Vietnam noted,

> They [amicicide incidents] also serve as a reminder that the battlefield is and always has been a strict and harsh disciplinarian. Those who have deviated from proven techniques, used "short cuts" because it was the "easy way out" or failed to follow directives and established procedures, have done so with disastrous results.[5]

Although the causes of amicicide incidents may be uncertain and hidden in the complex functioning of the human mind, the effects of such incidents are much more certain and patent. The first and most obvious effect is the unnecessary death and suffering of soldiers due to the actions of those dedicated to their support. Standing alone, the avoidance of such occurrences is a worthy goal. But amicicide also has a more subtle but very important impact on the overall conduct of military operations.

In general, the occurrence of even the most serious amicicide incidents seems to have had only a local and transient effect on the outcome of combat operations. Certainly, such incidents have delayed or even completely halted offen-

sive operations, disrupted and weakened defensive operations, and, on occasion, precipitated withdrawal and local defeats. The negative impact of amicicide on friendly combat power is, however, often more complex and subtle. Each incident contributes in some measure to the subtle degradation of combat power by lowering morale and confidence in supporting arms so necessary to the successful pursuance of modern combined arms operations. This effect is, as has been mentioned, geometric rather than linear. As expressed in the MACV study of Vietnam amicicide,

> The statistics and examples of incidents, although important, cannot and do not of themselves reveal the complete picture of the deplorable loss of life by fire from friendly sources. All service components are acutely aware of the seriousness of these incidents in terms of lowered effectiveness of the fighting forces, lessened rapport between US forces themselves and Vietnamese Nationals, and the unquestionable adverse effect on the overall military effort.[6]

The solutions and preventive measures required to reduce or eliminate incidents of amicicide on future battlefields are problematic. Given the clear preponderance of direct human error as the source of most amicicide incidents, it is manifest that preventive measures must be directed toward the correction or improvement of human frailties, and these, as always, are the factors least amenable to correction. The fear and confusion of the battlefield cannot be eliminated. Indeed they are likely to be even more prevalent on the battlefield of the future than they were on the battlefields of the past. The combat experience and steadiness born of the soldier's confidence in his cause, his weapons, his comrades, and himself can be gained in the end nowhere but on the field of battle itself. A vigorous study of past experience and the careful selection and rigorous training of soldiers under conditions closely approximating those of actual combat may prove of some value in reducing the incidence of amicicide, but in the last analysis the only truly effective solution is experience coupled with an unremitting attention to detail. Obviously, we cannot hope to eliminate amicicide as a problem in modern war, but direct and forceful attention to its human causes may bring some reduction of its incidence and effect.

Modern people, and especially Americans, have increasingly sought to overcome their most difficult problems,

particularly military problems, by the application of science and technology. While advanced technological devices may certainly be of significant value in reducing amicicide by better location and identification of friendly troops and equipment and by improved communication and coordination, they cannot provide a total solution to what is essentially a problem of human frailty.

Indeed, there is every reason to suspect that the advance of military technology has increased rather than reduced the problem of amicicide. As the use of technologically sophisticated weapons systems has increased, the limits of human ability to control such destructive forces have been approached. With respect to the problem of amicicide it may be suggested that the optimum point of matching the capabilities of men and machines may already have been passed and that the gap between the capabilities of machines and the human ability to control them adequately is increasing. The implications of this gap for amicicide in future war are clear: amicicide may be a greater problem on the future battlefield than ever before, both in terms of frequency and the number of casualties produced thereby.

The effective application of better selection and training or of modern technology to solve the problem of amicicide is dependent upon the degree to which amicicide is viewed as a problem of significant seriousness warranting the expenditures of resources to reduce its occurrence and the proper selection of areas in which such resources may be fruitfully employed. The conclusions suggested by this study are that the human factors responsible for the occurrence of amicicide incidents of all types should receive priority.

Regardless of the resources applied, the problem of amicicide cannot be eliminated by any means in the foreseeable future. Today, as in earlier times, the best intentions and efforts are insufficient to prevent the occurrence of amicicide, which remains a problem for all military forces right up to the present, as suggested by an article that appeared in the Kansas City Times on Wednesday, 2 January 1980:

> Confusion, fear and gunfire in the pre-dawn darkness of an ambush site produced Northern Ireland's first casualties of the decade Tuesday--a British squad leader and a private, killed by their own men.[7]

TABLE 6

Number of Casualties per Incident (All Types)

Number of Casualties	Number of Incidents				
	Air	Artillery	Ground	Antiaircraft	Total
0	12	2	4	4	22
1-5	19	25	14	1	59
6-10	8	12	5		25
11-15	1	5			6
16-20	4	5	1		10
21-25	2	2			4
26-30	1	1			2
31-35	1				1
36-40	2	1			3
41-45		1			1
46-50					
51-55	1	1			2
56-60		1			1
61-65					
66-70					
71-75			1		1
76-80	1				1
141-145	1				1
146-150		1			1
151-155					
156-170	2				2
236-240	1				1
316-320				1	1
396-400	1				1
601-605	1				1
TOTAL	58	57	25	6	146

NOTES

Introduction

1. For example, the FASTVAL tests conducted at Fort Hunter Liggett, California, between April and July 1979 pitted a reinforced tank company supported by A-10 aircraft and attack helicopters against an OPFOR tank battalion. All players were equipped with lasers and laser sensors, and artillery was played with all the inherent problems of accurate target location. Engagements of friendly forces as well as enemy forces were recorded and analyzed.

2. Operation COBRA is discussed in several studies. See Martin Blumenson, Breakout and Pursuit (Washington, DC, 1961), inter alia. For the Allied bombing of Switzerland see Jonathan E. Helmreich, "The Diplomacy of Apology: U.S. Bombings of Switzerland during World War II," Air University Review 28 (May-June 1977):19-37.

3. Translated from Alexandre Percin, Le Massacre de notre Infanterie, 1914-1918 (Paris, 1921).

4. Ibid., p. 10.

5. Courtlandt Dixon Barnes Bryan, Friendly Fire (New York, 1976).

6. US Army, Army Regulation 600-10, The Army Casualty System, 15 January 1976, with change 1, dated 15 September 1978.

7. The general problems of dealing with military medical statistics are well outlined in the preface and introduction to Gilbert Wheeler Beebe and Michael E. De Bakey, Battle Casualties: Incidence, Mortality, and Logistic Considerations (Springfield, IL: 1952), pp. xi-xii, 1-15. Beebe and De Bakey characterize such data as "inevitably crude and inexact."

8. 1st Lt. David W. Hart, "Casualty Reporting, July 1951-July 1953," typescript, Seoul, Korea, 6 April 1954, U.S. Army Center of Military History files, Washington, DC (hereafter cited as CMH).

9. Frank A. Reister, "Effects of Type of Operation and Tactical Action on Major Unit Casualty and Morbidity Experience--Korean War (Numbers and Rates of Killed, Wounded,

Disease and Non-Battle Injury for U.S. Army Divisions and Separate Regimental Combat Teams), 1950-1953" (Washington, DC, May 1969), table 18 (pp. 52-53), table 19 (pp. 54-55), CMH.

10. Ibid.

11. "Casualties-Number Incurred by U.S. Military Personnel--Hostile-Not Hostile, 1961-1975," typescript (n.p., n.d.), tables CAS 8.0, 9.0, 10.0, CMH.

12. Ibid., table CAS 9.0.

13. Percin, Le Massacre, pp. 10, 13-14.

14. Letter, Maj. Gen. Paul H. Streit (Commander, Walter Reed Army Hospital) to Maj. Gen. Raymond W. Bliss (The Surgeon General, Department of the Army), subject: Casualty Questionnaires, 23 August 1950, CMH.

Chapter 1. Artillery Amicicide

1. In the excellent World War I film, Paths of Glory, directed by Stanley Kubrick and starring Kirk Douglas, Adolphe Menjou, and Ralph Meeker, the commander of a French division scheduled for a particularly difficult assault matter-of-factly lists "5 percent to our own barrage" when enumerating the probable costs of the operation for the commander of the leading assault regiment. The angry reaction of the regimental commander in the film must be considered necessary to the dramatic progress of the story rather than as representative of actual reactions in a war in which such losses were all too common.

2. Percin, Le Massacre, passim.

3. Ibid., p. 10.

4. Ibid., pp. 13-14. The estimates of total casualties in the war vary. For consistency, I have used Percin's figure. Percin cites about 236 specific incidents of artillery amicicide among French forces. While an average of about 318 casualties per incident (75,000 ÷ 236) seems unreasonable, his estimation of the total number of casualties due to amicicide seems in accordance with what we know of the general conditions of artillery employment and is remarkably consistent with the evidence for other conflicts as explained above (ibid., p. 10).

5. John Ellis, Eye-Deep in Hell: Trench Warfare in World War I (New York, 1976), pp. 61-62.

6. Ibid., p. 61, quoting Sidney Rogerson of the 2d Battalion, West Yorkshire Regiment.

7. A summary review of the published official history of the North African campaign reveals only one incident. During the attack of the US 34th Infantry Division on Fondouk-el-Aouareb on 27 March 1943, American artillery struck two squads of the Intelligence and Reconnaissance Platoon of the 135th Infantry Regiment. The incident is described in George Frederick Howe, Northwest Africa: Seizing the Initiative in the West (1957; reprint ed., Washington, DC, 1970), p. 581.

8. The following account of the Monte Altuzzo incident is based entirely on the story of the battle contained in Charles Brown MacDonald and Sidney T. Mathews, Three Battles: Arnaville, Altuzzo, and Schmidt (1952; reprint ed., Washington, DC, 1974), pp. 169-216.

9. Blumenson, Breakout and Pursuit, p. 84.

10. Interview with Brig. Gen. James L. Collins, Jr., a former US Army Chief of Military History, who then commanded the 957th FA Battalion, 10 April 1980 at Fort Leavenworth, KS.

11. Robert L. Hewitt, The Workhorse of the Western Front: The Story of the 30th Infantry Division (Washington, DC, 1946), p. 32.

12. Ibid., p. 24. Before arriving on the Continent, the 30th Infantry Division artillerymen had sharpened their skills on the small and tricky ranges available in England with mixed success. On one occasion a stray round destroyed a wooden leg, leaving its owner otherwise untouched. Another (correctly placed) round hit a bull that had strayed into the impact area (ibid., p. 7).

13. Blumenson, Breakout and Pursuit, p. 243.

14. The detailed story of the battle of Schmidt and the amicicide incident as described here is contained in MacDonald and Mathews, Three Battles. I have followed closely MacDonald's account of the defense of Vossenack (pp. 352-54).

15. Charles Brown MacDonald, The Siegfried Line Campaign (1963; reprint ed., Washington, DC, 1970), p. 609.

16. Comment of Major General Barton on 8 August 1944, in US Army Ground Forces Observer Board (European Theater of Operations) (hereafter cited as AGFOB(ETO)), report no. 191, "Notes on Interviews with Various Commanders in Normandy during the period August 5th to 10th 1944," by Col. Charles H. Coates, 20 August 1944, p. 5, US Army Military History Institute, Carlisle Barracks, PA (hereafter cited as MHI).

17. MacDonald and Mathews, Three Battles, p. 25.

18. Ibid., pp. 25, 33.

19. Hugh Marshall Cole, The Ardennes: Battle of the Bulge (1965; reprint ed., Washington, DC, 1972), p. 106.

20. AGFOB(ETO), report no. 803, "Miscellaneous," by Col. James D. O'Brien, 7 April 1945, p. 1, MHI.

21. Ibid.

22. MacDonald, The Siegfried Line Campaign, pp. 270-71.

23. Cole, The Ardennes, p. 602.

24. "Report of the Commanding General, Buna Forces, on the Buna Campaign, December 1, 1942-January 25, 1943," (n.p., 1943), p. 54, Combined Arms Research Library, US Army Command and General Staff College, Fort Leavenworth, KS (hereafter cited as CARL).

25. Samuel Milner, Victory in Papua (1957; reprint ed., Washington, DC, 1971), p. 159.

26. Philip Axtell Crowl and Edmund G. Love, Seizure of the Gilberts and Marshalls (1955; reprint ed., Washington, DC, 1970), p. 251.

27. Robert Ross Smith, The Approach to the Philippines (1953; reprint ed., Washington, DC, 1971), pp. 339-40.

28. Robert Ross Smith, Triumph in the Philippines (1963; reprint ed., Washington, DC, 1973), p. 84.

29. Smith, The Approach to the Philippines, p. 199.

30. Ibid. It was later found that Maj. Ralph D. Burns's 1st Battalion, 124th Infantry, had not called for any artillery support and that the fire was apparently called for by artillery observers in towers along the coast who spotted the smoke from fires used by Burns's men to cook their breakfasts.

31. Crowl and Love, Seizure of the Gilberts and Marshalls, p. 363.

32. Ibid., p. 364.

33. The following accounts of Guam incidents are from Philip A. Crowl, Campaign in the Marianas (1960; reprint ed., Washington, DC, 1970), pp. 392-406.

34. Ibid., p. 406.

35. Edmund G. Love, The 27th Infantry Division in World War II (Washington, DC, 1949), p. 662.

36. Ibid., pp. 662-63.

37. Crowl, Campaign in the Marianas, p. 209.

38. US Army, 106th Infantry Regiment (27th Infantry Division), "Regimental Journal," 2 June 1944, entry 394, in "FORAGER Operations Report" (n.p., 1944), CARL. See also Crowl, Campaign in the Marianas, p. 209, and Love, The 27th Infantry Division, p. 662.

39. 106th Infantry Regiment, "Regimental Journal," 26 June 1944, entries 423, 428, 429, 430, 437, 451, 461, 463, 469; 27 June 1944, entries 510, 522, 567, CARL.

40. The story of the division's activity and the Company K mishap on Hill King on 29 June is told in Love, The 27th Infantry Division, pp. 332-33, and in Crowl, Campaign in the Marianas, p. 228. Not surprisingly, the 27th Infantry Division G-3 Periodic Report for the period 281600 June to 291600 June 1944 (in US Army, 27th Infantry Division, "Operational Report, 27th Infantry Division, Battle for Saipan, 17 June to 6 August 1944," CARL) is somewhat vague on this part of the day's events, consequently I have followed the account given in Love and in Crowl.

41. Love, The 27th Infantry Division, pp. 332-33.

42. Total 27th Infantry Division casualties for the period from 281300 June to 301300 June were 28 killed and 279 wounded, presumably including the men of Company K wounded by friendly artillery on Hill King. See 27th Infantry Division G-3 Periodic Reports for 281600-291600 June 1944 and 291600-301600 June 1944 in the division's "Operational Report," CARL.

43. 106th Infantry Regiment, "Regimental Journal," 3 July, entries at 1010 (no serial) and 0946; 4 July, entry at 0915 (no serial or time-in); 7 July, entry 1092, CARL.

44. Ibid., 30 June 1944, entry 739.

45. Crowl, Campaign in the Marianas, p. 238.

46. Love, The 27th Infantry Division, p. 289.

47. The following account was taken from the detailed story of the battle for Pork Chop Hill told by Samuel Lyman Atwood Marshall in his Pork Chop Hill: The American Fighting Man in Action, Korea, Spring, 1953 (New York, 1956), pp. 125-78.

48. The MACV Rules of Engagement are reproduced in David Ewing Ott, Field Artillery, 1954-1973 (Washington, DC, 1975), pp. 173-75.

49. Ibid., pp. 175-76.

50. Ibid.

51. Of 47 incidents identified, the type of error could be established in 34 cases. Of these, one was due to misidentification of friendly for enemy troops and four to mechanical problems of one type or another. The remaining 29 cases were all due to FDC/gun crew error (13), FO error (9), or lack of adequate coordination (7). See table 1. The results of a 1969 USARV study of artillery and mortar incidents and accidents (cited by Ott, Field Artillery, pp. 178-79) are given in table 2.

52. It should be noted that amicicide incidents of all types were perhaps more thoroughly reported and investigated in Vietnam than ever before (see Ott, Field Artillery, pp. 176-77). Aside from the now-famous incident that forms the background of C. D. B. Bryan's journalistic Friendly Fire and ten incidents described in official documents, the majority of the artillery amicicide cases noted in this study were identified through responses to a questionnaire circulated to the staff, faculty, and students of the US Army Command and General Staff College in January 1980. More than 100 responses were received, some detailing more than one incident. These incidents are not cited separately in the notes, thus all incidents in the text not identified as to source can be assumed to have been reported in the survey. The time available for verifying all the incidents reported in the survey has been short, therefore all incidents must be considered tentative as to unit involved, date, actual

casualties, and cause pending verification from official records. It might also be noted that although details are lacking, there were 29 artillery amicicide incidents reported in the XXIV Corps area between 1 February and 30 April 1970. These resulted in 40 killed and 112 wounded, both military and civilian. See US Army, XXIV Corps, "Operational Report--Lessons Learned, Headquarters, XXIV Corps, Period Ending 30 April 1970 (RCS CSFOR-65 (R2))," 23 May 1970, p. 34, Defense Technical Information Center, Defense Logistics Agency, Cameron Station, VA (DTIC).

53. An experienced infantry officer who served as a battalion S-3 in Vietnam related to the author that it was his common practice (and that of others) to accept up to 5 percent friendly casualties from friendly artillery in the assault before lifting or shifting fires. The rationale, of course, is that it is preferable to suffer 5 percent casualties from one's own fire plus 5 percent from the enemy than to permit the enemy, through lack of adequate suppression, to inflict 15 percent casualties on the attacking force.

54. AGFOB(ETO), report no. 157, "Notes on Interviews with Various Infantry Commanders in Normandy, France, 6 June-8 July 1944," by Col. Charles H. Coates, 5 August 1944, p. 7, MHI.

55. Bernard William Rogers, Cedar Falls-Junction City: A Turning Point (Washington, DC, 1974), p. 116.

56. Bryan, Friendly Fire, passim.

57. Ibid., pp. 337-38.

58. The following Vietnam accounts were taken from US Military Assistance Command, Viet Nam (MACJ343), Viet Nam Lessons Learned No. 70: Friendly Casualties from Friendly Fires, 17 October 1968, pp. 9-12 (hereafter cited as VNLL#70).

59. This incident reported in VNLL#70 was confirmed to me independently by a friend who served in the 25th Infantry Division artillery at the time of the incident.

60. Letter, US Department of the Army, the Adjutant General (AGAM-P(M)), Subject: Special Operational Report-Lessons Learned, Casualties from Own Fires, 8 January 1968, CMH.

61. Bryan, Friendly Fire, pp. 372-73.

62. This and the following accounts were taken from VNLL#70, pp. 5-13.

63. Visibility does not appear to have been a significant factor. In nearly one half of the total incidents the visibility was unknown or uncertain. Of the remaining 54 cases, the difference between incidents occurring during conditions of reduced (night, smoke, fog) visibility (25) and normal (daylight) visibility (29) cannot be considered significant. Such incidents did appear to occur more frequently during periods of reduced visibility in Vietnam (11:2) but one must consider that the tactical conditions of the Vietnam conflict generally resulted in increased artillery activity at night, specifically the firing of close defensive fires. With respect to the type of tactical operation (defense, attack, retrograde, or patrol) the data appear equally insignificant. Of the 98 incidents, the type of tactical operation could not be determined from the available data in 24 cases. Of the remaining 74 incidents more than half (39) occurred during offensive operations by friendly troops, 27 occurred during defensive operations, 3 during withdrawals, and 5 during patroling actions. When the World War II and Korea/Vietnam cases are considered separately, however, a pattern emerges. In World War II, 34 incidents took place during offensive operations as against only 8 during defensive combat. The situation is reversed in the case of Korea/Vietnam: 19 incidents during defensive operations and 5 during offensive operations. What is reflected here is the predominant tactical mode in each conflict rather than any decisive influence of type of operation on the occurrence of artillery amicicide.

64. The type of error to which an incident of artillery amicicide could be attributed was extremely uncertain. In 35 cases the cause was unknown. In only three cases (two in World War II and one in Vietnam) could the cause be identified as misidentification of friendly for enemy troops. Incidents due to mechanical problems were few (5). Errors due to direct human error predominated. The largest number of incidents (32) was due to lack of adequate coordination. Fire direction center (5), FO (9), and gun crew errors (9) were also important. All of the latter incidents occurred in Vietnam. Many such errors, however, are probably concealed under the general heading of lack of coordination in the World War II figures.

Chapter 2. Air Amicicide

1. Operation COBRA in Normandy, 25 July 1944. See the detailed discussion below.

2. "Saipan Operational Report, 295th Joint Assault Signal Company," in "Operational Report, 27th Infantry Division, Battle for Saipan," p. 21, CARL.

3. Letter, Advanced Allied Expeditionary Air Force (Adv. AEAF/24241), Headquarters, Subject: Air Support of the Attack on the Cherbourg Peninsula, June 22, 1944, 20 July 1944, p. 4, CARL (hereafter cited as Letter, AAEAF/24241).

4. Sir Edward Louis Spears, Liaison 1914: A Narrative of the Great Retreat (London, 1930), pp. 299-300.

5. Wesley Frank Craven and James Lea Cate, eds., The Army Air Forces in World War II, vol. II, Europe: TORCH to POINT BLANK, August 1942 to December 1943 (Chicago, 1949), pp. 29, 38.

6. Howe, Northwest Africa, p. 162.

7. US Army Ground Forces, "Observer's Report," by Col. Thomas J. Heavey, 19 February 1943, p. 23, CARL (hereafter cited as USAGF, "Observer's Report").

8. US Army, 701st Tank Destroyer Battalion, "North African Campaign Diary: "B" Co., 701st TD Bn and 2nd Plt., Recon Co., 701st TD Bn," typescript (n.p., 1943), p. 8, MHI.

9. Howe, Northwest Africa, p. 398.

10. Craven and Cate, Army Air Forces, II:193.

11. The following account was taken from Albert N. Garland and Howard McGaw Smyth, assisted by Martin Blumenson, Sicily and the Surrender of Italy (1965; reprint ed., Washington, DC, 1970), pp. 194-95.

12. The following account was taken from that provided in Garland and Smyth, Sicily, p. 403.

13. AGFOB(ETO), report no. 51, "Visit to 2d Armored Division (Major General E. H. Brooks, Commanding) at Tidworth Barracks, Wiltshire, England, 10-12 April 1944," by Col. Robert O. Montgomery, 18 April 1944, pp. 4-5, MHI.

14. Craven and Cate, Army Air Forces, II:486.

15. Martin Blumenson, Salerno to Cassino (Washington, DC, 1969), p. 441; James W. Walters, "Artillery and Air Support of Ground Attack, Cassino--1944," Military Review 26 (January 1947):54.

16. Blumenson, Salerno to Cassino, p. 441; James A. Huston, "Tactical Use of Air Power in World War II: The Army Experience," Military Review 32 (July 1952):41.

17. Blumenson, Salerno to Cassino, p. 441; Huston, "Tactical Use of Air Power," p. 40.

18. For General Clark's remarks see Blumenson, Salerno to Cassino, p. 441. The report of the commander of the 6th New Zealand Brigade is quoted by Walters in "Artillery and Air Support," p. 58.

19. Ibid.; Craven and Cate, Army Air Forces, vol. III, Europe: ARGUMENT to V-E Day, January 1944 to May 1945 (Chicago, 1951), p. 367 and n. 124, p. 849.

20. Of particular interest is the US Army Air Forces Evaluation Board in the European Theater of Operations, The Effectiveness of Third Phase Tactical Air Operations in the European Theater, 5 May 1944-8 May 1945 (Orlando Army Air Base, FL, 20 August 1945), CARL (hereafter cited as Third Phase Tactical Air Operations), which contains more than 400 pages of detailed information on all tactical (close air support) operations in the ETO. This very important study can be supplemented for various specific operations by more general histories: Blumenson, Breakout and Pursuit (particularly on Operation COBRA), and Helmreich, "The Diplomacy of Apology," pp. 19-37.

21. Helmreich, "The Diplomacy of Apology," p. 20.

22. Ibid., pp. 20-29.

23. Ibid., p. 31; Craven and Cate, Army Air Forces, III:735-36.

24. Helmreich, "The Diplomacy of Apology," p. 31 and n. 47, p. 36.

25. Ibid., pp. 34-35.

26. MacDonald, The Siegfried Line Campaign, p. 260 and n. 20; Craven and Cate, Army Air Forces, III:615.

27. Both incidents are examined in detail using the pertinent official records by Royce L. Thompson in "Malmedy, Belgium Mistaken Bombing, 23 and 25 December 1944," typescript, 5 June 1952, CMH. I have followed Thompson's excellent reconstruction of the events.

28. Cole, The Ardennes, p. 377.

29. Blumenson, Breakout and Pursuit, p. 208.

30. Letter, AAEAF/24241, p. 1, CARL.

31. Ibid., p. 2. The Germans also complicated matters by firing smoke shells over Allied positions to confuse Allied pilots. See Craven and Cate, Army Air Forces, III:200.

32. Ibid.

33. AGFOB(ETO), report no. 157, p. 11, MHI.

34. Ibid., p. 8.

35. Letter, AAEAF/24241, p. 3, CARL.

36. AGFOB(ETO), report no. 191, p. 5, MHI.

37. Letter, AAEAF/24241, p. 5, CARL. For additional information on OBOE and other radio/radar marking systems see Craven and Cate, Army Air Forces, III:17.

38. Third Phase Tactical Air Operations, p. 85.

39. Blumenson, Breakout and Pursuit, pp. 220-22.

40. Third Phase Tactical Air Operations, pp. 85-86.

41. Ibid., p. 86. See also Blumenson, Breakout and Pursuit, pp. 220-21.

42. Blumenson, Breakout and Pursuit, pp. 228-29; Third Phase Tactical Air Operations, p. 86.

43. Third Phase Tactical Air Operations, p. 91.

44. Blumenson, Breakout and Pursuit, p. 229 and n. 11.

45. Ibid.; Third Phase Tactical Air Operations, p. 91; Craven and Cate, Army Air Forces, III:230. The bomber was from the 2d Bombardment Division. The airfield was being used by the US Ninth Air Force.

46. Blumenson, Breakout and Pursuit, p. 229; Third Phase Tactical Air Operations, p. 91. Blumenson states that sixteen heavy bombers were involved, and Third Phase Tactical Air Operations mentions only twelve and does not indicate that the strike hit the 30th Infantry Division. In general I

have followed Blumenson's account throughout inasmuch as his work was conducted later with the benefit of better materials.

47. Third Phase Tactical Air Operations, p. 91.

48. Blumenson, Breakout and Pursuit, p. 229; Hewitt in Workhorse of the Western Front, p. 36, gives 24 killed and 128 wounded. Craven and Cate (Army Air Forces, III:230) put the 30th Infantry Division casualties at 16 killed and 64 wounded. The US Army, 30th Infantry Division, "After Battle Report," July 1944, pp. 18-19, CARL (hereafter cited as 30th Infantry Division ABR), lists the following casualties from friendly air attacks on 24 July:

a. 120th Infantry and 3/117th Infantry (at 1145; vicinity 451679): 18 killed, 76 wounded;

b. 117th Infantry (-): 8 wounded;

c. 119th Infantry (at 1146; vicinity 3d Battalion, 455674; from 3 bombs dropped by 2 P-47s): 4 killed, 33 wounded;

d. 743d Tank Bn: 1 wounded;

e. 823d Tank Destroyer Bn (bombed): no casualties;

f. 197th FA Bn: 1 killed, 3 wounded;

g. 105th Engineer Bn (by P-47s, vicinity 460680): 7 wounded;

h. Total Casualties: 24 killed, 128 wounded.

49. Hewitt, Workhorse of the Western Front, p. 36.

50. The following accounts of these incidents were taken from Blumenson, Breakout and Pursuit, pp. 235-36; Third Phase Tactical Air Operations, p. 91; and Craven and Cate, Army Air Forces, III:234.

51. Blumenson, Breakout and Pursuit, pp. 236-37; Third Phase Tactical Air Operations, pp. 91-92; Hewitt, Workhorse of the Western Front, p. 36.

52. Hewitt, Workhorse of the Western Front, p. 37.

53. Interview with Brig. Gen. James L. Collins, Jr. The 957th was hit by air strikes thirteen times in Europe. Seven of those attacks were by friendly aircraft.

54. Hewitt, Workhorse of the Western Front, p. 37. Hewitt's figures are the same as those in 30th Infantry Division ABR, July 1944, pp. 19-20, CARL. Blumenson, Breakout and Pursuit, p. 236 and n. 32, gives the number of men killed in the 30th Infantry Division as sixty-one.

55. Blumenson, Breakout and Pursuit, p. 236 and n. 32. The total casualties for the two days would thus be about 757 men killed and wounded. The figures vary. For instance, the most commonly mentioned figure is 101 killed and 463 wounded for both days (Third Phase Tactical Air Operations, p. 91), computed by Eighth Air Force in May 1945. Craven and Cate (Army Air Forces, III:234) give the losses on 25 July as 102 killed and 380 wounded for a two-day total of 562 casualties. Blumenson is more likely to be correct.

56. Third Phase Tactical Air Operations, p. 92; Blumenson, Breakout and Pursuit, pp. 238-41.

57. Third Phase Tactical Air Operations, p. 85.

58. Blumenson, Breakout and Pursuit, p. 236.

59. Third Phase Tactical Air Operations, p. 32.

60. Ibid., p. 96; Blumenson, Breakout and Pursuit, p. 480.

61. Third Phase Tactical Air Operations, pp. 96, 99.

62. Blumenson, Breakout and Pursuit, p. 510.

63. Third Phase Tactical Air Operations, p. 118.

64. Craven and Cate, Army Air Forces, III:xix.

65. Blumenson, Breakout and Pursuit, p. 115; Craven and Cate, Army Air Forces, III:206. The engagement with the 823d Tank Destroyer Battalion is described in chap. 4.

66. "Employment of 2d Armored Division in Operation COBRA, 25 July-1 August 1944," by Committee 3 (Student research report, The Armored School, Fort Knox, KY, May 1950), p. 21, CARL.

67. Blumenson, Breakout and Pursuit, p. 299.

68. Hewitt, Workhorse of the Western Front, pp. 59, 61.

69. Craven and Cate, Army Air Forces, III:255.

70. The following account of the air support for Operation CISCO is taken in its entirety from MacDonald, The Siegfried Line Campaign, pp. 252-60.

71. The details of the following account of the Operation QUEEN breakthrough attempt were taken from Third Phase

Tactical Air Operations, pp. 28, 173, 413; MacDonald, The Siegfried Line Campaign, pp. 403-6, 412-13, and n. 12.

72. MacDonald and Mathews, Three Battles, pp. 272, 274.

73. MacDonald, The Siegfried Line Campaign, p. 348; and MacDonald and Mathews, Three Battles, pp. 272, 274.

74. MacDonald and Mathews, Three Battles, pp. 385, 386.

75. MacDonald, The Siegfried Line Campaign, p. 424.

76. The following accounts of the Grandménil and Battle of the Bulge incidents were taken from Cole, The Ardennes, pp. 592, 441, 474, and n. 8.

77. MacDonald, The Siegfried Line Campaign, p. 382. In some areas close coordination proved almost impossible. One such area was the Balkans, where the US Fifteenth Air Force faced severe problems in getting the suspicious Russians to cooperate. Some minor improvements were made after a flight of P-38s strafed a Red Army march column near Nis, Yugoslavia, in November 1944, destroying twenty vehicles and killing six men, including a Russian lieutenant general. See Craven and Cate, Army Air Forces, III:749.

78. MacDonald, The Siegfried Line Campaign, p. 381.

79. Milner, Victory in Papua, p. 108.

80. Ibid.; Craven and Cate, Army Air Forces, vol. IV, The Pacific: Guadalcanal to Saipan, August 1942 to July 1944 (Chicago, 1950), p. 13; Robert L. Eichelberger, Our Jungle Road to Tokyo (New York, 1950), p. 67.

81. Craven and Cate, Army Air Forces, IV:13.

82. Ibid., IV:348.

83. Ibid., IV:126.

84. Milner, Victory in Papua, pp. 284-85. General Eichelberger noted in Our Jungle Road to Tokyo (p. 40) that more than a dozen casualties were caused by a stick of American bombs which fell on one company of the 127th Infantry on its first day in the line at Buna.

85. Craven and Cate, Army Air Forces, IV:123. Even the generals were not immune. General Eichelberger and the Australian General Blamey were strafed twice within minutes

near Buna by two different American aircraft. Three men were wounded in the last attack. Eichelberger, Our Jungle Road to Tokyo, p. 40.

86. Craven and Cate, Army Air Forces, IV:385.

87. Crowl and Love, Seizure of the Gilberts and Marshalls, p. 135.

88. Craven and Cate, Army Air Forces, IV:231-32; Robert Lee Sherrod, History of Marine Corps Aviation in World War II (1952; reprint ed., San Rafael, CA, 1980), p. 151. It was during the New Georgia Campaign that the Marine Corps began to develop more effective methods for controlling close air support. Ibid., p. 150.

89. Crowl and Love, Seizure of the Gilberts and Marshalls, p. 111.

90. Craven and Cate, Army Air Forces, IV:566.

91. US Army, 27th Infantry Division, "Saipan Operational Report, 295th Joint Assault Signal Company," in "Operational Report," 24 October 1944, p. 20, CARL.

92. This account of Garapan and the following accounts of Guam were taken from Crowl, Campaign in the Marianas, pp. 227, 345, 357, 407, 374, 427, 425.

93. Smith, Triumph in the Philippines, p. 183.

94. Craven and Cate, Army Air Forces, vol. V, The Pacific: MATTERHORN to Nagasaki, June 1944 to August 1945 (Chicago, 1953), p. 442.

95. Smith, Triumph in the Philippines, p. 236 and n. 56.

96. Ibid., p. 198; Craven and Cate, Army Air Forces, V:442.

97. Smith, Triumph in the Philippines, p. 236. The official Air Forces history (Craven and Cate, Army Air Forces, V:442 and nn. 76-81, pp. 805-6) admits only five air amicicide incidents during the Luzon Campaign: two involving Fifth Air Force planes strafing Sixth Army troops; one caused by the accidental jettisoning of a bomb on a Navy LSM by a Marine Corps SBD off Damortis; a bombing by twenty-three B-24s west of Fort Stotsenburg on 22 February 1945, which caused no casualties; and a strafing by Navy SBDs on positions held by the 1st Cavalry Division on 11 February.

98. Smith, Triumph in the Philippines, pp. 235-36. In April 1945 the 24th Infantry Division suffered 32 casualties on Mindanao when their positions were mistakenly bombed by Marine aircraft. Sherrod, Marine Corps Aviation, p. 321. On Okinawa Marine aircraft flew more than 10,000 sorties with only 10 reported incidents of amicicide involving 66 casualties. General Geiger himself was forced into a ditch on the Motobu Peninsula in April 1945 when he was strafed by an American plane. Ibid., pp. 409-10.

99. Craven and Cate, Army Air Forces, V:442.

100. Ibid., V:438-39.

101. Ibid., V:442 and n. 77, p. 806.

102. Of twenty-two incidents of air amicicide in Vietnam considered in this study only one could not be identified as to primary cause. Seven of the incidents involved a direct pilot error, either in navigation, orientation to the ground and target, physical manipulation, or observance of marking aids. Ten incidents involved problems of coordination or accurate location of the positions of friendly ground troops known to be in the target area. Only two incidents resulted from purely mechanical problems and there were only two incidents attributable to mistaking friendly for enemy troops. Of seven incidents in which it was possible to determine unambiguously the existing visibility conditions, six occurred in conditions of reduced visibility. Twenty of the incidents produced 327 casualties, or 16.35 casualties per incident. Unless otherwise noted all incidents described in this section were identified in the survey conducted at Fort Leavenworth in January 1980.

103. The details of this incident and most of the following accounts of other Vietnam incidents were taken from VNLL#70, pp. 14-22, except for the personal account of the A Shau Valley incident provided to the author by Lt. Col L. D. F. Frasché at Carlisle Barracks, PA, February 1980.

104. Anthony A. Bezreh, "Interim Report on Injuries Resulting From Hostile Actions Against Army Aircrew Members in Flight (July 1966-June 1967)," typescript, n.d., CMH.

Chapter 3. Antiaircraft Amicicide

1. The following account was taken from Howe, Northwest Africa, pp. 467-68.

2. USAGF, "Observer's Report," p. 28, CARL.

3. Garland and Smyth, Sicily, p. 175. Garland and Smyth give a detailed account of the ill-fated HUSKY 2 airborne operation, pp. 175-85. The following description is based entirely on their material except insofar as is noted.

4. Ibid., p. 180.

5. Ibid., p. 184.

6. Ibid., p. 184.

7. Ibid., p. 218.

8. Craven and Cate, Army Air Forces, II:454.

9. Garland and Smyth, Sicily, p. 218.

10. Craven and Cate, Army Air Forces, II:454.

11. Garland and Smyth, Sicily, p. 218.

12. Craven and Cate, Army Air Forces, II:455; Garland and Smyth, Sicily, pp. 423-25.

13. Craven and Cate, Army Air Forces, II:455.

14. Ibid., pp. 455-56; Garland and Smyth, Sicily, pp. 423-25.

15. AGFOB(ETO), report no. 51, p. 3, MHI.

16. Garland and Smyth, Sicily, p. 195. A similar case occurred on 15 August 1944 over Laval, France, when a fighter from the VIII Fighter Command was shot down while attempting to strafe the headquarters of the US Third Army and XIX Tactical Air Command. See Craven and Cate, Army Air Forces, III:255.

17. US Army Ground Forces Observer Board (Southwest Pacific Area), report no. 27, 19 January 1944, Inclosure 2, "Memorandum for G-3 HQ ALAMO Force from AA Section," 15 January 1944, pp. 2, 7, MHI (hereafter cited as AGFOB(SWPA), report no. 27). The cause stated for the erroneous downing of the P-47 was "too little training."

18. Craven and Cate, Army Air Forces, IV:340-41.

19. Ibid.; AGFOB(SWPA), report no. 27, p. 7, MHI.

20. Craven and Cate, Army Air Forces, IV:341.

21. AGFOB(SWPA), report no. 27, p. 7.

22. Craven and Cate, Army Air Forces, IV:341.

23. AGFOB(SWPA), report no. 27, p. 7, MHI. The B-24 later showed IFF.

24. Craven and Cate, Army Air Forces, IV:344.

25. Ibid.

26. AGFOB(SWPA), report no. 27, p. 7, MHI.

27. Craven and Cate, Army Air Forces, IV:345. The following accounts of 27 and 28 May 1944 were taken from IV:635-37.

Chapter 4. Ground Amicicide

1. This incident is not included in the tabulation of ground amicicide incidents found in table 4.

2. Charles Edwin Woodrow Bean, The Australian Imperial Force in France During the Main German Offensive, 1918 (Sydney, 1937), p. 585.

3. Garland and Smyth, Sicily, pp. 179, 181.

4. Ibid., p. 181, n. 15.

5. Ibid.

6. See above, pp. 67-68.

7. Information provided by Lt. Gen. DeWitt C. Smith, USA-Retired, former Commandant, US Army War College, who served in the 4th Armored Division at the time.

8. Hewitt, Workhorse of the Western Front, p. 22. The following account of the operations of the 30th Division in the Vire River crossing is based on Hewitt; chaps. V and VI of Blumenson, Breakout and Pursuit; and the journals, reports, and other documents of the 30th Infantry Division and its subordinate units in "AGO, World War II Operations Reports, 1940-1948," boxes 8732, 8792, 23847, 23849, 23911, Record Group 407, National Archives, Washington, DC (hereafter cited as AGOWWIIORs).

9. HQ, US Army Ground Forces, Memorandum for the Commanding General, Army Ground Forces, Subject: "Report on Operations of XIX Corps in Normandy and Comments based upon Interviews and Personal Observations," by Lt. Col. H. W. Johnson and Lt. Col. W. S. Renshaw, 2 August 1944, p. 7, CARL.

10. Blumenson, Breakout and Pursuit, p. 109; Hewitt, Workhorse of the Western Front, p. 28.

11. Summary of telephone conversation between Major General Hobbs (Commanding General, 30th Infantry Division) and Colonel Maguire (XIX Corps Headquarters), 2100 hours, 8 July 1944, entry 53A, 9 July 1944, in US Army, 30th Infantry Division, "G3 Journal Files," Box 8792, AGOWWIIORs.

12. Hewitt, Workhorse of the Western Front, p. 28.

13. In a telephone conversation with Colonel Maguire (XIX Corps Headquarters) Major General Hobbs accused Brig. Gen. John J. Bohn, the CCB commander, of having "not turned a track in 95% of his vehicles all day long" and of "sitting on his fanny all day, doing nothing," and attempted to resolve the confused artillery situation. Summary of telephone conversation between 30th Infantry Division, "G3 Journal Files," AGOWWIIORs.

14. Blumenson, Breakout and Pursuit, p. 109.

15. Summary of telephone conversation between Major General Hobbs and Major General Watson, 2045 hours, 8 July 1944, entry on 9 July 1944, 30th Infantry Division, "G3 Journal Files," AGOWWIIORs.

16. Summary of telephone conversation between Major General Hobbs and Colonel Ellis (CRACKER 5), 2112 hours, 8 July 1944, entry 53A, 9 July 1944, 30th Infantry Division, "G3 Journal Files," AGOWWIIORs.

17. The details of the following account of the Airel bridgehead incidents were taken from Blumenson, Breakout and Pursuit, pp. 110-14, 116; and Hewitt, Workhorse of the Western Front, pp. 28, 29, 274.

18. Despite the fact that elements of CCB did reach Hauts-Vents by 1700 on 9 July, Major General Hobbs did relieve Brigadier General Bohn five hours later (Blumenson, p. 116).

19. Hewitt, Workhorse of the Western Front, p. 274.

20. US Army, 823d Tank Destroyer Battalion, TD Weekly Operational Report no. 3 (090800 July 44-160800 July 44), 16 July 1944, entry no. 12, 16 July 1944, "Journal Files," Box 23847, AGOWWIIORs.

21. The following account of the amicicide incident at the St. Jean de Daye crossroads is based primarily on the sworn depositions of 823d TD Battalion personnel present. These statements are included in the report of the officer appointed to investigate the incident, Maj. Ashby I. Lohse, S-3, 823d TD Bn. Major Lohse's report, dated 10 July 1944, is included as entry no. 14, 10 July 1944, 823d TD Bn, "Journal Files," Box 23849, AGOWWIIORs (hereafter cited as "Lohse Investigation"). Blumenson briefly describes the incident in Breakout and Pursuit (pp. 114-15), using the Lohse investigation materials and the CCB, 3d Armored Division, journal files, which I have not seen. Hewitt (Workhorse of the Western Front, p. 29) completely confuses the incident, making it a fight between a column of tanks from CCA, 3d Armored Division, and friendly antiaircraft guns.

22. Sworn statement of Lieutenant McInnis, 10 July 1944, "Lohse Investigation."

23. Ibid.

24. Sworn statements of Lieutenant McInnis and Sergeant Nunn, 10 July 1944, "Lohse Investigation."

25. Ibid.

26. Sworn statement of Sergeant Hanna, 10 July 1944, "Lohse Investigation."

27. Sworn statement of Lieutenant Connors, 10 July 1944, "Lohse Investigation."

28. Sworn statements of Lieutenant Connors and Sergeant Chustz, 10 July 1944, "Lohse Investigation."

29. Sworn statement of Lieutenant Raney, 10 July 1944, "Lohse Investigation." Lieutenant Raney played a key role in later actions of the 823d TD Bn, particularly in the hard-fought defense of Mortain in early August.

30. 823d TD Bn Weekly Operational Report no. 3, AGOWWIIORs.

31. Statement of Investigating Officer, 10 July 1944, "Lohse Investigation"; Blumenson, Breakout and Pursuit, p. 115; 823d TD Bn Weekly Operational Report no. 3, AGOWWIIORs. The

"Daily Estimated Loss Report as of 2400, 9 July 1944," entry no. 2, 10 July 1944, 30th Infantry Division, "G1 Journal Files," AGOWWIIORs, shows 9 July casualties for the 823d TD Bn as 1 killed, 11 wounded, and 12 missing; for CCB, 3d Armored Division (attached) as 5 killed and 28 wounded. The exact personnel losses for the two units in this amicicide incident are difficult to determine. Blumenson (Breakout and Pursuit, p. 115) states that the two units together had 10 casualties. A review of the Lohse Investigation statements puts 823d TD Bn casualties at 1 killed (Pfc. Jacobs) and 3 wounded (counting Sgt. Nunn but not Sgt. Hanna). That would leave six casualties (or two tank crews) for the CCB company, not all of whom were killed, if the G-1 loss report for 9 July is correct.

32. Unit Report no. 15 (082200 July 44-092200 July 44), 092230 July 1944, entry no. 4, 9 July 1944, 823d TD Bn, "Journal Files," Box 23849, AGOWWIIORs.

33. Statement of Investigating Officer, 10 July 1944, "Lohse Investigation."

34. Blumenson, p. 115.

35. Ibid., pp. 115, 117.

36. Summary of telephone conversation between Lieutenant General Corlett and Major General Hobbs, 2100 hours, 9 July 1944, entry on 9 July 1944, 30th Infantry Division, "G3 Journal Files," AGOWWIIORs.

37. Entries 29 (at 0710 hours) and 59 (at 1300 hours), 10 July 1944, 30th Infantry Division, "G3 Journal Files," AGOWWIIORs.

38. Blumenson, Breakout and Pursuit, p. 164.

39. Notice of this incident was provided to the author indirectly by Lt. Gen. DeWitt C. Smith, USA-Retired, former Commandant, US Army War College, who was assigned to the 4th Armored Division at the time. The commander of the US XII Corps, Maj. Gen. Manton Eddy, noted a similar incident in his diary for 8 November 1944. The members of a tank battalion attached to the US 26th Infantry Division near Arracourt got into a shooting match among themselves and knocked out five of their own tanks and wounded the battalion commander (Manton S. Eddy, "Activities of General Eddy," entry for 8 November 1944).

40. AGFOB(ETO), report no. 120, "Employment of Tanks with Infantry," 2 September 1944, p. 7, MHI.

41. "The 10th US Armored Division in the Saar-Moselle Triangle," by Committee 15, (Student research report, The Armored School, Fort Knox, KY, May 1949), pp. 35-36 (hereafter cited as "Saar-Moselle Triangle"); Hugh M. Cole, The Lorraine Campaign (1950; reprint ed., Washington, DC, 1970), p. 493.

42. "Saar-Moselle Triangle," p. 36.

43. The following incidents are described in Cole, The Ardennes: Berdorf, p. 247; Holzthum, p. 185; Rocherath, p. 112; Osweiler, p. 251, Schoenberg, pp. 168, 170; the German 293. Regiment, p. 418; 9th Armored Infantry Battalion, p. 633.

44. The only other recorded incident is that involving the two tank battalions of the 4th Armored Division in the night assembly area near Avranches in July 1944. See above, p. 159.

45. "Armor in the Night Attack," by Committee 21 (Student research report, The Armored School, Fort Knox, KY, June 1950), p. 4; Hewitt, Workhorse of the Western Front, p. 228.

46. The plan as given in "Armor in the Night Attack," (p. 12) is certainly incorrect, substituting the 2d for the 1st Battalion and vice versa. The maps (figures 1-3) are even more misleading. The plan described in "Armor in the Night Attack" would have required the 2d and 3d Battalions to attack simultaneously across each other's paths. Hewitt (Workhorse of the Western Front, p. 228) apparently gives the correct (or at any rate, more reasonable) dispositions, the principle of difficilior lectio potior not withstanding.

47. "Armor in the Night Attack," pp. 11-12.

48. Hewitt, Workhorse of the Western Front, p. 228; "Armor in the Night Attack," p. 14.

49. "Armor in the Night Attack," pp. 14-15 (based on the "After Action Report" of the 743d Tank Battalion for February 1945, p. 19).

50. "Report of the Commanding General, Buna Forces, on the Buna Campaign, December 1, 1942-January 25, 1943," p. 70, CARL.

51. Ibid. General Eichelberger himself nearly became the victim of such uncontrolled nighttime firing during the

infamous "Battle of Brinkman's Plantation" at Hollandia. A platoon from the 24th Infantry Division was detailed to guard Eichelberger's CP, and from about 2200 until the following morning the trigger-happy platoon "carried on a terrific war," resulting in several friendly casualties. At dawn General Eichelberger dismissed the errant platoon, stating he would feel safer if guarded by the Japanese army. Coincidentally, the same platoon was again assigned to guard Eichelberger's CP on Biak several weeks later and despite a real Japanese presence did not fire at all that night. Eichelberger, Our Jungle Road to Tokyo, pp. 115-16.

52. AGFOB(SWPA), report no. 32, by Col. Horace O. Cushman, 25 February 1944, p. 6, MHI.

53. The story of the Kiska invasion is told by Brian Wynne Garfield in The Thousand Mile War: World War II in Alaska and the Aleutians (New York, 1969), pp. 334-35. Four of the dead and four of the wounded were Canadians of the 13th Canadian Infantry Brigade. US units involved included the 87th Mountain Infantry Regiment, the 184th Infantry Regiment, and elements of the 17th and 53d Infantry Regiments.

54. Ibid., p. 334.

55. Ibid., p. 335.

56. US War Department, Infantry Combat: Part One, Eddekhila, and Part Two, Attu (n.d.; reprint ed., Fort Benning, GA: US Army Infantry School, ca. 1944), pp. 14-15.

57. The details of the following accounts of the incidents of November 1943 and February 1944 were taken from Crowl and Love, Seizure of the Gilberts and Marshalls, pp. 42, 42-43, 96, 108, 109-10, 316, 265.

58. Craven and Cate, Army Air Forces, V:517.

59. See above, pp. 12-14.

60. 106th Infantry Regiment, "Regimental Journal," 3 July 1944, entry 946, CARL.

61. 106th Infantry Regiment, "FORAGER Operations Report," p. 10, CARL.

62. The following Pacific incidents are described in Crowl, Campaign in the Marianas: 22d Marines, p. 369; roadblock on the Finegayan Road, pp. 402-3; Salisbury Road, pp. 433-34; 77th Infantry Division, p. 434.

63. Ibid., p. 434. The 306th Infantry reported casualties of eleven killed and twenty-four wounded on 8 August, many of which were due to friendly fire from both the Marines and the 307th Infantry. Earlier in the day the 3/306th had been fired on accidentally by tanks with the 307th Infantry (ibid., p. 432).

64. Streit to Bliss, p. 6, and questionnaire form on McCoy, CMH. The letter transmits to The Surgeon General a questionnaire filled out on (and by) each of the first 100 men evacuated from Korea. Private McCoy was awarded the Purple Heart Medal.

65. Ibid., pp. 2, 6, and questionnaire on Yoder. Pfc. Yoder was also awarded the Purple Heart Medal.

66. Ibid., p. 2.

67. The story of the 29th Brigade's defense of the Imjin River line is in T. R. Fehrenbach, This Kind of War (New York, 1963), pp. 449-57. I have followed closely Fehrenbach's account of the encounter between the Gloster survivors and the US armor unit (pp. 456-57).

68. The whole story of the battle for Pork Chop Hill is told by S. L. A. Marshall in Pork Chop Hill. The amicicide incident involving Companies K and L is on pp. 151, 177.

69. Ibid., p. 151.

70. Information provided by a respondent to the friendly fire incidents survey conducted at the US Army Command and General Staff College in January 1980.

71. All information on ground amicicide incidents in Vietnam, unless otherwise identified, is derived from the friendly fire incidents survey conducted at the US Army Command and General Staff College.

72. Rogers, Cedar Falls-Junction City: A Turning Point, p. 112.

Chapter 5. Conclusions

1. In 58 of the 99 air incidents the actual number of casualties could be determined. These 58 incidents resulted in a total of 2,616 casualties (killed or wounded). Most incidents (31) resulted in fewer than 5 casualties per

incident, but in 5 incidents the total was more than 140, including the St. Lô bombings of 24-25 July 1944, in which the total casualty count was more than 757. See table 6, Air column.

2. In 57 of the 98 artillery incidents the actual number of casualties could be determined. These 57 incidents resulted in a total of 722 casualties. Again, almost half of the incidents (27) involved fewer than 5 casualties per incident and only one resulted in more than 60 casualties (this incident involved 150 casualties). See table 6, Artillery column.

3. In 25 of the 58 ground incidents the actual number of casualties could be determined. These 25 incidents resulted in a total of 147 casualties. Once again most incidents (18) involved fewer than 5 casualties per incident, and only one resulted in more than 20 casualties (this incident involved 74 casualties). See table 6, Ground column.

4. In 6 of the 15 antiaircraft incidents the actual number of casualties could be determined. These 6 incidents resulted in a total of 320 casualties, but in two-thirds (4) of the incidents no casualties resulted, and in one other incident there was one casualty. The figures for antiaircraft incidents are thus greatly skewed by the 319 casualties of the Sicilian airborne operation (HUSKY 2). See table 6, Antiaircraft column.

5. VNLL#70, p. 4.

6. Ibid., p. 3.

7. The Kansas City Times, Wednesday, 2 January 1980, p. A9. The Washington Post, Sunday, 4 July 1982, p. A17, also carried reports from British war correspondents in the Falkland Islands of two amicicide incidents during the short war between Britain and Argentina. On 21 May 1982 at least four British Royal Marine commandos were injured when one Royal Marine commando patrol called in mortar fire on another patrol in the mistaken belief that it was Argentinian. In the second incident two men were killed by friendly small arms fire when a Special Boat Squadron patrol and a Special Air Service patrol attacked each other at night. The same article reported a total of 256 British fatalities from fighting in the Falklands.

GLOSSARY

AAEAF: Advanced Allied Expeditionary Air Force
AO: area of operations
APC: armored personnel carrier
ARVN: Army Republic of Vietnam
CBU: cluster bomb unit
CCA: Combat Command A
CCB: Combat Command B
CIDG: Civilian Irregular Defense Group
CP: command post
CTZ: corps tactical zone
DT: defensive target
ETO: European Theater of Operations
FAC: forward area controller
FDC: fire direction center
FDO: fire direction officer
FO: forward observer
FSB: fire support base
FSE: fire support element
H and I: harassment and interdiction
HE: high explosive
HHC: headquarters and headquarters company
I CTZ: I Corps Tactical Zone
IFF: identification, friend/foe (radar)
KATUSA: Korean augmentation to United States Army
KIA: killed in action
LCI: landing craft, infantry
LCM: landing craft, medium
LFT: light fire team
LNO/FSCOORD: liaison officer/fire support coordinator
LP: listening post
LST: landing ship, tank
LZ: landing zone
MACV: Military Assistance Command Vietnam
NCO: noncommissioned officer
NDP: night defensive position
NVA: North Vietnamese Army
OBOE: a radar bombing system
OPCON: operational control
OPFOR: opposing force
OT: observer-target (line)
PF: Popular Force
PZ: pickup zone
RAF: Royal Air Force
RCAF: Royal Canadian Air Force
RF/PF: Regional Force/Popular Force
SOP: standing operating procedure
TAC: tactical air command
TAF: tactical air force
TD: tank destroyer
TF: task force
TOC: tactical operations center
USMC: United States Marine Corps
VNAF: Vietnamese Air Force
VT: variable time fuze
WIA: wounded in action
WP: white phosphorous

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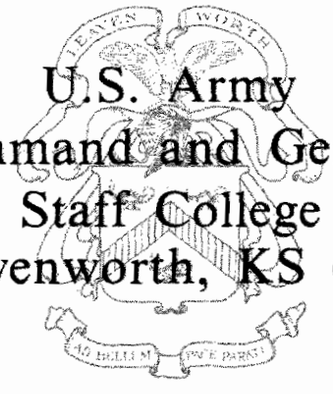

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