

AD-779 850

SOME ALLIED AND GERMAN CASUALTY
RATES IN THE EUROPEAN THEATER OF
OPERATIONS

Leonard Wainstein

Institute for Defense Analyses

Prepared for :

Weapon Systems Evaluation Group

December 1973

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5285 Port Royal Road, Springfield Va. 22151

UNCLASSIFIED

Security Classification

AD 779 850

DOCUMENT CONTROL DATA - R & D		
<i>(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)</i>		
1. ORIGINATING ACTIVITY (Corporate author) INSTITUTE FOR DEFENSE ANALYSES PROGRAM ANALYSIS DIVISION 400 Army-Navy Drive, Arlington, Virginia 22202		2a. REPORT SECURITY CLASSIFICATION Unclassified
3. REPORT TITLE Some Allied and German Casualty Rates in the European Theater of Operations		2b. GROUP
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Final		
5. AUTHOR(S) (First name, middle initial, last name) Leonard Wainstein		
6. REPORT DATE December 1973	7a. TOTAL NO OF PAGES 69	7b. NO OF REFS 40
8a. CONTRACT OR GRANT NO. DAHC15 73 C 0200	8b. ORIGINATOR'S REPORT NUMBER(S) P-989	
b. PROJECT NO. c. Task Order T-177 d.	8c. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
10. DISTRIBUTION STATEMENT Approved for public release; distribution unlimited.		
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY WEAPONS SYSTEMS EVALUATION GROUP
13. ABSTRACT Historical research is aimed at gaining some new insights into relationships which might exist among the key simulation elements of force ratios, casualties, and rates of advance. This paper has two objectives. It examines U.S. and German casualties and casualty rates in the European Theater in 1944-45 with prime emphasis on the Normandy-Northern France campaign of June-September 1944. The second objective is to describe the methodological problems likely to be encountered in any effort to glean comparative statistics from the records of the Second World War which may be applicable to future war in Europe.		
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DD FORM 1 NOV 65 1473

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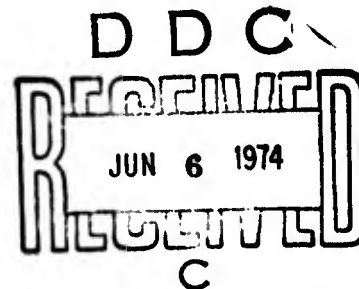
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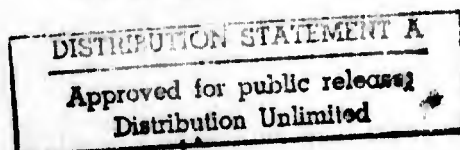
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INSTITUTE FOR DEFENSE ANALYSES
PROGRAM ANALYSIS DIVISION
400 Army-Navy Drive, Arlington, Virginia 22202

Contract DAHC15 73 C 0200
Task Order T-177



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PREFACE

The use of history as a source of combat statistics that might be usable or transferable by transmutation to model-building would appear to be elementary common sense. Nevertheless, while it is generally agreed that more historical research should be done in support of model-building, it should also be recognized that this approach does not offer endless possibilities. There are both data and methodology limitations. It is not merely a question of the adequacy of current or past efforts at the mining of history for combat statistics. There is probably a limit to what can be expected from this approach in terms of two-sided comparative statistics.

It is a common misconception that the historical record of World War II holds more statistical data within it than it actually does. Mr. Noble Frankland, of the Imperial War Museum, the renowned British historian and author of several of the official U.K. military histories of the Second World War, has taken a circumspect view in regard to what the historical record in general contains. In a paper delivered in June 1971, he stated:

I do not believe that the art of history is scientific in the sense of being exact. I believe that the bulk of evidence about the past perishes as it is deposited. I believe that it is as impossible to recreate the past as it is to bring a dead man back to life. I believe that all that is possible for the historian is the discovery of a small amount of evidence about the past, most of which has perished forever. I think historical interpretations are likely to be right more because the instinct of the historian is right than because he has assembled and proved his case in the scientific meaning of those words.¹

¹ Paper entitled "Research and Archival Problems in the British Official History," delivered at the conference sponsored (continued on next page)

For the model-builder, searching the past for precise inputs to his model, such a caveat must be kept in mind.

Purpose of the Study

This historical research has been aimed at gaining some new historically based insights into any relationships which might exist among the key simulation elements of force ratios, casualties, and rates of advance. The focus of effort has been on actions at the division level.

This paper has two objectives, one substantive and the other methodological. The first objective, the substantive one, is to examine U.S. and German casualties and casualty rates in the European theater in 1944-45, with prime emphasis on the Normandy-Northern France campaign of June-September 1944. It was thought that this 90-day campaign, pitting two high-quality forces against each other, might provide some interesting parallels, in terms of combat intensity, to the casualty rates a NATO-Warsaw Pact conventional war might produce in the same length of time.

It was not expected that precise ratios would emerge in any neat two-sided form. In fact, no two-sided sets of statistics were found, so that the objective was to present broad relationships only. From the data that were located, some potentially useful statistical relationships have been derived.

The first and most important objective was to retrieve as many "undoctored" numbers as possible, especially in regard to both specific German losses and rate of losses, numbers that were straight from the historical record and were neither (1) derived from an analyst's judgment nor (2) fleshed out by use of tables of organization. All too many of the combat statistics produced in past simulation research efforts have come essentially from these latter two sources.

(cont'd) by the American Committee on the History of the Second World War and the National Archives and Records Service, in Washington, D.C., June 1971.

Since only English language sources could be used, it was necessary to rely upon sources that were themselves drawn from the German records or that had been translated. Also, after the research had begun, it became apparent that the campaign was one for which German documentation was particularly poor, especially as far as statistics were concerned. Consequently, generalizations offered in this paper about the overall availability of German data may not apply to all campaigns.

U.S. statistics, on the other hand, could be derived and, therefore, have been presented in much greater depth. In both U.S. and German cases, examples have been drawn from several campaigns of the war in order to provide greater perspective.

The secondary objective of the paper is to describe in some detail the methodological problems encountered in an effort to mine the records of World War II for comparative U.S.-German combat statistics. Since the idea of two-sided statistical comparisons holds a perennial appeal for model-builders, it is well that future researchers should be fully aware of the nature of what faces them. This material is presented in Chapter I. Chapter II provides the data on German casualty rates, and Chapter III provides the data on American casualty rates.

Chapter I

METHODOLOGICAL PROBLEMS IN WORLD WAR II COMBAT STATISTICS RESEARCH

There are several major methodological problems encountered in any effort to develop two-sided statistics from the Second World War, which should be made clear before any findings are presented.

The Second World War against Germany seems to have been the source of most of the base data used in major models of the last 20 years. It has been preferred over the war against Japan or the Korean War for several good reasons: it involved major conventional operations against a competent Western enemy over terrain the defense of which remains a key U.S. strategic interest; the two sides were generally well matched in terms of quality of equipment; and the enemy records became available at the end of hostilities.

Thus there would appear at first glance to be a rich body of data fit for analogy. Experience, however, soon shows the limits of this lode, and a consequent tendency appears in research efforts. Because research into comparative combat statistics is time consuming and expensive, there develops a natural reluctance to accept the generally incomplete nature of the record. Instead, the temptation is to complete the picture by "filling in the holes," mostly commonly by personal judgment or, in the case of firepower scores, by reliance on type tables of organization and equipment. This may produce a nicely balanced set of comparative statistics, but these are not history per se. Qualified, such work has a general guidance utility; but all too easily the qualification can drop off with time, and a tentative piece of work can become enshrined as basic truth.¹

¹For an excellent example of this phenomenon, the transmutation of rates-of-advance tables, see another paper of this project: Leonard Wainstein, IDA P-991, "An Examination of the Parsons and Hulse Papers on Rates of Advance."

A. LIMITATIONS IMPOSED BY HISTORICAL TIME AND SCALE

A major aspect of the problem lies in the issue of the relevance of the historical approach itself. Examination of modern European-type battle at the division (or, for that matter, almost any) level faces methodological constraints imposed by time and scale that are too easily brushed aside by model-builders.

Some interesting writings in the model-building field have appeared which examined pre-20th-century combat for statistical relationships applicable to 20th-century ground warfare. However, such analyses for such purposes must be viewed with considerable skepticism, since there may be a limit to how far back in time one may go to find statistics that are still relevant to a future war in Europe. There has been a major difference in the character of 20th-century warfare (as it was fought in Western Europe) from what preceded it, and older statistical relationships, even when available and genuine, may have very limited, if any, applicability to the present.

To be sure, the nature of pre-20th-century European combat better permits statistical analysis. Gross figures for forces involved are generally known; support elements were fewer, and the ratio of combat to noncombat troops was much greater. Armies (or major portions of them) fought as distinct entities within a fixed environment. Forces were smaller and more definable; there were no "fronts" as such. A battle between two specific forces was a clash between two discernible aggregations of force with an identifiable beginning and end, the time interval being relatively short. Battles were distinct within time and space.

Since the First World War, in contrast, European battles have involved very large forces fighting for extended periods in fixed "lines" (as in the First World War) or on "fronts" with FEBAs (Forward Edges of Battle Area) such as marked the Second World War. All forces involved are not usually in contact at one time. Consequently, analysis of divisional or corps--or even army--actions in a major campaign is essentially a dissection of a larger battle. The analyst, in effect,

abstracts a portion of the action from the overall matrix of battle and examines it. The conclusions drawn therefrom must necessarily be constrained.

This matter of scale causes model-builders much difficulty in attempting to determine the value of collateral forces (those forces not directly engaged in, but adjacent to, the action, whose presence has, to some greater or lesser degree, an impact on the battles being examined). Should, for example, reserves be counted in for force-ratio determination or forces which launch diversionary actions apart from the main attack? Also, when the support tail of American and Western European divisions has grown to such proportions and the combat power of the unit has come to rely to such an extent upon the support elements, at what point can one validly separate the combat from the noncombat elements? Then, how much of the latter should be counted in a force ratio? In short, there is a real problem of "counting" in modern battle, a problem of the determination of actual numbers for the purpose of establishing force ratios, even if records provide statistics.

The numerical totality of forces in modern war on one side or the other is really misleading. There were many men in 20th-century European battles, but few of them were actually in combat. Even the total of combat troops alone cannot tell the student what proportion of those were in actual contact with the enemy. What counts most is the force ratio at the actual point of attack, but these are the very numbers which are most often lacking in the historical record.

Even success or failure has become harder to determine in modern battle. Clear-cut decisions, especially as far as subunits go, are much rarer when battle is essentially a continuum, where previously one side generally clearly withdrew or was broken and routed. The constant attack-counterattack rhythm of modern battle often makes it difficult to determine in any particular action who is really on the offensive and who on the defensive. Action is continuous over large fronts, varying in intensity from point of contact to point of contact.

Actions tend to rise in intensity and then taper off only to rise again, often making the specific beginning and terminal points of a particular battle difficult to determine.

In addition, the problem arises of describing success in a battle. Must a unit achieve all its designated objectives in order to claim success? What proportion of achievement constitutes success? An operation must be measured by the casualties it inflicts on the enemy as well as on the ground gained, and also by the effects it may have elsewhere beyond the specific combat area being examined. In the case on which this paper focuses, that of Normandy-Northern France, the costly British attacks south and southeast of Caen in July 1944 were at best only partially successful in terms of their specific objectives; but they did succeed in both tying down the German panzer divisions and using them up, so that no fresh German divisions were available when the Allied breakout occurred. On the very broadest scale, the purpose of the whole British Twenty-First Army Group operations at that time was to draw the German strength away from the American front, where the main breakthrough attack was to be launched.

Similarly, the persistent American attacks in the bocage country in June-July 1944, while mostly expensive partial successes, stretched German defense lines, used up their reserves, and compelled them to commit their available armor piecemeal in a defensive role.

Admittedly, this sort of distinction can be an ex post facto rationalization. The difference, nevertheless, between a local tactical defeat and a strategic success can sometimes be blurred when forces engaged are very large.

A key issue raised by these thoughts, then, is the feasibility of meaningful comparative statistical analysis of engagements at division or lower level. Perhaps comparative analysis is more meaningful statistically at corps level or above. After all, as already pointed out, the earlier pre-20th-century battles invariably are analyzed in terms of whole armies.

B. RESEARCH INTO GERMAN HISTORICAL SOURCES

The experience of others strongly suggested the advisability of concentrating first on German data, since this would determine what U.S. data should be sought. However, in order to set guidelines on the types of data to be sought, U.S. and German statistics were examined concurrently. As expected, the equivalence of data as a major problem appeared immediately.

Any research effort aimed at developing usable and equivalent comparative statistics for German and U.S. Allied forces encounters three methodological barriers: (1) the existence or nonexistence of numerical data; (2) the incompatibility of military counting systems, Allied and German; (3) the difference between T/O (Table of Organization) numbers and actual numbers at any particular period of interest, especially in the German case. The first, of course, is the determining factor, while the second and third can seriously limit any effort to extrapolate from any data found. Each of these points will be discussed below. First, however, it may be helpful briefly to describe the nature of German research sources, since it is the quality of these which governs the success or failure of research into comparative statistics.

1. Major German Sources

There are three major sources for German military data available in the United States:

a. Microfilm of Actual Records

Some 20,000 rolls of microfilm were taken of the captured German military records before they were returned to the Federal Republic during the 1960s. The film archive comprises about 75 percent of the German records. Unfortunately, in the portion not microfilmed were the quartermaster and personnel records, which presumably would include the sorts of combat statistics needed by model-builders. The records preserved here were, generally, selected on the basis of

their interest to historians (rather than statisticians) and were primarily concerned with strategy, tactics, and intelligence. The archivists at the National Archives in charge of captured documents feel that the records here contain, for their bulk, relatively few combat statistics and these occur with no regularity. These micro-films were not used for this study.

There is, of course, no assurance that more complete records do indeed exist in the original archives in Bonn. The destruction of the German Army in the West inevitably included many of the combat records (especially for divisions). In his bibliographic note, the official U.S. historian of the Normandy-Northern France campaigns states that "few, if any, division war diaries survived the war."¹

It may be that other campaigns are better covered in the micro-film--the Italian campaign, for example. Both the Historical Evaluation and Research Organization and the Vertex Corporation claim to have found statistical data on Italy and the Ardennes, respectively.

b. Foreign Military Studies (FMS) Series - German Authorship

The Foreign Military Studies Series comprises over 4,000 documents, completed between 1945 and 1956. The program was begun immediately after the war with detailed interrogations of senior German officers. The purpose of the program was to record the German conduct of the war, as reflected in personal impressions of leading participants, before memories faded. Within a short while, the German participants were being asked to prepare monographs or respond to detailed questionnaires on some particular issue or period. The program run by the Historical Division of the European Command, relied heavily upon the German participants to manage the effort.

Originally the program concerned the European Theater of Operations exclusively, but later it was expanded to cover the Mediterranean Theater of Operations and the Eastern Front.

¹Martin Blumenson (OCMH), The United States Army in World War II, Breakout and Pursuit (Washington, D. C.: Dept of the Army, 1961).

The writers were not historians. They viewed events in terms of their own experience. While this circumstance imposed obvious limitations on the accuracy of the output, especially as the years passed after the surrender, the participants were, nevertheless, able to supply information not otherwise available and, in large degree, quite unique in the annals of military history. As more ambitious monographs were requested in a later period, the authors were provided with whatever documentary material was available as a basis upon which to put down their own recollections and analyses.

The very nature of the studies, drawn almost completely from personal memories, obviated the likelihood that many combat statistics would be included. As will be seen, such combat statistics as do appear are very few and spotty.

About 75 percent of the total series were translated, the rest remaining in German. Of the 25 percent still in German, many are lengthy monographs, so that there still remain thousands of pages unavailable to the non-German speaking researcher. (For example, a study of OB West, the German Theater Command in France/Low Countries, by Von Runstedt and other top German commanders, alone runs to some 500 pages.)

c. Office of the Chief of Military History (OCMH), Foreign Military Studies Series - U.S. Authorship

A third source is a series of monographs prepared by OCMH in the late 1940s and early 1950s, drawn from the German records, and designed to provide back-up for specific volumes of the OCMH series on the U.S. Army in World War II. The studies, by historians, are essentially histories of the German operations (rather than recollections, as in the FMS Series). Combat statistics appear only infrequently, reflecting not only the focus of the papers (and the OCMH histories themselves) but also, possibly, the state of the German records in terms of statistics. The studies concerning Normandy-Northern France are eight in number.

2. Problems: The Existence or Nonexistence of Numerical Data

The researcher into combat statistics initially appears to be confronted by a simple choice of approaches. He can attempt a superficial view of many engagements, relying upon easily accessible sources and hoping to gain thereby both perspective and the sufficiently broad statistical basis necessary for a sound sample. Or he can concentrate on a few battles and delve into less accessible sources of data, hoping that greater amounts of data may compensate for the reduced size of his sample.

In fact, of course, in either case he will face the problem of data availability. On the one hand, easily accessible data usually contain few statistics and are often imprecise. On the other hand, in the alternative approach he has no assurance that intensive research will yield much more comprehensive or appropriate data than will a more superficial effort. It is not a question of the data being there and the problem one of finding it. It should be recognized in this form of historical research that much of what we would like to know is irretrievably gone. No amount of research will find it.

The use of judgment, which is then customarily substituted for fact, is usually defended on the grounds that the result is "better than nothing." It is well to remember, however, that an uncritical reliance on such a product may indeed be worse than nothing, since it may suggest a degree of authenticity that can lead to totally unwarranted assumptions and extrapolations. Once committed to paper, the qualifications that may be attached to "judgmental numbers" all too often fade with time and the numbers become accepted as cold fact.

Of course, the problem of data availability is not unique to German records alone. There are some astonishing inadequacies even in Allied combat data, which put into better perspective the adequacy of German combat statistics. For example, the official Canadian history says of that most famous day, 6 June 1944:

It is out of the question to state with accuracy the losses suffered by the British, US, and Canadian divisions which made the attack; for the three countries, only Canada has prepared post war casualty figures on the basis of individual records.¹

American unit records themselves are extremely spotty--some very complete, others unexpectedly deficient. There is no way of learning this without actually working in the records.

3. The Incompatibility of Counting Systems

A basic methodological problem in using or extrapolating from German statistics was described by one of the OCMH historians seeking comparative statistical data as back-up for Blumenson's volume on Normandy, Breakout and Pursuit:

Records of German strength are fragmentary reports and it is always difficult to arrive at accurate estimates of the strength of German units in a specific action. The most complete records reported the effective combat strength rather than the T/O strength. US strength reports include organic service troops. German strength reports reflect effective combat strength. Comparison of our own and enemy figures therefore gives an inaccurate picture. A valid comparison can only be made by applying the German measuring stick to American units.

No such study was ever made to compute the strength of US units committed to action in 1944, applying the German or a similar measure.²

A similar comment is found in the official Canadian history of operations in Italy:

Yet to determine the actual number of opponents that each side was containing on any given date is extremely difficult, for not only is there a dearth of statistics from

¹C. P. Stacey, Official History of the Canadian Army in the Second World War, Vol. III: The Victory Campaign: Operations in Northwest Europe, 1944-45 (Ottawa: Queens Printer, 1960), p. 119.

²OCMH, MS-R72, James B. Hodgson, "Counting Combat Noses" (September 1954). The quote is from an undated memo inserted into the document, which, from its context, would appear to date from around 1950.

enemy sources but such as have become available from captured documents were not rendered in a form which permits an exact comparison with Allied strength returns.¹

Allied forces were generally counted on a full personnel basis, strength figures representing all personnel in the particular unit. However, even here anomalies occur. The Canadian source quoted immediately above states that in April 1944 the British Eighth Army in Italy reported its strength in terms of a "fighting state" of 190,000 men, while the U.S. Fifth Army reported an "effective strength" of 360,000. What is apparent here is that even Allied reporting methods did not always follow a standard pattern.

By the Spring of 1944, the Germans had begun to ignore assigned or ration strength as a basis of counting. Instead, they called for reports of "effective combat strength," "combat efficiency," and "critical armament." Combat effectives were defined by the Army High Command as those individuals whose normal place of duty was at the command posts of the infantry regiments or forward. It was not that simple a definition, however. The term comprised that portion of a unit directly engaged in fighting, among whom casualties most frequently occurred. The category omitted personnel on leave, convalescence, or detached duty; those back with the division trains (cooks, mechanics, clerks, supply personnel); and all drivers, except those of serviceable combat vehicles. The category comprehended all personnel up front, including medical personnel and messengers. Basically, this involved infantry companies, reconnaissance units, heavy weapons, and anti-tank companies, as well as staff members of artillery battalions. Ammunition carriers also counted, as did men manning operational tanks and staffing tank battalions. Only engineers in the infantry companies, in tank destroyer units, or those in firing positions or observation posts were included.

¹G. W. Nicholson, Official History of the Canadian Army in the Second World War, Vol. II: The Canadians in Italy, 1943-45 (Ottawa: Queens Printer, 1956).

The personnel included as combat effective were those on whom the tactical fate of an operation rested. They were definitely separated from those whose primary duty was logistics support but who were generally immune to artillery fire fights.

Yet the term was very flexible and counted actual duty at any particular time. If cooks and drivers were pressed into action, they then too became "combat effectives."¹

However, to compound the confusion even further, it should be noted that even the Germans apparently did not adhere rigidly to this counting method. Many references to unit strengths in the Foreign Military Studies Series are in terms of "battalions" or just "men."

Weekly strength reports to division headquarters were made on a battalion basis and, because of the extreme flexibility/ambiguity of the system of counting, battalion commanders reported with a large margin of error, as much perhaps as 30 percent (OCMH, MS-R72).

There was a code for reporting battalion combat strength:

- "Strong": over 400 combat effectives
- "Medium-strong": over 300 combat effectives
- "Average": over 200 combat effectives
- "Weak": over 100 combat effectives
- "Exhausted": less than 100 combat effectives.

For "critical armament" only operational tanks and guns were reported (OCMH, MS-R49).

4. German T/O and Actual Strength

The researcher must also contend with the large variety of types of German divisions in Western Europe in 1944:

- (1) The old triangular division of nine battalions plus supporting arms numbered 16,000 at full T/O, of which 12,000 were counted normally as combat effectives.

¹OCMH, MS-R49, James B. Hodgson, "The Germans in Normandy, 1 July 1944" (April 1954). Also OCMH, MS-R72.

- (2) The new-type division of six battalions had 10,000 men at full T/O, of which 7,000 were combat effectives.
- (3) Static divisions (8,000) were of widely varying strength. Each was supposed to field a battle group of regimental size, but the divisions were poor substitutes for regular infantry divisions.
- (4) Panzer divisions (8,000 combat effectives, total strength about 14,750).
- (5) SS Panzer divisions (9,500 combat effectives, total strength up to 20,000). Elite units.
- (6) Parachute divisions of 17,000 (14,000 combat effectives). Elite units.
- (7) Motorized (Panzer Grenadier) divisions. Resembling the panzer divisions, they had four or six infantry battalions, depending on whether they were Army or SS divisions. They contained no tanks but had an assault gun battalion of 45 guns on tank chassis. Strength was at T/O about 14,750.
- (8) Luftwaffe field divisions (12,500) and weaker in firepower than the regular infantry division.

It should be stressed that no two German infantry divisions in the West in the Spring of 1944 were alike. The variations among armored divisions was even greater.

Once combat had begun, battle groups were often formed, these having no fixed form or strength, but being created for a specific purpose from whatever forces were at hand.

The OCMH historian of Operation Overlord summarized the German tank situation on D Day in this fashion:

To meet the invasion OB West had 6 Army and 3 SS Panzer divisions. Their strength and organization varied so widely that it is impossible to talk of a type. Personnel strength of the Army divisions ranged from 12,768 (9th Panzer) to 16,466 (2nd Panzer). The SS divisions which had six instead of four infantry battalions varied from 17,590 (9th SS Panzer) to 21,386 (1st Panzer). All panzer divisions were larger than their US counterparts, the 1st SS Panzer being more than twice as large. On the other hand, they had fewer tanks. Here again individual variations were enormous.¹

¹G. A. Harrison (OCMH), The United States Army in World War II, European Theater of Operations, Cross Channel Attack (Washington, D.C., 1951), p. 240.

The armored divisions, according to the U.K. official history (History of the Second World War, United Kingdom Military Series), had complements of tanks ranging in number from 90 to 200.¹

It would be difficult to compare German and U.S. divisions on a T/O basis, because of the combat-effective counting system and the wide variation in T/O. The problem is accentuated when, after combat has begun, even the widely varying German T/Os cease to be meaningful.

On 10 July, the 77th Infantry Division had "1850 men," the 353rd Division "1250 men," and the 243rd Division "700 men." The German source does not specify whether these represented combat-effective or total divisional strength, but either way it shows the degree of degradation suffered.²

A list prepared by the Germans showing actual strengths of the divisions available in the West on 1 September 1944 will indicate the ratio between actual strength and T/O strength during extended combat:

- 3 infantry divisions each of 10,000
- 2 infantry divisions each of 9,000
- 1 infantry division of 8,000
- 3 infantry divisions each of 7,000
- 1 infantry division of 6,500
- 2 infantry divisions each of 6,000
- 3 infantry divisions each of 5,000
- 5 infantry divisions each of 4,000
- 13 infantry divisions each of 3,000
- 3 infantry divisions each of 2,000

The list reveals that, even if the T/O of the relatively weak Volksgrenadier Division (11,197) be taken as a basis for comparison, two-thirds of the total number of infantry divisions in the West at that time had less than half their T/O strength.

¹L. F. Ellis, Victory in the West, Vol. I: The Battle of Normandy (London: HMSO, 1962).

²FMS, MS-B763, Genalt. Pemsel, "The Seventh Army in the Battle of Normandy and the Fighting Up to Avranches (6 June-29 July 1944)" (March 1946).

For armored divisions with a regular T/O of between 14,750 and 20,000, the situation on 1 September 1944 was as follows:

1 armored division	- 15,000
1 armored division	- 9,000
2 armored divisions	- 8,000
1 armored division	- 6,000
1 armored division	- 4,000

Only one division was at full strength, the next smaller being 40 percent below strength, while the others were almost 50, 60, and 66-2/3 percent under strength.¹

This source does not state whether the figures refer to combat effectives or to total divisional strength. From their magnitude, it may be assumed that they are in terms of total divisional strength. This may reflect an effort by the German authors to make their work more useful to their American sponsors by using the U.S. counting method.

On the other hand, the OCMH historian who, from the German records, wrote background papers for the OCMH histories of the campaign in Normandy and Northern France, has stated: "Since there is every reason to suspect that German estimates of infantry strength were scaled down as much as possible, actual strengths may well have been greater."² Hodgson does not explain this cryptic comment. It may suggest that German commanders regularly understated their strength as a hedge against defeat.

A typical variation in figures available offers different numbers, but a similar illustration of immense T/O strength degradation. The official OCMH history states that as of the end of August "few of the panzer divisions had more than five to ten tanks in working order" (Blumenson, p. 700). Van Runstedt found that of the nominal

¹FMS, MS-P117, Generalmajor H. Reinhardt, "Statistical Data Pertaining to the German Armed Forces" (1951).

²OCMH, MS-R57, James B. Hodgson, "The Eve of Defeat" (October 1954). This covers the period 18-31 July 1944.

48 infantry and 15 panzer-type divisions in his two Army groups, only a quarter could be considered near full combat strength. He judged their effectiveness as actually the equivalent of 27 infantry and 6 panzer divisions at most.

The effect of losses can be illustrated by German strengths in the counterattack against Avranches. The Chief of Staff of the Seventh Army, in a report done for the Foreign Military Studies Series, states that the divisions involved had all suffered heavy losses before the attack began, with the exception of the 116th Panzer Division. He recalled tank strengths as of 7 August 1944 as follows:

116th Panzer:	20-25 tanks (excluding some attached to 2nd Panzer)
2nd Panzer:	60-80 tanks (including elements of two other divisions)
2nd SS Panzer:	20-25 tanks
Total:	100-130 tanks

Curiously, General von Gersdorff also went on to state that the 2nd Panzer and 2nd SS Panzer were 50-60 percent of full strength.¹ While that may have been so for the 2nd Panzer, the T/O of the 2nd SS Panzer most certainly called for six or eight times the 20 tanks it then had.

By 26 August, the Commander of the 116th Panzer Division recalled, the following strengths existed:

116th Panzer:	20 tanks, 600 infantry, 2 artillery battalions
2nd SS Panzer:	30 tanks, 5000 infantry, 3 artillery battalions
9th SS Panzer:	25 tanks, 600 infantry, 2 artillery battalions
21st Panzer:	10 tanks, 300 infantry, 1 artillery battalion. ²

The Chief of Staff of the Seventh Army had roughly comparable figures for 22 August in recalling the strength of the Fifth Panzer Army:

¹FMS, MS-A921, Generalmajor von Gersdorff, "Counterattack Against Avranches" (November 1945).

²FMS, ETHINT 18, Genlt. von Schwein, "116th Panzer Division - From the Seine to Aachen" (October 1945).

1st SS Panzer: no tanks or artillery, only weak infantry.
 2nd Panzer: no tanks or artillery, 1 panzer grenadier battalion.
 12th SS Panzer: 10 tanks, 300 infantry.
 116th Panzer: 12 tanks, 2 infantry battalions, 2 artillery batteries.
 21st Panzer: 10 tanks, 4 battalions of infantry.¹

The ultimate in difference between T/O and actual strength was perhaps that reported by 1st SS Panzer Corps (21st and 12th SS Panzer Divisions) on 7 September. It reported its strength as "800 men and one tank."²

For comparative purposes, a few examples from the Italian campaign can be offered. Following (in Table 1) are actual counts as of 2 July 1944.³ It should be recalled, however, that these German units had been in action for many months prior to this date.

Table 1. ITALIAN CAMPAIGN: REPRESENTATIVE GERMAN LOSSES

Division	Entire Division		All Combat Units		Infantry Units	
	Strength	Percent of T/O	Strength	Percent of T/O	Strength	Percent of T/O
356th Infantry	10,909	88	3,927	37	2,269	38
4th Parachute	9,161	58	4,050	28	1,850	19
29 Panzer Grenadier	12,889	93	5,217	44	1,734	29
90 Panzer Grenadier	11,840	86	3,954	33	1,339	22

What Table 1 indicates is that, while replacements did flow to German units, there was invariably a shortfall of huge proportions among the combat effectives. The Commander of the 9th SS Panzer

¹FMS, MS-B726, Generalmajor von Gersdorff, "The Battle in Northern France" (1946).

²FMS, MS-B730, General der Panzertruppen Brandenberger, "The Battle of the Seventh Army, 1-13 September 1944" (February 1947).

³N. C. Phillips, Italy, Vol. I: Sangro to Cassino (Wellington, New Zealand: War History Branch, Dept of Internal Affairs, 1957).

Division stated: "The Division did not receive any reinforcements, either before or after the invasion, but only in November 1944 when it was being reorganized for the battle of the Ardennes."¹

Lt. Gen. Pemsel said of the whole Seventh Army, as of 10 July: "For more than four weeks now the Seventh Army had been fighting without receiving appreciable reinforcements."² Losses suffered were almost 100,000, but only some 8,000 replacements had been received.

Rommel, in reporting to Headquarters on 15 July, listed his losses as 97,000 with replacements to date of some 10,000, of whom only 6,000 had actually reached the front.³

Again for comparison, the official Canadian history can be cited in regard to German strength in Italy:

The Tenth Army's condition report for the week ending 25 September (1944) reveals that of its 92 infantry battalions only 10, classified as "strong," had a strength of more than 400, and 16, "fairly strong," between 300 and 400. There were 20 "average" battalions (200-300); 38 had less than 200 all ranks (and two were unreported).⁴

Another example is found in a British comment on German strength just prior to the German Ardennes offensive:

At this time SHAEF identified a nominal 64 German divisions under Field Marshal von Runstedt facing the Allied front....But many of these were considerably below strength and their fighting value was estimated to be equivalent to some 31 divisions. [Nicholson, p. 494]

¹FMS, MS-B470, Generalmajor Stadler, "Combat Report of the 9th SS Panzer Division, Period 3-24 July 1944" (December 1945).

²FMS, MS-B763, Genlt. Pemsel, p. 72.

³B. H. Lidell Hart (ed.), The Rommel Papers (New York: Harcourt Brace, 1953), p. 486.

⁴L. F. Ellis, Victory in the West, Vol. II: The Defeat of Germany (London: HMSO, 1968), p. 175.

While the Germans were unable to keep their ranks filled with replacements, it is appropriate to mention that the Allies suffered similarly. The U.K. history (History of the Second World War, United Kingdom Military Series) can state, as of 17 June: "But the enemy formations shown should not be taken at their nominal value, for while Allied losses in action had continuously been made good, the German losses had not" (Ellis, I, 262). But five weeks later, with heavy losses in rifle strength, the picture for the Allies had begun to change. To take an Allied example first: on 25 July, during an attack by the 2nd Canadian Infantry Division, the leading battalion, the Black Watch of Canada, led with four rifle companies whose normal T/O strength should have been 507 officers and men. The four companies on 25 July actually numbered about 300 men (Stacey, p. 121). This was not an isolated case. Infantry companies, the cutting edge of the army, were almost invariably under strength as the campaign progressed, although not to the extent reached by the Germans. In the U.S. 79th Division, after the heavy action of 8-9 July, a typical rifle company that had contained one officer and 94 men the day before was down to 47 men (Blumenson, p. 126). After 17 days of battle (2-19 July), in which the First Army's 12 divisions had advanced only seven miles, "a rifle company after a week of combat often numbered less than 100 men; sometimes it resembled a reinforced platoon" (Blumenson, p. 175).

5. Significance

The implications of the above statistics are obvious. The strength of a unit is a function of its original strength (as opposed to T/O strength) at the outset of combat, minus casualties, plus replacements sent to it. This study found, in the English-language sources used, scattered numbers on German initial strengths and some on losses (as will be shown) for certain periods. We also found a few scattered strength reports during combat. We have no figures at all on specific replacements or even on any gross replacement rate that could be applied.

We do not have in this study a consistent picture of any German division during the course of the three-month period (or for whatever fraction of the period the unit was committed). It is apparent, then, that no two-sided statistical comparisons could be made for any single action against a specific U.S. or Allied division, for which daily strengths and losses were available. Furthermore, because of the problems of varying T/Os and combat strength degradation, any attempt to extrapolate the strength of German units for which losses are known in a defined period, drawing on judgment or T/Os, would be meaningless.

Chapter II

GERMAN CASUALTY RATES

In the previous chapter, certain German strength figures were presented as a means of illustrating graphically the difficulty of knowing at any one time the strength of a German unit. In this chapter, some specific German losses will be described over specific time periods. In view of their incompleteness, these can be at best representative of average daily losses for infantry and panzer divisions.

A. OVERALL GERMAN LOSSES

On 28 May 1944, German ground forces in the West consisted of--

- 25 Static coast divisions
- 16 Infantry field force and parachute divisions
- 10 Armored and mechanized divisions
- 7 Reserve divisions.

Between 6 June and 31 August, the Allies were engaged with 51 of these divisions.¹

Only fragmentary reports on the casualties suffered by these units were located--some on an aggregated basis, others on a divisional or corps basis. These figures are for an odd selection of time periods which, nevertheless, overlap sufficiently to provide some picture of the scale and rate of German losses up to 1 September.

The British official history (History of the Second World War, United Kingdom Military Series) claims that the German losses up to 18 June were 26,000.² Rommel, in a memorandum to Hitler, stated that

¹L. F. Ellis, Victory in the West, Vol. I: The Battle of Normandy (London: HMSO, 1962).

²Ibid., p. 262.

losses between 6 June and 15 July were 97,000, "an average of 2500-3000 per day."¹ Montgomery states German losses through August as 210,000 prisoners and 240,000 estimated killed and wounded.² This was more than double the Allied losses presented above.

A German source, compiled from available records, presents average German monthly losses in the West from 1 July to 31 December.³ These were as follows:

Dead	-	8,294
Wounded	-	28,959
Missing	-	62,856

These figures, it should be noted, would represent not only the Normandy-Northern France campaign but the Siegfried Line, Lorraine, and Southern France operations, along with the German counteroffensive in the Ardennes. The monthly average here is about 100,000.

An OCMH breakdown, based on the German records, provides the following cumulative figures (shown in Table 2), as well as daily averages for five time blocks through 7 August. These figures then include the first two months of the three which the Normandy-Northern France campaign covered.

These figures represent an average daily loss for 63 days of 2,401 men. It is interesting to note that the overall monthly loss was almost exactly similar for the two months. It was in the third month that German losses soared, through captures. In the mobile operations of the next four weeks, more than twice as many losses were inflicted on the Germans as they had previously incurred from 6 June.

¹H. Speidel, We Defended Normandy (London: Jenkins Co., 1951), p. 126.

²B. L. Montgomery, Normandy to the Baltic (London: Hutchinson & Co., 1947), p. 112.

³FMS, MS-B716, P. Schramm, "Wehrmacht Losses" (November 1945).

Table 2. GERMAN LOSSES IN NORMANDY

Date	Cumulative Losses		Daily Average		Number of days
	Officers	EMs	Officers	EMs	
6 Jun-11 Jul	1,962	81,115	54	2,253	36
12-16 Jul	2,360	100,000	80	3,800	5
17-23 Jul	2,722	116,863	72	3,372	7
24-27 Jul	3,017	127,247	74	2,596	4
28 Jul-7 Aug	3,219	148,075	30	3,118	11
Source: OCMH, MS-R58, James B. Hodgson, "Thrust & Counterthrust: The Battle for France, 21 July-25 August 1944" (September 1955).					

It will be noted that the figures in Table 2 do not square with those given by the German source immediately above it, which gives a monthly average of 100,000. That would mean a loss of 200,000 before the Allied landings in Southern France required that losses inflicted there be brought into the equation. That is 50,000 more than the loss total given in Table 2. Both sources give rates which are lower than the Allied estimates (given above) of total German losses of some 450,000.

B. LOSS RATES

One of the FMS Series¹ contains some average loss rates based upon some existing German divisional records. Curiously, the accounting included only dead and missing, not wounded. For the period 6 June-31 December in the West, the average daily divisional loss was 5.1 dead and 28.5 missing. If the usual dead-to-wounded ratio of 1 to 4 is used, one may assume some 20 wounded daily. Total daily casualties per division would then average about 53.

¹FMS, MS-Poll, B. Mueller-Hillebrand, "The German System of Reporting Statistics" (March 1949).

Loss rates were, of course, very erratic in real time as compared to the average. Once the Allied breakout began, German casualties soared. The official U.S. history states, in regard to the German counterattack at Mortain on 7 August:

Many units (German) had already taken heavy losses before the attack started. In contrast with the usual daily personnel losses that averaged about 3 percent of those units in contact, German casualty reports for 6 August inexplicably attained heights of 30 and 40 percent. The meaning of the casualty figures was obscured to the Germans, for although it indicated the urgent necessity of getting the counterattack underway before attrition sapped the strength of their forces in Normandy, the fact that the 353rd Division (kampfgruppe size) and 363rd Division had together knocked out 28 American tanks on 6 August indicated that the German units, though severely reduced, were still combat effective.¹

The "3 percent" probably represents a fair measure of combat loss rate.² The 116th Panzer Division, for example, was brought into action in late July from the relatively quiet German Fifteenth Army sector near the Pas de Calais. Between 30 July and 5 August, this fairly "strong" unit (it nevertheless included only 62 tanks) suffered 10-15 percent casualties in battle with American forces.³

The quotation, however, illustrates not merely the erratic nature of high intensity combat rates but also the difficulty of attempting

¹Martin Blumenson (OCMH), The United States Army in World War II, Breakout and Pursuit (Washington, D.C.: Dept of the Army, 1961), p. 461.

²Of peripheral interest to this study are the casualty-producing firepower elements as reported by the Germans. The Commander of the Seventh Army stated: "Prior to July 25, 1944, the greatest source of casualties to our forces certainly was the air force and the artillery. Casualties caused by tanks and infantry were less severe" (FMS, MS-ETHINT 48, "An Interview with Genobst P. Hausser, Seventh Army in Normandy," September 1945). Another German said that the Allied air forces caused damage to materiel, the artillery the personal casualties.

³FMS, MS-ETHINT 58, "An Interview with Generalmajor von Gersdorff in Regard to the Seventh Army (25 July-31 August 1944)" (16 December 1945).

to relate the combat effectiveness of good divisions to losses incurred by them.

Table 3 indicates some representative panzer divisional losses. These were drawn mostly from the OCMH German series, since the FMS reports rarely tied specific numerical losses to specific time periods. The dates are all in June and July and so represent the period of fiercest combat before the German front cracked. The overlap in some of the time periods for the same division represents different reports on casualties from that unit. The casualty-per-day rate has been computed for the seven divisions and runs from a high of 382 to a low of 36. The high points--383, 333, and 208--all were suffered by the II SS Panzer Corps (9th and 10th SS Panzer Divisions) in three days of the heaviest fighting. The low point--36--is in the range of the overall division average for all combat time, both low and high intensity. If the three high points and the low points are excluded, the average of the remaining daily averages is 127. If all 14 points are included, the average rises to 159. Because some of the numbers are obviously rounded or are only approximate, these averages cannot be considered precise.

In short, average daily casualties for a panzer division in heavy combat in this time period were between 127 and 159.

There are also a few figures (shown in Table 4) for infantry division losses in this same period of heavy combat.

The 352nd lost 1,000 men on 7 June and another 1,000 the next day. It had opposed the Americans at Omaha Beach, while the 716th fought the British on their beaches.¹ The average daily loss rate for these three units is 209.

¹FMS, MS-B433, Oberstleutnant F. Ziegelmann, "352nd Infantry Division (7 June 1944)." Also FMS, MS-B434, Oberstleutnant F. Ziegelmann, "352nd Infantry Division (8 June 1944)."

Table 3. REPRESENTATIVE PANZER DIVISION LOSSES

Panzer Unit	Time Period	No. of Days	Casualties	Casualties Per Day	Sources
2nd	13-22 Jun	10	1000	100	Hodgson OCMH MS R49
21st	6-30 Jun	25	3500	140	Hodgson OCMH MS R49
	1-31 Jul	31	1106	36	Hodgson OCMH MS R54
	6 Jun-11 Jul	36	3411	95	Blumenson
Lehr	8-25 Jun	18	2700	150	Hodgson OCMH MS R49
	8-24 Jun	17	2360	139	Hodgson OCMH MS R54
	8 Jun-1 Jul	24	3000	125	Hodgson OCMH MS R54
	1-31 Jul	31	2899 ^a	94	Hodgson OCMH MS R54
	8 Jun-11 Jul	34	3140	92	Blumenson
9th SS	29 Jun-1 Jul	3	1145	382	Hodgson OCMH MS R24
	29 Jun-18 Jul	20	1891	95	Hodgson OCMH MS R24
12th SS	8-26 Jun	19	2550	134	Hodgson OCMH MS R49
	8 Jun-18 Jul	41	6164	150	Hodgson OCMH MS R54
	8 Jun-11 Jul	34	4485	132	Blumenson
1st SS	9-18 Jul	10	1441	144	Hodgson OCMH MS R54
10th SS	29 Jun-9 Jul	11	2289	208	Hodgson OCMH MS R54
	29 Jun-1 Jul	3	1000	333	Hodgson OCMH MS R49

^aThe figure given is 3629 (347 KIA, 1144 WIA, 1408 MIA, 304 sick, 354 other causes). Only the combat loss is considered in computing the daily rate. It is not known whether other figures from Panzer Lehr also included non-combat casualties.

Table 4. REPRESENTATIVE INFANTRY DIVISION LOSSES

Unit	Time Period	No. of Days	Casualties	Casualties Per Day	Source
352	6 Jun-11 Jul	36	7886	219	Hodgson R58
243	9 Jun-11 Jul	33	8000+	242	Blumenson
716	6 Jun-11 Jul	36	6000+	167	Blumenson

C. SOME COMPARISONS

For purposes of comparison, it is interesting to compare other German loss experience. Table 5 presents divisional loss rates. It is drawn from the same FMS report cited earlier which did not report wounded, only killed and missing. Again, by adding a rough 4 to 1 factor for wounded, an overall loss rate can be established for each campaign or time period.

Table 5. GERMAN LOSSES IN SEVERAL CAMPAIGNS

Campaign	Date	Days	KIA + MIA per Participating Division per Day
Poland	Sep 1939	19	13.7
West	May-Jun 1940	47	7.6
Russia	22 Jun-31 Aug 1941	71	17.0
	1 Sep-31 Dec 1941	122	8.8
	1 Jan-31 Mar 1942	90	7.8
	1 Apr-31 Aug 1942	153	7.0
	1 Sep 1942-12 Dec 1944	833	28.7 ^a
West	1 Sep-31 Dec 1944	122	33.6 ^b
^a 6.3 dead, 22.4 missing (many PW).			
^b 5.1 dead, 28.5 missing (many PW)			
Source: FMS, MS-P011, B. Mueller-Hillebrand, "The German System of Reporting Statistics" (March 1949), p. 125.			

It is difficult to say why the casualty rate was higher for at least that part of the Western Campaign than for the other campaigns. It could be that the intensity of combat was greater. On the other hand, loss rates for smaller forces were generally greater than for larger forces, and it must be remembered that, while the Germans met

the Allies in the West in June 1944 with some 60 divisions, they had over 200 divisions on the Eastern Front.¹

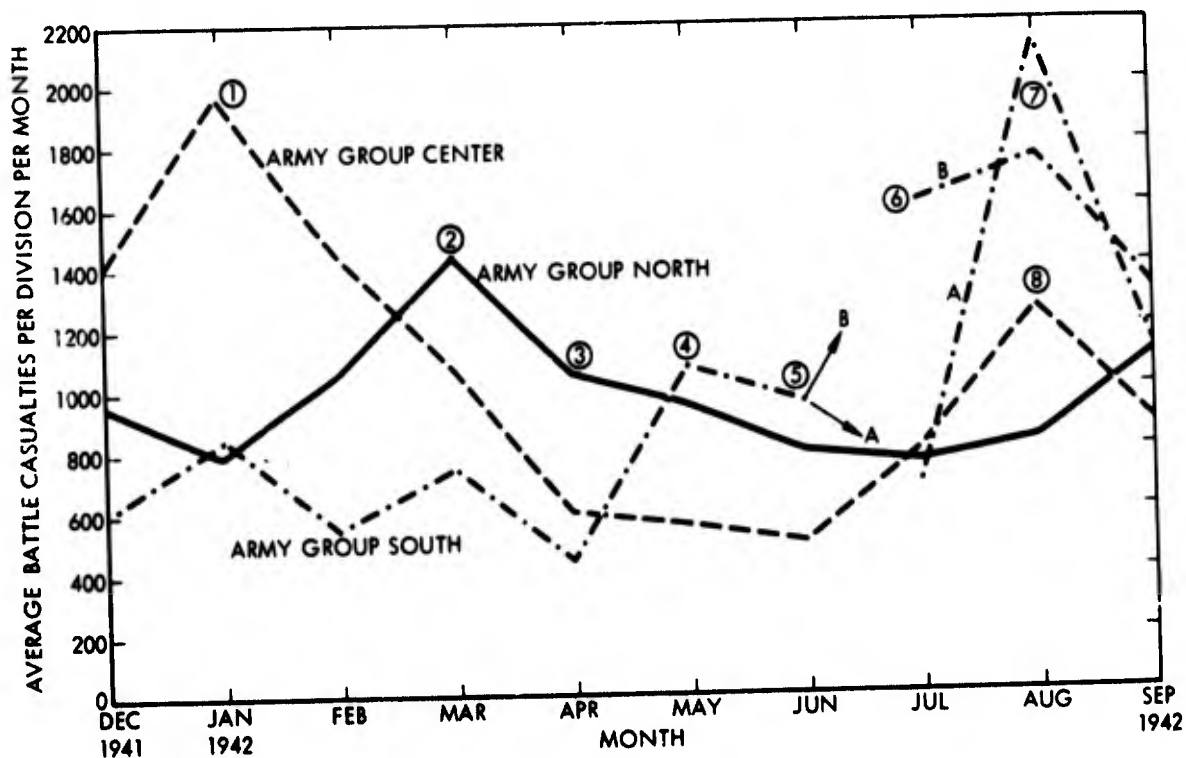
A RAC (Research Analysis Corporation) study has pointed out that, in broad terms, the typical casualty rate for a German infantry division (on a basis of three army groups on the Eastern Front from December 1941 through September 1942) was about 1,000 casualties a month, or 0.2 percent per day of T/O (17,895). (We have already pointed out the weaknesses involved in using German T/O as a basis of analysis.) Nevertheless, the figure is not very different from the rates for U.S. and British divisions in the Western campaign; and it is also about the same as for U.S. divisions in Korea, where, during the period July 1950-December 1951, the loss rate was about 900 men per month per division.

The RAC report also comments on the breakdown of German casualties in Russia, 21 June 1941-10 September 1942, pointing out that the breakdown for the 446 days strikingly resembles that of the Allied armies in other theaters (U.S. in the ETO: 17 percent killed, 71 percent wounded, 11.9 percent missing).²

Figure 1 illustrates the relationship of losses to types of tactical activity and specifications for German forces in Europe. While the time curves are in terms of army groups, losses are indicated in terms of division per month.

¹Ellis, I, xviii.

²Robert J. Best, Casualties and the Dynamics of Combat (McLean, Va.: Research Analysis Corporation, March 1966), p. 22.



- A, B, Army Group South split into two sections.
- ① Withdrawal and heavy defensive actions.
 - ② Heavy defensive fighting.
 - ③ Attack near Demjansk.
 - ④ Mopping up Crimea, fighting near Kharkov.
 - ⑤ Capture of Sevastopol.
 - ⑥ Offensive launched, defensive fighting near Voronezh.
 - ⑦ Offensives toward Stalingrad and Caucasus.
 - ⑧ Defensive fighting.

Source: FMS P-011, p.128.

11-1-73-2

Figure 1. AVERAGE MONTHLY DIVISIONAL CASUALTIES OF GERMAN ARMY GROUPS IN RUSSIA

Chapter III

AMERICAN CASUALTY RATES IN THE EUROPEAN THEATER OF OPERATIONS

A. SOME GENERAL OBSERVATIONS ON U.S. CASUALTIES IN THE SECOND WORLD WAR

U.S. casualty rates for both offense and defense displayed a relative constancy for most of the period 1944-45. While U.S. forces on the whole were on the offensive, except during the German Ardennes attack of December 1944-January 1945, casualty rates were roughly the same for both offensive and defensive fighting. After D Day there was relatively little variation in the casualty rate, and, similarly, nonbattle casualty rates remained remarkably constant throughout the whole war for all theaters.

There are numerous ways of examining casualty rates--by the type of action producing casualties, by echelon, by intensity of combat. The data which follow will cover several of these approaches.

Because of the comparative stability in the organization of U.S. ground forces and, further, because of the consistent and orderly manner in which varying sized units were employed tactically, the variation in casualty rates by echelon offers one of the most constant patterns appearing in casualty statistics. In general, if a divisional casualty rate is given a base value of 100, the corresponding corps rate is about 70-80, the army rate 55-65. Given operations, in other words, of size sufficient to employ field armies, the internal pattern of rates by echelon was relatively constant. The variation in wounded rates for ground forces is illustrated in Table 6, with corps, army, and theater measured against the division as base.¹

¹G. W. Beebe and M. de Bakey, Battle Casualties: Incidence, Mortality, and Logistic Considerations (Springfield, Ill.: Thomas Co., 1952).

Table 6. LOSS RATES BY ECHELON

Echelon	Percent	Rate per 1000 Men per Day
Division	100	2.07
Corps	73	1.51
Army	59	1.22
Theater	23	0.47

Another way of illustrating the ratio is by examining a more detailed breakdown for all casualties (Table 7):

Table 7. CASUALTIES IN THE ETO BY ECHELON

Echelon	Casualties per 100 Men Per Day		
	Killed	Wounded	Missing
All Types Division	0.50	2.07	0.35
Infantry	0.56	2.32	0.39
Armored	0.30	1.25	0.21
Airborne	0.44	1.83	0.31
Corps	0.36	1.51	0.25
Army	0.29	1.22	0.21
Source: Beebe and De Bakey, p. 55.			

This represents a loss of about 44 casualties per division per day. This Beebe and De Bakey figure corresponds closely with the one in the next section, derived from divisional casualty lists.

The ratio between killed and wounded for U.S. troops for the entire war was 3.4. The ratio in the ETO progressed from 3.7 in July 1944 to 3.5 in December 1944, to 3.7 in March 1945. The peak rate for wounded reached in the ETO was 269 per 1,000 men. When infantry is taken as representative of the ground arms, the World War II average, according to Beebe and De Bakey, may be estimated as 4.1

(or essentially the same ratio as has been reported for some 200 years). These ratios are useful in that often the available data on casualties present wounded but not killed figures. This is especially the case with German records. A quick calculation is thereby possible to derive killed figures.

1. Determinants of Casualties

Beebe and De Bakey, in their 1952 pioneer work (from which much of this section is drawn), were cautious as to broad application of some of their findings. They pointed out (p. 5) that the usefulness of charts, such as the one above (Table 7), as a basis for statistical generalization designed to meet the ends of prediction, was limited:

This is because the recorded attributes (geographic location, length of time, size of force) have only moderate value as determinants of casualty incidence. The most significant determinants are poorly recorded and difficult of access, e.g., relative superiority (or inferiority) over the enemy in point of such factors as: 1) air or naval support; 2) land artillery; 3) size of force; 4) quality of weapons; 5) position for offensive or defensive action, including the natural features of terrain and prepared position; 6) experience and condition of troops; 7) adequacy of logistics support; 8) leadership.

2. The Tactical Situation as a Casualty Determinant

The most important factor in determining casualty rates and the least well documented (and probably "documentable") statistically is, of course, the tactical situation. Only two kinds of observations are readily available from the reports of World War II. The first gives the casualty experience of a unit in relation to its type of contact with the enemy and the character of the enemy opposition, and may be classified (perhaps with qualitative distinctions as to severity of opposition) as patrolling, holding, attack, defense, and counterattack. The second type of observation consists of a compilation of unit-rates for periods when units were in certain well-defined tactical situations of a more general nature (e.g., overwater assault

and establishment of a beachhead, attack on a fortified line, reduction of an isolated port or town, breakthrough following a period of containment by the enemy, defensive operations, and river crossing).

In the 1943 annual report of the Fifth Army (Italy) Surgeon General, there is a unique table (Table 8) of weekly divisional casualty rates coded as to type of contact. Since only 66 division-weeks are involved, most of the groups are small. The extreme rates, it will be noted, are in the ratio of 40 to 1.

Table 8. WOUNDED PER 1,000 PER WEEK, FIFTH ARMY DIVISIONS
[By type of contact with enemy, 1943]

Type of Contact	Number of Division-weeks	Wounded per 1,000 Men per Week	
		Rate	Percentage of Average Rate
Enemy counterattack, or attack against heavy opposition	21	21.0	202
Advance against resistance, attack against light opposition, advance slowed by mines and demolition, patrolling with contact, and enemy artillery attack	23	10.2	98
Patrolling without contact, reserve	22	0.5	5
Total	66	10.4	100

A useful comparison with British experience was provided by Robert J. Best (RAC), similarly basing his figures on the nature of combat activity--less specifically in terms of type of activity, but equivalent in terms of intensity to the categories of Table 9.

Beebe and De Bakey suggested another means of categorization that shows the influence of the tactical situation on wounded rates and reveals the probable range within which wounded rates will fall.

Table 9. DIVISIONAL CASUALTY RATES FOR VARYING INTENSITIES OF COMBAT IN
SEVERAL BRITISH CAMPAIGNS
[Infantry and armored divisions, battle casualties: KIA, WIA, MIA]

Theater and date	Combat Activity						Overall rate, % per day
	Intense ^a		Normal ^b		Quiet ^c		
	Frequency, % of days	Rate, % per day	Frequency, % of days	Rate, % per day	Frequency, % of days	Rate, % per day	
Northwest Europe							
Jun 44	26	1.16	50	0.26	24	0.01	0.45
Jul-Aug 44	17	1.05	47	0.20	36	0.02	0.28
Oct-Dec 44	3	0.85	50	0.11	47	0.01	0.09
Feb-May 45	13	0.84	61	0.11	26	0.00	0.18
Italy							
1944	13	0.86	52	0.09	35	0.00	0.16
North Africa							
1943	22	--	49	--	29	--	0.33

^aIntense: at least one battalion engaged in full-scale offensive or defensive fighting (for example, three companies involved) or equivalent divisional activity with larger numbers of proportionately less intensely involved battalions.

^bNormal: Division in close contact with the enemy and engaged in patrolling or minor skirmishes.

^cQuiet: division not in contact or engaged in no more than light patrolling.

Source: Robert J. Best, Casualties and the Dynamics of Combat (McLean, Va.: Research Analysis Corporation, March 1966), p. 36.

This is classification by tactical activity. In an effort to provide a rough scale of rates corresponding to types of tactical activity in World War II, the following classes were established:

- (1) Beachhead operations. Characterized by overwater assault on enemy-held territory, and establishment of a forward position secure enough to repel enemy counterattack and to permit expansion.
- (2) Reduction of ports and towns. Encirclement, and sustained assault on enemy-held ports and towns, usually heavily fortified and defended, or both.
- (3) Assault on fortified lines. Assault on an entire enemy line, consisting of at least some heavily fortified, mutually supported points.
- (4) Offensive breakthrough operations. Full-scale offensive effort concentrated at one or more points in order to penetrate the enemy line, of whatever nature.
- (5) Defensive operations. In which the enemy counterattacks in force to throw American forces on the defensive, or the American forces are being contained in an essentially defensive position from repeated enemy attempts to counterattack.
- (6) River crossings. Major crossings against enemy opposition, with intent to establish a secure bridgehead permitting further expansion.

These six groupings are not altogether mutually exclusive--classification as one type or the other sometimes being a matter of emphasis. The Beebe and De Bakey compilation included only wounded (some 169,000, or about 28 percent of all the wounded sustained by ground troops in World War II) in these categories of tactical activity.

Below (in Table 10) is a summary of their findings for combat divisions for all theaters. Each line pertains to a defined type of action (e.g., river crossing) and includes the number of operations falling into that type, as well as its average WIA (wounded-in-action) rate. The highest rate is 11.04 per 1,000 per day--for beachhead operations. This is about seven times the average rate for a division in combat in World War II, and more than twice the average for practically all the other types of action shown in the table. Offensive

breakthrough operations rank next to beachhead operations with an average rate of 7.14 WIA per 1,000 per day. Third is the rate of 5.88 for the reduction of ports and towns. The rates for assault on fortified lines and for river crossings are about the same, 5.10 and 5.02, more than three times the average figure for a World War II division in combat. Lowest of the six rates is that of 3.73 for defensive operations, but this rate is more than twice the overall World War II average for a division in combat.

Table 10. WOUNDED IN ACTION BY TACTICAL ACTIVITY, U.S. ARMY AND MARINE CORPS DIVISIONS, WORLD WAR II

Tactical Activity	Number of Operations	Number of Divisions	Wounded	
			Number	Rate ^a
Beachhead Operations	8	24	26,570	11.04
Offensive Breakthrough Operations	3	16	7,420	7.14
Reduction of Ports and Towns	9	23	25,139	5.88
Assault on Fortified Lines	7	47	46,910	5.10
River Crossings	7	43	18,339	5.02
Defensive Enemy Counterattack	8	63	45,049	3.73
Total	42	216	169,427	5.19
^a WIA per 1,000 men per day.				

In some instances (e.g., beachhead operations), the type is so well defined that there is little question as to the identity of the individual operations to be included. In other instances (e.g., defensive operations), such is not the case; and the result obtained will vary with the operations chosen to represent the class. Figure 2 gives a graphic summary of the entire classification and exhibits the relative variation within each type of operation. The horizontal

TYPE OF TACTICAL ACTIVITY

Tactical Activity	Average Rate (Wounded per 1,000 men per day)	W.W. II - Average Rate for Divisions
BEACHHEAD	11	1
BREAK-THROUGH	7	1
REDUCTION OF PORTS, TOWNS	6	1
ASSAULT ON FORTIFIED LINES	5	1
RIVER CROSSING	5	1
ENEMY COUNTER-ATTACK	4	1

WOUNDED PER 1,000 MEN PER DAY

W.W. II - AVERAGE RATE FOR DIVISIONS

LOW

HIGH

AVERAGE FOR TACTICAL ACTIVITY

11-1-73-1

38

3. Nonbattle Injuries and Disease

Model-builders should not, in their calculations, overlook the tremendous loss of fighting power due to nonbattle injuries and disease. The impact of these non-enemy-produced losses can be crippling.

The rate for nonbattle injuries remained fairly constant throughout the war, but disease rates obviously varied widely, depending on the geographical location of the operations. In Europe, for the four armies in the Western campaign, the overall breakdown of casualties on the basis of disease, nonbattle injury, and wounded can be expressed in Table 11:

Table 11. CASUALTY TYPES IN THE ETO

Army	Percent of Admissions for Entire Campaign		
	Disease	Nonbattle Injury	Wounded
1st Army	40	15	44
3rd Army	43	15	42
7th Army	57	18	25
9th Army	57	18	25

The average casualty experience of the four U.S. field armies in the ETO on a basis of admissions per 1000 men per week was as follows:

Table 12. CASUALTY RATES IN THE ETO

Army	Disease	Nonbattle Injury	Wounded	Total
1st	10.3	3.4	12.0	25.8
3rd	10.0	2.7	9.1	21.8
7th	14.0	3.7	7.8	25.5
9th	7.5	2.1	4.2	13.8

B. U.S. DIVISIONAL AND CORPS CASUALTY RATES

1. American Divisional Casualty Rates

American field armies in the ETO included 43 infantry divisions, 3 airborne divisions, and 15 armored divisions. Of these, the 13th Airborne Division saw no combat, while the 16th and 20th Armored Divisions had only three and eight combat days, respectively. For purposes of determining casualty rates among the divisions, these two armored divisions have not been included in the analysis. Data on the 82nd Airborne Division was so incomplete that it, too, was excluded.

Data was drawn from the Order of Battle¹ for each of these divisions: the date it entered combat, number of days in combat, killed, wounded, missing, captured, total battle casualties, nonbattle casualties, total casualties, the percentage of T/O represented by the total casualties, and the campaigns (of the five fought in the ETO) in which the division served.

From this, data were then derived for each division:

- (1) Average battle casualties per combat day
- (2) Average total casualties per combat day
- (3) Daily total casualties as a percentage of T/O.

Average rates for all the divisions were then derived. The 44 infantry/airborne divisions in the ETO suffered an average of 47 battle casualties per combat day. If one excludes the 106th Division, which suffered extraordinarily heavy losses during the Ardennes battle, the average drops to 45 casualties per day. The high was 130 (106th); the low, 12 (66th).

¹Office of the Theater Historian, "Order of Battle, United States Army in World War II, European Theater of Operations - Divisions" (Paris, December 1945).

For the 13 armored divisions included in the analysis, an average rate per combat day of 31 battle casualties prevailed. The high was 44 (3rd); the low 21 (8th).

For total casualty rates (battle and nonbattle combined), it was necessary to exclude the 101st Airborne Division, for which statistics on nonbattle casualties were missing. The average total casualty rate for 43 infantry divisions was found to be 82 per day; for 13 armored divisions, 53 per day. If one again excludes the bias introduced by the 106th Division, the rate is 80 per day for infantry divisions. The high for infantry divisions was 169 (106th); the low, 21 (66th). The high for armored divisions was 70 (3rd); the low, 32 (14th).

Average daily total casualties for an infantry division as a percentage of T/O (14,089) was 0.56 percent. For armored divisions (T/O of 10,670; except for 2nd and 3rd Divisions, 14,454) it was 0.5 percent. Average daily combat casualties for an infantry division, again excluding the 106th Division, as a percentage of T/O was 0.29 percent; for armored divisions it was 0.33 percent.

The data above are summarized in Table 13.

Table 13. AVERAGE CASUALTY RATES

Average	Infantry Divisions	Armored Divisions
Battle casualties per combat day	47 (45)	31
Total casualties per combat day	82 (80)	53
Daily combat casualties as a percentage of T/O	0.29%	0.33%
Daily total casualties as a percentage of T/O	0.56%	0.50%

Relations of Casualties to Length of Time in Combat. Tables 14 and 15 indicate the effect of time in combat upon battle losses. Divisions (infantry and armor separately) are listed in order of

Table 14. RELATIONSHIP OF CASUALTIES TO LENGTH OF TIME IN COMBAT IN THE ETO (INFANTRY DIVISIONS)

Infantry Division	Days in Combat	Average Casualties per Day	
		Battle	Nonbattle
90th*	308	60	30
2nd*	303	50	35
4th*	299	75	43
1st*	292	51	48
30th*	282	63	29
5th*	270	46	41
8th*	266	50	29
9th*	264	70	58
35th*	264	58	38
79th*	248	60	35
83rd*	244	62	36
29th*	242	83	36
80th	239	61	46
3rd	233	56	65
44th	230	27	33
45th	230	45	70
36th	227	50	65
101st*	214	54	--
26th	199	50	35
28th*	196	81	46
94th	183	31	28
104th	178	39	36
102nd	178	28	23
100th	163	29	46
84th	152	43	22
95th	151	42	26
99th	151	40	39
103rd	147	31	33
87th	134	41	45
78th	125	63	35
63rd	119	38	29
42nd	106	34	22
76th	95	33	25
75th	94	42	43
66th	91	12	9
70th	83	48	51
69th	63	24	27
106th	63	130	39
89th	57	18	18
65th	55	19	23
71st	49	16	22
17th	45	70	19
86th	34	22	14
97th	31	30	12

*Divisions engaged in Normandy-Northern France.

**82nd Airborne (194 days in combat) not included because of incomplete casualty data.

Table 15. RELATIONSHIP OF CASUALTIES TO LENGTH OF TIME
IN COMBAT IN THE ETO (ARMORED DIVISIONS)

Armored Division	Days in Combat	Average Casualties per Day	
		Battle	Nonbattle
3rd ^a	231	44	26
4th ^a	230	26	20
6th ^a	226	24	33
2nd ^a	223	30	32
7th ^a	172	36	25
5th ^a	161	22	22
14th	133	22	10
10th	124	38	30
12th	102	34	25
11th	96	34	19
9th	91	43	16
8th	63	21	18
13th	16	31	15
20th	8	--	--
16th	3	--	--
^a Divisions engaged in Normandy-Northern France.			

length of combat service. While the patterns are spotty, some generalizations can be made:

Units in the line for 200+ days (18) -
57 average daily battle casualties

Units in the line for 100-199 days (14) -
42 average daily battle casualties

Units in the line for under 100 days (12) -
39 (30 if the 106th is excluded) average
daily battle casualties

It will be noted in Table 14 that the rate for the 17th Division (70) is also far out of line with the experience of the other divisions in that time group. If it is excluded and the sample (minus the 106th and the 17th) is reduced to 10 units, the average casualty rate for the time groups falls to 24.

The sample for the armored divisions (Table 15) is, of course, much smaller:

Units in the line for 200 plus days -
31 average daily battle casualties

Units in the line for 100-199 days -
30 average daily battle casualties

Units in the line for under 100 days -
32 average daily battle casualties

The 16th and 20th Armored Divisions are again excluded because of the brevity of their combat time. The groupings for armor indicate no real difference between long and short combat service.

The average daily nonbattle casualties for 43 infantry divisions were 35 (including the 106th, whose nonbattle casualty rate was more normal than its battle casualty rate). The high was the 70th, with 70 (combat casualty average of 45); the low was the 66th, with 9 (combat casualty average of 12). There were 12 cases where average daily non-combat casualties exceeded daily noncombat casualties.

The relationship between average daily noncombat casualties and length of time in combat is expressed for both infantry and armored divisions in Table 16:

Table 16. AVERAGE DAILY NONCOMBAT CASUALTIES
[By units in line]

Length of Time in Combat	Infantry Divisions	Armored Divisions
200+ days	17 - 43 men	4 - 28 men
100-199 days	14 - 33 men	5 - 22 men
Less than 100 days	12 - 23 men	4 - 16 men

2. Representative Allied Divisional Losses in Attack in Normandy-Northern France

In contrast to average loss rates are the actual losses incurred by units during offensive operations. The first part of the list below (Table 17) is all drawn from the heavy fighting in the hedgerow country and near Caen, which typified Allied operations prior to the breakout. The examples cover 10 U.S. infantry divisions and one

Table 17. REPRESENTATIVE ALLIED DIVISIONAL LOSSES IN ATTACK

Division	1944 Date	Days' Duration	Losses	Average Losses/Day
U.S. 90th	3-7 Jul	5	2000	400
U.S. 4th	5-15 Jul	10	2300	230
U.S. 30th	7 Jul	1	300	300
U.S. 30th	8-11 Jul	4	1000	250
U.S. 30th	12-15 Jul	4	2000	500
U.S. 79th	2-7 Jul	5	2000	400
U.S. 9th	10-20 Jul	10	2500	250
U.S. 2nd	11 Jul	1	407	407
U.S. 29th	11 Jul	1	500	500
U.S. 29th	12 Jul	1	500	500
U.S. 8th	8-31 Jul	23	2080	90
U.S. 83rd	4 Jul	1	1105	1105
U.S. 3rd Armored	2-7 Aug	6	300	50
U.S. 4th	2-7 Aug	6	600	100
U.S. 9th	2-7 Aug	6	850	142
U.S. 28th	2 Aug	1	750	750
U.S. 29th	5-7 Aug	2	1000	500
3rd Canadian	8-9 Jul	2	1194	597
3rd Canadian	25 Jul	1	750	750
2nd Canadian	18-21 Jul	4	1149	287

Source: U.S., British, and Canadian official histories, as cited elsewhere.

armored division, to which are added three Canadian operations (for comparison). These were very high-casualty operations, but there was no single cause for these losses. Experience was certainly a factor, in that some of these divisions were hard hit in their first combat. Others were much more battle tested. The 3rd Canadian had landed on D Day, yet its losses in this chart are the second highest.

The lower rates in August reflect the American breakthrough and the beginning of the disintegration of the German front.

Excluding the armored division example, the average for the 19 division experiences is a rate of 424 per day, with a high of 1,105 and a low of 90.

For comparison, three examples of U.S. divisional losses on the defensive can also be offered. U.S. defensive operations were comparatively scarce, the one major case being the German counterattack at Mortain on 7-12 August. Most German counterattacks tended to be on sub-divisional level. The U.S. 30th Division lost almost 2,000 men in six days; the 9th Division, nearly 1,000; and the 4th Division, 600.¹ For this tiny sample, this represents an average loss of 200 men per day.

3. Representative Corps Casualty Rates in the ETO

Two examples of corps casualty rates are considered: the V Corps from the First Army and the XII Corps from the Third Army. V Corps went into action on D Day, while XII Corps entered combat in mid August. Table 18 presents data on XII Corps.

¹Martin Blumenson (OCMH), The United States Army in World War II, Breakout and Pursuit (Washington, D. C.: Dept of the Army, 1961), p. 490.

Table 18. XII CORPS STRENGTH AND CASUALTIES

Month as of--	Average Corps Strength	Total Combat Casualties	Total Combat Casualties as Percent of Corps Strength	Average Daily Battle Casualties
31 Aug 44 ^a	67,881	833	1.2	56
30 Sep	83,948	6,656	7.9	222
31 Oct	97,109	3,977	4.0	128
30 Nov	91,705	10,733	11.7	358
31 Dec	72,628	7,676	10.6	248
31 Jan 45	82,018	4,586	5.6	148
28 Feb	79,474	4,785	6.0	171
31 Mar	92,436	5,518	6.0	178
1 Apr-8 May	84,917	2,571	3.0	68
^a For period 16-31 August only.				
Source: G. Dyer, <u>XII Corps, Spearhead of Patton's Third Army</u> , (Washington, D. C.: Infantry Journal Press, 1947).				

Some averages were as follows:

- Average corps strength was 83,568.
- Average daily casualties for the 266 days of combat were 178.
- Average daily casualties as a percentage of corps strength were about 0.2 percent.

The time breakdown available for V Corps in Table 19 is on an operational phase rather than a monthly basis.

Some averages were as follows:

- Average corps strength was 71,318.
- Average daily casualties for the 337 days in combat were 165. (If 6 June 1944 is excluded because of the extremely heavy casualties suffered in the initial landing, the daily average for the 336 days is 158.)
- Average daily casualties as a percentage of corps strength were about 0.2 percent.

Table 19. V CORPS STRENGTH AND CASUALTIES

Time Period (days)	Average Corps Strength	Total Battle Casualties	Battle Casualties	
			Total as Percentage of Corps Strength	Average Daily
6 Jun 1944 (1)		2,476		
7-13 Jun (7)	67,000	3,373	5.0	422
14 Jun-12 Jul (28)	70,000	4,128	5.9	147
13-28 Jul (16)	67,000	3,573	5.3	223
29 Jul-5 Aug (8)	60,000	2,070	3.5	259
5-17 Aug (12)	42,000	1,601	3.8	133
17-25 Aug (8)	66,000	1,475	2.2	184
25-29 Aug (4)	70,000	342	0.5	86
29 Aug-3 Sep (5)	76,000	499	0.7	100
4-9 Sep (5)	66,000	488	0.7	98
10-29 Sep (19)	64,000	4,704	7.4	248
29 Sep-23 Oct (25)	67,000	1,173	1.8	47
23 Oct-10 Nov (17)	72,000	3,222	4.5	190
11-20 Nov (10)	66,000	2,732	4.1	273
21 Nov-7 Dec (17)	70,000	3,451	4.9	203
8-15 Dec (8)	80,000	2,036	2.5	255
16 Dec-14 Jan (28)	92,000	7,656	8.3	273
15 Jan-10 Feb (25)	96,000	5,620	5.9	225
11 Feb-20 Mar (37)	86,000	1,937	2.3	52
21 Mar-4 Apr (14)	69,000	1,055	1.5	75
5 Apr-28 Apr (24)	70,000	1,965	2.8	82
29 Apr-9 May (11)	81,000	<u>267</u>	0.3	21
		55,576		

Source: "V Corps Operations in the ETO, 6 January 1942-8 May 1945" (no author, place of publication, or date; probably prepared by Corps HQ shortly after the end of the war). In Army Library.

The daily casualty rate shows no clear pattern. Dropping from the height reached in the ferocious fighting of the first week, it rose and fell several times, reaching another peak during the Ardennes offensive in December. Only during the first week after D Day can the losses be considered unusually high. The rest of the Normandy-Northern France campaign did produce casualties much like those suffered until mid February.

4. Army Casualty Rates in the ETO¹

The three main American armies in the campaign in the northern sector of the Allied front in Western Europe were the First, Third, and Ninth (Table 20). First Army landed in Normandy and conducted operations there until joined by Third Army, which entered combat on 1 August. Ninth Army became operational on 5 September.

Table 20. ARMY STRENGTHS AND CASUALTIES

Army	Average Strength	Average Battle Casualties		Campaign Days
		Daily	Percent of Strength	
First	318,851	616	0.1	334
Third	299,614 ^a	497	0.1	281
Ninth	209,322	149	0.07	246

^aThe Third Army increased greatly in size in the last eight days of the war, from 346,839 to 438,004. Since this represented an abnormal disposition, the 1-8 May figure is excluded from the average strength for the Army.

¹The data on which these calculations are based are from (1) HQ First Army, "Combat Operations Data: First Army, Europe, 1944-1945" (New York, November 1946); (2) HQ Third Army, "After Action Report, Third US Army, 1 August 1944-9 May 1945" (Regensburg, Germany, May 1945); and (3) Ninth Army Staff, "Conquer: The Story of the Ninth Army, 1944-1945" (Washington, D.C., 1947).

An interesting and useful reminder of the impact of noncombat casualties on the effectiveness of a military force may be found in comparative figures (Table 21) for battle and nonbattle casualties for the three armies:

Table 21. BATTLE AND NONBATTLE CASUALTIES

Army	Total Casualties	
	Combat	Noncombat
First	205,805	51,410
Third	139,646	111,562
Ninth	36,577	54,083

These figures do not include losses to the unit from disease, which in the case of the First Army, came to 149,811 for the period of the campaign.

5. Overall Casualties for the Western Campaign

To round out the picture, it might be useful to present the total strengths and losses for Allied armies incurred during the entire campaign in the West, 6 June 1944-7 May 1945 (Table 22).

Table 22. TOTAL ALLIED LOSSES IN THE WESTERN CAMPAIGN

Nationality	Army Strength 30 April 1945	Killed	Wounded	Missing or Captured	Total
American	2,618,023	109,824	356,661	56,632	523,117
British	835,208	30,276	96,672	14,698	141,646
Canadian	183,421	10,739	30,906	2,247	43,892
French	413,144	12,587	49,513	4,726	66,826
Other Allies	34,518	1,528	5,011	354	6,893
Source: History of the Second World War, United Kingdom Military Series, L. F. Ellis, <u>Victory in the West</u> , Vol. II: <u>The Defeat of Germany</u> (London: HMSO, 1962), p. 407.					

There is undoubtedly some small duplication in that some of those captured were also wounded, while some men were wounded on more than one occasion. The total U.S. forces involved can be estimated at roughly 3,100,000 (strength as of 30 April plus casualties incurred, again assuming that some of the wounded had returned to duty). The total U.S. casualties then came to some 16-17 percent of the total U.S. forces involved.

For the specific campaign of interest, Normandy-Northern France, Allied casualties up to the end of August were as follows:

<u>Armies</u>	<u>Killed</u>	<u>Wounded</u>	<u>Missing</u>	<u>Total</u>
American	20,838	94,881	10,128	128,847 ¹
British Canadian	16,138	58,594	9,093	83,825 ¹

These losses were incurred by four Allied armies consisting of 28 infantry divisions and 11 armored divisions. A total of 2,052,299 Allied soldiers were landed in this period. Casualties thus equaled some 10.4 percent of the forces landed.

6. A Comparison With World War I²

In order to put into better perspective American loss rates in Europe for World War II, it might be interesting to compare the data presented above with some U.S. divisional casualty figures for units in France in 1918.

The combat experience of the American Expeditionary Force in 1918 was short but extremely intense. In terms of wounded per 1,000 strength per year, the AEF peak (including gas) was 546, while the peak for U.S. forces in 1944-45 reached 269.

During the period May-November 1918, American forces fought on the defensive for the first two months and in almost continuous

¹L. F. Ellis, Victory in the West, Vol. I: The Battle of Normandy (London: HMSO, 1962), p. 493.

²Col. L. P. Ayres, "The War With Germany: A Statistical Summary" (Washington, D.C.: Government Printing Office, August 1919).

offensive operations thereafter. Yet the distance advanced against the enemy was minute compared to World War II standards. The maximum advance in 1918 was 45 miles (by the 77th Division). This was for the entire period of U.S. combat.

A difficulty in determining a daily average battle casualty rate for 1918 lies in the very sharp difference made by location of the unit in the line, as between "active" and "inactive" sectors. Since three divisions never served in an active sector but still incurred casualties from normal patrolling and raiding, their losses (a small statistical sample) can be used for an average loss rate in quiet sectors. The three units suffered average daily losses of 39, 14, and 4, or a rounded 20-per-day division average in a quiet sector.

Even when the presumed average losses for quiet sector duty are subtracted from each divisional total casualty figure, the remainder is still extremely large compared to World War II. The 2nd Division, for example, suffered at an average rate of 315 per day in an active theater, while the 35th Division reached a level of almost 1,100 per active day. There is also clearly no direct correlation between length of time in an active sector and total casualties incurred (Table 23).

Table 23. AMERICAN DIVISIONAL CASUALTIES, WORLD WAR I (1918)^a
[Relationship to length of time in the line]

Division	Killed	Wounded	Total	Total Days	
				In Line	In Active Sector
2nd	4,478	17,752	22,230	137	66
1st	4,411	17,201	21,612	220	93
3rd	3,177	12,940	16,117	66	86
28th	2,551	11,429	13,980	80	49
42nd	2,644	11,275	13,919	164	39
26th	2,135	11,325	13,460	193	45
32nd	2,915	10,477	13,392	95	35
4th	2,611	9,893	12,504	45	38
77th	1,992	8,505	10,497	113	66
27th	1,785	7,201	8,986	57	57
30th	1,629	7,325	8,954	56	56
5th	1,976	6,864	8,840	103	32
82nd	1,298	6,248	7,546	97	27
89th	1,433	5,858	7,291	83	28
35th	1,067	6,216	7,283	97	5
90th	1,392	5,885	7,277	68	26
33rd	989	6,266	7,255	59	27
78th	1,384	5,861	7,245	38	21
79th	1,419	5,331	6,750	45	17
80th	1,132	5,000	6,132	18	17
91st	1,414	4,364	5,778	29	14
37th	977	4,266	5,243	61	11
29th	951	4,268	5,219	82	23
36th	600	1,928	2,528	23	23
7th	296	1,397	1,693	33	2
92nd	176	1,466	1,642	53	2
81st	251	973	1,224	31	--
6th	93	453	564	40	--
88th	29	89	118	28	--

^a Some 70,000 of the U.S. casualties (some 29 percent of the above total) were caused by poison gas and were mostly fairly short-term disabilities.

Chapter IV

SOME SUMMARY COMPARISONS

Any comparisons between U.S. or Allied and German casualty rates must be heavily qualified for the several reasons which have emerged in this paper. The simple lack of German statistics is compounded by the ambiguity of what few statistics are available. Furthermore, the problem of equivalence of data is complicated by the fact that the Allies generally were on the offensive and the Germans generally on the defensive in the period 6 June-3 September. Consequently, examples of German offensive losses and Allied defensive losses are scarce.

The wide variation in T/Os and the extreme degradation of German divisions due to combat losses make highly questionable any figures on German strengths or casualties extrapolated from the few existing statistics.

Given the sparse German data, a few interesting comparisons can be made. It has been shown that the average divisional rate of loss on both sides tended to be fairly similar. The average U.S. infantry division daily loss rate was 45 men; the average German division, 53. The loss as a percentage of T/O was for the American division 0.3 percent and for the German 0.2 percent. This last figure, however, is derived from German experience on the Eastern Front over a 10-month period. Since the record shows that German losses were higher per day in the West, it is likely that the percentage of T/O figures should also be higher. However, the lack of uniformity of German T/O figures makes any such estimated average extremely uncertain. The chances are that the two rates were similar.

The smallness of statistical samples also imperils any broad conclusions. In regard to representative infantry divisional losses in the defensive, three were given for each side. Three German divisions

lost an average of 209 men per day; the three American units, 200. Again there is a strong similarity.

There is for both sides the same great difference between average rates and high-intensity combat rates. Unfortunately, most of the German numbers acquired (which relate to specific time/losses) were for panzer divisions, while the selection chosen for Allied representative losses in high-intensity combat were nearly all infantry divisions. It should be noted at this point, too, that, while average daily losses for armored divisions are one-third smaller than for infantry divisions (45 to 31), the difference increases tremendously during high-intensity combat, with infantry losses soaring.

Establishing comparability in either defense or offense modes for the two sides is complicated by several factors, perhaps most significantly by the factor of the overwhelming Allied air superiority. It is not possible to determine from the record what proportion of German losses were due to Allied air or, even less (conversely), how many Allied soldiers were prevented from becoming casualties because of Allied air power.

Another important factor in casualty rates is that of fighting style or capacity. The Germans all through the campaign fought a tremendous fight against odds, the stubborn and reckless aggressiveness of the Waffen SS and the paratroops evoking an admiration from the Allied troops that echoes in U.S., British, and Canadian official histories. For their part, Allied troops tended to be more "cautious," to use the most frequently expressed German word of comment ("timid" was also often used). They--U.S., British, and Canadians--tended to rely heavily upon artillery and air for fire support, and infantry was reluctant to assault without immediate tank support.

It is difficult to say what effect these differences in doctrine and fighting style had on respective losses in either attack or defense. That they had an effect, nevertheless, remains undeniable. While the Allies claimed that reliance upon massive fire power was a

means of reducing casualties, we have also seen that high-intensity combat casualty rates were fairly similar for both sides. In short, superior German training and élan may well have partly counterbalanced Allied firepower.

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