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PERSONNEL ATTRITION RATES IN HISTORICAL LAND COMBAT OPERATIONS: LOSSES OF DIVISIONS AND LOWER LEVEL LAND COMBAT FORCES

APRIL 1997

PREPARED BY
TACTICAL ANALYSIS DIVISION

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CAA-RP-97-1

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REPLY TO
ATTENTION OF:

CSCA-TA

5 MAY 19[illegible]

MEMORANDUM FOR Deputy Under Secretary of the Army (OR), Headquarters, Department of the Army, Washington, DC 20310

SUBJECT: Personnel Attrition Rates in Historical Land Combat Operations: Losses of Divisions and Lower Level Land Combat Forces

1. The U.S. Army Concepts Analysis Agency (CAA) is pleased to publish this research paper by Dr. Robert L. Helmbold. Its analysis of selected aspects of personnel losses and loss rates in combat operations spanning a wide range of scales gives US Army operations analysts a much improved foundation for judging future casualty numbers, casualty fractions, and casualty rates on the basis of historical land combat operations. Properly used, this information can be exploited to improve U.S. Army treatment of personnel attrition in models, war games, studies, and analyses. Wide dissemination will make this work available to others for further use in their work.

2. Questions or inquiries should be directed to the Tactical Analysis Division, U.S. Army Concepts Analysis Agency (CSCA-TA), 8120 Woodmont Avenue, Bethesda, MD 20814-2797, (301) 295-1611 or DSN 295-1611.

Encl

E. B. VANDIVER III
Director

PREFACE

The Personnel Attrition Rates (PAR) Study as a whole is limited to studying personnel strengths and battle casualties in historical land combat operations. Other types of attrition (nonbattle losses, losses to equipment, casualties to other services, and so forth) are outside PAR's scope, as are personnel losses in models, simulations, war games, field experiments, or training exercises (like those of the National Training Center).

Phase 1, or PAR-P1, was devoted to assembling the available data and past studies on personnel strengths and attrition rates in land combat operations, preparing a comprehensive bibliography of it, and planning the approach to subsequent phases. Its specific objectives were to:

- Collect as many as possible of the available tabulated data and data-based studies of attrition rates in historical land combat operations,
- Prepare a comprehensive bibliography of such data and studies, and
- Outline an approach to accomplishing the subsequent phases of the PAR Study as a whole.

The bibliography of works collected during Phase 1 was published as *Personnel Attrition Rates in Land Combat Operations: An Annotated Bibliography,* US Army Concepts Analysis Agency Research Paper, CAA-RP-93-2, June 1993 (AD-A268 787). The collection of data and data-based studies consists of the files of pertinent documents maintained at the US Army Concepts Analysis Agency. Phases 2 and 3 of the PAR Study converted some of the most important data to electronic form in order to facilitate their analysis, and performed selected analyses of the attrition data to derive information useful in US Army war games, studies, and analyses. As of this writing, the following documents have been published during Phases 2 and 3:

- *Personnel Attrition Rates in Historical Land Combat Operations: Susceptibility and Vulnerability of Major Anatomical Regions,* CAA Research Paper CAA-RP-93-3, August 1993, AD-A270 766

- *Personnel Attrition Rates in Historical Land Combat Operations: A Catalog of Attrition and Casualty Data Bases on Diskettes Usable With Personal Computers,* CAA Research Paper CAA-RP-93-4, September 1993, AD-A279 069 (report), AD-M000 344 (diskettes)

- *Personnel Attrition Rates in Historical Land Combat Operations: A Note on the Probability of Readmissions and Multiple Wounds,* CAA Research Paper, CAA-RP-94-2, 1 March 1995

- *Personnel Attrition Rates in Historical Land Combat Operations: Some Empirical Relations Among Force Sizes, Battle Durations, Battle Dates, and Casualties,* CAA Research Paper, CAA-RP-95-1, 1 March 1995

- *Personnel Attrition Rates in Historical Land Combat Operations: Addenda to the Annotated Bibliography,* CAA Research Paper, CAA-RP-95-2, 1 April 1995

- *Personnel Attrition Rates in Historical Land Combat Operations: Losses of National Populations, Armed Forces, Army Groups, and Lower Level Land Combat Forces,* CAA Research Paper, CAA-RP-95-5, April 1996.

This paper, written as part of Phase 4, furnishes an additional analysis. It uses historical data to examine selected aspects of the personnel losses and loss rates of divisions and lower level land combat forces. The basic approach used is to review the prior work in these areas, and then to analyze the available data for information related to selected aspects of personnel losses and loss rates. The coverage is therefore unavoidably somewhat spotty and uneven. However, as Best (Robert J. Best, "Casualties and the Dynamics of Combat," RAC-TP-185, March 1966, pg 12) says, "Retrospective combat analysis resembles archaeology in the necessity to exploit information which may be fortuitously available." The primary data analysis technique used is descriptive statistics.

CAA (Concepts Analysis Agency, United States Army)	**PERSONNEL ATTRITION RATES IN HISTORICAL LAND COMBAT OPERATIONS: LOSSES OF DIVISIONS AND LOWER LEVEL LAND COMBAT FORCES**	**SUMMARY CAA-RP-97-1**

THE REASON FOR PERFORMING THIS RESEARCH was that the estimation of attrition in future combat engagements might be improved if the main features of losses over a wide span of operational levels were better known and understood.

THE SPONSOR was the Director, US Army Concepts Analysis Agency.

THE OBJECTIVE was to document selected personnel losses and loss rates for a wide span of operational levels, so that the relationships of rates at various levels would be better understood.

THE SCOPE OF THE RESEARCH is restricted to consider mainly total battle casualties (TBC), defined to be the sum of its principal components, namely, the killed in action (KIA), the wounded in action (WIA), and the captured or missing in action (CMIA). Organizational levels from Corps to nations are considered.

THE MAIN ASSUMPTION of this paper is that the bulk of the pertinent works has been collected and is on file at CAA, and that statistical procedures are appropriate for summarizing the empirical relationships inherent in these data. A secondary assumption, needed for application of the findings, is that the statistics of future military operations will be like the statistics of past battles: in other words, that trends of sufficiently long duration can be extrapolated to the near future with a reasonable degree of confidence.

THE BASIC APPROACH used in this research is to analyze the available data bases for information related to selected aspects of personnel attrition in wars, campaigns, and smaller-scale military operations. The primary technique used is descriptive statistics.

THE PRINCIPAL FINDINGS of the work reported herein are that:

a. Casualty numbers and rates vary widely from one situation to another. They are strongly affected by dilution and attenuation effects. Also, most casualty rate distributions are approximately lognormal.

b. Within corps and other echelons above division (EAD), divisions take the overwhelming majority of the casualties. Within divisions, infantry regiments and brigades account for the overwhelming majority of the casualties. Within brigade or regimental sizes units, infantry battalions take the overwhelming majority of the casualties. This is true even in armor divisions. Within all units, personnel in the infantry branch of the service account for the overwhelming majority of the casualties.

c. In general, a simple autoregressive model fits the divisional time series data rather well.

d. There are few cases in which the TBC number is proportional to exposure. Most of the plots show TBC number actually declining as exposure increases. Even when the trendline of TBC number rises with increasing exposure, the relationship is not usually one of simple proportionality. Instead, it is generally given by a power-law relationship. Hence, a simple proportionality between TBC number and exposure cannot be assumed as a general rule. Instead, it must be established on a case-by-case basis.

e. Both the winner's and loser's TBC fractions declined approximately exponentially with the passage of time over the last 400 years or so. It appears likely that this decline affected both the winner's and the loser's TBC fractions about equally. In addition, it appears that, on average, the loser's TBC fraction has consistently been about twice the winner's TBC fraction, and that this is true at the division, brigade, and battalion levels.

f. Infantry regiments account collectively for about 85 to 95 percent of an infantry division's TBC number. If we classify a division's infantry regiments, field artillery units, machinegun battalions, mortar batteries, and so forth as its "major combat elements," then these generally account for about 95 to 99 percent of the division's TBC number. Within regiments or brigades, the infantry units and infantry branch personnel bear by far the highest number of casualties.

g. Divisions, brigades, battalions, and companies normally experience a moderate percentage of casualty-free days. Some percentages of casualty-free days found in the data at our disposal are as follows: divisions, 20 to 40 percent; brigades, 30 percent; companies, 20 to 70 percent.

h. The battle stress casualty rate can be expected to be given by some base rate plus a number equal to about 10 or 12 percent of the WIA hospital admission rate. Psychiatric cases can be expected to account for 30 to 40 percent of all nonbattle disability discharges, and hence to be the leading single cause of nonbattle disability discharges.

i. The causative agents of battle casualties vary from situation to situation. In general, however, World War II and Korean War experience indicates that small arms fires account for between 14 and 31 percent of the total battle casualties. Machinegun fires account for about the same percentage of total battle casualties as does small arms fire. Artillery and mortar fires together account for about 50 to 70 percent of the total battle casualties. A small residue of cases involve grenades, landmines, boobytraps, bombs, *etc.*

j. There is little trustworthy data regarding casualties to noncombatants during wars. However, some data suggest that their deaths may often equal or even exceed those of the military forces involved.

k. Friendly casualties increase as the level of friendly fire support increases. Presumably, this effect is due to their both being driven by the underlying tempo or intensity of the action.

l. Friendly casualties due to friendly fire may amount to about 10 percent of the friendly casualties caused by enemy fire.

m. The casualty rates experienced during training exercises at the National Training Center (NTC) at Fort Irwin far exceed the rates typically experienced by similar-sized forces in actual combat actions.

THE RESEARCH EFFORT was directed by Dr. Robert L. Helmbold, Tactical Analysis Division.

COMMENTS AND SUGGESTIONS may be sent to the Director, US Army Concepts Analysis Agency, ATTN: CSCA-TA, 8120 Woodmont Avenue, Bethesda, Maryland, 20814-2797.

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CHAPTER 1

EXECUTIVE SUMMARY

1-1. BACKGROUND. In April 1992, the US Army Concepts Analysis Agency (CAA) started a multiphased study of personnel attrition data—the Personnel Attrition Rates (PAR) Study. PAR as a whole is limited to studying personnel strengths and battle casualties in historical land combat operations. Other types of attrition (nonbattle losses, losses to equipment, casualties to other services, and so forth) are outside PAR's scope, as are personnel losses in models, simulations, wargames, field experiments, or training exercises (such as those of the National Training Center).

Phase 1, or PAR-P1, was devoted to assembling the available data and past studies on personnel strengths and attrition rates in land combat operations, preparing a comprehensive bibliography of it, and planning the approach to subsequent phases. Its specific objectives were to:

- Collect as many as possible of the available tabulated data and data-based studies of attrition rates in historical land combat operations,
- Prepare a comprehensive bibliography of such data and studies, and
- Outline an approach to accomplishing the subsequent phases of the PAR Study.

In earlier phases of the PAR Study, some of the most important data were converted to electronic form in order to facilitate their analysis, and some selected analyses of it were performed to derive information useful in US Army wargames, studies, and analyses. As of this writing, the following documents have been published:

- *Personnel Attrition Rates in Land Combat Operations: An Annotated Bibliography*, US Army Concepts Analysis Agency Research Paper, CAA-RP-93-2, June 1993, AD-A268 787

- *Personnel Attrition Rates in Historical Land Combat Operations: Susceptibility and Vulnerability of Major Anatomical Regions,* CAA Research Paper CAA-RP-93-3, August 1993, AD-A270 766

- *Personnel Attrition Rates in Historical Land Combat Operations: A Catalog of Attrition and Casualty Data Bases on Diskettes Usable With Personal Computers,* CAA Research Paper CAA-RP-93-4, September 1993, AD-A279 069 (report), AD-M000 344 (diskettes)

- *Personnel Attrition Rates in Historical Land Combat Operations: A Note on the Probability of Readmissions and Multiple Wounds,* CAA Research Paper, CAA-RP-94-2, April 1994, AD-A280 498

- *Personnel Attrition Rates in Historical Land Combat Operations: Some Empirical Relations Among Force Sizes, Battle Durations, Battle Dates, and Casualties*, CAA Research Paper, CAA-RP-95-1, March 1995, AD-A298 124

- *Personnel Attrition Rates in Historical Land Combat Operations: Addenda to the Annotated Bibliography*, CAA Research Paper CAA-RP-95-2, April 1995, AD-A294 527

- *Personnel Attrition Rates in Historical Land Combat Operations: Losses of National Populations, Armed Forces, Army Groups, and Lower Level Land Combat Forces*, CAA Research Paper CAA-RP-95-5, April 1996, AD-A308-506

The present paper, written as part of Phase 4, furnishes additional analyses. It uses selected historical data to illustrate various aspects of the casualty rates for military conflicts. These are arranged by operational level, beginning with divisions and progressing downward in echelon through brigades, battalions, companies, and individuals. Throughout, primary emphasis is on the rates of total battle casualties (TBC), defined to be the sum of the killed in action (KIA), the wounded in action (WIA) and the captured or missing in action (CMIA).

1-2. OBJECTIVE. The objective of this research paper is to examine the historical evidence for illustrative casualty numbers and rates as related to various echelons of organization, and thereby to establish a baseline for projections into the future.

1-3. SCOPE

a. PAR as a whole is limited to studying personnel strengths and battle casualties of land combat forces. Other types of attrition (nonbattle losses, losses to equipment, casualties to other services, and so forth) are outside PAR's scope. PAR is concerned only with historical data on actual combat operations; it will not deal with personnel losses in models, simulations, wargames, field experiments, or training exercises (such as those of the National Training Center). PAR focuses mainly on either original or translated works in English, although some important work in other languages may be included. Studies of personnel attrition are also included, provided they contain cogent analyses of a publicly available, nonproprietary body of tabulated data on attrition in actual combat operations. Since trends in attrition over long periods of time are of interest, data on ancient as well as recent battles are solicited. However, as no contract support is anticipated and in-house resources are limited, no systematic effort is made to extract data from the archives or primary source materials, and no original historical research is envisioned. Thus, PAR relies almost exclusively on secondary works that contain data in readily usable tabulated form. All works received prior to a cutoff date of 31 May 1995 are included in this paper.

b. The analyses presented in this paper are motivated by two general issues, as listed below. Each of these general issues is analyzed to the degree the data available to us permits. The individual chapters analyze more specific issues that contribute to an understanding of the following general issues.

- Issue 1–What empirical trends in force sizes, battle durations, force ratios, casualty numbers, casualty exchange ratios, casualty fractions, and fractional exchange ratios of the opposing sides persisted over extended periods of time?

- Issue 2–How are force sizes, battle durations, force ratios, casualty numbers, casualty fractions, and casualty rates interrelated?

c. Additional issues, which we hope to examine in greater detail in future works, include such items as the following.

- Issue 3–How are force sizes, battle durations, force ratios, casualty numbers, casualty fractions, and casualty rates related to winning and losing?

- Issue 4–How are force sizes, battle durations, force ratios, casualty numbers, casualty fractions, and casualty rates related to various situational and environmental factors, such as the rate of advance, nationality, tactics, terrain, and supporting fires, among others?

- Issue 5–How do casualty numbers, casualty fractions, and casualty rates vary over relatively brief periods of time?

- Issue 6–What proportion of the total battle casualty number are due to killed in action, wounded in action, died of wounds, captured, and missing in action?

- Issue 7–How are force sizes, battle durations, force ratios, casualty numbers, casualty fractions, and casualty rates distributed statistically?

- Issue 8–What other questions should be addressed?

1-4. ASSUMPTIONS

a. The main assumptions of this paper are (i) that the bulk of the pertinent works has been collected and is on file at CAA and (ii) that descriptive statistical procedures are appropriate for summarizing the empirical relationships implicit in these data. A secondary assumption, needed for application of the findings, is that the statistics of near-future battles will be like the statistics of the battles of the past—in particular, that trends of sufficiently long duration can be extrapolated to the near future with a reasonable degree of confidence.

b. The following caveats should be borne in mind by any potential users of this information.

(1) Marginal distributions may be misleading as to the multivariate distribution.

(2) Trends with respect to time affect projections of past experience to the future.

(3) Typical values give only general guidance, and often need to be modified to apply to the specific case. In this regard, attention should be given to variations with the level of operation, organizational echelon, theater, enemy characteristics, tactical situation, general intensity or level of activity, allocation of effort, and so forth.

1-5. APPROACH. The basic approach used in this study was to review and organize prior work in this area and, where possible, to contribute to it. Our efforts seek to advance the state of the art over prior efforts by (i) providing a more complete survey and analysis of the more readily-available data, (ii) providing mathematical models summarizing the findings where this seems appropriate, and (iii) to the extent supported by the data, using more than one data base at a time in order to determine the sensitivity of the results to different sets of data. The primary data analysis technique used is descriptive statistics.

1-6. FINDINGS, OBSERVATIONS, AND CONCLUSIONS. The following are supported by the data assembled for this study. Since they are based on objective analyses of combat experience, they presumably can be extrapolated to the near future with at least a modest degree of confidence.

a. Casualty numbers and rates vary widely from one situation to another. They are strongly affected by dilution and attenuation effects. Also, most casualty rate distributions are approximately lognormal.

b. Within corps and other echelons above division (EAD), divisions take the overwhelming majority of the casualties. In World War II, airborne and infantry divisions had higher casualties than armor divisions. Within divisions, infantry regiments and brigades account for the overwhelming majority of the casualties. Within brigade or regimental sizes units, infantry battalions take the overwhelming majority of the casualties. This is true even in armor divisions. Within all units, personnel in the infantry branch of the service account for the overwhelming majority of the casualties.

c. For US divisions in the European theater of operations (ETO) during World War II:

(1) Airborne divisions generally had the highest TBC rates, infantry divisions the next highest, and armor divisions the lowest. The proportion of division-days with a zero TBC rate was about 0.20 for both airborne and infantry divisions, but more than 0.40 for armor divisions. Thus, in the ETO, armor divisions experienced zero casualties on a large fraction of their division-days. This may account for armor divisions showing the lowest TBC rates.

(2) Individual divisions differed substantially from each other in their TBC rate experience. The differences presumably are rooted in their differing operational employments and tactical situations.

(3) Most divisions had TBC rates that varied considerably from one day to another. A day to day TBC rate variation from zero to about 10.1 TBC/kpd was not at all unusual.

(4) In general, a simple autoregressive model fits the divisional time series data rather well. For nearly all of these data, there is a consistent and roughly exponential downward trend of the TBC rate with the passage of time. (In an earlier study, this phenomenon was also observed to occur at the corps, army, army group, and theater levels.)

d. We offer the following observations regarding the relation of TBC number to exposure measured in personnel days for the divisions in the ETO. There is a tendency for divisions to have two moderately distinct levels of exposure: high or low. There are few cases in which the TBC number is proportional to exposure. Most of the plots show TBC number actually declining as exposure increases. Even when the trendline of TBC number rises with increasing exposure, the relationship is not usually one of simple proportionality. Instead, it is generally given by a power-law relationship. In all cases, there is considerable scatter about the trendline. (Similar phenomena were observed in an earlier analysis of echelons above division.) For the reasons cited above, a simple proportionality between TBC number and exposure cannot be assumed as a general rule. Instead, it must be established on a case-by-case basis.

e. Both the winner's and loser's TBC fractions declined approximately exponentially with the passage of time over the last 400 years or so. It appears likely that this decline affected both the winner's and the loser's TBC fractions about equally. That is, over the last 400 years or so, their trendlines are approximately parallel. In addition, it appears that, on average, the loser's TBC fraction has consistently been about twice the winner's TBC fraction, and that this is true at the division, brigade, and battalion levels.

f. Infantry regiments account collectively for about 85 to 95 percent of an infantry division's TBC number. On average, the individual infantry regiments share about equally in these casualty numbers. This is presumably due to a tendency to avoid making any regiment carry a significantly larger casualty burden than the others. If we elect to classify a division's infantry regiments, field artillery units, MG battalions, mortar batteries, and so forth as its "major combat elements," then these generally account for about 95 to 99 percent of the division's TBC number. The small residual percentage of the TBC number not accounted for by its major combat elements generally falls on the division's combat support and service support units, with the combat engineers typically bearing the greatest proportion of the residual percentage. Within regiments or brigades, the infantry units and infantry branch personnel bear by far the highest number of casualties.

g. Divisions, brigades, battalions, and companies normally experience a moderate percentage of casualty-free days. Some percentages of casualty-free days found in the data at our disposal are as follows: divisions, 20 to 40 percent; brigades, 30 percent; companies, 20 to 70 percent.

h. The battle stress casualty rate can be expected to be given by some base rate plus a number equal to about 10 or 12 percent of the WIA hospital admission rate. Psychiatric cases can be expected to account for 30 to 40 percent of all nonbattle disability discharges, and hence to be the leading single cause of nonbattle disability discharges.

i. The causative agents of battle casualties vary from situation to situation. In general, however, World War II and Korean War experience indicates that small arms fires account for between 14 and 31 percent of the total battle casualties. Machinegun fires account for about the same percentage of total battle casualties as does small arms fire. Artillery and mortar fires together account for about 50 to 70 percent of the total battle casualties. A small residue of cases involve grenades, landmines, boobytraps, bombs, *etc.*

j. There is little trustworthy data regarding casualties to noncombatants during wars. However, some data suggest that their deaths may often equal or even exceed those of the military forces involved.

k. Friendly casualties increase as the level of friendly fire support increases. Presumably, this effect is due to their both being driven by the underlying tempo or intensity of the action.

l. Friendly casualties due to friendly fire may amount to about 10 percent of the friendly casualties caused by enemy fire.

m. The casualty rates experienced during training exercises at the National Training Center (NTC) at Fort Irwin far exceed the rates typically experienced by similar-sized forces in actual combat actions. This is particularly true for the Opposing Forces (OpFor) that simulate enemy forces.

CHAPTER 2

BACKGROUND

2-1. INTRODUCTION. This chapter reviews some definitions, concepts, and information on casualties to echelons above division (EAD) in order to establish a suitable context for our discussion of losses to divisions and lower echelon forces. The data presented in this chapter deals primarily with total battle casualties (TBC), defined to be the sum of the killed in action (KIA), wounded in action (WIA), and captured or missing in action (CMIA). This review of the data on EAD is not intended to be exhaustive, but merely to provide a proper perspective on the relation of division-level casualties to the casualties of EAD.

2-2. DEFINITIONS

a. We note for the record that here, as well as in other parts of this paper, loss rates are normally expressed as the average number of losses of a certain type per thousand personnel in the exposed population per day, symbolized by L/kpd, where L is the type of loss in question. Appendix D-1 discusses the concept of average loss rate in more detail.

b. For an example of an average loss rate, suppose we take the experience of the US 24th Infantry Division in the early days of the Korean War. It has been reported that this division began operations with a strength of 16,000 and was reduced to a strength of 8,660 over a period of 22 days [Summers-1996]. Assuming a linear change in strength throughout the indicated period, the division's average strength was 12,330, so its average attrition rate during that time was 27.06 personnel lost per kilo personnel-days of exposure (kpd), so we write the loss rate as 27.06/kpd. An analogous approach applies to figuring the average loss rates for other types of losses, such as killed in action (KIA), wounded in action (WIA), died of wounds (DOW), captured or missing in action (CMIA), and disease or nonbattle injured (DNBI).

c. On occasion we may be concerned with the *fraction* of losses, rather than their rate. The fraction of losses is normally computed relative to the organization's initial strength. In the 24th Infantry Division example given above, the fraction of personnel lost during the period in question was 45.88 percent of its initial strength (but 59.53 percent of its average strength).

d. In many cases we have information on the initial and final strengths of a force, and on its total (endogenous) casualties and total (exogenous) gains, but not on its detailed personnel strength history. The data cited above for the US 24th Infantry Division is a case in point. In such cases, the available information is insufficient to determine a unique value of the force's average casualty rate. In such cases, it is conventional to estimate the average casualty rate by assuming a linear change in the force's strength. Appendix D-2 discusses the likely error incurred by this procedure.

e. Published casualty rates are generally affected by some degree of dilution and attenuation. By dilution we mean that not all portions of the population used as a basis for computing a published (average) casualty rate are equally exposed to the risk in question. Thus, casualty rates for the more exposed portions of the population are diluted by other, less exposed, portions of the population. By attenuation we mean that the level of risk is not constant over the time period used as a basis for computing a published (average) casualty rate. Thus, casualty rates for the higher-risk times are attenuated by casualty rates at lower-risk times. Accordingly, we anticipate that casualty rates based on large populations and long time periods will, as a rule, be lower than those based on small populations and shorter time periods. Indeed, we will find that these dilution and attenuation effects can result in average casualty rates orders of magnitude lower than the undiluted and unattenuated rates. Accordingly, these effects are extremely important and must be carefully borne in mind when interpreting the significance of casualty rate.

2-3. SUMMARY OF SELECTED FINDINGS FROM PRIOR WORK The following is a summary of the findings regarding casualties to EAD that are of greatest relevance to the present work [adapted from Helmbold-1995]. These examples focus on those items that are analogous or most pertinent to casualties at division level and below, and so are not intended to be comprehensive.

a. In recent US experience, nonbattle deaths over the course of a war are mostly due to accidents. Deaths from disease are only about 20 percent of all nonbattle deaths and only about 5 percent of all (battle and nonbattle) deaths.

b. Casualty numbers and rates vary widely from occasion to occasion. In particular, most casualty rate distributions are approximately lognormal. Figure 2-1 shows a typical example of the distribution of TBC rate for the US 12th Army Group in Northwest Europe during World War II. It illustrates that these rates can range over two orders of magnitude.

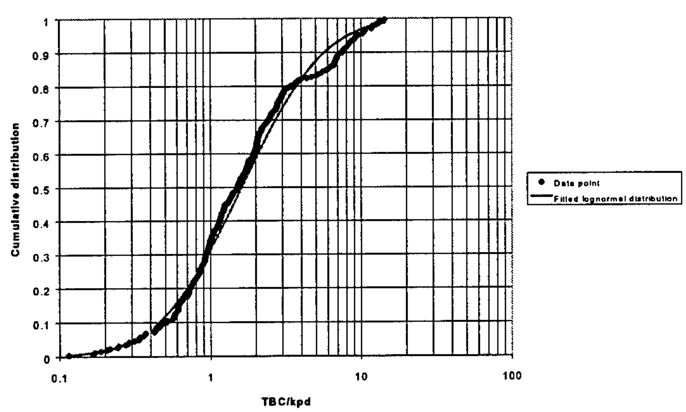

Figure 2-1. Distribution of TBC Rates for the US 12th Army Group

c. The violin plots shown at Figures 2-2 through 2-4 provide a quick overview of the typical values and ranges of casualty rates at EAD that have been experienced under various circumstances. See Appendix D-3 for an explanation of how to interpret violin plots.

(1) Figure 2-2 shows the TBC rates for theaters and army groups. The key to the cases shown there is as follows:

- Th-A = British theater-level TBC rates from World War I and Boer War.
- Th-B = US Army TBC rates from World War II.
- AG-A = US 12th Army Group TBC rates, European theater of operations (ETO), World War II.
- AG-B = Allied Forces, Ardennes Campaign, World War II.
- AG-C = German Forces, Ardennes Campaign, World War II.

Some observations that can be drawn from these figures are as follows:

- British theater-level TBC rates in World War I and Boer War averaged about twice those of the US Army in World War II.
- Army Group TBC rates in World War II averaged about an order of magnitude higher than the Theater-level TBC rates.
- Allied forces in the hard-fought Ardennes Campaign had average TBC rates about twice those of the normal or typical US Army ETO TBC rate experience.
- Losing German forces in the Ardennes Campaign had average TBC rates about twice those of the winning Allied Forces.

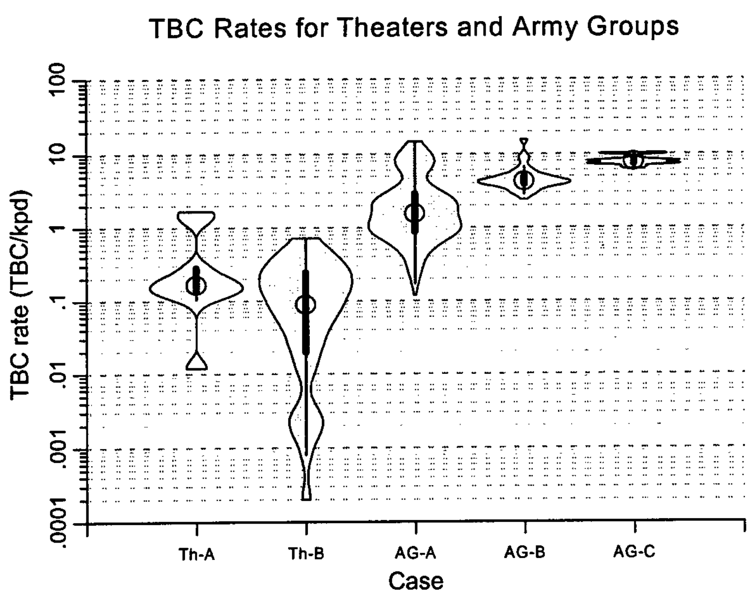

Figure 2-2. TBC Rates for Theaters and Army Groups

(2) Figure 2-3 shows the TBC rates for armies. The key to the cases shown there is as follows (CDB90DAT and PARCOMBO are data bases of battles—see Helmbold-1995):

- Ar-A = US 1st Army, ETO.
- Ar-B = US 3rd Army, ETO.
- Ar-C = US 9th Army, ETO.
- Ar-D+= US 15th Army, ETO, positive TBC rates only..

- Ar-E = Selected US Army TBC rates from World War II, based on Beebe and DeBakey.
- Ar-F = US 1st Army, Meuse-Argonne offensive, World War I.
- Ar-G = Soviet Fronts & Independent Armies, World War II.
- Ar-H = Soviet Large Front Operations, World War II.
- Ar-I = Soviet Strategic Operations, World War II.
- Ar-J = CDB90DAT, Winners.
- Ar-K = CDB90DAT, Losers.
- Ar-L = PARCOMBO, Winners.
- Ar-M = PARCOMBO, Losers.

Some observations that can be drawn from these figures are as follows:

- US Armies in the ETO had quite different TBC rate experiences, despite operating in the same theater of war. This is in part due to their difference in arrival times (TBC rates were much higher in Normandy than in later phases of ETO operations). In part it is due to their employment in different sectors of the front and in operations of differing intensity.
- The TBC rates for Case Ar-E fall in the middle range of those for US Armies in the ETO.
- Soviet Army-sized forces tended to experience significantly higher TBC rates than US armies in the ETO. This is in part due to differences in their circumstances, and in part due to a tendency for these data to select notable operations of rather higher intensity than experienced by US Armies in the ETO.
- The historical data for Cases Ar-J through Ar-M illustrates that losers tend to have TBC rates that are about twice those of the loser. These TBC rates are significantly higher than for the other cases in part because (i) they are for selected battles (so that the recorded TBC rates are undiluted and unattenuated by less actively engaged forces, and (ii) many of these data are for battles of an earlier era, when casualty rates were significantly higher than subsequently.

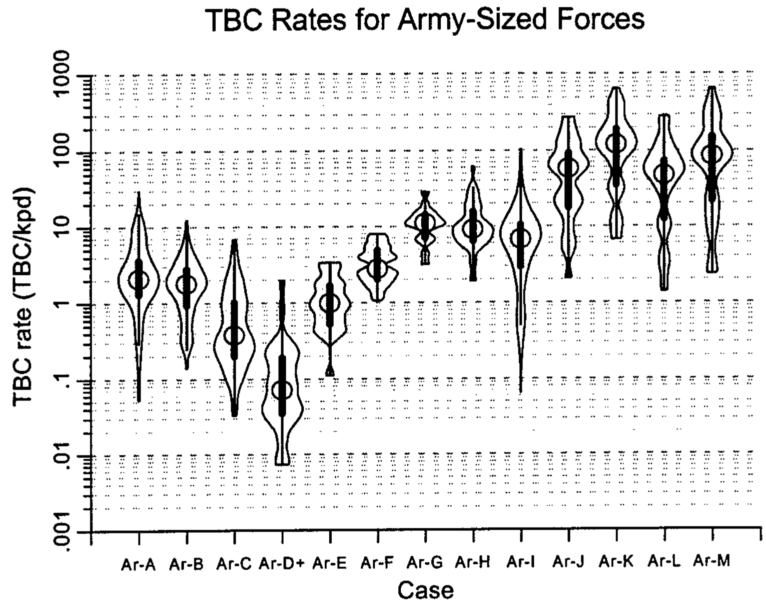

Figure 2-3. TBC Rates for Army-sized Forces

(3) Figure 2-4 shows the TBC rates for corps. The key to the cases shown there is as follows (a "+" indicates that zero TBC rate values have been omitted in order to use a logarithmic scale; BWSH is a data base of battles—see Helmbold-1995):

- A = CDB90DAT, Winners.
- B = CDB90DAT, Losers.
- C = PARCOMBO, Winners.
- D = PARCOMBO, Losers.
- E = BWSH Winners.
- F = BWSH Losers.
- G = LeMans to Metz, ETO, US XX Corps, Winner.
- H = LeMans to Metz, ETO, German forces, Loser.
- I = Saar Campaign, ETO, US XII Corps, Winner.
- J = Saar Campaign, ETO, German forces, Loser.
- K = USMC data from World War II, after Blood.
- L = Selected data on US army corps TBC rates from World War II, after Beebe and DeBakey.
- M+ = US 3d Corps, ETO, positive TBC rates only.
- N = US 5 Corps, ETO.
- O = US 7 Corps, ETO.
- P = US 8 Corps, ETO.
- Q = US 12 Corps, ETO.
- R+ = US 13 Corps, ETO, positive TBC rates only.
- S+ = US 16 Corps, ETO, positive TBC rates only.
- T+ = US 18 Corps, ETO, positive TBC rates only.
- U = US 19 Corps, ETO.

- V = US 20 Corps, ETO.
- W+ = US 22 Corps, ETO, positive TBC rates only.
- X+ = US 23 Corps, ETO, positive TBC rates only.

Some observations that can be drawn from these figures are as follows:

- The following cases all have similar TBC rates: A = CDB90DAT, Winners; C = PARCOMBO, Winners; E = BWSH Winners.
- The following cases all have similar TBC rates, but their TBC rates are about twice those mentioned in the preceding observation: B = CDB90DAT, Losers; D = PARCOMBO, Losers; F = BWSH Losers. In other words, losers tend to have TBC rates about twice those of winners.
- All of the cases mentioned in the first and second observations above have TBC rates that are an order of magnitude or more above the other cases.
- The US Army corps TBC rates quoted by Beebe and DeBakey (Case L) are concordant with most other sources's US Army corps TBC rates for the World II European Theater of Operations.
- The German forces opposing US corps in Cases H and J had TBC rates about as high as Blood's data on US Marine Corps TBC rates in World War II amphibious operations.
- Some of the US corps in the ETO had TBC rates lower than experienced by other corps in the US 12th Army Group. This is probably due to their later arrival in theater and use in less intense operations.
- The historical data for Cases A through J illustrates that losers tend to have TBC rates that are about twice those of the loser.
- The TBC rates for Cases A through F are significantly higher than for the other cases in part because (i) they are for selected battles (so that the recorded TBC rates are undiluted and unattenuated by less actively engaged forces), and (ii) many of these data are for battles of an earlier era, when casualty rates were significantly higher.

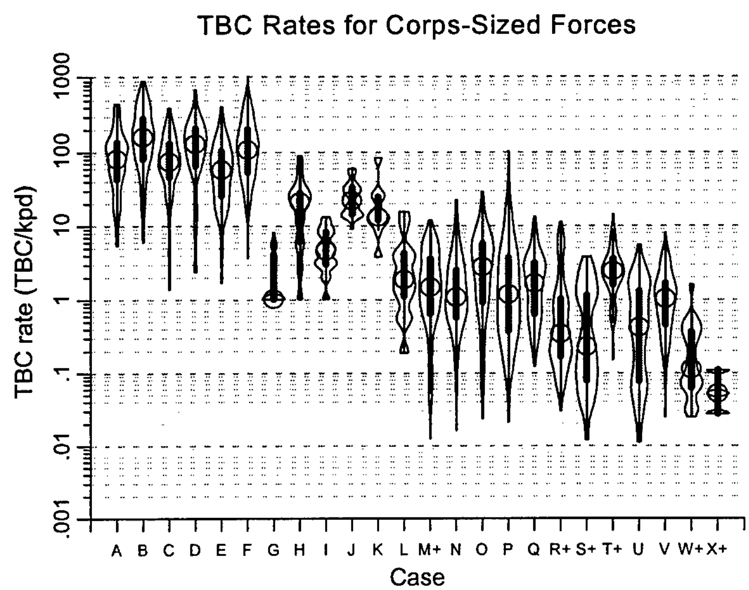

Figure 2-4. TBC Rates for Corps-sized Forces

d. In practice, the number of TBC is often forecast by multiplying an assumed constant TBC rate by the level of exposure to risk (as measured by the thousands of personnel-days of exposure). That is, a simple proportionality, represented by the equation

$$TBC = Rate \times Exposure,$$

is postulated, where *TBC* is the number of TBC, *Rate* is an assumed constant of proportionality, and *Exposure* is the level of exposure to risk (as measured by the thousands of personnel-days of exposure). However, in fact the TBC number is often poorly approximated by a simple proportionality of the form given above. Instead, the data follow a power law of the form

$$TBC = Const \times (Exposure)^{p}$$

where the exponent, p, is not equal to unity. Moreover, several instances have been observed in which the slope of the *TBC* versus *Exposure* graph is negative—which would suggest a negative value of the casualty rate *Rate.* An example of this is shown in Figure 2-5. These findings demonstrate that it is hazardous to apply a simple proportionality of casualties to exposure levels without considering other important factors.

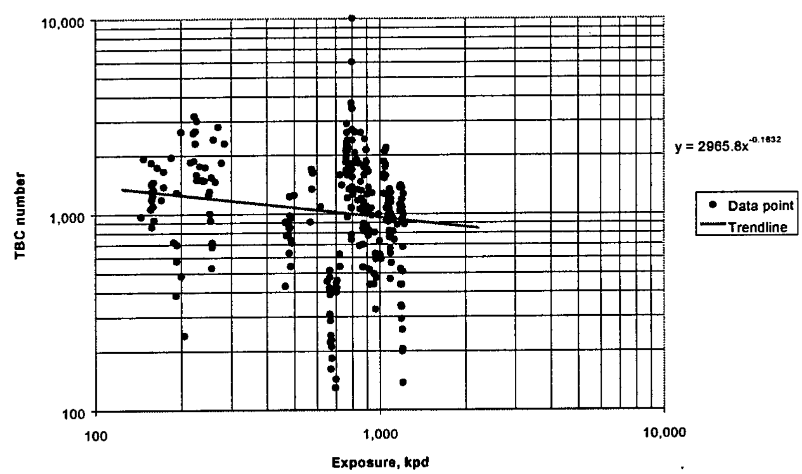

Figure 2-5. US 12th Army Group TBC Number Versus Exposure

e. When viewed over several weeks or months duration for a basically successful offensive campaign, EAD TBC rates tend to decline exponentially. After transforming the data logarithmically, this is a linear trend, and on this average linear trend is superimposed a residual that can be represented by a simple, one-term autoregressive process having a normal random error. The form of the autoregressive moving average (ARIMA) equations describing this phenomenon are given in Appendix D-4. Figure 2-6 shows a typical result of fitting these equations to a time series of TBC rates.

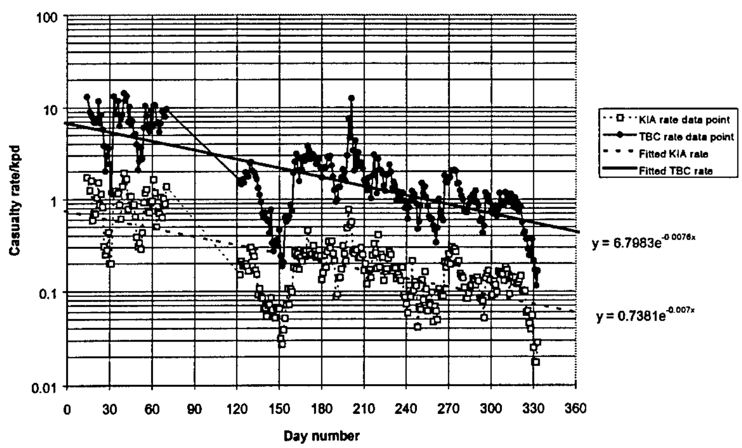

Figure 2-6. US 12th Army Group Casualty Time Series, World War II

f. Historically, over 99 percent of all army group battle casualties are taken by formations at army level and below. Over 99 percent of all army battle casualties are taken by formations at corps level and below. Well over 90 percent of all corps battle casualties are taken by formations at division level and below. This is illustrated in Figure 2-7.

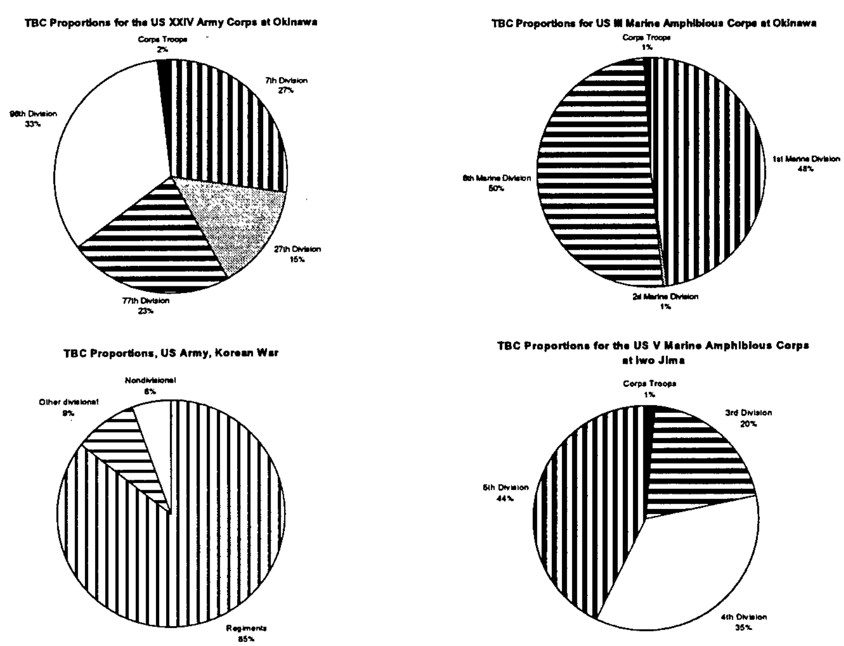

Figure 2-7. Casualties to Divisions as a Percentage of Casualties to Corps Echelons

CHAPTER 3

ANALYSIS OF US 12TH ARMY GROUP DATA

3-1. INTRODUCTION

a. This chapter presents some analyses of the divisional data in the US 12th Army Group data base. That data base gives personnel strengths and losses of the US 12th Army Group throughout its operations in northwest Europe during World War II [see Helmbold-1993]. Its information includes the onhand strength and casualty data (including KIA, WIA, and CMIA) on a daily basis for operations in northwest Europe during World War II from 15 June 1944 (shortly after the D-day landings in Normandy on 6 June 1944) through 30 April 1945 (shortly before the surrender of Nazi Germany on 5 May 1945). However, due to gaps in the archival records, no data are available for the following dates: 16 June 1944, 3 July 1944, 6 July 1944, and 11 August through 30 September 1944.

b. For simplicity, we will always refer to the forces included in this data base as the US 12th Army Group. However, during the initial period (15 June 1944 through early August 1944), these forces were not of army group size. Instead, they constituted the US First Army and were one of the armies under the British 21st Army Group. By early August 1944, the size of the US forces had increased to the point that they were reorganized as the US 12th Army Group under GEN Omar Bradley. By the time the war in Europe ended, the US 12th Army Group was organized as shown below.

- 12th Army Group (Bradley)
  - 3d Army (Patton)
    - 8 Corps (Middleton)
    - 12 Corps (Eddy)
    - 20 Corps (Walker)
  - 1st Army (Hodges)
    - 3 Corps (Van Fleet)
    - 5 Corps (Huebner)
    - 7 Corps (Collins)
    - 18 Abn Corps (Ridgway)
  - 15th Army (Gerow)
    - 22 Corps (Harmon)
    - 23 Corps (Balmer)
  - 9th Army (Simpson)
    - 13 Corps (Gillem)
    - 16 Corps (Anderson)
    - 19 Corps (McLain)

c. This data base uses a category called UNIT to denote the type of basic unit. For divisions, UNIT designations are either INF D, ARM D, or ABN D. For higher echelons, the UNIT designations are either INF D, ARM D, or ABN D (for individual divisions attached directly to the higher echelon); HQ/SE (for organic and attached "headquarters and service" elements); or OTHER (for other *combat* elements organic or attached to the higher echelon, such as artillery, tank destroyer units, *etc.*). Although some of these OTHER unit types were often assigned or attached to divisions for operational control, this data base carries them at the higher echelon.

d. Every data base has some special characteristics of which the user should be aware. Some of the special characteristics of this data base are mentioned here. First, there are the gaps in the available source data, mentioned above. Second, there are no HQ/SE elements listed in the data base for the period prior to 1 October 1944. Although some US corps and army HQ/SE must have been active prior to that date, the sources used to prepare this data base provide no information on them. Third, the 44th Infantry Division appears only briefly (in 3 Corps of the 9th Army from 1 October 1944 through 10 October 1944 and as attached directly to the 9th Army from 11 October 1944 through 16 October 1944). Throughout its appearance, all of its battle casualties are recorded as zero, and its assigned strength varies from a low of 13,551 to a high of 13,895. This agrees with the information in the sources consulted in preparing the data base. Fourth, for the period 23 January 1945 through 31 January 1945, the 35th Infantry Division in 3 Corps of the 3d Army consisted of a regimental combat team only, which explains its unusually low authorized and assigned strength values. Fifth, at various times from 2 October 1944 through 24 October 1944, the 9th Armored Division in 3 Corps of the 9th Army (later reassigned to 8 Corps of the 3d Army) had one of its combat commands assigned to another division, which explains its occasional unusually low authorized and assigned strength values. Sixth, at various times from 15 June 1944 through 11 July 1944, both the 82d and 101st Airborne Divisions had unusually low assigned strengths, but these have been confirmed by a check against the original source materials used. Seventh, at various times from 19 December 1944 through 6 April 1945, the 106th Infantry Division had unusually low assigned strengths, but these were a direct result of the heavy losses this division took in the early phases of the Ardennes Campaign (Battle of the Bulge). Apparently, this division was never restored to full strength after suffering these losses and was either out of the line or assigned to a quiet sector thereafter. Eighth, the data on individual divisions has occasional gaps in addition to those mentioned earlier. Some of these gaps are rather lengthy. Ninth, divisions were sometimes shifted from one corps to another (or even from one army to another.) Tenth, these data are for organizations that concentrated almost all of their combat power in divisions and supplied a somewhat lower fraction of it from EAD than is the current US practice. Hence, the relative proportions of casualties to divisions versus EAD may not apply directly to current US operational and organizational concepts.

3-2. SUMMARY TABULATION OF STRENGTHS AND LOSSES. Table 3-1 shows a summary tabulation of the US 12th Army Group data. In this table, an entry of #Div/0! indicates that no valid ratio could be computed for these data because the denominator is equal to zero.

a. The first column lists the unit type designations used in this data base. The second column indicates the kinds of values given on the corresponding rows.

b. The next block of columns gives the number according to the organizational placement of the unit. For example, "Inf D," "Sum of KIA" for "In Corps" provides the total number of KIA for all of the infantry divisions listed in the data base as being directly under the control of a corps. Similarly, "Inf D," "Sum of KIA," "Row total" gives the total number of KIA for *all* infantry divisions listed in the data base, regardless of their organizational assignment. The rows identified as "Sum of Assd" gives the sum of the total daily onhand strength, and so is equal to the exposure of these unit types, expressed in units of personnel-days.

c. The next block of columns gives the casualty rates, expressed in units of casualties per 1,000 personnel-days of exposure. For example, the KIA casualty rate for infantry divisions directly under corps control is equal to (28,661 KIA) / (73,132.466 kpd) = 0.39 KIA/kpd. The overall KIA casualty rate for all infantry divisions in the 12th Army Group, regardless of their organizational assignment, is (28,795 KIA) / (80,193.174 kpd) = 0.36 KIA/kpd.

d. The next block of columns gives the ratio of the number of casualties of various types to the number of WIA casualties, by type of unit and organizational assignment.

e. We offer the following observations on Table 3-1. These do not necessarily exhaust the important points that can be inferred from it.

(1) Divisions directly under corps control had substantially higher casualty rates than the OTHER and HQ/SE unit types.

(2) Of the division types, airborne divisions had the highest casualty rates, followed by infantry divisions and armor divisions.

(3) The OTHER combat unit types had higher casualty rates than the HQ/SE unit types.

(4) The KIA / WIA ratio amounted to about 1/6. The CMIA / WIA ratio amounted to about 1/4.

(5) The TBC / WIA ratio amounted to about 1.43.

(6) Of the grand total of 337,864 TBC, 257,053 (76.08 percent) were taken by infantry divisions directly controlled by corps, another 39,563 (11.71 percent) were taken by armor divisions in corps, another 14,114 (4.18 percent) by airborne divisions in corps. The divisions in corps took 310,730 TBC (91.97 percent of the grand total of all TBC). Another 25,033 TBC (7.41 percent) were taken by the OTHER corps combat units. Thus, the total TBC to divisions and OTHER combat units directly controlled by corps amounted to 335,763 (99.38 percent of the grand total of all TBC).

Table 3-1. Summary Tabulation of US 12th Army Group Strengths and Casualties

		Number				Rate/kpd				Ratio to WIA			
Unit	Data	In Corps	In Army	In ArmyGrp	Row Total	In Corps	In Army	In ArmyGrp	Overall	In Corps	In Army	In ArmyGrp	Overall
INF D	Sum of KIA	28,661	54	80	28,795	0.39	0.01	0.03	0.36	0.16	0.23	0.30	0.16
	Sum of WIA	178,354	233	267	178,854	2.44	0.05	0.11	2.23	1.00	1.00	1.00	1.00
	Sum of CMIA	50,038	74	24	50,136	0.68	0.02	0.01	0.63	0.28	0.32	0.09	0.28
	Sum of TBC	257,053	361	371	257,785	3.51	0.08	0.16	3.21	1.44	1.55	1.39	1.44
	Sum of Assd	73,132,466	4,714,153	2,346,555	80,193,174								
ARM D	Sum of KIA	5,210	116	0	5,326	0.24	0.04	#DIV/0!	0.22	0.18	0.25	#DIV/0!	0.18
	Sum of WIA	29,386	471	0	29,857	1.37	0.15	#DIV/0!	1.21	1.00	1.00	#DIV/0!	1.00
	Sum of CMIA	4,967	60	0	5,027	0.23	0.02	#DIV/0!	0.20	0.17	0.13	#DIV/0!	0.17
	Sum of TBC	39,563	647	0	40,210	1.85	0.20	#DIV/0!	1.63	1.35	1.37	#DIV/0!	1.35
	Sum of Assd	21,383,678	3,226,208	0	24,609,886								
ABN D	Sum of KIA	1,844	14	0	1,858	0.69	0.21	#DIV/0!	0.68	0.19	0.52	#DIV/0!	0.19
	Sum of WIA	9,584	27	0	9,611	3.58	0.40	#DIV/0!	3.50	1.00	1.00	#DIV/0!	1.00
	Sum of CMIA	2,686	0	0	2,686	1.00	0.00	#DIV/0!	0.98	0.28	0.00	#DIV/0!	0.28
	Sum of TBC	14,114	41	0	14,155	5.27	0.61	#DIV/0!	5.16	1.47	1.52	#DIV/0!	1.47
	Sum of Assd	2,677,381	67,459	0	2,744,840								
OTHER	Sum of KIA	3,653	36	4	3,693	0.09	0.00	0.01	0.07	0.20	0.31	0.12	0.20
	Sum of WIA	18,126	116	34	18,276	0.42	0.01	0.07	0.33	1.00	1.00	1.00	1.00
	Sum of CMIA	3,254	6	5	3,265	0.08	0.00	0.01	0.06	0.18	0.05	0.15	0.18
	Sum of TBC	25,033	158	43	25,234	0.59	0.01	0.09	0.45	1.38	1.36	1.26	1.38
	Sum of Assd	42,740,759	12,522,768	475,958	55,739,485								
HQ/SE	Sum of KIA	54	0	28	82	0.01	0.00	0.01	0.00	0.27	#DIV/0!	0.28	0.27
	Sum of WIA	202	0	99	301	0.02	0.00	0.04	0.01	1.00	#DIV/0!	1.00	1.00
	Sum of CMIA	42	0	55	97	0.01	0.00	0.02	0.00	0.21	#DIV/0!	0.56	0.32
	Sum of TBC	298	0	182	480	0.04	0.00	0.07	0.01	1.48	#DIV/0!	1.84	1.59
	Sum of Assd	8,117,677	28,177,425	2,672,087	38,967,189								
Sum of KIA		39,422	220	112	39,754	0.27	0.00	0.02	0.20	0.17	0.26	0.28	0.17
Sum of WIA		235,652	847	400	236,899	1.59	0.02	0.07	1.17	1.00	1.00	1.00	1.00
Sum of CMIA		60,987	140	84	61,211	0.41	0.00	0.02	0.30	0.26	0.17	0.21	0.26
Sum of TBC		336,061	1,207	596	337,864	2.27	0.02	0.11	1.67	1.43	1.43	1.49	1.43
Sum of Assd		148,051,961	48,708,013	5,494,600	202,254,574								

3-3. TBC RATE DISTRIBUTIONS

a. Previous work noted that the TBC rates of echelons above division (EAD) are often distributed lognormally (cf. paragraph 2-3b above). It illustrated that by plotting their TBC rate distributions on logarithmic scales. Unfortunately, many of the divisions in the US 12th Army Group database are recorded as having several days with no TBC. These zero-casualty days certainly ought not to be ignored. Yet including them precludes plotting their distributions on logarithmic scales. To cope with this difficulty, we adopted the Box-Cox data transformation described in Appendix D-5. As explained there, it can be viewed as an "approximate" logarithmic transformation. For consistency, we used the same Box-Cox transformation in all cases, namely the one for which the exponent is equal to 0.3 ($s = 0.3$ in the notation of Appendix D-5). That particular value may not be optimal, but it was selected as one that appeared adequate based on a few trials. Figure 3-1 shows a cumulative distribution plot comparing the results of a logarithmic transformation to a Box-Cox ($s = 0.3$) transformation, together with the corresponding fitted normal distributions. The data used here are for the US 12th Army Group as a whole. For it, there are no zero values, so there is no difficulty in taking the logarithmic transformation. As can be seen, the Box-Cox ($s = 0.3$) transformation qualitatively resembles a logarithmic transformation that has been slightly compressed at the lower values and stretched a bit at the higher values. When balanced against the possible loss of information if zero values were ignored, we consider these slight distortions acceptable.

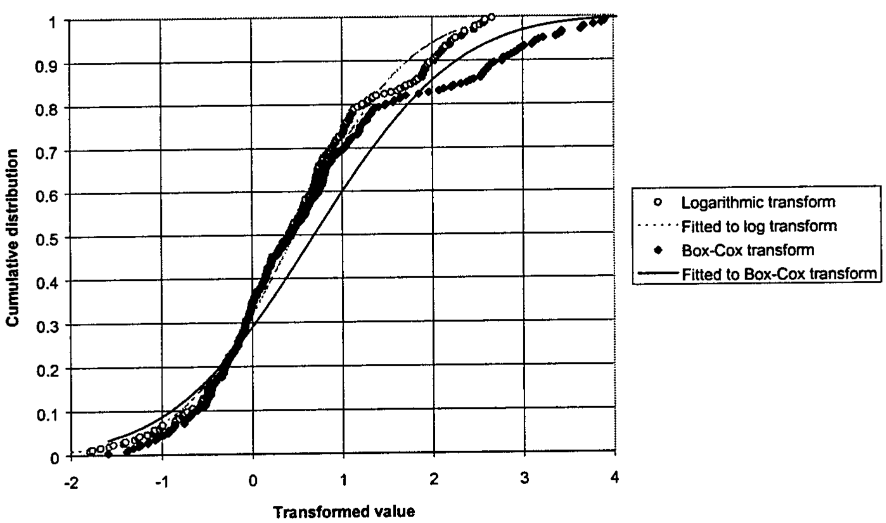

Figure 3-1. Comparison of Logarithmic and Box-Cox Transformations

b. Appendix E contains the figures showing observed and fitted normal distributions of the Box-Cox ($s = 0.3$) transformed TBC rates for the divisions in the US 12th Army Group data base. Figures 3-2 through 3-4 give aggregate or composite distribution plots for the airborne, armor, and infantry division types of the US 12th Army Group. Distribution plots for the individual divisions with enough data to warrant plotting are provided in Appendix E as follows:

- Airborne divisions– Figures E-4 through E-6 on pages E-3 and E-4.

- Armor divisions– Figures E-7 through E-16 on pages E-5 through E-9.
- Infantry divisions– Figures E-17 through E-50 on pages E-10 through E-26.

c. As can be seen, the normal distribution is generally a reasonable fit to these Box-Cox transformed TBC rates, especially at the higher TBC rate values. The "staircase" shape of the data point plot in the lower parts of Figures 3-3 and 3-4 is due to the discreteness or granularity of the data, and is particularly apparent for very low TBC rates.

d. The normal distribution fitted to the data in Figures 3-2 through 3-4 and in Figures E-1 through E-50 was fitted using the method of moments. That is, in each case, the fitted distribution was determined by the average and standard deviation of the data. In computing the average and standard deviation, all Box-Cox values corresponding to an observed TBC rate of zero were used (*i.e.*, Box-Cox TBC values equal to –10/3 = –3.3333...). A distribution fitted in this way will be called a "simple normal distribution." In retrospect, using just a simple normal distribution may not have been the best procedure. There are many alternative approaches, including the two mentioned below. Unfortunately, none of the alternatives could be pursued at length within the scope of this effort. Note that each alternative reduces to the simple normal distribution when there is no data spike.

(1) One alternative is to assume that the distribution of Box-Cox TBC rates consists of a "spike" at the value –10/3, plus a normal distribution of values greater than –10/3. Mathematically, such a distribution has the form

$$y = \begin{cases} 0, \; x < a \\ p, \; x = a \\ p + \Phi\left(\dfrac{x-\mu}{\sigma}\right)(1-p), \; x > a \end{cases}$$

where $\Phi(\cdot)$ is the standard cumulative normal distribution, μ and σ are the mean and standard deviation values of Box-Cox TBC rates greater than a, a is the value of x at which the "spike" occurs (for the Box-Cox transform with $s = 0.3$, $a = -10/3$), and p is the fraction of Box-Cox TBC rates equal to a. Such a distribution will be called a "spike distribution." It has more free parameters than the simple normal distribution, and so should give a better fit. Figure 3-5 shows a spike distribution fit to the Box-Cox TBC rate data for composite infantry divisions. The following parameter values were used for the spike distribution: $\mu = -0.76$, $\sigma = 1.97$, and $p = 0.20$. The fit is rather disappointing, and does not seem to be much more meaningful than that of a simple normal distribution.

(2) A second alternative is to assume that the distribution of Box-Cox TBC rates is a sort of smooth transition from a "spike" at –10/3 to a normal distribution at higher values. For example, one might consider using a distribution of the form

$$y = \Phi\left(\frac{a-\mu}{\sigma}\right)\exp\left[-b(x-a)^c\right] + \Phi\left(\frac{x-\mu}{\sigma}\right)\left\{1-\exp\left[-b(x-a)^c\right]\right\}$$

where $\Phi(\cdot)$ is the standard cumulative normal distribution, μ and σ are mean and standard deviation values, a is the value of x at which the "spike" occurs, b and c are adjustable parameters, and $x \geq a$. Such a distribution will be called a "transition distribution." It has more adjustable parameters than the spike distribution, so it would not be surprising if it gave a good fit. Of course, the more free parameters that are involved, the more difficult it is to interpret the meaning of the corresponding fit. However, Figure 3-6 shows a transition distribution fit to the Box-Cox TBC rate data for composite infantry divisions. The following parameter values were used for the transition distribution: $a = -10/3$, $\mu = -0.9$, $\sigma = 2.96$, $b = 0.1$, and $c = 2.3$. It fits the data much better than either the simple normal or spike distributions. Future work might profitably explore this and other alternatives to the simple normal distribution.

3-4. VIOLIN PLOTS OF TBC RATES

a. Violin plots are convenient for making quick comparisons among a number of data distributions. Appendix D-6 explains the format used to display violin plots. Figure 3-7 shows a violin plot comparison of logarithmic and Box-Cox transformations. This figure uses the same data as Figure 3-1, and a comparison between them illustrates some of the advantages of violin plots. In particular, Figure 3-7 suggests that the transformed data might best be represented as a mixture of two or three normal distributions, rather than as a single normal distribution. However, this notion could not be examined within the scope of this effort.

b. Appendix E contains violin plots of the Box-Cox ($s = 0.3$) transformed TBC rates for the divisions in the US 12th Army Group data base. Figure 3-8 gives violin plots of the aggregate or composite airborne, armor, and infantry division types of the US 12th Army Group. Violin plots for the individual divisions with enough data to warrant plotting are provided in Appendix E as follows:

- Airborne divisions– Figure E-52 on page E-27.
- Armor divisions– Figure E-53 on page E-28.
- Infantry divisions– Figures E-54 through E-57 on pages E-28 through E-30.

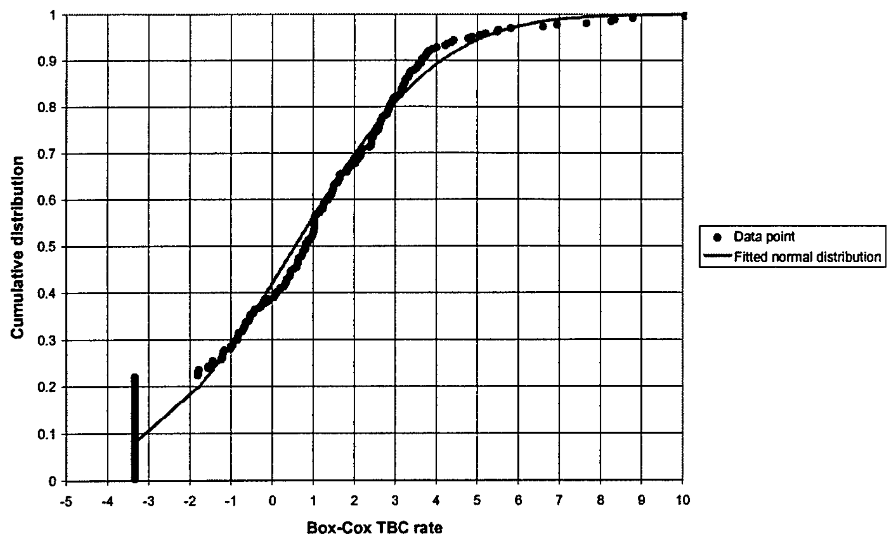

Figure 3-2. Distribution of TBC Rates for Composite Airborne Divisions

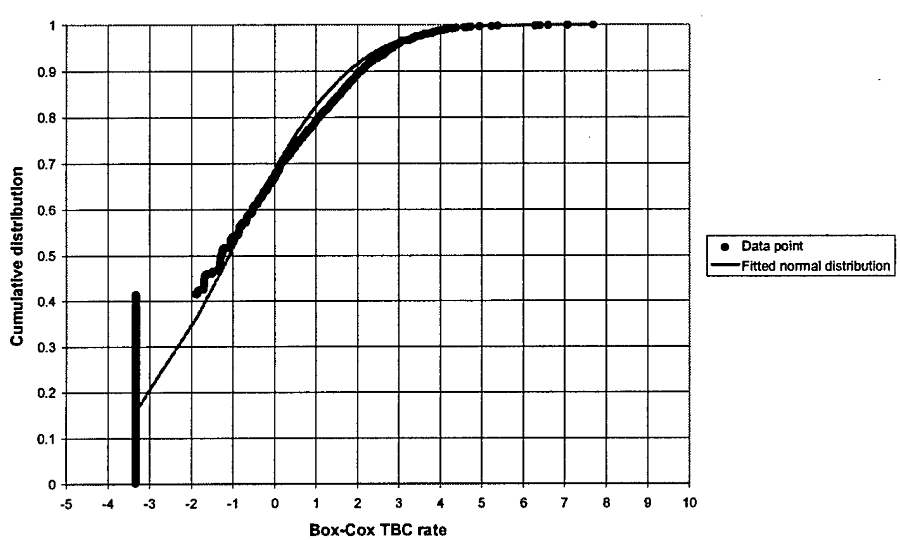

Figure 3-3. Distribution of TBC Rates for Composite Armor Divisions

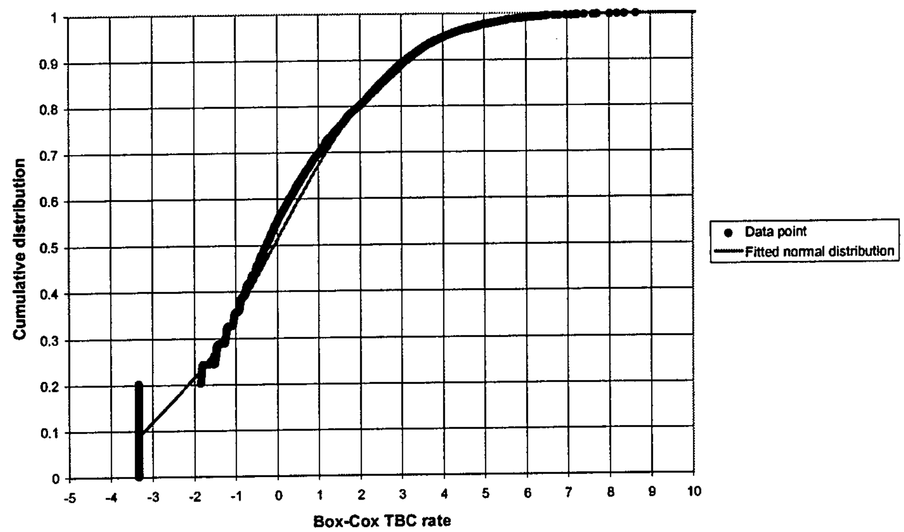

Figure 3-4. Distribution of TBC Rates for Composite Infantry Divisions

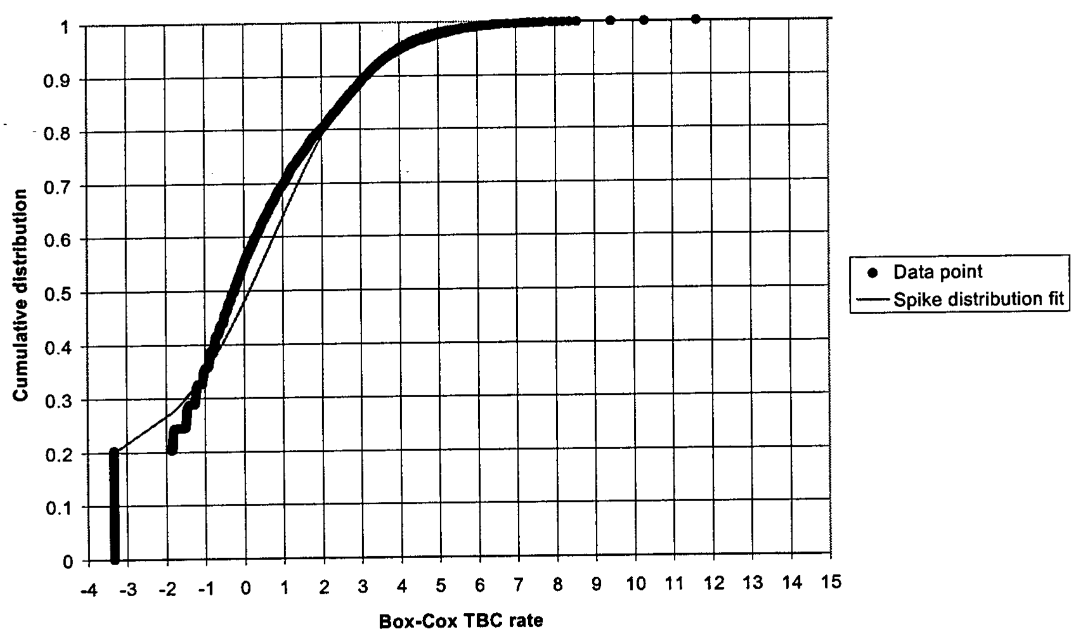

Figure 3-5. Spike Distribution Fit to the TBC Rates of Composite Infantry Divisions

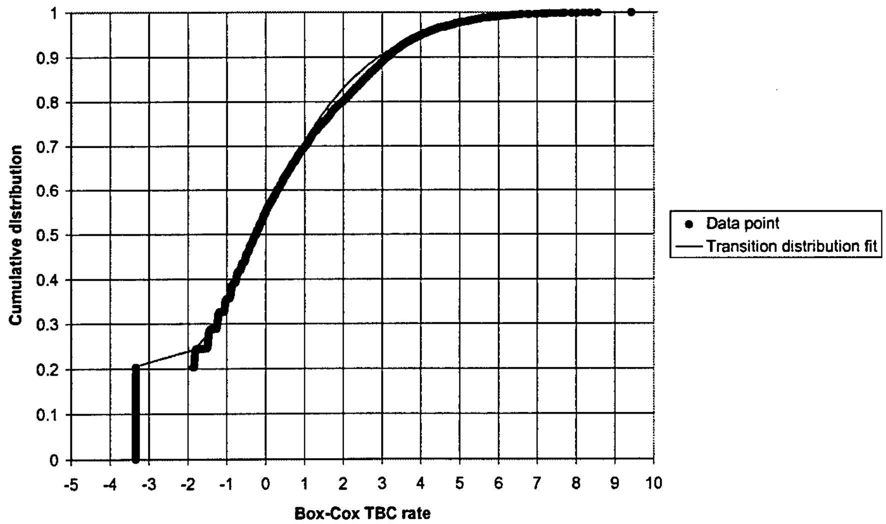

Figure 3-6. Transition Distribution Fit to the TBC Rates of Composite Infantry Divisions

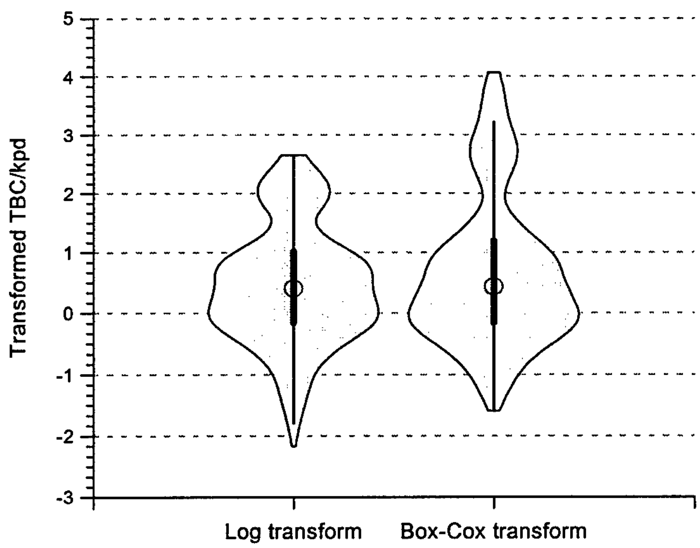

Figure 3-7. Violin Plot Comparison of Logarithmic and Box-Cox Transformations

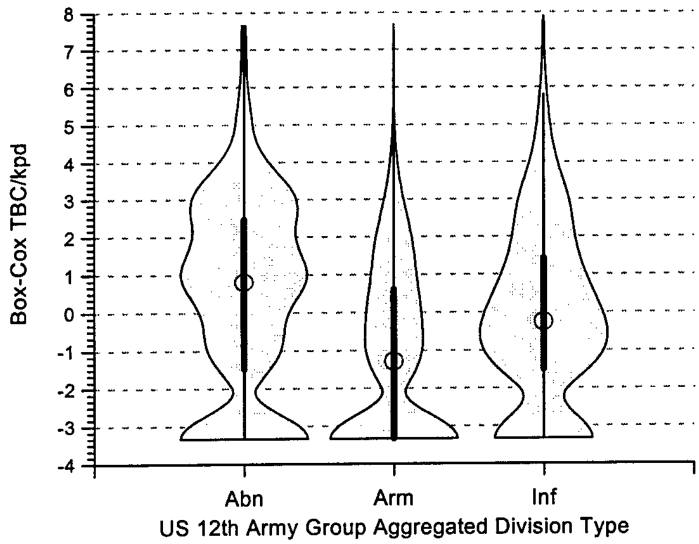

Figure 3-8. Violin Plots of Box-Cox TBC Rates for Composite Division Types

c. We offer the following observations on the violin plots.

(1) Airborne divisions generally had the highest TBC rates, infantry divisions had lower TBC rates, and armor divisions had the lowest TBC rates. As shown on Figures 3-1 through 3-3, the proportion of division-days with a zero TBC rate (Box-Cox TBC rate of –10/3), is about 0.20 for both airborne and infantry divisions, but more than 0.40 for armor divisions. Thus, in this data base, armor divisions experienced zero casualties on a large fraction of their division-days. This may account for armor divisions showing the lowest TBC rates.

(2) Individual divisions differed substantially from each other in their TBC rate experience. This is easily seen by consulting Figures E-52 through E-57. The differences presumably are rooted in the differing operational employments and tactical situations experienced by the various divisions. Although we could not pursue the influence of these factors on TBC rates within the scope of this effort, it is an interesting topic for future work.

(3) Most divisions had TBC rates that varied considerably from one day to another. This is shown by the vertical extent of the violin plots in Appendix E. A TBC rate variation from –10/3 to +10/3 on the Box-Cox scale is not at all unusual. By consulting Figure D-4 or the equations for the Box-Cox transformation (with $s = 0.3$), we see that this corresponds to a TBC rate variation from zero to about 10.1 TBC/kpd.

3-5. TIME SERIES ANALYSIS OF TBC RATES.

a. Knowledge of the trends of TBC rates over time, including their day to day correlations, are of interest in a number of practical applications. When data on TBC rates are available for a number of consecutive days, it is possible to subject them to a time series analysis. Such analyses contribute substantially to our understanding of the trends and correlations between day to day variations in TBC rates. We used the time series model described in Appendix D-4 for all of the time series analyses presented in this paper. In several cases, gaps in the data were filled using linear interpolation on the recorded Box-Cox TBC rates.

b. Appendix E contains time series plots of the Box-Cox ($s = 0.3$) transformed TBC numbers for the divisions in the US 12th Army Group data base. Composite time series plots are not appropriate because they would lump together divisions with differing data gaps and other time series peculiarities. However, US Army Concepts Analysis Agency Research Paper CAA-RP-95-5 [Helmbold-1996] gives time series of the logarithmic TBC rates for the US 12th Army Group and its component armies and corps. Figure 3-9 shows a sample time series plot of Box-Cox TBC rates for the US 30th Infantry Division. As explained in Appendix D-4b, the day numbers for all of the US 12th Army Group time series plots start with day number 0 on 1 June 1944. Time series plots of Box-Cox TBC rates for the individual divisions with enough data to warrant plotting are provided in Appendix E as follows:

- Airborne divisions– Figures E-58 through E-60 on pages E-30 through E-31.
- Armor divisions– Figures E-61 through E-70 on pages E-32 through E-36.
- Infantry divisions– Figures E-71 through E-104 on pages E-37 through E-53.

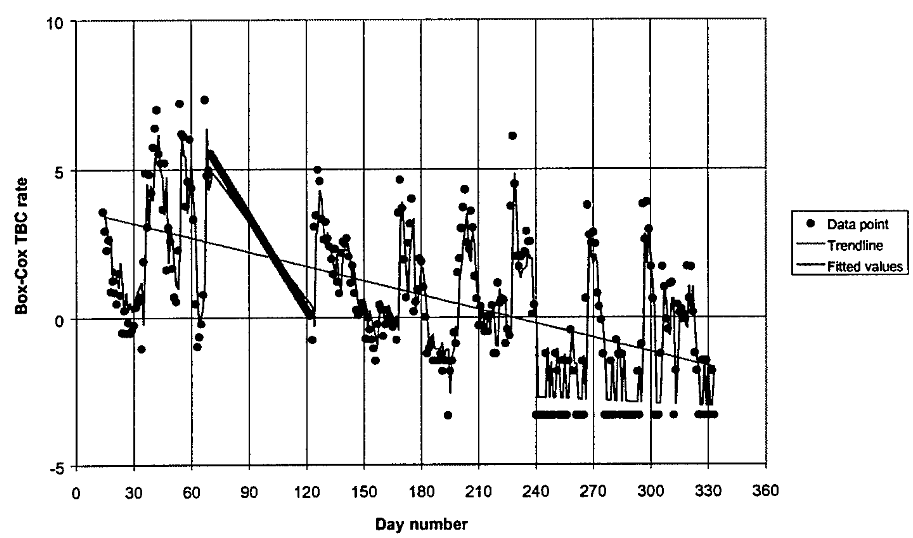

Figure 3-9. Time Series Plot for the 30th Infantry Division, US 12th Army Group

Table 3-2. Time Series Analysis Parameters for Airborne and Armor Divisions

Division designation	Trend intercept	Trend slope	AR(1)	SE of AR(1)	RMSE	No. of days with actual entries
US 17th Airborne, ETO	2.465593	-0.019967	0.781270	0.056110	1.427189	74
US 82nd Airborne, ETO	-0.223768	-0.003264	0.900620	0.023029	0.994096	117
US 101st Airborne, ETO	0.226651	0.000343	0.934892	0.020325	0.873299	72
US 2nd Armored, ETO	0.168876	-0.005946	0.776520	0.035359	1.234271	266
US 4th Armored, ETO	1.970607	-0.011866	0.712335	0.041065	1.573329	227
US 5th Armored, ETO	-0.822098	-0.005406	0.663974	0.051471	1.528565	212
US 6th Armored, ETO	1.349834	-0.008457	0.802231	0.035703	1.313355	204
US 7th Armored, ETO	-0.013836	-0.007789	0.847503	0.036699	1.161987	183
US 8th Armored, ETO	-2.648911	0.019240	0.637570	0.073069	1.428449	111
US 9th Armored, ETO	-2.852446	0.012945	0.737221	0.047150	1.551198	211
US 10th Armored, ETO	-2.222280	0.009877	0.834809	0.041927	1.339682	154
US 11th Armored, ETO	-0.741614	0.000221	0.671583	0.065715	1.536850	127
US 12th Armored, ETO	Entries for only 5 days--too few for statistical analysis.					5
US 13th Armored, ETO	-3.989349	0.032048	0.842190	0.062079	0.764567	64
US 14th Armored, ETO	Entries for only 7 days--too few for statistical analysis.					7
US 16th Armored, ETO	Entries for 67 days from 23 Feb 45 thru 30 Apr 45, but all of their TBC values are zero (held as army reserve thruout).					67
US 20th Armored, ETO	Entries for 60 days from 23 Feb 45 thru 23 Apr 45, but only 2 TBC for these 60 days (held as army or corps reserve thruout).					60

Table 3-3. Time Series Parameters for Infantry Divisions (part 1of 2)

Division designation	Trend intercept	Trend slope	AR(1)	SE of AR(1)	RMSE	No. of days with actual entries
US 1st Infantry, ETO	0.652494	-0.002033	0.750546	0.037063	1.143849	262
US 2nd Infantry, ETO	0.894877	-0.004395	0.779882	0.034876	1.108277	266
US 3rd Infantry, ETO	0.603055	-0.004370	0.754555	0.037407	1.383793	253
US 4th Infantry, ETO	1.970904	-0.005512	0.778222	0.038388	1.333640	216
US 5th Infantry, ETO	-0.548842	0.002413	0.782674	0.036740	1.294408	235
US 8th Infantry, ETO	-0.609570	0.001549	0.832871	0.032231	1.247151	238
US 9th Infantry, ETO	2.642993	-0.008658	0.783757	0.034702	1.338370	265
US 26th Infantry, ETO	1.244879	-0.006992	0.741280	0.045617	1.388983	212
US 28th Infantry, ETO	3.876396	-0.026955	0.775794	0.037503	1.554683	193
US 29th Infantry, ETO	3.266780	-0.019943	0.736327	0.038083	1.297660	266
US 30th Infantry, ETO	3.467191	-0.016121	0.796803	0.033896	1.275250	266
US 35th Infantry, ETO	3.890902	-0.018873	0.771934	0.036301	1.418777	242
US 44th Infantry, ETO	Entries for only 16 days from 1 Oct 44 thru 16 Oct 44, all with TBC values of zero--too few for statistical analysis.					16
US 65th Infantry, ETO	-3.091380	0.037059	0.621390	0.086989	1.332760	82
US 66th Infantry, ETO	-1.957988	0.000265	0.036377	0.091201	0.956927	119
US 69th Infantry, ETO	-2.051079	0.023247	0.787128	0.069213	1.186902	88

Table 3-3. Time Series Parameters for Infantry Divisions (part 2of 2)

Division designation	Trend intercept	Trend slope	AR(1)	SE of AR(1)	RMSE	No. of days with actual entries
US 70th Infantry, ETO	Entries for only 30 days, 25 Mar - 30 Apr 1945. Total TBC = 43, with 40 TBC on 25 Mar alone.					30
US 71st Infantry, ETO	-4.336459	0.052991	0.683282	0.083549	0.901037	52
US 75th Infantry, ETO	0.298140	-0.016362	0.813642	0.050796	1.338300	110
US 76th Infantry, ETO	0.208742	-0.003607	0.808345	0.059817	1.118633	101
US 78th Infantry, ETO	0.158389	0.000297	0.879050	0.039155	1.101976	153
US 79th Infantry, ETO	2.178079	-0.017305	0.836427	0.029904	0.897201	114
US 80th Infantry, ETO	1.639108	-0.010096	0.739179	0.046676	1.615568	212
US 83rd Infantry, ETO	1.638666	-0.010185	0.848178	0.029968	1.235948	243
US 84th Infantry, ETO	1.590955	-0.017234	0.754851	0.049423	1.408405	173
US 86th Infantry, ETO	-4.005774	0.079695	0.812828	0.079396	0.900527	56
US 87th Infantry, ETO	1.361744	-0.014084	0.726894	0.056921	1.422164	138
US 89th Infantry, ETO	-2.390232	0.002922	0.756920	0.045325	0.848920	88
US 90th Infantry, ETO	0.365252	-0.000912	0.811914	0.032549	1.334503	256
US 94th Infantry, ETO	-1.146799	0.003221	0.783589	0.043339	1.240332	212
US 95th Infantry, ETO	0.642155	-0.011933	0.827378	0.038386	1.323122	212
US 97th Infantry, ETO	-4.046304	0.069939	0.831604	0.086783	1.096338	55
US 99th Infantry, ETO	-0.100019	0.001976	0.743189	0.050565	1.302292	173
US 102nd Infantry, ETO	-1.068849	0.002547	0.729468	0.046895	1.328030	212
US 104th Infantry, ETO	-1.303477	0.008295	0.851220	0.036181	1.123381	191
US 106th Infantry, ETO	1.426271	-0.039462	0.590156	0.070813	2.706693	129

c. Table 3-2 shows the parameter values obtained from a statistical analysis of the Box-Cox TBC rate time series for airborne and armor divisions. Table 3-3 shows the parameter values from a statistical analysis of the Box-Cox rate time series for infantry divisions. The columns in these tables give the division name, the intercept and slope of the fitted trend, the autoregressive correlation AR(1) and its standard error (SE), the root mean square error (RMSE) of the one-day-ahead forecasts based on the fit, and the number of days with actual entries (*i.e.*, the number of days with TBC rates obtainable from the data base, as opposed to the number of days of data that were interpolated for the purpose of developing the time series statistics).

d. We offer the following observations on the time series charts and analyses.

(1) In general, the simple time series model fits the data rather well.

(2) For nearly all of these data, there is a consistent, approximately linear, downward trend of Box-Cox TBC rate with the passage of time. This corresponds roughly to an exponential decrease in the untransformed TBC rate with the passage of time. That phenomenon was also noted in the analysis of echelons above division [Helmbold-1996].

3-6. TBC NUMBER VERSUS EXPOSURE

a. The exposure in personnel-days (or in thousands of personnel-days) is often used as the basis for forecasting TBC number. This is done by assuming a proportionality between exposure and TBC number, that is, by assuming a mathematical relationship of the form

$$TBCNumber = K \times Exposure,$$

where K is some proportionality factor and *Exposure* is the total number of personnel-days of exposure to the risk of battle casualties (see, for example US Army Field Manual FM-101-10-1). Such relationships, when valid, provide a quick and easy method for estimating TBC numbers.

b. Appendix E contains plots of the Box-Cox (s = 0.3) transformed TBC numbers versus exposure in personnel-days for the divisions in the US 12th Army Group data base. Only those days for which the data base had actual recorded data were used. Figures 3-10 through 3-12 show this sort of plot for the composite division types. Plots of the Box-Cox TBC numbers versus exposure for the individual divisions with enough data to warrant plotting are provided in Appendix E as follows:

- Airborne divisions– Figures E-108 through E-110 on pages E-55 through E-56.
- Armor divisions– Figures E-111 through E-120 on pages E-57 through E-61.
- Infantry divisions– Figures E-121 through E-154 on pages E-62 through E-78.

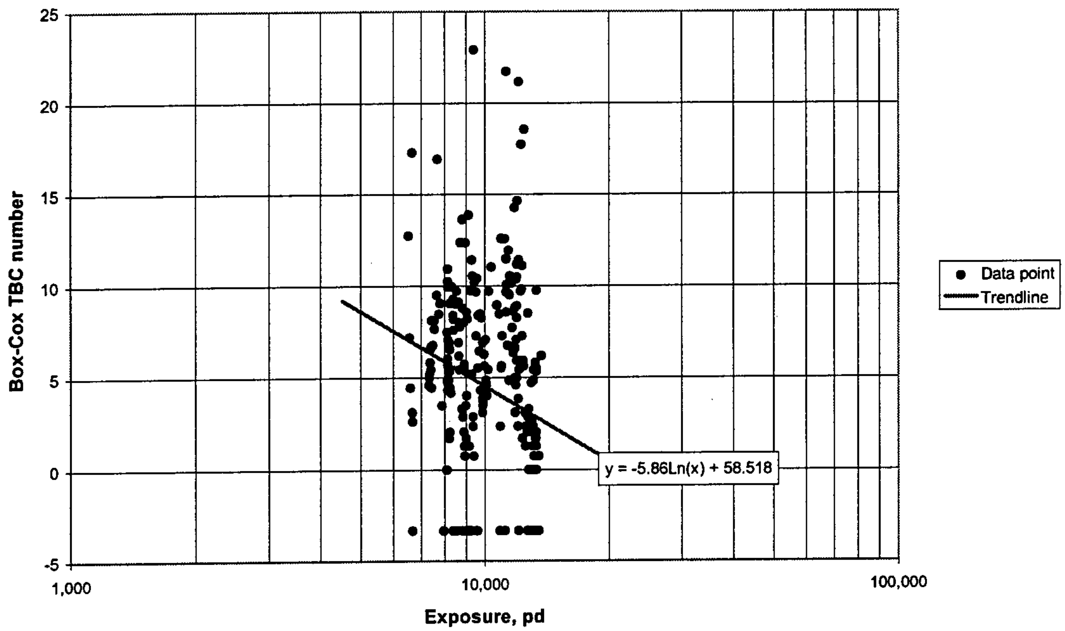

Figure 3-10. Exposure Plot for the Composite Airborne Divisions, US 12th Army Group

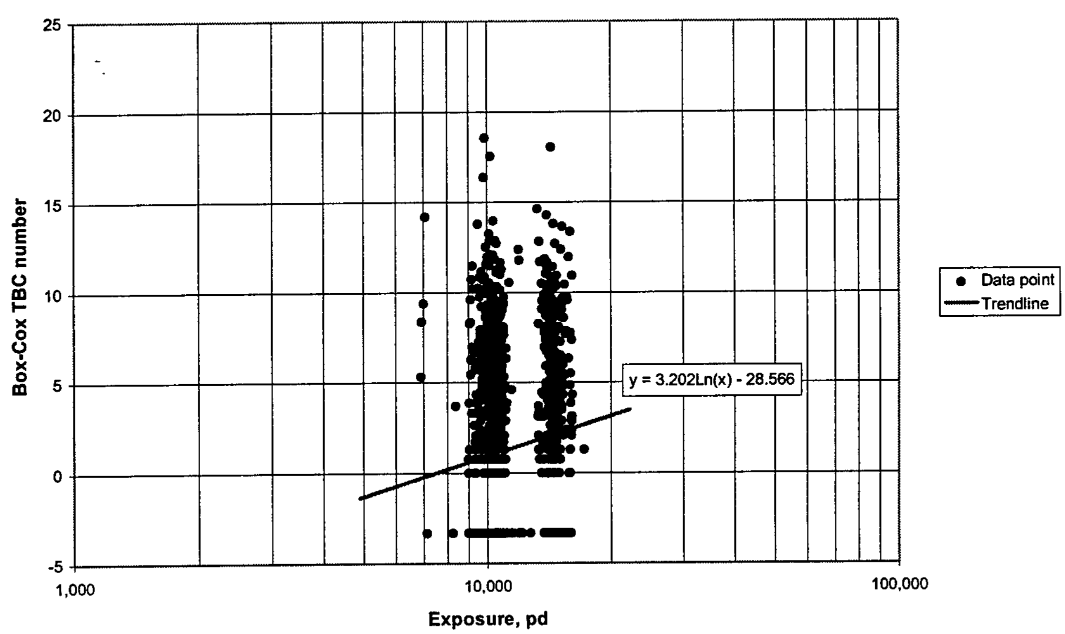

Figure 3-11. Exposure Plot for the Composite Armor Divisions, US 12th Army Group

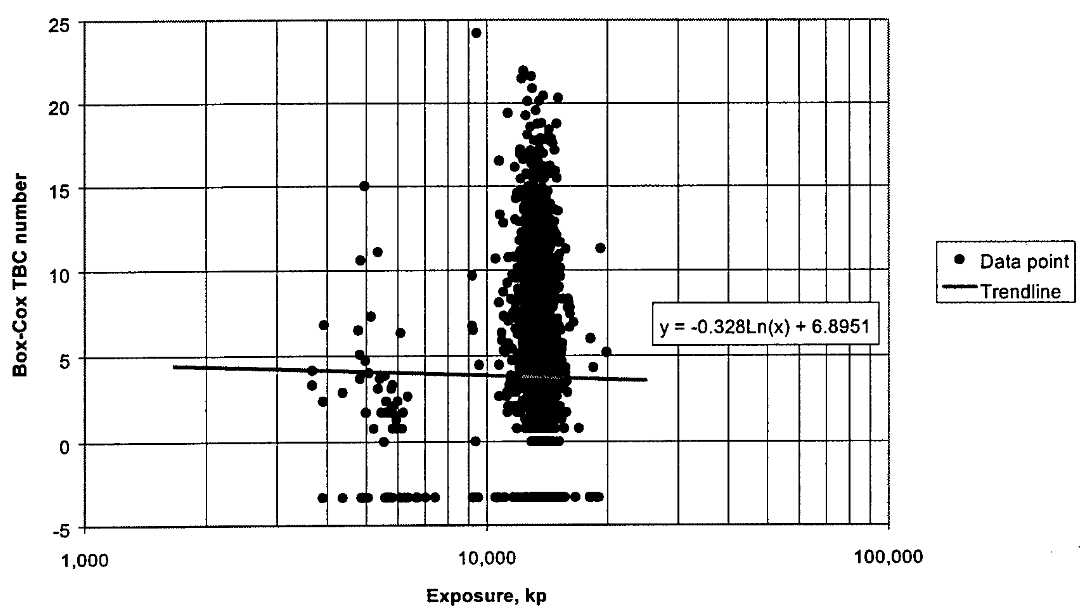

Figure 3-12. Exposure Plot for the Composite Infantry Divisions, US 12th Army Group

c. We offer the following observations regarding these exposure plots.

(1) There is a tendency, particularly evident in the composite armor division plot of Figure 3-11, for divisions to have two moderately distinct levels of exposure: high or low.

(2) In these data, there are few cases in which the Box-Cox TBC number is proportional to exposure. Most of the plots show Box-Cox TBC number actually declining with exposure.

(3) Even when the trendline of Box-Cox TBC number rises with increasing exposure, the relationship is not usually one of simple proportionality. Instead, it is generally given by a power-law relationship of the form

$$BoxCoxTBCNumber = K(Exposure)^{p},$$

where p is a power that is rarely equal to unity.

(4) In all cases, there is considerable scatter about the trendline.

(5) Similar phenomena were observed in the analysis of TBC rates for echelons above division [Helmbold-1996].

(6) For the reasons cited above, a simple proportionality between TBC number and exposure cannot be assumed as a general rule. Instead, it must be established on a case-by-case basis.

CHAPTER 4

ANALYSIS OF DATA OTHER THAN US 12TH ARMY GROUP

4-1. INTRODUCTION.

a. This chapter examines selected aspects of the personnel casualty data on divisions. An analysis of the casualty data on echelons below division is given in Chapter 5. Also, this chapter deals with data other than that in the US 12th Army Group data base. Thus, it provides some perspective on the degree to which findings based on the US 12th Army Group data base can be extrapolated to other times and situations.

b. What constitutes a division is sometimes in doubt, especially when varying military organizations and naming conventions are considered over many decades. For simplicity, we elected to treat a unit as a division if it was so designated. In order to impose some degree of consistency in other cases, we consider a unit to be of "division size" if its initial strength is at least 8,000 personnel and no greater than 30,000 personnel.

4-2. LONG-TERM TRENDS AND OTHER CONSIDERATIONS REGARDING TOTAL BATTLE CASUALTY RATES

a. A previous report [Helmbold-1995] examined long-term trends in battle casualty rates and found that total battle casualty rates have declined substantially over the last 400 years or so. Figures 4-1 through 4-3 illustrate this secular trend for battles where *both* sides fielded units of division size. The data bases used for these figures are described in [Helmbold-1995]. WIN and LOS are abbreviations for "winner" and "loser," respectively. TBCF or TBC Frac are abbreviations for "TBC as a fraction of the initial personnel strength." The trendlines are least-squares fits to the logarithmically transformed TBC fractions.

b. We observe the following. First, both winner's and loser's TBC fractions declined approximately exponentially with the passage of time over the last 400 years or so. Second, despite the PARCOMBO data base's exception, it appears likely that this decline affected both the winner's and the loser's TBC fractions about equally. That is, over the last 400 years or so, their trendlines are approximately parallel. Finally, on average, the winner has consistently had substantially lower TBC fractions than the loser. Despite the PARCOMBO data base's exception, it appears that, on average, the loser's TBC fraction has consistently been about twice the winner's TBC fraction.

c. Hence, we draw the following implications. Divisional TBC rates based on the US 12th Army Group World War II experience described in Chapter 3 should at least be adjusted for long-term trends before extrapolating them to other times. In addition, they should at least be adjusted for the difference between the winner's and loser's TBC rates before extrapolating them to other situations.

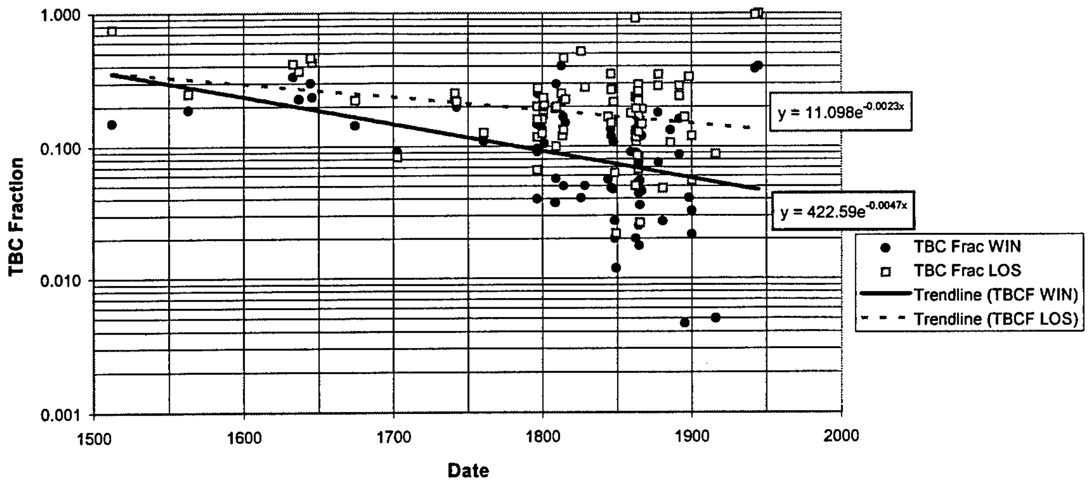

Figure 4-1. Winner's and Loser's TBC Fractions for Divisions in the PARCOMBO Data Base

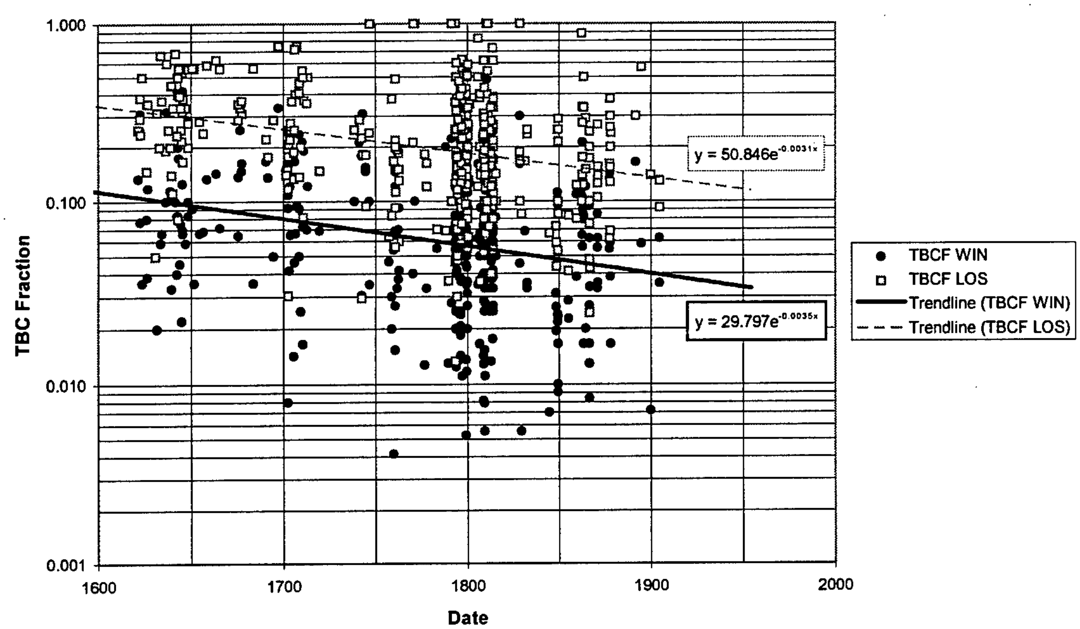

Figure 4-2. Winner's and Loser's TBC Fractions for Divisions in the BWSH Data Base

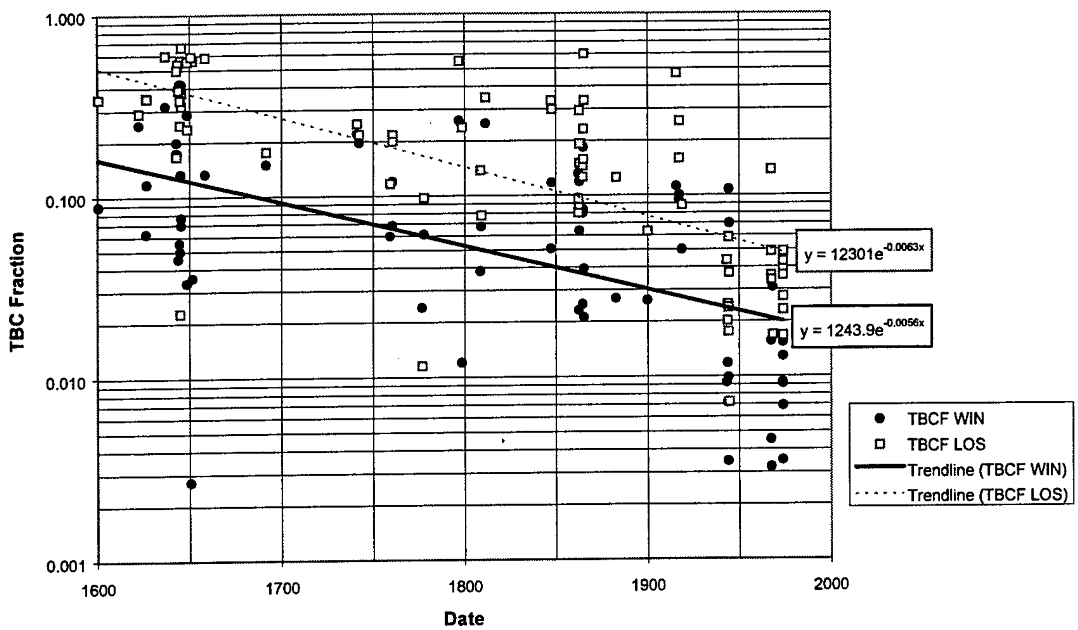

Figure 4-3. Winner's and Loser's TBC Fractions for Divisions in the CDB91DAT Data Base

d. In addition, published casualty rates are almost always affected by some degree of dilution and attenuation. By dilution we mean that not all portions of the population used as a basis for computing a published (average) casualty rate are equally exposed to the risk in question. Thus, casualty rates for the more exposed portions of the population are diluted by other, less exposed, portions of the population. By attenuation we mean that the level of risk is not constant over the time period used as a basis for computing a published (average) casualty rate. Thus, casualty rates for the higher-risk times are attenuated by casualty rates at lower-risk times. Accordingly, we anticipate that casualty rates based on large populations and long time periods will be lower than those based on small populations and shorter time periods. Indeed, we will find that these dilution and attenuation effects can result in average casualty rates orders of magnitude lower than the undiluted and unattenuated rates. Accordingly, these effects are extremely important and must be carefully borne in mind when extrapolating casualty rates to other echelons and other tactical situations. In particular, division casualty rates are usually higher than those of echelons above division (EAD) and lower than those of echelons below division.

4-3. DIVISIONAL CASUALTIES AND TYPE OF TACTICAL OPERATION. This paragraph discusses some data on the relation of divisional casualties to the type of operation.

a. [Beebe-1957] gives data on the losses of divisions in 42 World War II operations. These operations accounted for about 27 percent of the total wounded or injured in action sustained by US Army ground troops during World War II and about 30 percent of the total sustained by the US Marine Corps. They are arranged according to the following six types of operation, with the number of cases in each enclosed in parentheses: (i) river crossings against strong enemy resistance (7 cases), (ii) beachheads (8 cases), (iii) defense against strong enemy counterattacks (8 cases), (iv) offensive breakthroughs (3 cases), (v) reductions of encircled but heavily defended ports and towns (9 cases), and (vi) assaults on fortified lines (7 cases). Beebe deliberately selected these six types to include the ground operations with higher than average casualty rates. Additional operation types that Beebe considered but eventually rejected included (i) pursuit operations and (ii) holding operations. Those which were considered but not finally adopted either seemed unlikely to yield high rates for wounded in action or failed to lead to explicit criteria which could be satisfied by operational reports available for study. The operations and their arrangement by type are shown below. Note that each of these operations was basically a successful one for the US forces involved.

1. River crossings:

   Rapido, 20-31 January 1944
   Volturno (1st crossing), 13-14 October 1943
   Volturno (2nd crossing), 18-20 October 1943
   Volturno (3d crossing), 3-4 November 1943
   Roer, 23-28 February 1945
   Rhine, 7-31 March 1945
   Moselle, 5-18 September 1944

2. Beachheads:

   Tarawa, 20-23 November 1943
   Saipan, 15-19 June 1944
   Iwo Jima, 19-27 February 1945
   Normandy, 6-13 June 1944
   Salerno, 9-14 September 1943
   Leyte, 20-30 October 1944
   Okinawa, 1-4 April 1945
   Anzio, 22-24 January 1944

3. Defense against strong enemy counterattacks:

   Okinawa, 4-5 May 1945
   Mortain, 7-12 August 1944
   Anzio (1st attack), 3-12 February 1944
   Anzio (2nd attack), 16-18 February 1944
   Anzio (3d attack), 20 February-4 March 1944
   Bougainville, 8-24 March 1944
   Ardennes (1st phase), 16 December 1944-2 January 1945
   Ardennes (2nd phase), 3-27 January 1945

4. Offensive breakthroughs:

   Cisterna, 23-25 May 1944
   St. Lo, 25-28 July 1944
   Po Valley, 14-20 April 1945

5. Reductions of encircled but heavily defended ports and towns:

   St. Malo, 5-17 August 1944
   Lanuvio, 26 May-3 June 1944
   Cherbourg, 29-27 June 1944
   Brest, 25 August-20 September 1944
   Metz, 8-22 November 1944
   Cassino, 1-14 February 1944
   Aachen, 7-21 October 1944
   Manila, 3-25 February 1945
   Nuremburg, 16-20 April 1945

6. Assaults on fortified lines:

   Machinato Line, 19-24 April 1945
   Gustav Line, 11-15 May 1944
   Shuri Line, 11-24 May 1945
   Hurtgen Forest, 13 September-7 December 1944
   Gothic Line, 13-22 September 1944
   Yamashita Line, 21-28 February 1945
   Siegfried Line, 12 September 1944-24 March 1945

b. We analyzed Beebe's data on these types of operations using the regression model:

$$\ln TBC = \beta_0 + \beta_1(TypeOperation) + \beta_2 \ln Exposure + \varepsilon ,$$

where the betas are coefficients to be fitted to the data, *TypeOperation* is the number assigned to the type of operation in the above list, *Exposure* is the exposure in kilo personnel-days, and ε is the residual or error term. This produced the correlations shown in Table 4-1, the regression equation analysis shown in Table 4-2, and the distribution of residuals shown in Figure 4-4. Based on these results, we offer the following observations. First, the type of operation is not statistically significant. Second, the fit as measured by the R-squared value and the residual root mean square error (RMSE = 0.66) is quite good for sociological data. Third, the coefficient of the ln*Exposure* term is somewhat less than unity, so that a simple proportionality of TBC to exposure is not very well supported by these data. Fourth, because the residuals are distributed approximately normally, the estimates of significance in Table 4-2 are reasonably trustworthy from a statistical viewpoint.

Table 4-1. Correlation Matrix for Beebe's Data

	Type operation code	lnExposure	lnTBC
Type operation code	1.000	0.240	0.296
lnExposure	0.240	1.000	0.854
lnTBC	0.296	0.854	1.000

Table 4-2. Regression Results for Beebe's Data

Independent variable	Regression coefficient	Standard error	Decision (5%)
Intercept	2.64	0.53	Reject H0
Type operation code	0.07	0.06	Accept H0
lnExposure	0.88	0.09	Reject H0
R-Squared	0.74		

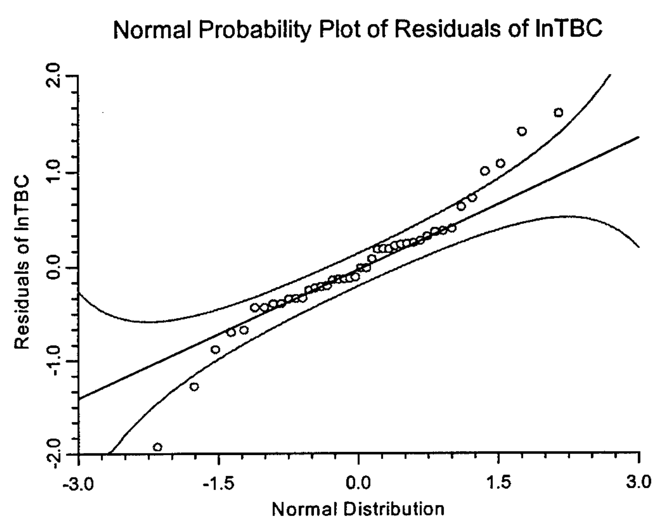

Figure 4-4. Distribution of Residuals for Beebe's Data

c. Figure 4-5 shows violin plots of the TBC rates for Beebe's data. Case 2 (beachhead operations) tends to be higher than the others. Case 3 (defense against enemy counterattack) tends to be lower than the others. However, the other operations seem to be more or less comparable with regard to their TBC rates.

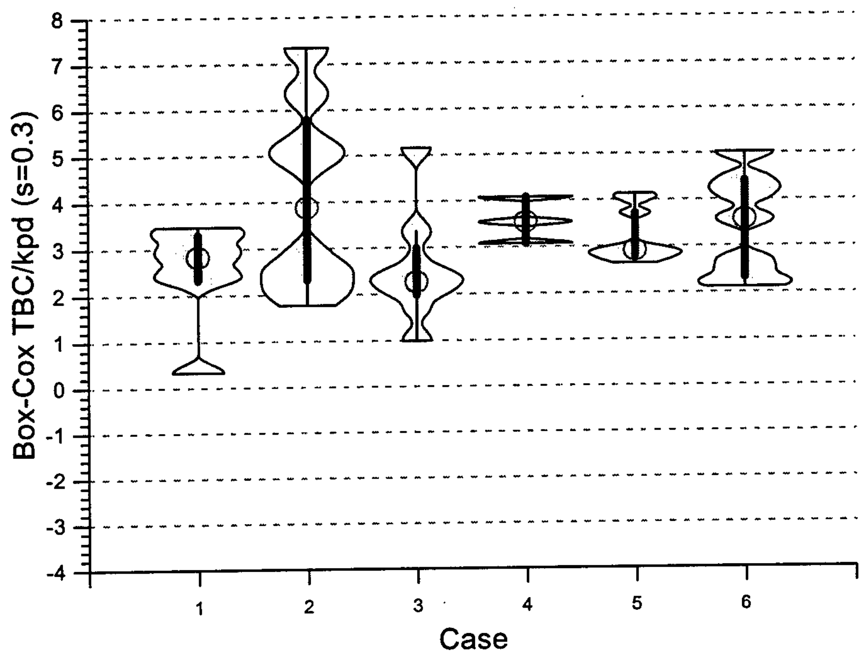

Figure 4-5. Violin Plots of TBC Rates for Beebe's Data

d. We offer the following interpretations of these results. First, the operations were selected to be those with relatively high casualty rates. Hence, the finding that the type of operation is not significant may perhaps be due to all operations with relatively high casualty rates having high casualties. Second, as Beebe notes, the data are highly variable within each of the operation types. This variability tends to mask differences among operation types. Third, the conversion of qualitative variables such as type of operation to numerical values may distort their influence on the outcome. Fourth, each category is represented by only a relatively small number of data points, which makes it difficult to detect any but the most salient differences among them. (However, a plot of the residuals against the type operation code numbers used in the regression shows no sign of such a distortion.)

e. [Reister-1986] gives data on 40 operations involving US divisions during the Korean War, grouped into six operation types. They are listed below and account for about 93 percent of the total number hit—KIA and WIA including Carded for Record Only (CRO) cases—among US Army troops in the Korean War. In this list, CCF is an abbreviation for "Chinese Communist Forces."

1. Maintaining static defensive lines

   Line "D" (furthest CCF penetration in South Korea), 5-29 January 1951
   Line BOSTON (south bank of Han River southeast of Seoul), 18 February-6 March 1951
   Line KANSAS (phase line across Korea around 38th parallel), 4-29 April 1951
   Line GOLDEN (line halting CCF spring offensive north of Seoul), 29 April-19 May 1951
   Line NO NAME (line halting CCF spring offensive in IX and X Corps), 29 April-19 May 1951
   Line WYOMING–I Corps (phase line forward of KANSAS around 38th parallel on Western Front), 10 June-2 October 1951
   Line WYOMING–IX Corps (phase line forward of KANSAS above 38th parallel on Central Front), 13 June-31 October 1951
   Line KANSAS/HAYS–X Corps (phase lines above 38th parallel in X Corps sector on Eastern Front), 15 July-4 October 1951
   Line JAMESTOWN (main battle position, Western Front), 7 Oct 1951-27 July 1953
   Line MISSOURI (main battle position, Central Front), 23 October 1951-27 July 1953
   Line MINNESOTA (main battle position, Eastern Front), 16 October 1951-27 July 1953

2. Withdrawal operations:

   Evacuation of Hungnam, 1-14 December 1950
   Withdrawal from North Korea to Line "D", 2 December 1950-16 January 1951

3. Pursuit and mopping up operations:

   Pursuit and mopping up, south of 38th parallel, 28 September-30 November 1950
   Pursuit north of 38th parallel to Yalu River, 5 October-27 November 1950
   Iwon landing and pursuit, north of 38th parallel, 31 October-27 November 1950

4. Defense against enemy offensive:

   Delaying invasion (South Korea), 4 July-3 August 1950
   Defense of Pusan Perimeter, 4 August-15 September 1950
   CCF Counteroffensive (North Korea), 25 November-15 December 1950
   CCF Counterattack (Wonju-Chipyong area), 12-21 February 1951
   CCF first spring offensive (1951), 22-29 April 1951
   CCF second spring offensive (1951), 17-22 May 1951
   CCF attack (Western and Central Fronts, 1952), 6-13 October 1952
   CCF attack (ROK II Corps Front, 1953), 10-18 June 1953
   Battle of Kumsong River salient, 14-20 July 1953

5. Limited operations from main battle positions:

   WYOMING–I Corps, 1 July-3 October 1951
   WYOMING–IX Corps, 26 June-21 September 1951
   KANSAS–X Corps, 26 July-5 September 1951
   HAYS–X Corps, 9 September-15 October 1951
   JAMESTOWN, 16 October 1951-24 July 1953
   MISSOURI, 10 February-4 November 1952
   MINNESOTA, 10 February-4 November 1952

6. Major offensive operations:

Breakout of Pusan Perimeter, 16-27 September 1950
Inchon landing and liberation of Seoul, 18-30 September 1950
Counteroffensive against Chinese Communist Forces (CCF),
25 January-20 February 1951
Operation Killer–to reestablish UN line east of Wonju, 21 February-7 March 1951
Operation Ripper–to outflank Seoul and capture Chunchon, 7 March-4 April 1951
Operation Rugged–to secure phase line KANSAS, 1-15 April 1951
Operation Dauntless–to secure phase line UTAH, 10-22 April 1951
Operation Detonate–to retake line KANSAS after CCF spring offensive,
20 May-8 June 1951
Operation Piledriver–to secure line WYOMING and Iron Triangle, 3-12 June 1951
Operation Commando-to secure line JAMESTOWN, 3-15 October 1951
Operation Nomad and Polar–to secure lines later designated MISSOURI,
13-22 October 1951

f. We analyzed Reister's data on these types of operations using the regression model:

$$\ln TBC = \beta_0 + \beta_1(TypeOperation) + \beta_2 \ln Exposure + \varepsilon ,$$

where the betas are coefficients to be fitted to the data, *TypeOperation* is the number assigned to the type of operation in the above list, *Exposure* is the exposure in kilo personnel-days, and ε is the residual or error term. This produced the correlations shown in Table 4-3, the regression equation analysis shown in Table 4-4, and the distribution of residuals shown in Figure 4-6. Based on these results, we offer the following observations. First, the type of operation is statistically significant. Second, the fit as measured by the R-squared value and the residual root mean square error (RMSE = 0.67) is quite good for sociological data. Third, the coefficient of the ln*Exposure* term is substantially less than unity, so that a simple proportionality of TBC to exposure is not supported by these data. Fourth, because the residuals are distributed approximately normally, the estimates of significance in Table 4-4 are reasonably trustworthy from a statistical viewpoint.

g. We offer the following interpretations of these results. First, the operations were selected to be a nearly complete sample of all major Korean War operations. Hence, the finding that the type of operation is significant may perhaps be due to including nearly all operations, rather than only those with relatively high casualty rates. Second, the conversion of qualitative variables such as type of operation to numerical values can distort their influence on the outcome. (However, a plot of the residuals against the type operation code numbers used in the regression indicates that this is not a major consideration in this case.)

Table 4-3. Correlation Matrix for Reister's Data

	Operation type code	lnExposure	lnTBC
Operation type code	1.000	-0.493	0.332
lnExposure	-0.493	1.000	0.454
lnTBC	0.332	0.454	1.000

Table 4-4. Regression Results for Reister's Data

Independent variable	Regression coefficient	Standard error	Decision (5%)
Intercept	0.79	0.85	Accept Ho
Operation code	0.39	0.06	Reject Ho
lnExposure	0.72	0.10	Reject Ho
R-Squared	0.61		

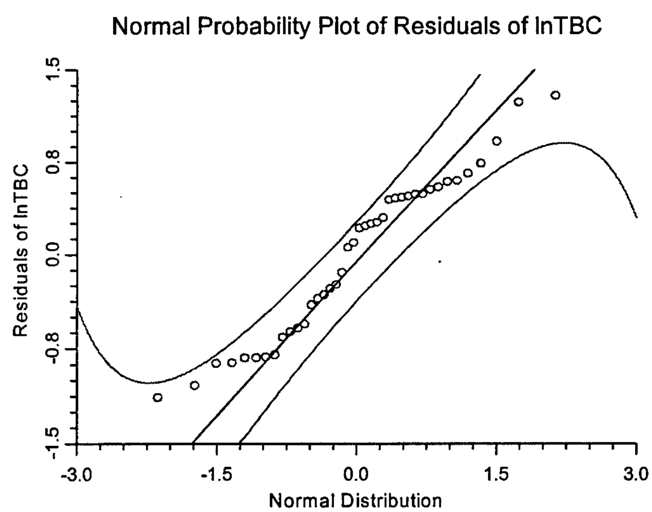

Figure 4-6. Distribution of Residuals for Reister's Data

h. Figure 4-7 shows a violin plot of TBC rates for the Reister data. From Figure 4-7, it appears that the Korean War operations could be divided into just two major groups with respect to their TBC/kpd rates: (i) offensive, limited, and defensive (types 1, 4, and 5) with Box-Cox rates of about 1 to 2, and (ii) pursuit, static, and withdrawal (types 2, 3, and 6) with Box-Cox rates of about –1 to 0. A comparison of Figure 4-7 with Figure 4-5 shows that these Korean war data exhibit lower divisional TBC rates than those in Beebe's World War II data. A possible explanation of this is Beebe's concentration on the higher casualty operations as opposed to Reister's more comprehensive tabulation.

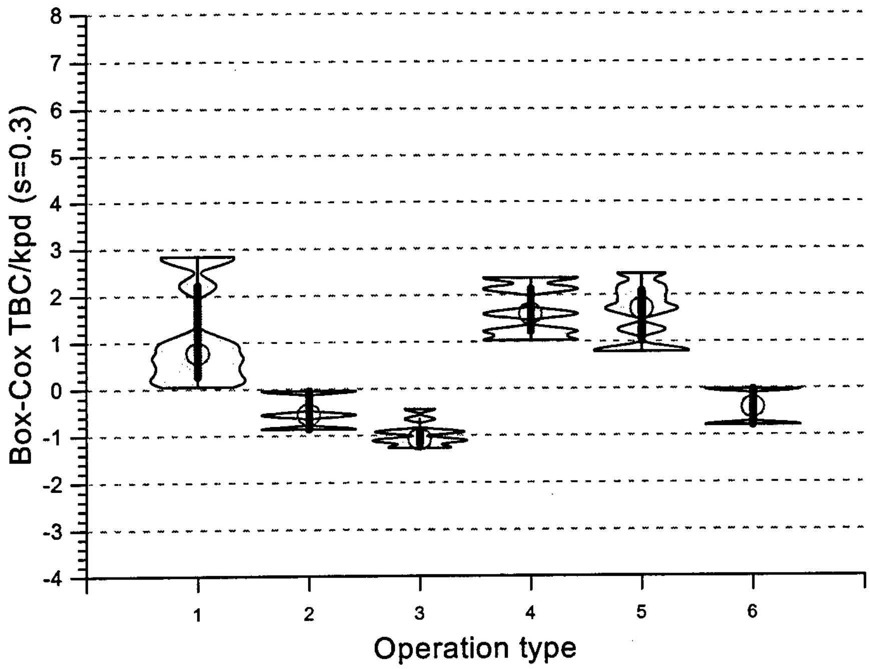

Figure 4-7. Divisional Casualty Rates for Some Korean War Operations

i. We offer the following comments on the results of our analysis of the Beebe and Reister data. First, the exposure factor is significant for both the Beebe and Reister data. In both cases, the coefficient of the ln*Exposure* term is less than unity. This suggests that the relation of TBC to exposure is not one of simple proportionality. Second, the operation type is significant for Reister's data, but not for Beebe's. It is not clear why this should be the case. However, Reister's choice of operation types is qualitatively quite different from Beebe's. Also, Reister's data are much closer to a complete sample of the major operations than Beebe's. Despite the relatively small sample sizes involved, it seems reasonable to conjecture that exposure and operation type both have a major influence on casualty numbers.

4-4. SOME MISCELLANEOUS DIVISION CASUALTY DATA

a. Figures 4-8 and 4-9 show violin plots of the TBC rates for the following four conditions: (i) the attacker's TBC rate given that the attacker wins (ATK|AWIN), (ii) the defender's TBC rate given that the defender wins (DEF|DWIN), (iii) the attacker's TBC rate given that the defender wins (ATK|DWIN), and (iv) the defender's TBC rate given that the attacker wins (DEF|AWIN). Figure 4-8 was derived from the CDB90DAT data base and Figure 4-9 from the PARCOMBO data base. Figure 4-10, derived from the BWSH data base, shows only the TBC rate for the winner (WIN) and loser (LOS) , because that data base does not identify the attacker and defender.

The pattern seems to be that, in general, the defender takes slightly higher losses than the attacker, and the loser (whether the loser is the attacker or the defender) takes substantially higher losses than the winner. Indeed, one might speculate that the winner's TBC rate distribution is insensitive to whether the winner was attacking or defending; and that the loser's TBC rate distribution is also insensitive to whether the loser was attacking or defending.

Figures 4-8 through 4-10 show TBC rates much higher than those in either Beebe's or Reister's data. The reasons for this include the following. First, Much of the data in Figures 4-8 through 4-10 are for battles of earlier times, when attrition rates were much higher. They are also for battles, which are the highest intensity operations, and so these data are not much attenuated by the inclusion of lower intensity periods.

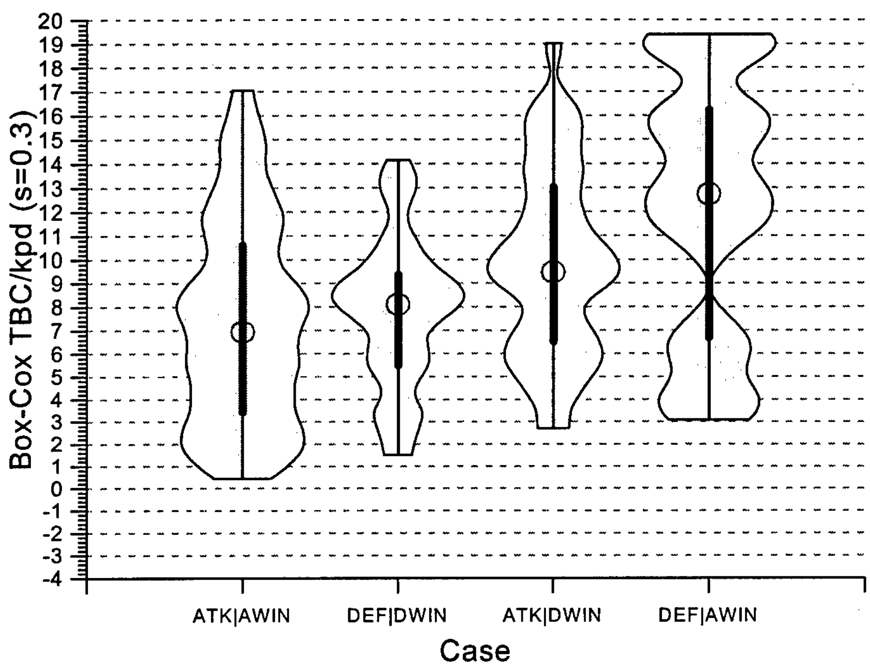

Figure 4-8. Violin Plot of TBC Rates for Divisions in the CDB90DAT Data Base

b. Figures 4-11 through 4-13 show the TBC number versus exposure for divisions in the PARCOMBO, CDB90DAT, and BWSH data bases, respectively. Exposure values in these figures above 200,000 personnel-days (pd) are for special long-duration operations, such as sieges or extended campaigns.

It appears from these figures that the loser's TBC numbers are higher than the winner's throughout a large range of exposure values.

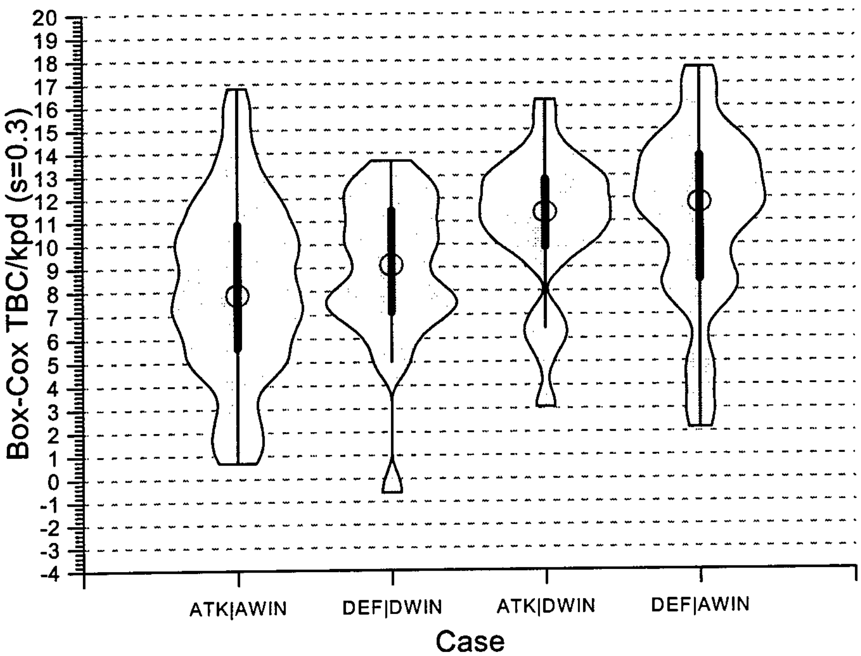

Figure 4-9. Violin Plot of TBC Rates for Divisions in the PARCOMBO Data Base

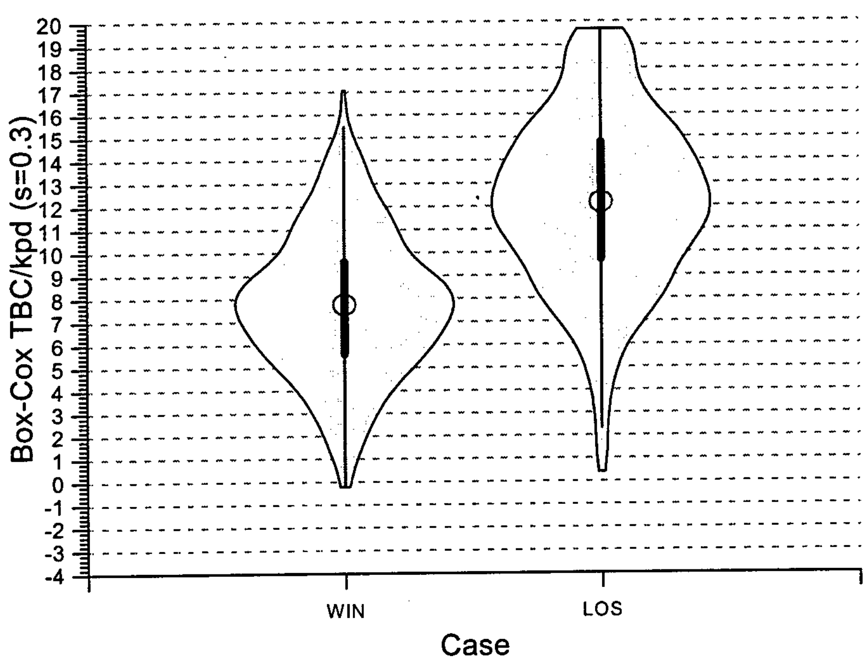

Figure 4-10. Violin Plot of TBC Rates for Divisions in the BWSH Data Base

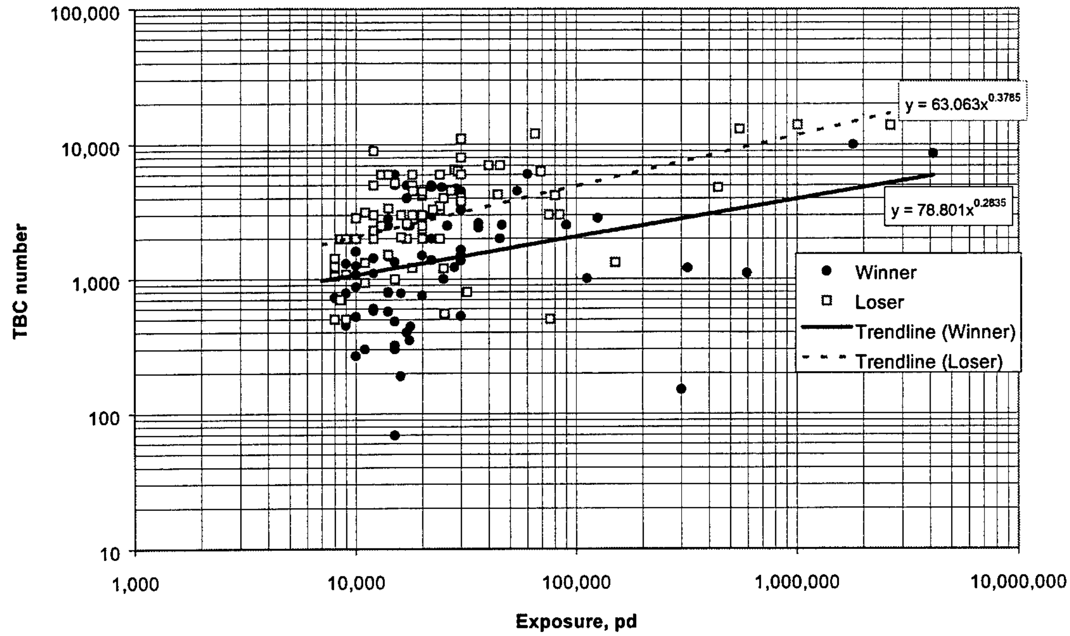

Figure 4-11. TBC Number Versus Exposure for Divisions in the PARCOMBO Data Base

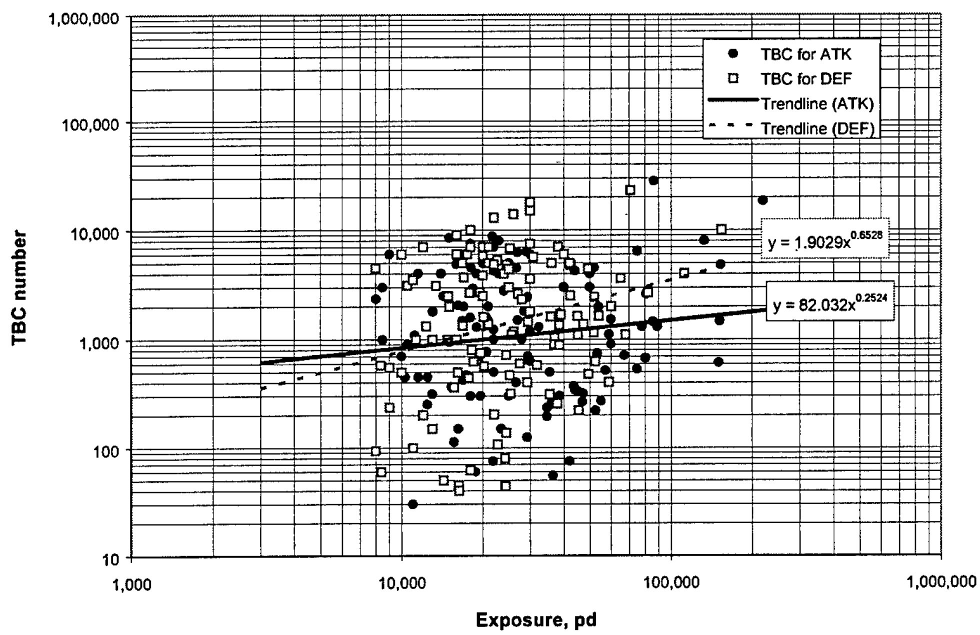

Figure 4-12. TBC Number Versus Exposure for Divisions in the CDB90DAT Data Base

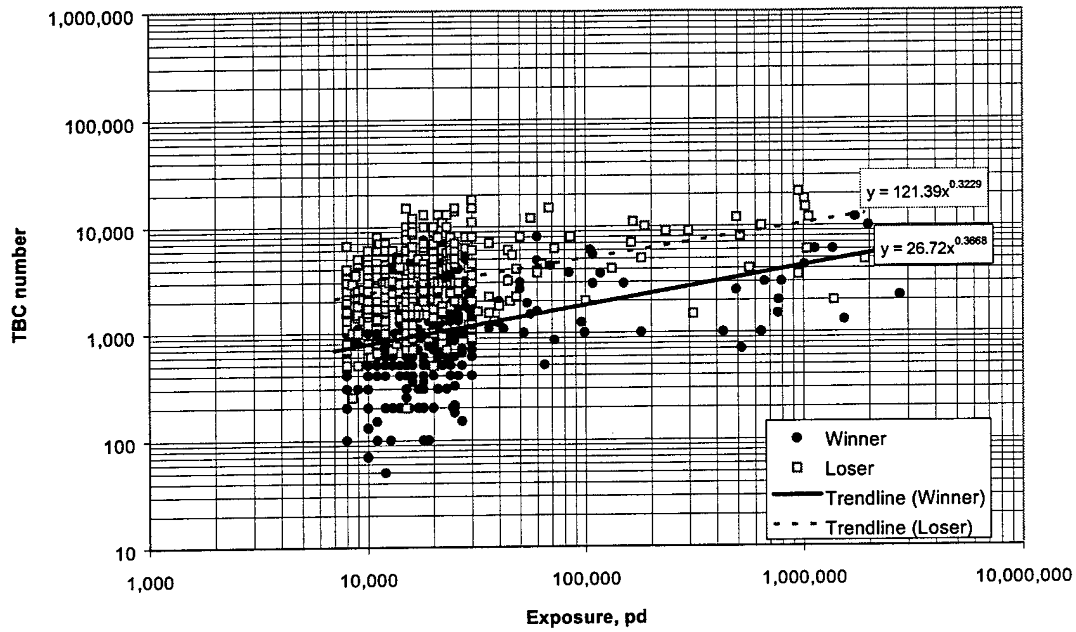

Figure 4-13. TBC Number Versus Exposure for Divisions in the BWSH Data Base

4-5. SOME WORLD WAR I DATA

a. This paragraph presents some analyses of division casualty data from World War I. [Ayres-1923] presents data on the casualties to the US divisions in the American Expeditionary Force (AEF), together with the number of days each division was on an active or an inactive sector of the front. (Actually, there were 42 US divisions in the AEF. Ayres provides the number of days on active and inactive fronts for only29 of these 42 divisions. Apparently the remaining 13 divisions saw little action.). A multiple regression of the TBC number versus the number of days on active and inactive fronts indicated that the intercept should be set to zero, which then led to the following fitted equation:

$$TBC = (45.6 \pm 10.3)QuietDays + (196.0 \pm 15.5)ActiveDays + \varepsilon ,$$

where the values of the coefficients and their standard errors are enclosed in parentheses, *TBC* is the number of TBC for a division, *QuietDays* and *ActiveDays* are the number of days that division was on a quiet and active front, and ε is an approximately normal random error with zero mean and standard deviation equal to 2,478 total battle casualties. This estimating equation has an R^2 value of 0.94. Figure 4-14 shows how the actual TBC numbers compare to those predicted using the above equation. The implication of the above equation is that casualties on active days averaged about 4 times those on quiet days (because $196.0/45.6 \approx 4.3$).

b. Ayres gives losses and days on the front, but does not provide the corresponding average division strengths. However, according to [Love-1931, p108], "An examination made by the Historical Branch of the War College of the returns of 14 Combat Divisions on or about September 26, 1918 showed that the average strength of each one was 24,128 men. It was assumed then that 24,000 was a fair figure to use in determining the strength of the corps.... But for the purpose of calculating rates for Divisions, the 24,000 was reduced to approximately 91%, or to 22,000, to compensate for the unassembled divisional casualties." If we adopt Love's division strength estimate of 22,000 and use Ayres's TBC and time values, we obtain the normal distribution of Box-Cox TBC rates shown in Figure 4-15. That fitted distribution may look like a poor fit to the data. However, since there are only 29 data points, they do satisfy many of the usual tests for normally distributed data. Figure 4-16 shows the same data in the form of a violin plot. A comparison of Figure 4-16 to Figure 3-8 and to those in Appendix E shows that the TBC rates of US divisions in World War I tended to be distinctly higher than most of those for World War II. A comparison with Figures 4-5 and 4-7 indicates that they are about equal to the higher casualty rates in Korea, but lower than those for Beebe's World War II data.

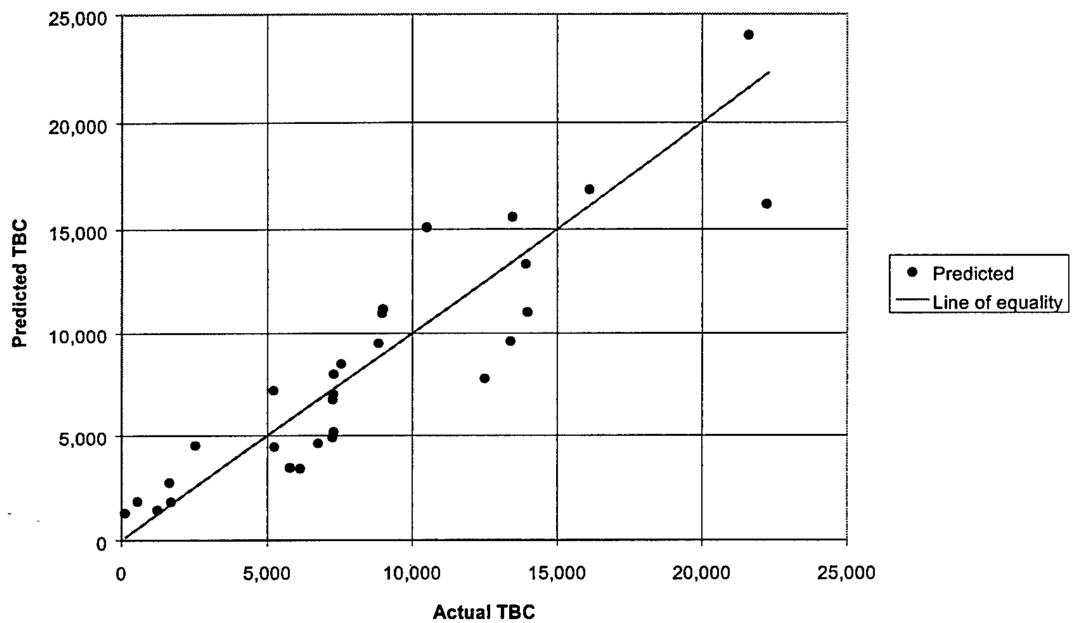

Figure 4-14. Predicted Versus Actual TBC Number for US Divisions, World War I

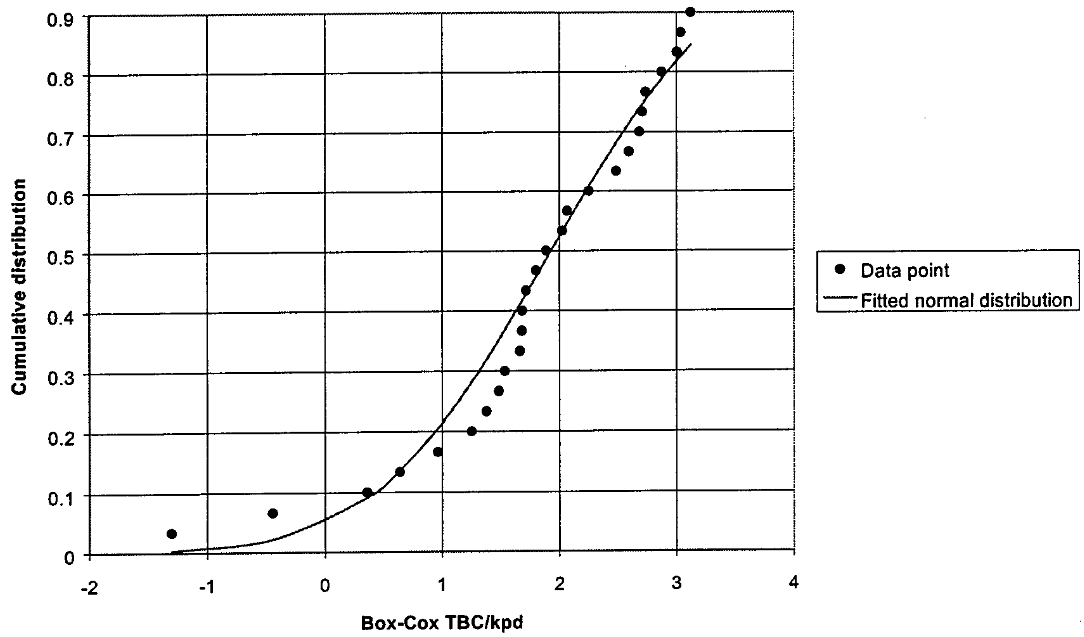

Figure 4-15. Distribution of Box-Cox TBC Rates for US Divisions, World War I

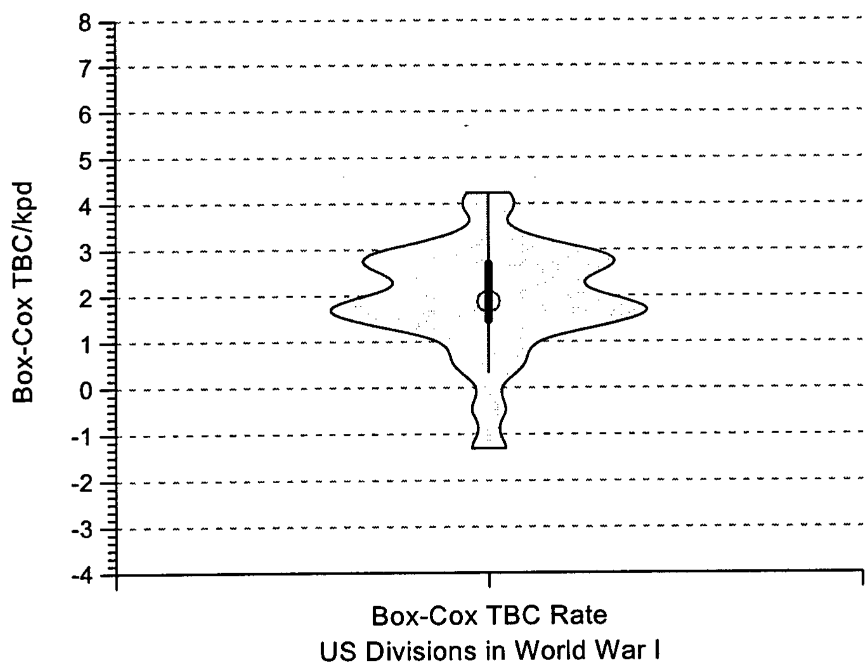

Figure 4-16. Violin Plot of Box-Cox TBC Rates for US Divisions in World War I

4-6. SOME WORLD WAR II DATA

a. This paragraph analyzes some division casualty data from World War II, using material other than the US 12th Army Group data bases. Although some of these divisions are included in the US 12th Army Group analyses of Chapter 3, here we use data on them developed using historical sources and methods *other* than those used and documented in [Kuhn-1989, Kuhn-1990, Kuhn-1991, Helmbold-1993]. Because the data on World War II is so extensive and diverse, we subdivided our treatment of it according to convenient areas of operation.

b. This paragraph addresses some casualty data on divisions and their opposing forces from the Ardennes Campaign of World War II. This campaign is also known as the Battle of the Bulge or by its German code name *Wacht am Rhine* [Watch on the Rhine]. All these data were extracted from the Ardennes Combat Simulation Data Base (ACSDB) [Data Memory Systems-1990]. The procedure used was, if possible, to match Allied or German divisions to the forces (of whatever size) that directly opposed them on a particular day. Some days had several identifiable matches; others had few. Figure 4-17 shows the distribution of Box-Cox TBC rates for these Allied and German forces, with their fitted normal distributions. Figure 4-18 shows the TBC rate violin plots for these forces. Figure 4-19 shows a plot of their TBC rates versus day number. Here day number 1 is 16 December 1944 and day number 32 is 16 January 1945. The trendlines shown on Figure 4-19 are cubic polynomials fitted to the data points by least squares. Figure 4-20 shows the exposure plots for these forces. From Figures 4-17 and 4-18, we infer that (on the average) the Allies enjoyed an advantage over the German forces. In other words, their TBC rates were lower than their German opponent's. From the trendlines in Figure 4-19, we infer that the Allies gained the upper hand within a week and maintained their superiority for the rest of the operation. Figure 4-20 shows a plot of the casualty number versus exposure for these actions. The trendlines indicate that casualty numbers are not simply proportional to exposure, but instead rise faster than linearly.

c. This paragraph uses data from the study of Opposed Rates of Advance of Large Forces in Europe (ORALFORE) documented in [Historical Evaluation and Research Organization-1972]. Figure 4-21 shows the daily casualty fractions of the US 7th Armor Division and its German opposing forces for its advance from LeMans to Metz for the period 14 August-13 September 1944. Observe that the US had the upper hand (relatively lower casualty rates) until early September, when the pursuit across France ended and German resistance stiffened. Figure 4-22 shows the daily casualty fractions of the US 4th Armor Division and its German opposing forces during the Saar (Lorraine) Campaign for the period 9 November-7 December 1944. Observe that, with a few exceptions, the US had the upper hand (relatively lower casualty rates) during most of this period.

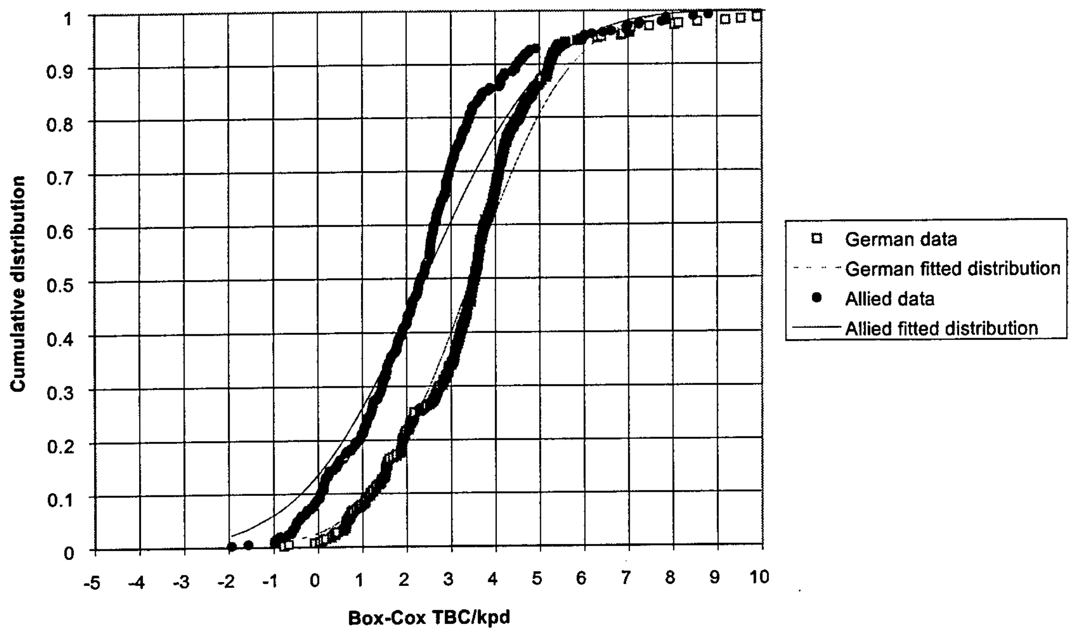

Figure 4-17. TBC Rate Distributions for ACSDB Forces

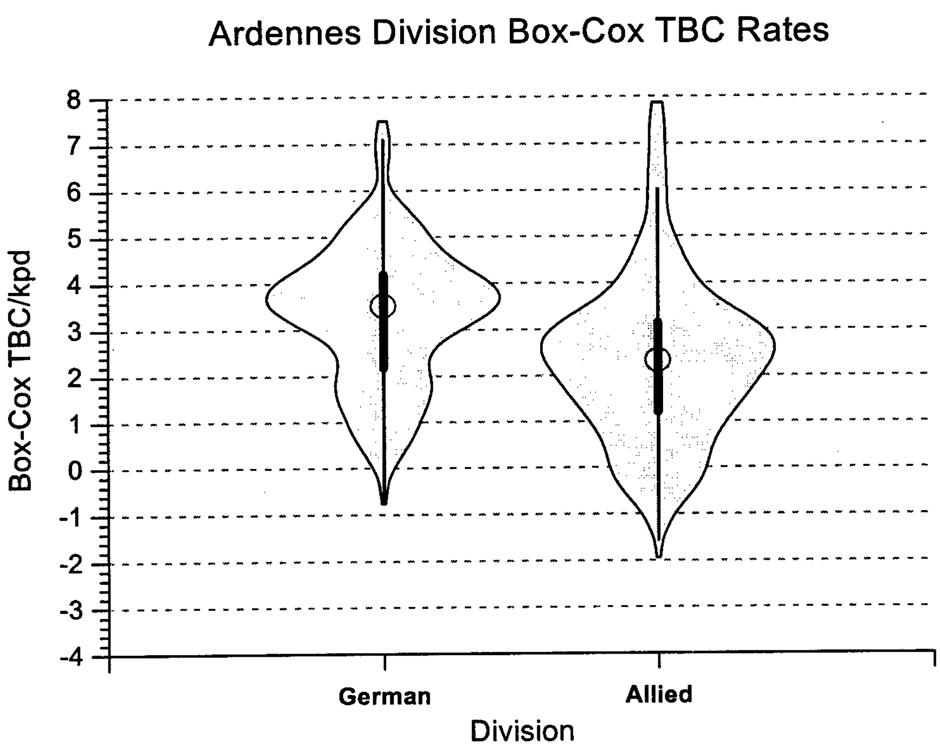

Figure 4-18. TBC Rate Violin Plot for ACSDB Forces

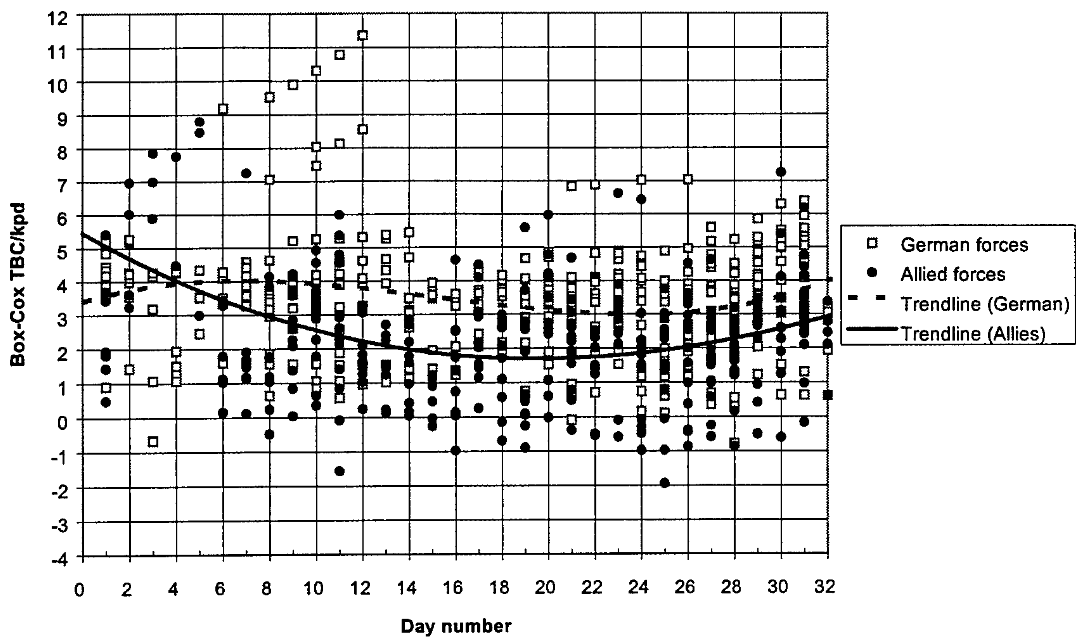

Figure 4-19. Box-Cox TBC Rate Versus Day for ACSDB Forces

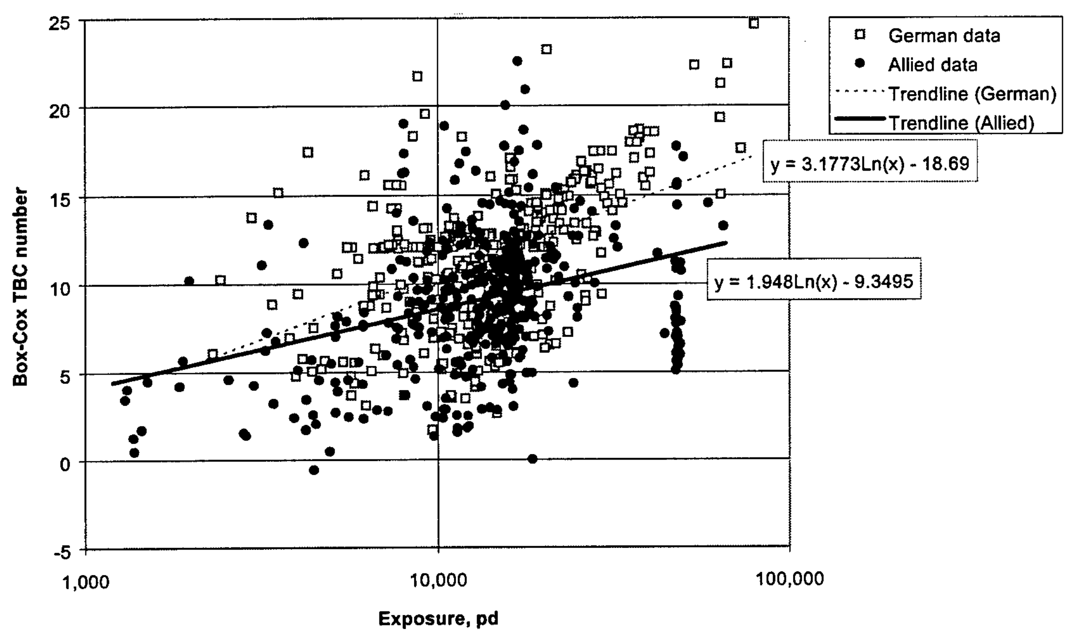

Figure 4-20. Exposure Plot for ACSDB Forces

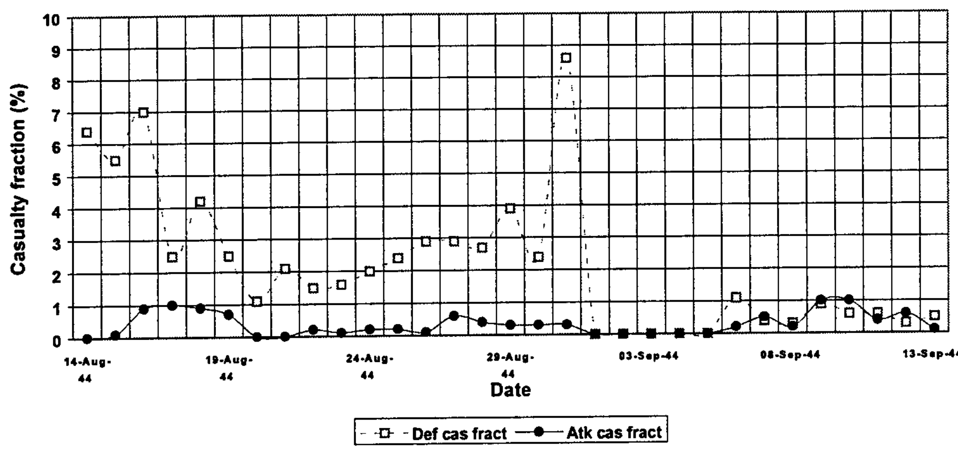

Figure 4-21. US 7th Armor Division Casualty Experience

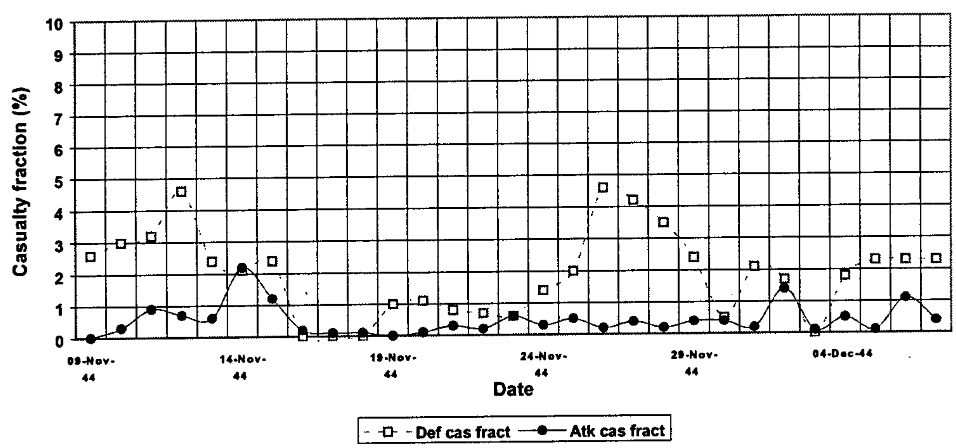

Figure 4-22. US 4th Armor Division Casualty Experience

d. This paragraph discusses the Westwall battle of WWII. That battle involved a local Allied penetration of the German prepared defenses known as the Siegfried Line or Westwall. The locale was a few kilometers north of Aachen. The data used are from the CHASE data enhancement study [Historical Evaluation and Research Organization-1986] and the US Army Concepts Analysis Agency's data base of battles [Historical Evaluation and Research Organization-1984]. Figure 4-23 shows the casualty experience of the attacking US forces, which were approximately of division size, together with those of the defending German forces, which were also approximately of division size. Here time zero, or H-Hour, is 1100 hours on 2 October 1944. The graph shows the diurnal variation in intensity of the action. However, US forces had the upper hand throughout. The action after 06-Oct-44, 0710 (92.17 hours, or H + 92.17), toward the end of the battle, was not the same as before. On that day, despite the defensive efforts of German reserves, the attack broke through the first band of the Westwall, and on the following day (7 October) made sweeping gains and collected many German prisoners. So the large "spike" in German TBC/kpd that rises to over 130 TBC/kpd near 120 hours is due to the collapse of German resistance in this sector of the front.

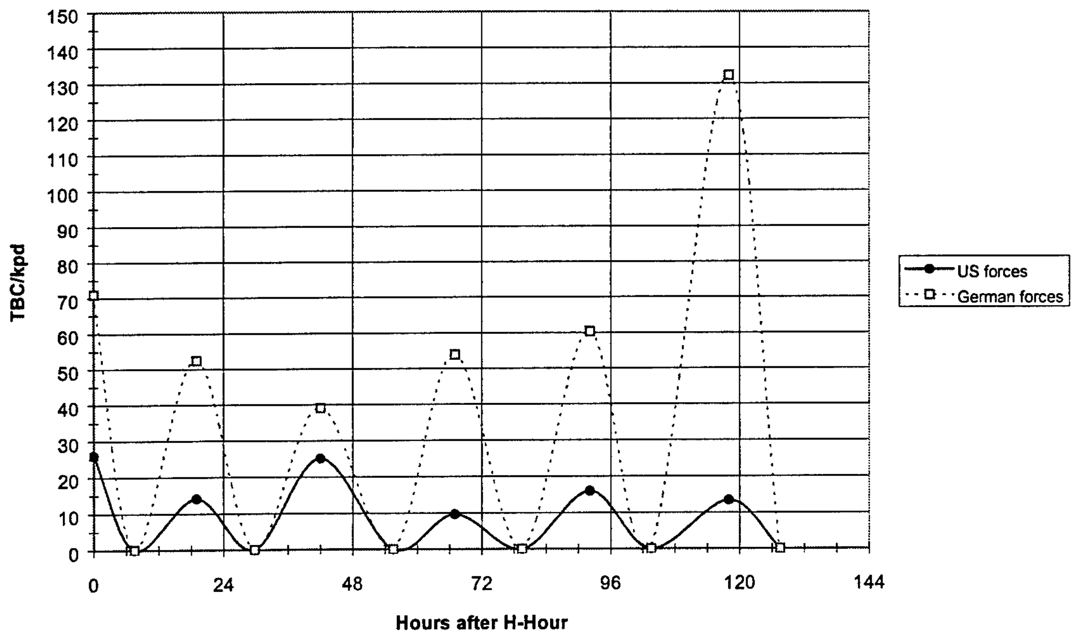

Figure 4-23. US and Opposing German TBC Rates for the Westwall Battle

e. This paragraph considers some data on US and allied divisions operating in the Normandy-Northern France (13 June to 9 September 1944) and Siegfried Line (September 1944 to February 1945) campaigns of World War II. The data are from [Wainstein-1973], who gives 50 data points for Normandy-Northern France and 40 for Siegfried. Figures 4-24 and 4-25 show the distribution of division Box-Cox casualty rates for these data. They are approximately normally distributed. Figure 4-26 shows a violin plot of the data. Casualty rates tended to be somewhat higher in Normandy-Northern France than for the Siegfried Line campaign. Both are somewhat higher than was typical of most US divisions in World War I (compare Figures 4-26 and 4-16). Figures 4-27 and 4-28 show their exposure plots. Although the data are sparse, the tendency is for the number of casualties to increase more rapidly than would be expected from a simple proportionality to the exposure level.

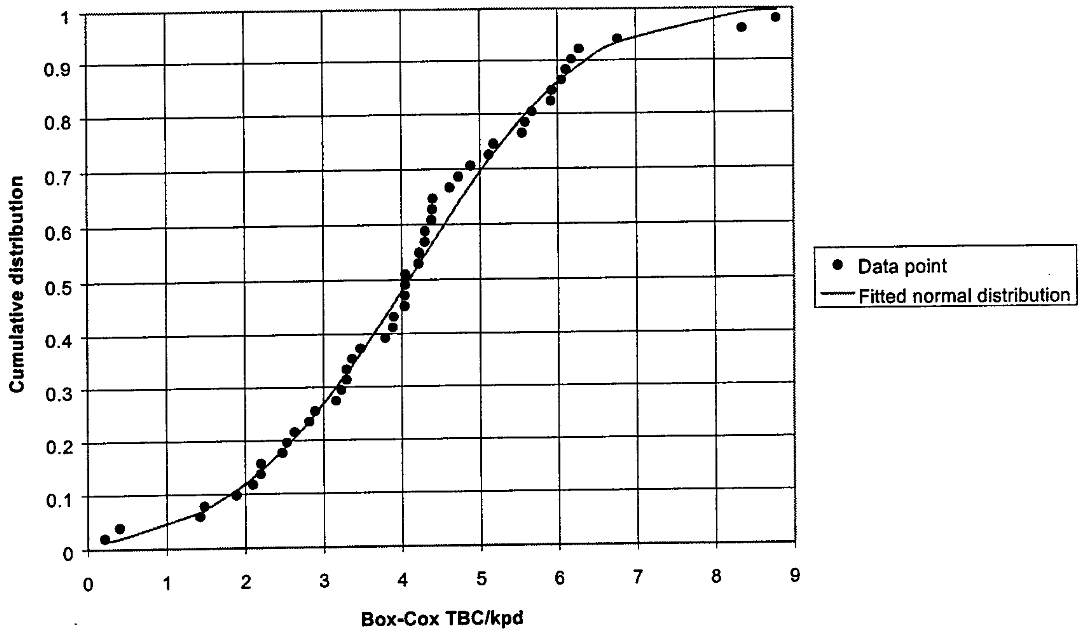

Figure 4-24. Box-Cox TBC Rate for Allied Divisions Operating in Normandy-Northern France

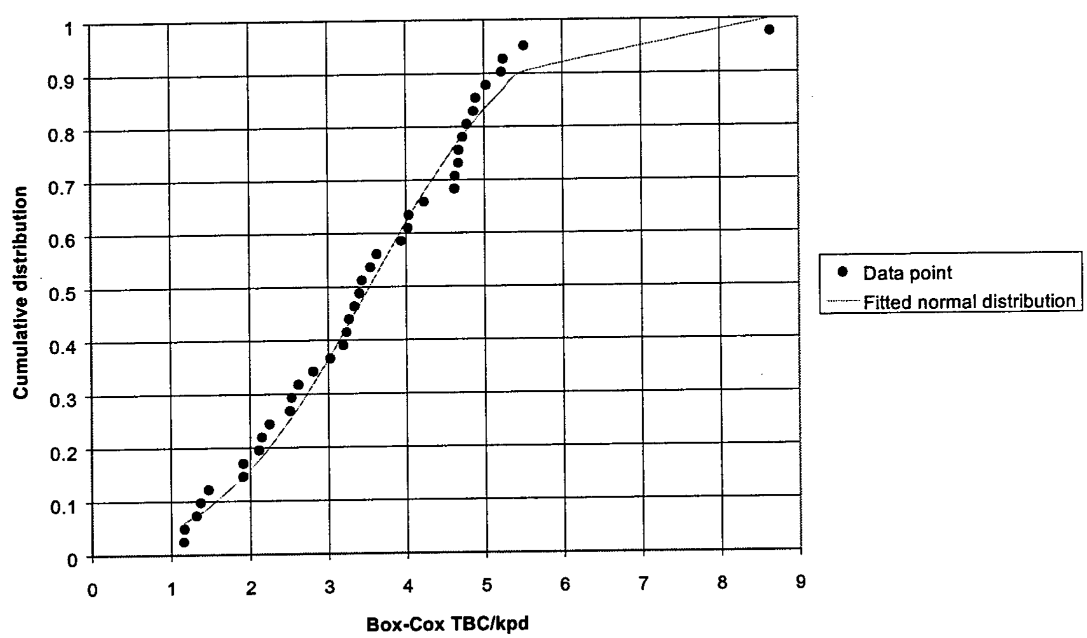

Figure 4-25. Distribution of Box-Cox TBC Rates for Allied Divisions in the Siegfried Line Campaign

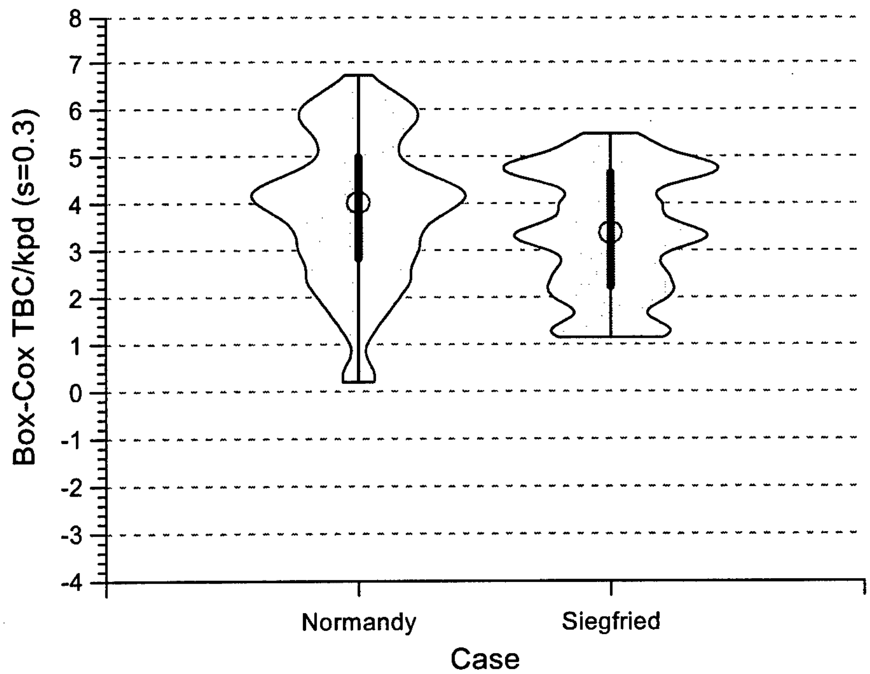

Figure 4-26. Violin Plots of Box-Cox TBC Rates for Allied Divisions in Normandy-Northern France and in the Siegfried Line Campaign

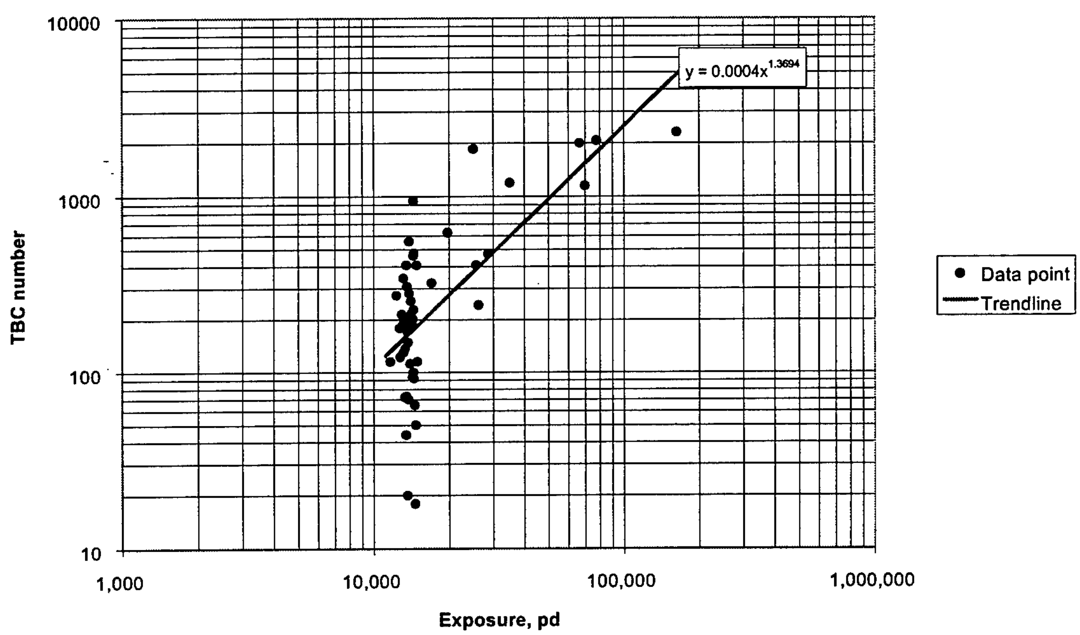

Figure 4-27. TBC Number Versus Exposure for Allied Divisions Operating in Normandy-Northern France

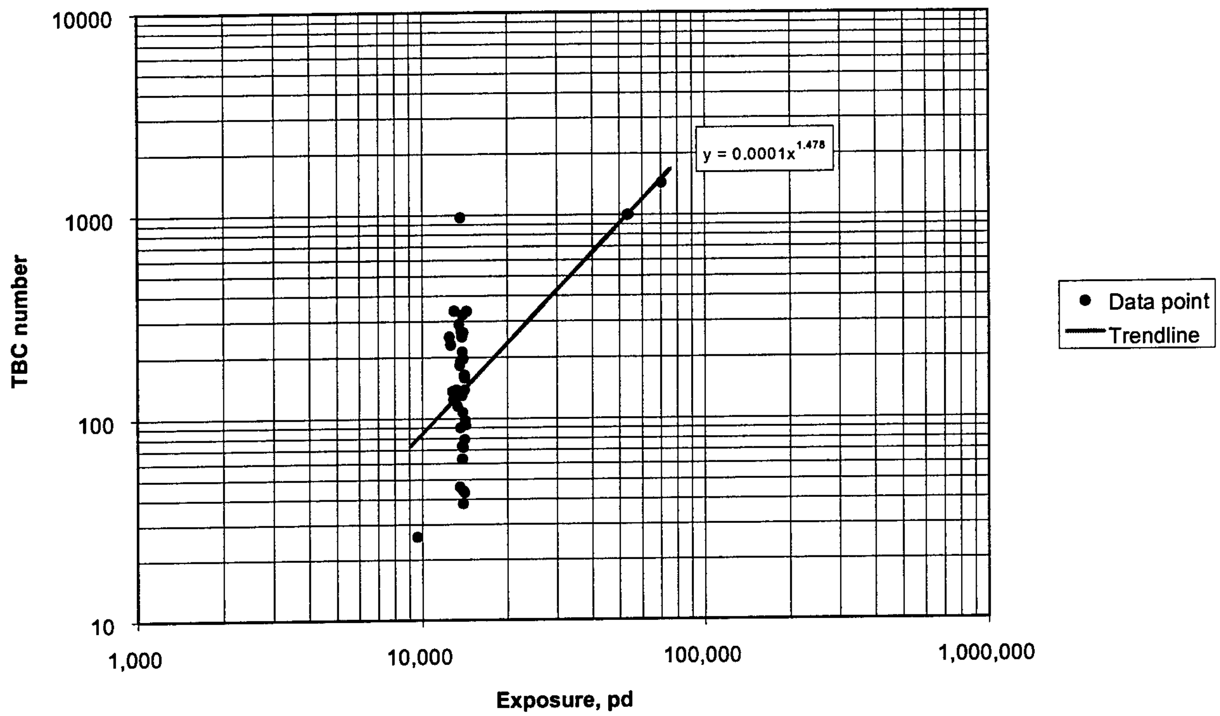

Figure 4-28. TBC Number Versus Exposure for Allied Divisions in the Siegfried Line Campaign

f. This paragraph discusses some data on US infantry divisions operating in Northwest Europe during World War II. The data are taken from [Wainstein-1973] and are presented in Figure 4-29. This figure shows that the trend is for the number of casualties incurred to increase with the number of days the division was in combat. However, the increase is not directly proportional to the number of combat days, but instead increases more slowly. In these data, the number of nonbattle casualties tends to be roughly proportional to the number of battle casualties. Caution needs to be used in extrapolating the trends shown in Figure 4-29 to other situations, for in these data there is a strong tendency for the divisions with the longest times in combat to also have been heavily engaged in Normandy during the early days of the Allied invasion of Europe. Technically, the number of days in combat is confounded with the high casualty rates taken during the early days of the Allied western front operations.

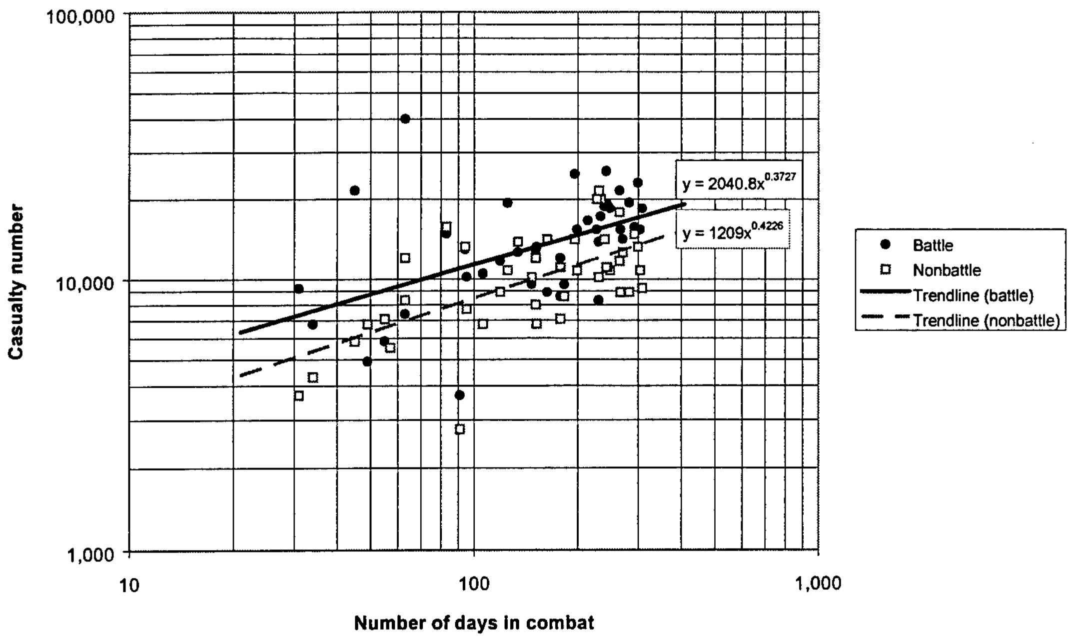

Figure 4-29. Casualties Versus Days in Combat for US Infantry Divisions Operating in Northwest Europe During World War II

g. This paragraph discusses some data on the Iwo Jima campaign of World War II, based on [Morehouse-1946], [Bartley-1954], [Engel-1954], [Samz-1972], and [Morison-1960]. This campaign was conducted by air and surface forces of the US Marine Corps, US Navy, and US Army. The preliminary bombardment of the island began about 8 or 9 months before the landings took place (depending on exactly what dates one elects to use) and increased in magnitude and tempo as the landing date approached. A special 3-day bombardment by navy surface ships and aircraft, together with Army air forces, was conducted on D-3 through D-1. During and after the landings on D-day, continued Army and Navy air attacks, along with naval surface gunfire, augmented Marine Corps organic artillery fires. It has been estimated [Morison, pp 73/74] that about 10,650 tons of ammunition were expended on Iwo Jima, an island about 8 square miles in area.

The Japanese forces defending Iwo Jima heavily fortified, mined, and tunneled the island in preparation for defending it to the last man. For example, the US 5th Marine Division destroyed 5,000 cave entrances and pillboxes in their zone of operations alone. Thus, Japanese personnel and materiel essential to defense were generally unreachable by air and naval bombardment. A postoperation analysis indicated that there was no general shortage of food or water (although Japanese status reports issued toward the end of the operation indicate that isolated pockets of defenders had exhausted their locally accessible supplies).

D-day was on 19 February 1945. The landings were conducted by the US V Amphibious Corps, which comprised the 3d, 4th, and 5th Marine Divisions together with numerous Army, Navy, and Marine supporting elements such as medical, air defense, transport, and signal units. Each Marine division consisted of three Marine regimental combat teams (RCTs), a division artillery regiment, plus command and support units. Each RCT consisted mainly of three battalion landing teams (BLTs) along with command and other units. The D-day landings were made by the 4th and 5th Marine Divisions. One of the 3d Marine Division's RCTs was landed on D+2 and attached to the 4th Marine Division. A second RCT from the 3d Marine Division, together with division headquarters, landed on D+5. The third and last RCT of the 3d Marine Division stayed afloat throughout the battle (in part because this division had been earmarked for use in an invasion of the Japanese homeland if that became necessary). On D+13, the first emergency landing of a B-29 was made on Iwo Jima. On D+16, US Army units assumed responsibility for island base development, air defense, and airfield operations. On D+23, an official flag raising ceremony on Iwo Jima proclaimed the establishment of a US Navy Military Government in the Volcano Islands (which include Iwo Jima). On D+25, it was officially declared that organized resistance had ceased and that the island was secured (except for a small pocket in the 5th Marine Division area). On D+29, a large contingent of US Army combat troops landed and began assisting the Marines. By D+33, these US Army forces were providing most of the mopping-up ambushes and patrols. On D+35, US Army units assumed control of all units on the island and it was officially announced that the capture and occupation of Iwo Jima was complete. On D+44, the last Marine RCT to do so began reembarking and US Army forces assumed full responsibility for all ground defense.

An estimated 20,526 Japanese and Koreans held the island on D-day. By D+33, when the US Army was shouldering the major responsibility for mopping up, an estimated 18,020 of them had been killed. Of these, an estimated 8,000 had been sealed in caves, although their exact number is unknown. Another 217 had been taken prisoner (159 Japanese and 58 Koreans). Of these, 186 were wounded (11 later died of wounds, another 70 were wounded severely enough to require hospitalization but survived, and yet another 105 were wounded but not hospitalized).

Nevertheless, an organized Japanese counterattack was launched on D+35, and another on D+42. The latter was made by about 200 Japanese and lasted all night, ending only after they had all been killed. In April and May of 1945 [D+41 through D+101] the Army captured 687 Japanese prisoners and killed 1,602, for a total of 2,289. However, small pockets long held out in various parts of the island. Indeed, as late as a year later emaciated Japanese foragers, unaware the war was over, were still being captured or slain in ambush as they crept at night from caves in search of food and water—and to kill Americans if they could.

If we figure that Japanese strength started at 20,520 on D–day and declined to 2,289 by D+33, for a loss of 18,231 for the period D–day to D+33, their average attrition rate would amount to 48.4 TBC/kpd if figured on the basis of a linear decline, or to 66.5 TBC/kpd if figured on the basis of an exponential decline. (See Appendix D for a discussion of the different attrition rate models.)

The US Marine forces experienced the attrition rates shown in Table 4-5. In this table, corps-level units include the corps headquarters and communication elements; corps field and air defense artillery units; one battalion each of tank, engineer, pioneer, service, motor transport, and medical; two amphibious tractor battalions; and smaller Army and Navy units operating ashore. The Marine division (MARDIV) strengths shown include the reinforcing elements attached to each division for the operation. The strength of 3 MARDIV is less because, as mentioned earlier, one of its RCTs was held in reserve aboard ship and never landed. The number of days differs from one unit to another because they each started and/or ended combat engagement at different times. For example, 4 MARDIV started reembarkation on D+20; it finished reembarkation and sailed on D+28. 5 MARDIV began reembarking on D+27 and sailed on D+36, accompanied by the Corps units. However, those elements of 5 MARDIV still ashore were the target for a strong Japanese counterattack on D+35. The Landing Force is the total, and its number of days were computed as the average number of days of its components, weighted by their starting strengths. Strengths are based on [Morehouse-1946] and losses on [Bartley-1954]. The percent of Landing Force casualties gives the percentage of all Landing Force TBC that occurred in the indicated unit. The (average) TBC/kpd values were computed on the basis of a linear decline. (For these data, the increase in TBC/kpd computed assuming an exponential decline amounts to less than about 3 percent, which we consider to be within the accuracy of the original data on strengths and losses.) We recall that 3 MARDIV did not land in strength on D-day, when the casualty rates were particularly high. Also, it stayed on through the closing phase of the campaign when casualty rates were much lower than earlier on. Presumably, these are the main reasons its TBC rate is so much lower than the other marine divisions. But the Box-Cox TBC rates in Table 4-5 are comparable to those given by Beebe as shown in Figure 4-5.

Table 4-5. Marine Unit Attrition Rates for Iwo Jima

Unit	Start strength	Total battle casualties	Percent of Landing Force casualties	Days	TBC/ kpd	Box-Cox TBC/ kpd (s=0.3)
Corps-level units	9,952	2,043	8.5	27	8.5	3.00
3 MARDIV	15,589	3,996	16.5	35	8.4	2.98
4 MARDIV	22,486	8,217	34.0	20	22.4	5.13
5 MARDIV	23,218	9,925	41.0	27	20.1	4.87
Landing Force	71,245	24,181	100.0	26.54	15.4	4.24

h. This paragraph discusses some data from the Okinawa campaign of World War II. The data are based on [Appleman-1948] and [Richardson-undated]. Okinawa is an island about 640 square miles in an area located about 350 miles south-southwest of the Japanese homeland island of Kyushu. It was held by an estimated 110,000 defenders. However, the actual number of defenders is not known very precisely. The Japanese army proper consisted of about 77,000 (39,000 in infantry combat units and 38,000 in artillery, service, and other units). They also drafted and conscripted several thousand Okinawans. About 20,000 Okinawans were organized in Boetai labor and service units, for the most part unarmed. A highly uncertain number of others were conscripted into Japanese forces to augment existing units or to form new ones. Moreover, during the fighting, the Japanese disbanded many units that had been weakened by high casualties, only to form new ones from the survivors of several disbanded units. This practice caused a lot of confusion amongst US intelligence elements at the time, as they were puzzled by the appearance of these new and unanticipated Japanese units. Accordingly, Japanese strength figures are rather uncertain.

Japanese resistance was fanatical. During the first 70 days of battle the US invasion forces averaged less than 4 prisoners captured per day. The capture rate increased sharply toward the end of the battle, but even so, the US took only about 7,400 Japanese prisoners of war out of the

110,000 estimated defender strength. During the last 2 weeks in June (D+77 to D+90), 80,000 Okinawa civilians were found in caves at the south tip of the island, between a third and a half of whom were wounded. These were either children, the very old, or women; there were few able-bodied men among them. The bodies of many thousands of other civilians lay in scattered locations, or had been sealed in caves.

The US 10th Army conducted the campaign to seize Okinawa. It consisted of two corps: the US Army's XXIV Corps and the US Marine Corps' III Amphibious Corps. We will deal almost exclusively with the experience of the US XXIV Corps. However, the IIIAmphibious Corps shared in all phases of the operation, and in broad general terms, its experience was similar (it took 2,779 KIA, 13,609 WIA, and 119 MIA for a total of 16,507 battle casualties). The initial landings took place around 0900 hours on D-day, 1 April 1945. It was conducted by the assault elements of the 7th and 96th Infantry Divisions (XXIV Corps), and of the 1st and 6th Marine Divisions (III Amphibious Corps). By nightfall of D-day, more than 60,000 men, including the reserve elements of the assault divisions and all division artillery elements, were ashore. Numerous tanks were also ashore and operating, as were miscellaneous antiaircraft artillery and 15,000 service troops. The major portion of the campaign occupied approximately the next 80 days (to D+80, 20 June 1945). However, reduction of isolated pockets and mopping up operations continued through D+92 (2 July 1945), when the Ryukus campaign (the main phase of which was the seizure of Okinawa) was declared ended.

In addition to corps troops, the US Army's XXIV Corps consisted of the US 7th, 27th, 77th, and 96th Infantry Divisions. The assault elements of the 7th and 96th divisions hit the beach along with the Marines on D-day and then conducted operations in the southern part of Okinawa. The 27th Division landed soon after and initially conducted operations in the northern part of Okinawa. Initially, the 77th Division landed on Ie Shima (a smaller island about 3 miles off the northwest tip of Okinawa) on D+15 (16 April 1945) and completed its seizure on D+24 (25 April 1945). The 77th Division then relocated to Okinawa and on D+29 (30 April 1945) it relieved the 96th Division. On the same day, the 1st Marine Division relieved the 27th (US Army) Division. As of 30 May 1945 (D+59) the XXIV Corps had taken only 90 Japanese military prisoners, most of whom were either badly wounded or unconscious and so could neither avoid capture nor commit suicide. By that time the 96th Division had been in the line 50 days, the 7th Division the last 32.

The XXIV Corps' total battle casualties for the entire Okinawa operation, broken down by branch of service, are shown in Table 4-6. In that table, MD is an abbreviation for Medical, CWS for Chemical Weapons Service (flame and smoke), CE for engineers, and CAC for Coast Artillery. Other abbreviations are standard. As can be seen the XXIV Corps took about 21 percent casualties during the campaign. If we take the campaign duration to be 80 days, this is an average casualty rate for the campaign of 2.66 TBC/kpd (the corresponding Box-Cox value is 1.14).

Table 4-6. Battle Casualties to Army Forces for Okinawa

Unit or branch	Strength	No. of casualties	Casualty percentage	Percentage of all casualties
Total (XXIV Corps)	100,383	21,342	21.26%	100.00%
Inf	38,284	18,591	48.56%	87.11%
Cav	596	83	13.93%	0.39%
MD	6,231	715	11.47%	3.35%
CWS	823	93	11.30%	0.44%
ARMD	8,717	593	6.80%	2.78%
FA	11,829	572	4.84%	2.68%
CE	10,616	428	4.03%	2.01%
SIG C	4,964	103	2.07%	0.48%
CAC(AA)	10,079	117	1.16%	0.55%
Others	8,244	47	0.57%	0.22%

Table 4-7 gives the total battle casualties by branch of service to the Army divisions of the XXIV Corps. It is clear that the infantry branch consistently took between 90 and 95 percent of the total divisional casualties.

Table 4-7. Army Division Casualties for Okinawa

Division	CE	FA	Inf	MD	Others	Total
27th Infantry	36	52	2,611	129	34	2,862
77th Infantry	96	148	4,545	158	28	4,975
7th Infantry	58	133	4,708	190	32	5,121
96th Infantry	46	155	6,718	223	24	7,166
Total	236	488	`18,582	700	118	20,124

4-7. SOME ARAB-ISRAELI WAR DATA.

a. This paragraph presents some analyses of division casualty data from the Arab-Israeli Wars. The data used are for the 46 battles that occurred between 5 June 1967 and 24 October 1973, as documented in [HERO-1975]. Here we have included a number of actions with force strengths as low as 4,000 on each side. These are exceptions to our general rule of counting only forces with at least 8,000 personnel as division-sized. However, omitting these smaller engagements would make little difference in the results, and there are too few of them to use in a separate statistical treatment.

b. Figure 4-30 gives a violin plot of the Israeli and Arab TBC rates. As indicated, the Israeli forces generally had a substantial advantage over their Arab counterparts with regard to the TBC rate. These are battles, and so their TBC rates are comparable to the TBC rates of the high intensity battles, such as those depicted in Figures 4-8 through 4-10.

c. Figure 4-31 shows the casualty number versus exposure for the attacker and defender in these battles. In most cases, the Israeli forces were on the attack, and their casualty numbers were generally lower than those of the opposing forces.

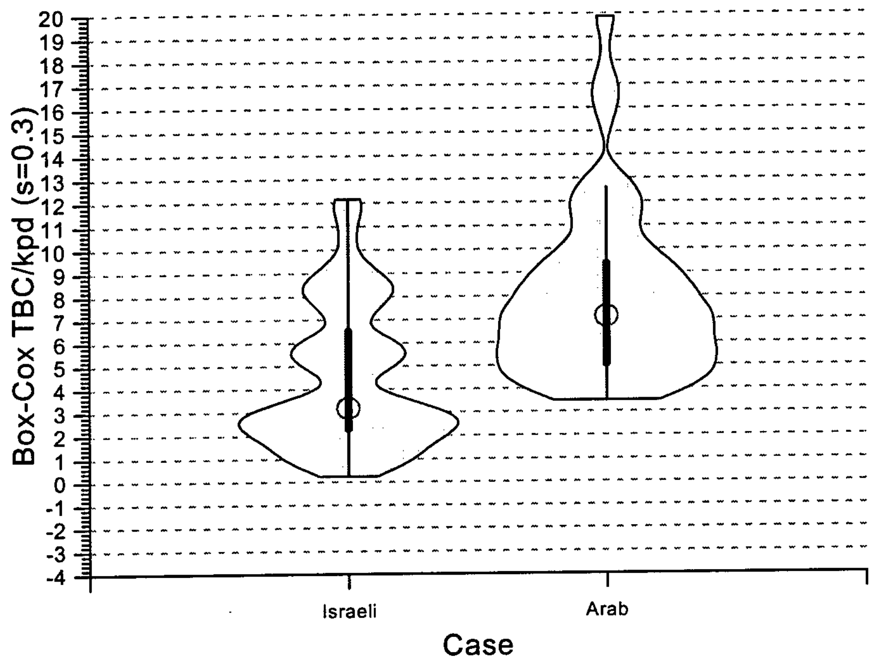

Figure 4-30. TBC Rates for Israeli and Arab Forces

4-8. SOME MISCELLANEOUS OPERATION DATA. This paragraph presents some analyses of division casualty data from various operations.

a. Some Spanish-American War Data. [Heitman-1903] gives the data in Table 4-8 relevant to US battle casualties for the expedition to Cuba during the Spanish-American War. Although the US force that fought there was called a corps, its size is closer to one of today's divisions and so we have included it in that category. The US force consisted of the following major contingents with their nominal sizes: (i) corps headquarters and staff (16 officers), Infantry units (12,000 to 13,000 total), Cavalry units (3,000 total), Artillery units (600 total), Engineers (200 total, and Signal Corps elements (90 total). Note that the Box-Cox TBC rates are roughly comparable to those for similar operations in World War I and Korea.

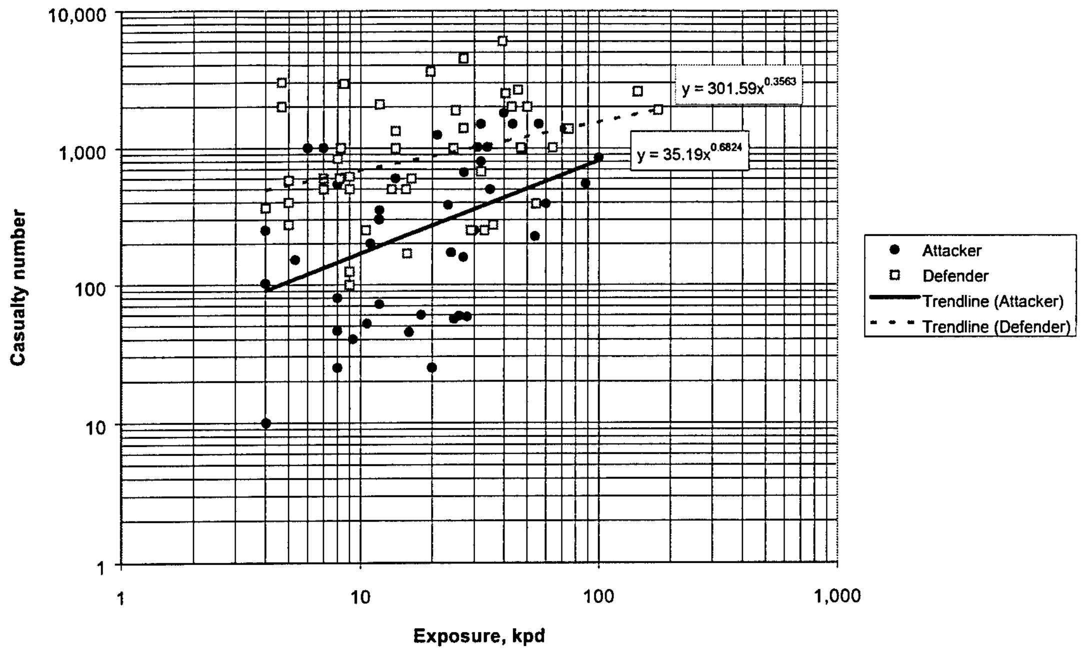

Figure 4-31. Casualties Versus Exposure for Some Arab-Israeli Battles

Table 4-8. Division Casualty Data from the Spanish-American War Era

Datum	Officers	Enlisted	Total
Present, 20 June 1898	803	14,935	15,738
Present, 20 July 1898	771	16,354	17,125
Killed, 20 June-17 July 1898	21	222	243
Wounded 20 June-17 July 1898	101	1,344	1,445
Killed and wounded, 20 June-17 July 1898	122	1,566	1,688
Ratio, wounded to killed	4.81	6.05	5.95
Casualty rate, killed/kpd	1.01	0.57	0.59
Casualty rate, wounded/kpd	4.84	3.46	3.53
Casualty rate, TBC/kpd	5.84	4.03	4.13
Box-Cox TBC/kpd (s=0.3)	2.33	1.73	1.77

b. [Love-1931, p29] estimates US Army loss rates during the Philippine Insurrection as shown in Table 4-9. Observe that the winning side's TBC rate declines steeply with the passage of time. This phenomenon has been observed in other contexts [Helmbold-1995]. Note that these Box-Cox TBC rates are much lower than for most of the other data in this chapter. Presumably this is in part due to the extended periods of time involved, and the concomitant attenuation of higher TBC rates that may have prevailed during shorter periods of time.

Table 4-9. Estimated TBC/kpd Rates for the Philippine Insurrection

Period	TBC/kpd	Box-Cox TBC/kpd (s=0.3)
4 Feb 1899–31 Dec 1899	0.136	–1.50
1 Jan 1900–31 Dec 1900	0.033	–2.14
1 Jan 1901–31 Dec 1901	0.012	–2.45
1 Jan 1902–14 Jul 1902	0.010	–2.50
4 Feb 1899–14 Jul 1902	0.044 (average)	–2.03

CHAPTER 5

ANALYSIS OF DATA ON THE PRINCIPAL COMPONENTS OF DIVISIONS

5-1. INTRODUCTION.

a. This chapter examines selected aspects of the personnel casualty data on the principal components of divisions. An analysis of the casualty data on division-level organizations can be found in Chapters 3 and 4.

b. What constitutes a principal component of a division is sometimes in doubt, especially when varying military organizations and naming conventions are considered over many decades. For simplicity, we elected to treat a unit as a unit smaller than a division if it was called a brigade, regiment, battalion, company, or comparable unit (such as a battery, a squadron, etc.). In order to impose some degree of consistency in other cases, we consider a unit to be of "smaller than division size" if its initial strength is less than 8,000 personnel.

c. In this chapter, the principal components of a division are considered to include elements such as the division headquarters, division artillery, division logistics, combat maneuver brigades or regiments, and similar entities. A discussion of casualties to units smaller than these principal components is given in Chapter 6.

d. The remarks made in paragraph 4-2 about long-term trends and other considerations regarding total battle casualties apply equally to the material on units smaller than division.

5-2. SOME GENERAL FEATURES OF CASUALTIES TO FORCES SMALLER THAN A DIVISION

a. Here we consider some features of casualties to forces smaller than a division. The data are drawn from the CBD90DAT, PARCOMBO, and BWSH data bases [see Helmbold-1991]. In this paragraph, we use all battles for which *at least one side* had an initial personnel strength less than 8,000. Thus, in some cases the strength of the units is greater than our nominal size limit of 8,000. Figures 5-1 through 5-3 show violin plots of the initial personnel strengths for the attacker and defender (INITW or winner and INITL or loser for the BWSH data base, since it does not provide information on which side was the attacker or defender). Figures 5-4 and 5-5 show the distribution of Box-Cox TBC rates for the attacker and defender based on two different data bases. The abscissa shows deviations from the average value, measured in units of the distribution's standard error. A theoretical normal distribution would plot as a straight line on charts like these. The sample sizes for units smaller than a division are about 105 and 109, respectively for the CDB90DAT and PARCOMBO data bases (slight departures from these nominal sample sizes occur due to occasional missing values). We observe that these Box-Cox TBC rates are distributed approximately normally. We also observe that the defender typically suffers a greater TBC rate than the attacker.

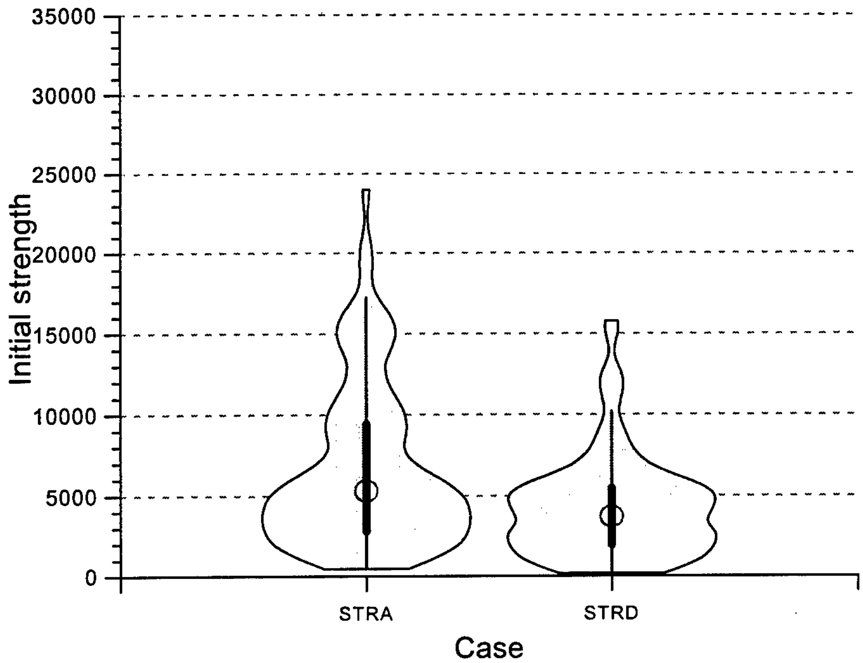

Figure 5-1. Violin Plot of Initial Strengths for the CDB90 Data Base

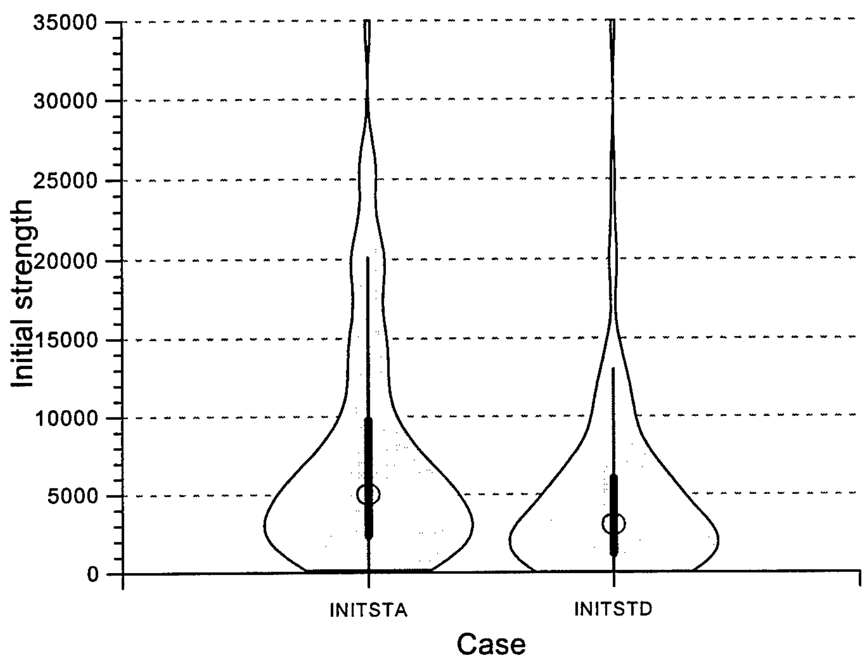

Figure 5-2. Violin Plot of Initial Strengths for the PARCOMBO Data Base

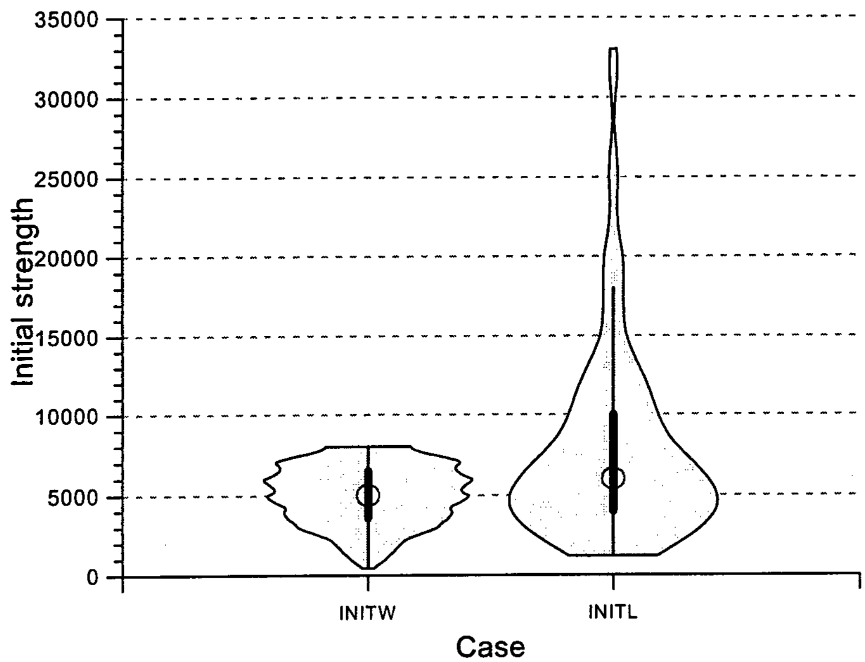

Figure 5-3. Violin Plot of Initial Strengths for the BWSH Data Base

b. Figures 5-6 through 5-8 show the distribution of Box-Cox TBC rates for the winner and loser based on three different data bases. The BWSH data base is used only for winner and loser displays because it does not include any information on which side was the attacker or defender. Its sample size for units smaller than a division is about 175. We observe that these Box-Cox TBC rates are distributed approximately normally. We also observe that the loser typically suffers a greater TBC rate than the attacker.

c. Figures 5-9 and 5-10 show violin plots of the distribution of Box-Cox TBC rates for the following four cases: (i) attacker's rate when the attacker wins (ATK|AWIN), (ii) defender's rate when the defender wins (DEF|DWIN), (iii) attacker's rate when the defender wins (ATK|DWIN), and (iv) defender's rate when the attacker wins (DEF|AWIN). Figure 5-11 shows a violin plot of the winner's and loser's Box-Cox TBC rates for the BWSH data base (which does not provide information on which side was the attacker and defender). We observe that a winning defender typically suffers about the same TBC rate as a losing attacker. A winning attacker typically suffers lower TBC rates than these, but a losing defender typically suffers higher ones.

d. Figures 5-12 and 5-13 show the attacker and defender TBC number versus exposure for the CDB90DAT and PARCOMBO data bases. Figures 5-14 through 5-16 show the winner and loser TBC number versus exposure for the CDB90DAT, PARCOMBO, and BWSH data bases. We observe that the TBC number typically is higher for the defender, and also higher for the loser.

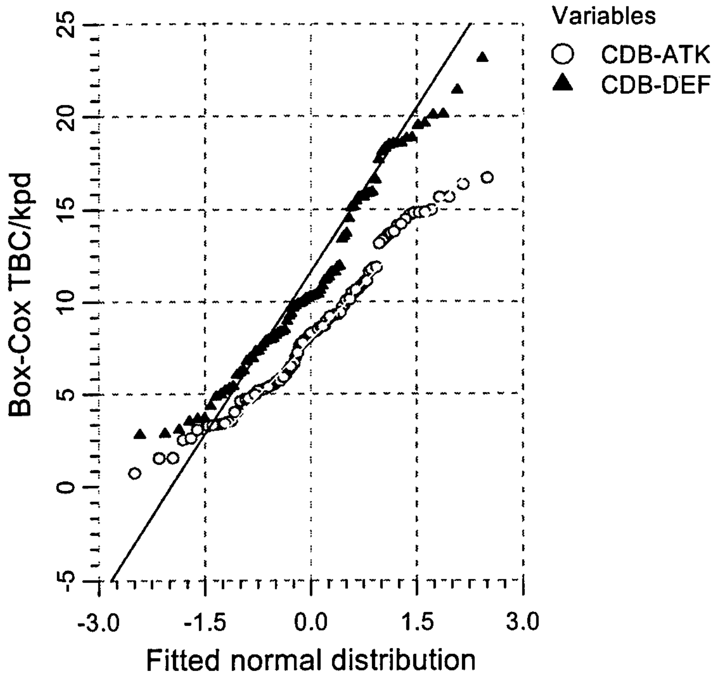

Figure 5-4. Distribution of Attacker and Defender Box-Cox TBC Rates for the CDB90DAT Data Base

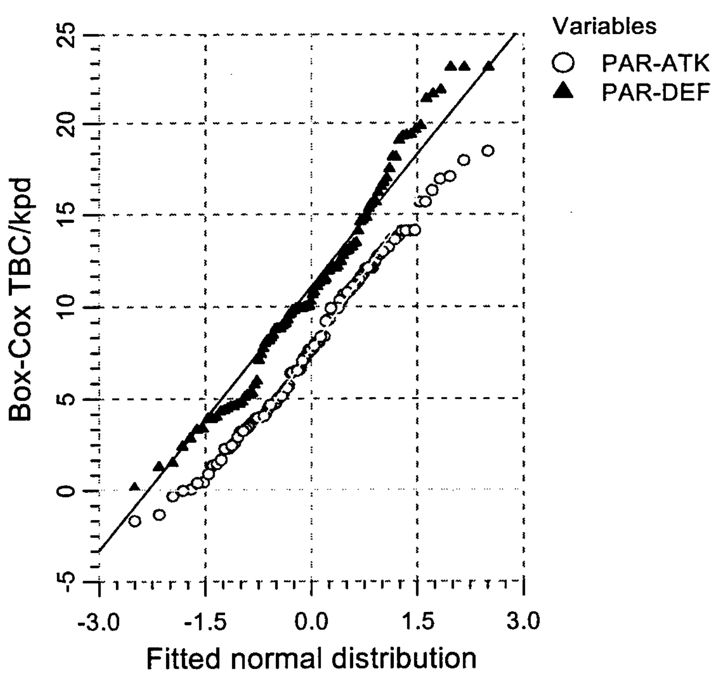

Figure 5-5. Distribution of Attacker and Defender Box-Cox TBC Rates for the PARCOMBO Data Base

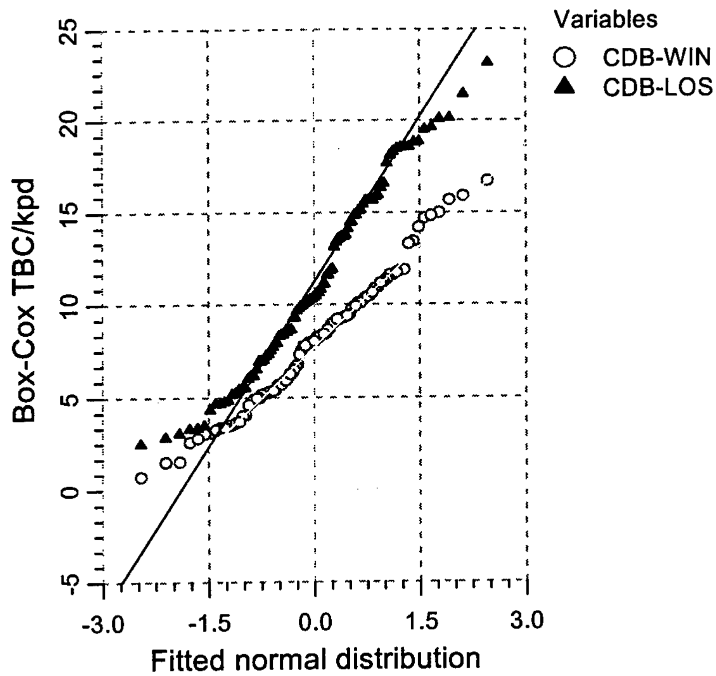

Figure 5-6. Distribution of Winner and Loser Box-Cox TBC Rates for the CDB90DAT Data Base

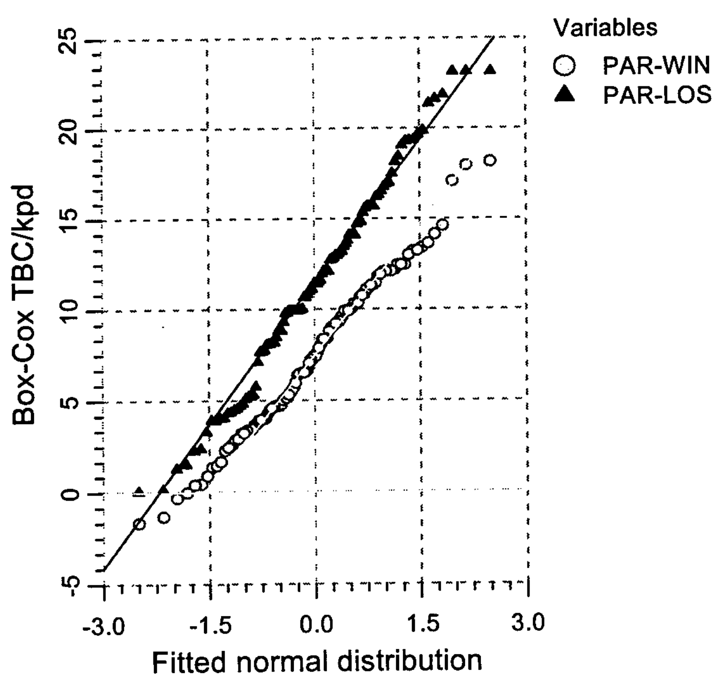

Figure 5-7. Distribution of Winner and Loser Box-Cox TBC Rates for the PARCOMBO Data Base

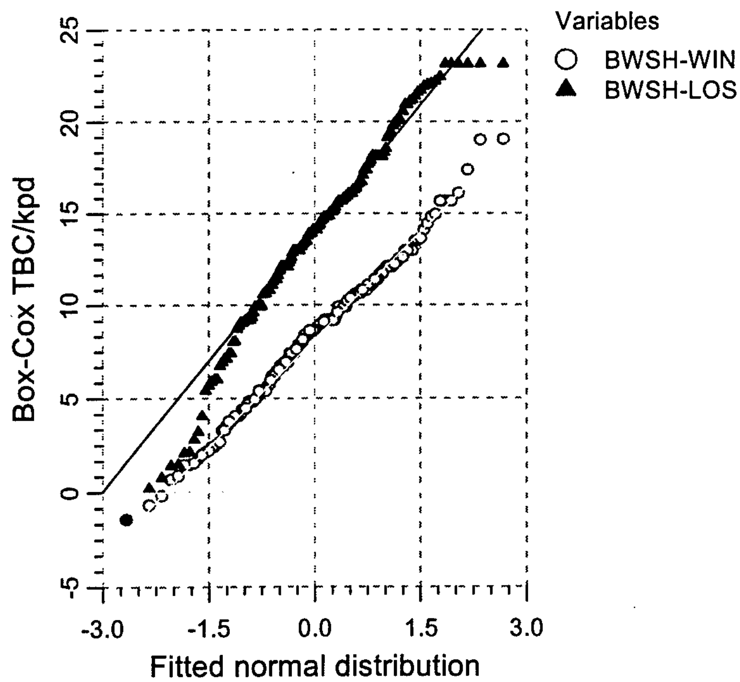

Figure 5-8. Distribution of Winner and Loser Box-Cox TBC Rates for the BWSH Data Base

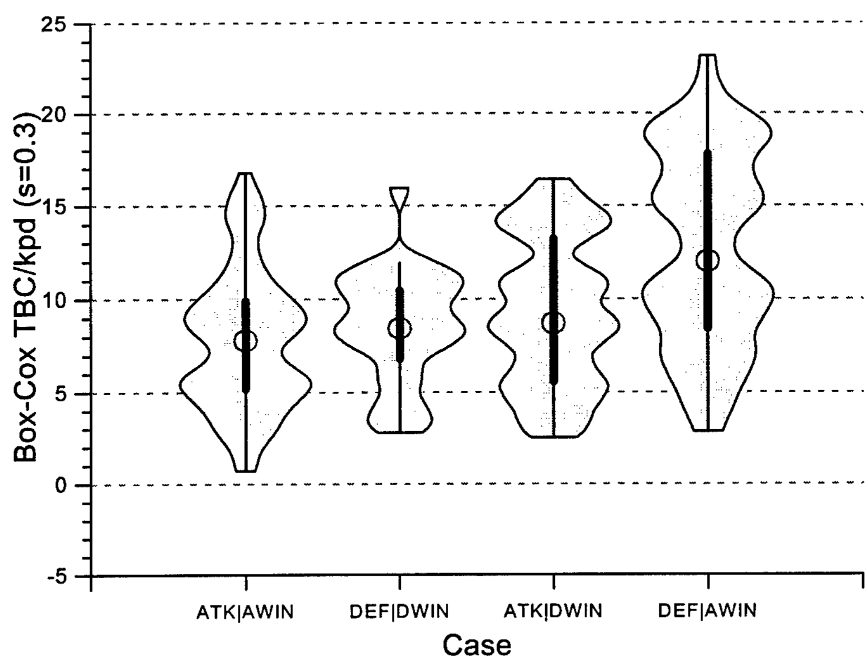

Figure 5-9. Violin Plot of TBC Rates for the CDB90DAT Data Base

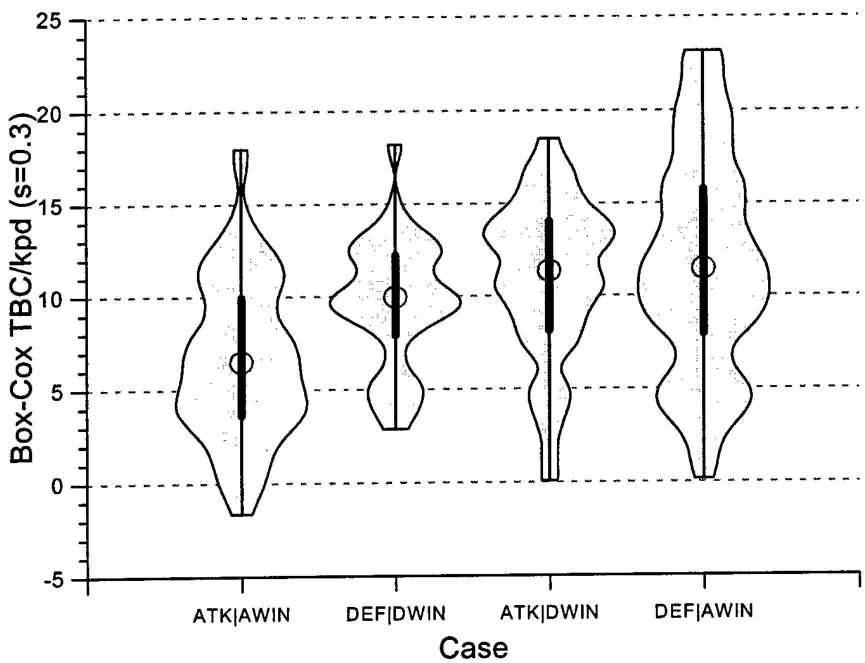

Figure 5-10. Violin Plot of TBC Rates for the PARCOMBO Data Base

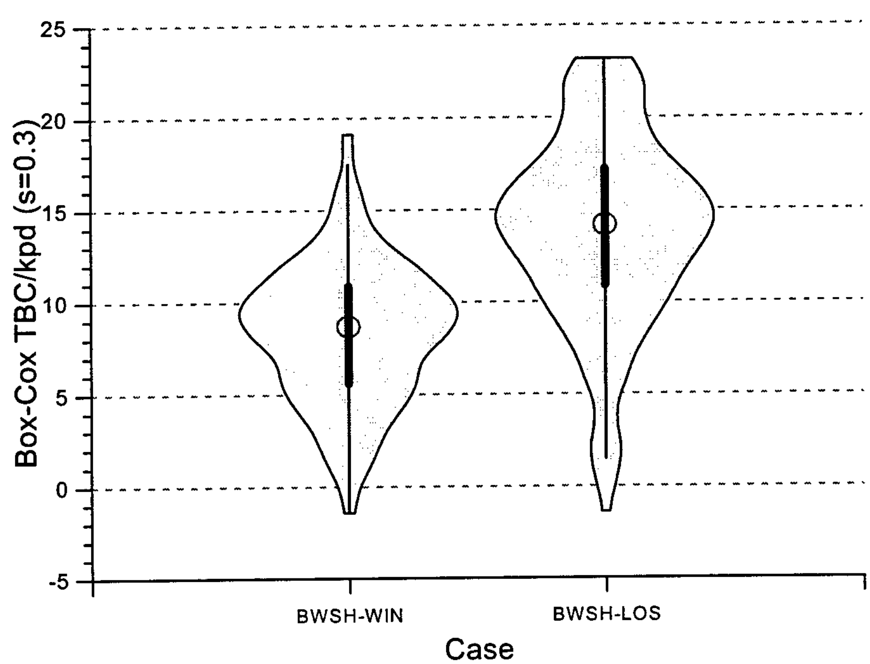

Figure 5-11. Violin Plot of Winner's and Loser's TBC Rates for the BWSH Data Base

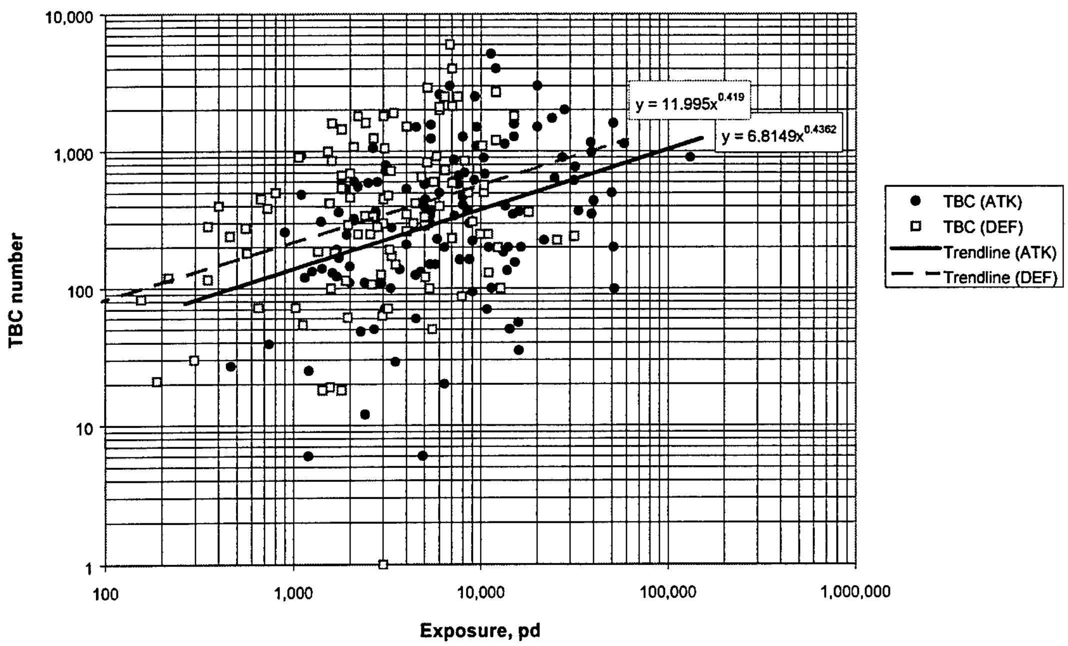

Figure 5-12. Attacker and Defender TBC Number versus Exposure for the CDB90DAT Data Base

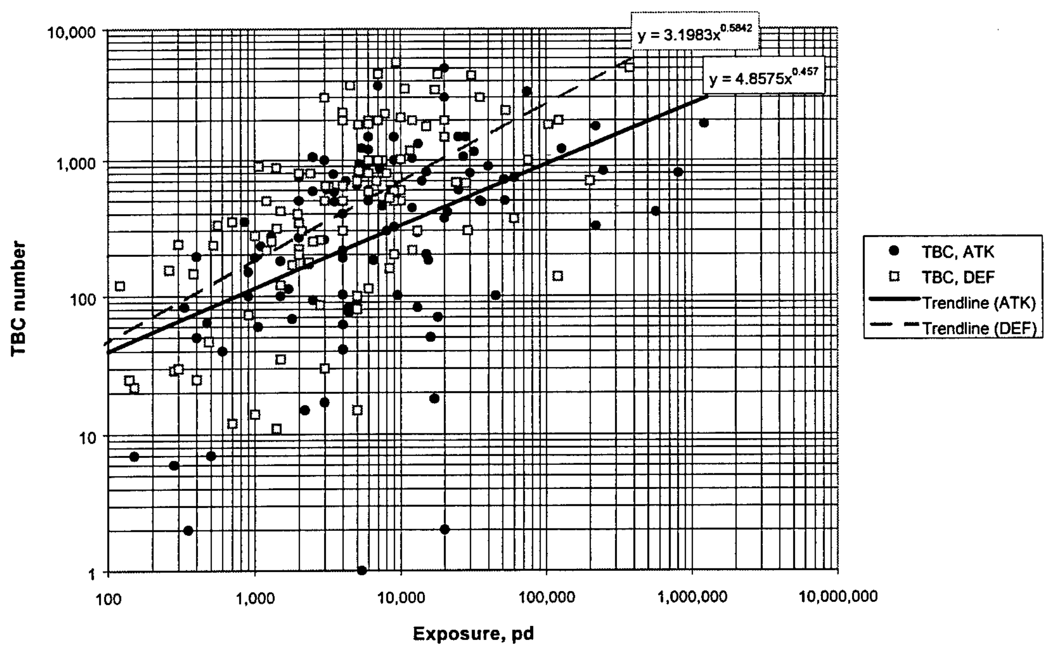

Figure 5-13. Attacker and Defender TBC Number versus Exposure for the PARCOMBO Data Base

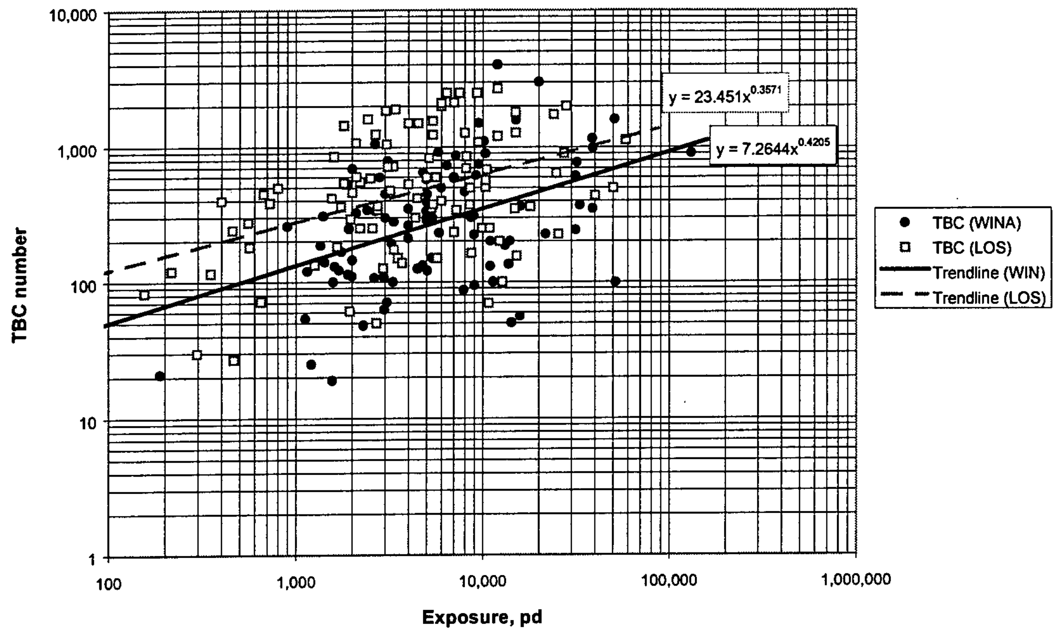

Figure 5-14. Winner and Loser TBC Number versus Exposure for the CDB90DAT Data Base

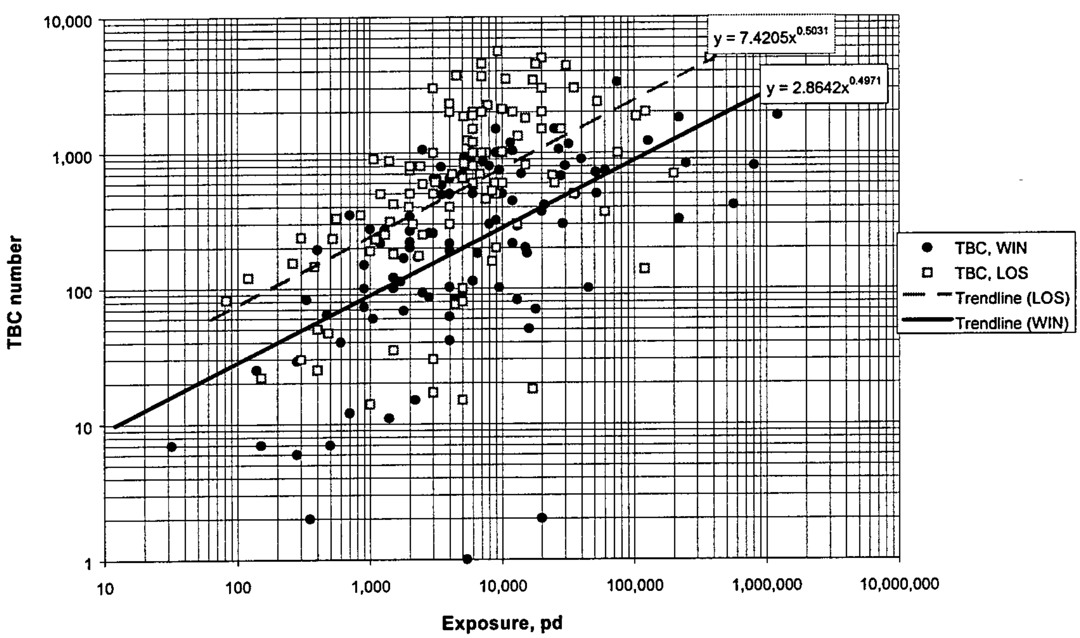

Figure 5-15. Winner and Loser TBC Number versus Exposure for the PARCOMBO Data Base

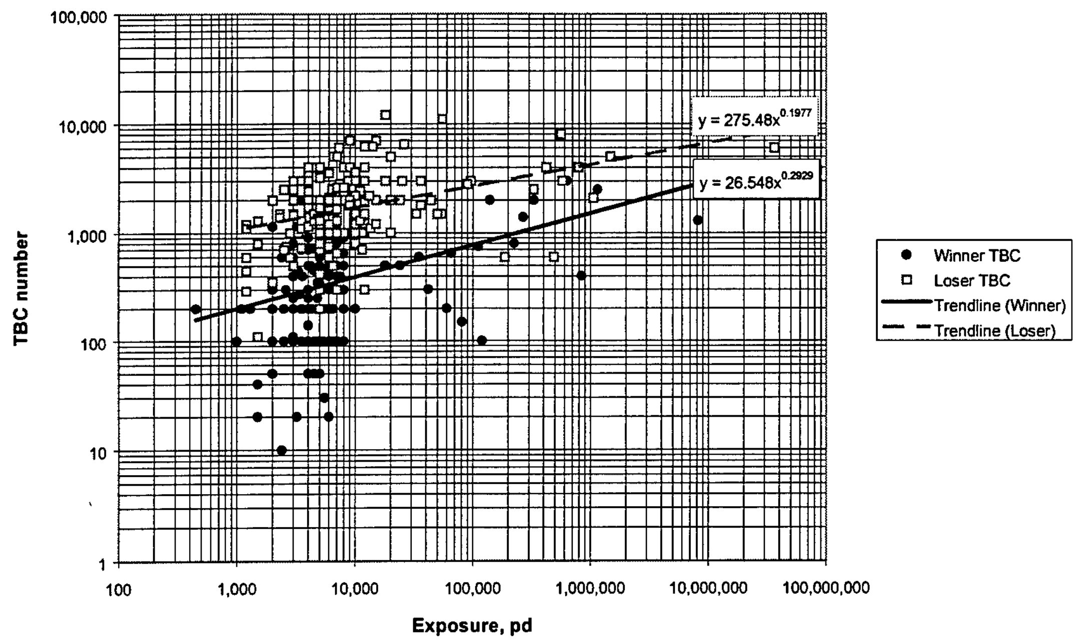

Figure 5-16. Winner and Loser TBC Number versus Exposure for the BWSH Data Base

5-3. PROPORTION OF CASUALTIES TO MAJOR DIVISION COMPONENTS

a. World War I. Here we address the issue of the relative proportion of casualties to division components. We begin by considering some data from World War I, based on [Anonymous-1926]. In those days, US Army infantry divisions were configured in a "square" organizational structure. That is, they consisted of four infantry regiments plus a number of nonregimental units. A US World War I infantry division typically included the following:

- Division Headquarters
- Inf Bde HQ No. 1
- Inf Bde HQ No. 2
- Field Arty Bde HQ
- Inf Rgt No. 1
- Inf Rgt No. 2
- Inf Rgt No. 3
- Inf Rgt No. 4
- Marine Liaison Unit
- Field Arty No. 1
- Field Arty No. 2
- Field Arty No. 3
- MG Bn No. 1
- MG Bn No. 2
- MG Bn No. 3

- Mortar Btry No. 1
- Engr Rgt & Train
- Signal Bn
- Trains HQ & MP
- Supply Train
- Ammo Train
- Sanitary Train

Table 5-1 shows the distribution of TBC numbers among these components of US divisions in the American Expeditionary Force (AEF) during World War I. For the computation of these percentages, we used the following procedure. There were a total of 42 US divisions in the AEF, together with many nondivisional units (such as aviation squadrons). However, 8 of these 42 divisions were noncombat divisions and had no casualties. These eight divisions are excluded from the percentage computation (however, since they had no casualties, including them would not change the percentage distribution of TBC among division components). Another four divisions were depot or replacement divisions. Although they had no combat mission, they did suffer some combat casualties. Those casualties are included in computing the percentages shown in Table 5-1 (however, they are relatively few in number and so omitting them would not appreciably affect the percentage figures in Table 5-1).

We offer the following observations on Table 5-1. First, the infantry regiments account collectively for about 84 percent of the division's TBC number. Second, on average, the individual infantry regiments share about equally in these casualty numbers. This is presumably due to a tendency to avoid making any regiment carry a significantly larger casualty burden than the others. Third, if we elect to group the infantry regiments, field artillery units, MG battalions, and mortar battery together as "combat" elements, then these account for very nearly 95 percent of the division's TBC number. The remaining 5 percent of the TBC number falls on the division's combat support and service support units, with the engineers alone bearing by far the greatest proportion (nearly two-thirds) of this remaining 5 percent.

b. World War II (Iwo Jima). Our sources and the major events surrounding the World War II campaign of Iwo Jima are described in paragraph 4-6. Here we concentrate on the distribution of casualties to the major division components, drawn from the sources used in paragraph 4-6. Table 5-2 shows the distribution of TBC among the major components of the reinforced Marine divisions (MARDIVs) in this operation. Recall that only two of the 3d MARDIV's regimental combat teams (RCTs) ever landed: the other RCT remained aboard ship throughout. We see that the RCT TBC numbers range from about 73 percent to 87 percent (and average about 78 percent) of the division's TBC number. On the average, the artillery units account for about 4 percent of the division's TBC number. Other units account for about 18 percent of the division's TBC number. These "other" units generally include most or all of the following:

Table 5-1. Distribution of TBC Among Components of US AEF Divisions in World War I

Unit	TBC as % of division total TBC
Division Headquarters	0.11%
Inf Bde HQ No. 1	0.03%
Inf Bde HQ No. 2	0.01%
Field Arty Bde HQ	0.01%
HQ Total	*0.16%*
Inf Rgt No. 1	22.03%
Inf Rgt No. 2	21.96%
Inf Rgt No. 3	19.83%
Inf Rgt No. 4	20.37%
Rgt Total	*84.19%*
Attached to Marines	0.01%
Liaison Total	*0.01%*
Field Arty No. 1	1.47%
Field Arty No. 2	1.44%
Field Arty No. 3	1.34%
Arty Total	*4.25%*
MG Bn No. 1	0.97%
MG Bn No. 2	2.89%
MG Bn No. 3	2.35%
MG Total	*6.22%*
Mortar Btry No. 1	0.17%
Mortar Total	*0.17%*
Engr Rgt & Train	3.09%
Engr Total	*3.09%*
Signal Bn	0.79%
Signal Total	*0.79%*
Trains HQ & MP	0.13%
Supply Train	0.06%
Ammo Train	0.33%
Sanitary Train	0.60%
Trains Total	*1.12%*
Grand Total	*100.00%*

- 1 Armored amphibious bn
- 2 Amphibious tractor bns
- 1 JASCO unit
- 1 VMO unit
- 1 Naval construction battalion (NCB, or "SeaBee")
- 2 Amphibious truck cos
- 1 War dog platoon
- 1 Provisional rocket detachment
- 1 Field depot detachment
- 1 Special weapons company
- 1 Signal bn
- 1 Port company
- 1 Intelligence team
- 2 Replacement draft formations

Unfortunately, the data in the sources consulted does not provide sufficient information to apportion the TBC numbers among these "other" elements.

c. World War II (Okinawa). The major events surrounding the World War II campaign of Okinawa are described in paragraph 4-6. Here we use the same sources to concentrate on the distribution of casualties to components of the US Army divisions in the Okinawa action, all of which were assigned to the US XXIV Corps. Table 5-3 shows the distribution of casualty numbers among components of the XXIV Corps (the source document does not make clear whether these are to be interpreted as units or as branches). Table 5-4 shows the distribution of casualty numbers among components of the various US divisions that took part in the Okinawa campaign. Note that Table 5-4 for *divisions* may omit some of the *corps* units included in Table 5-3. From Table 5-4 it is clear that the infantry consistently took between 90 and 95 percent of the total divisional casualties.

d. World War II (Battle of Schmidt). This paragraph discusses some data on US 28th Infantry Division operations during the Battle of Schmidt (2-13 November 1944). This division was tasked with taking the town of Schmidt in the Huertgen Forest of Germany. It was the only Allied division on the Western Front to attempt a major offensive operation during that time. The German defenders inflicted high casualties on this division. It failed to take the town, and on 14 November it was declared destroyed as a fighting machine. We use data drawn from [Clark-1954], [Compton-1983], and [Kuhn-1989]. These data are partly incommensurable. Clark gives only the cumulative total losses (including nonbattle as well as battle losses) for the entire action. Compton gives both battle and nonbattle losses for each day of the operation. Kuhn gives only battle losses on each day. Figure 5-17 illustrates the differences among these sources for the cumulative losses to the 28th Infantry Division as a whole. Clark uses the corrected morning reports for her data. Kuhn's data may use uncorrected morning reports, as there is a fairly strong suggestion in Figure 5-17 that on 10 November his data "catch up" with losses actually taken on 8 through 10 November. Nevertheless, despite their differences, there is a general qualitative agreement among these three sources of data.

Table 5-2. Distribution of TBC Within US Marine Corps Divisions for Iwo Jima

Unit	KIA	DOW	WIA	TBC	Percent of divisional TBC	Ratio of (WIA + DOW) to KIA
3 MARDIV RCTs	725	209	2,547	3,481	87.1	3.80
3 MARDIV DIVARTY	13	8	122	143	3.6	10.00
3 MARDIV other	46	12	314	372	9.3	7.09
3 MARDIV total	784	229	2,983	3,996	100.0	4.10
4 MARDIV RCTs	1,347	316	4,845	6,508	79.2	3.83
4 MARDIV DIVARTY	44	12	224	280	3.4	5.36
4 MARDIV other	240	47	1,142	1,429	17.4	4.95
4 MARDIV total	1,631	375	6,211	8,217	100.0	4.04
5 MARDIV RCTs	1,356	452	5,512	7,320	73.8	4.40
5 MARDIV DIVARTY	87	24	269	380	3.8	3.37
5 MARDIV other	507	158	1,560	2,225	22.4	3.39
5 MARDIV total	1,950	634	7,341	9,925	100.0	4.09
All divisions RCTs	3,428	977	12,904	17,309	78.2	4.05
All divisions DIVARTY	144	44	615	803	3.6	4.58
All divisions other	793	217	3,016	4,026	18.2	4.08
All divisions total	4,365	1,238	16,535	22,138	100.0	4.07

Table 5-3. Battle Casualties to US Army Forces for Okinawa

Unit or branch	Strength	No. of casualties	Casualty percentage	Percentage of all casualties
Total (XXIV Corps)	100,383	21,342	21.26%	100.00%
Inf	38,284	18,591	48.56%	87.11%
Cav	596	83	13.93%	0.39%
MD	6,231	715	11.47%	3.35%
CWS	823	93	11.30%	0.44%
ARMD	8,717	593	6.80%	2.78%
FA	11,829	572	4.84%	2.68%
CE	10,616	428	4.03%	2.01%
SIG C	4,964	103	2.07%	0.48%
CAC (AA)	10,079	117	1.16%	0.55%
Others	8,244	47	0.57%	0.22%

Table 5-4. US Army Division Casualties for Okinawa

Division	CE	FA	Inf	MD	Others	Total
27th Infantry	36	52	2,611	129	34	2,862
77th Infantry	96	148	4,545	158	28	4,975
7th Infantry	58	133	4,708	190	32	5,121
96th Infantry	46	155	6,718	223	24	7,166
Total	236	488	18,582	700	118	20,124
Percent of total	1.17	2.42	92.34	3.48	0.59	100.00

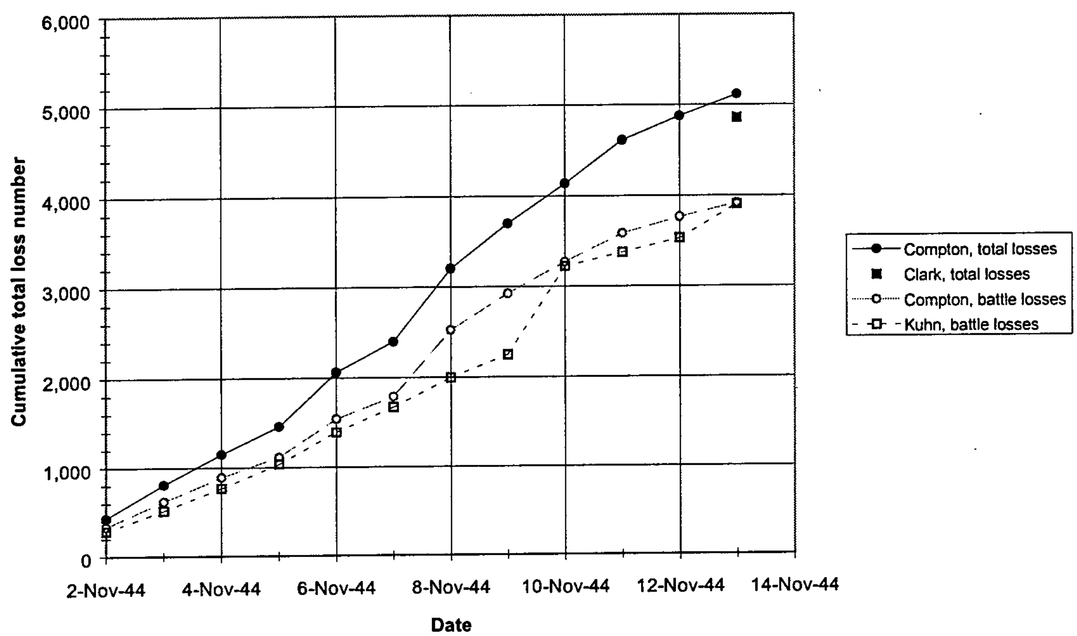

Figure 5-17. Comparison of Source Data for Battle of Schmidt

According to Clark, from 2 through 13 November 1944 (inclusive), the 28th Infantry Division and its attached elements suffered total losses (including nonbattle as well as battle) of 4,857, of which 4,836 (99.57 percent) were taken in the principal combat units, as indicated in Table 5-5. In that table, "Other" includes units identified in the source as "AAA Bn, Med Bn, Sig Co, Ord Co, QM Co, MP Pltn, and Band."

Table 5-5. Total Losses to US 28th Infantry Division Components According to Clark

Units	Total loss number	Percent of cumulative total losses
3 Inf rgts	4,526	93.19
Rcn troop	10	0.21
Engr cbt bn	44	0.91
Div arty	74	1.52
Tank destroyer bn (att)	80	1.65
Tank bn (att)	102	2.10
Other	21	0.43
Cumulative	4,857	100.00

Table 5-6 shows the battle and total (nonbattle as well as battle) losses to the principal components of the US 28th Infantry Division during the Battle of Schmidt according to Compton (see Appendix F for more detail on Compton's data). For a portion of this time, the US 12th (Regimental) Combat Team of the US 41st Infantry Division was attached to the US 28th Infantry Division, and its losses are included in Table 5-6. Also, for just one day during the battle the US 28th Infantry Division organized from its components a Task Force "R." In Table 5-6, casualties to the elements of this task force are allocated to their parent organizations as follows: 3d Battalion, 110th RCT to the 110th RCT; A and B Companies, 707th Tank Battalion to the 112th RCT; C Company, 893d Tank Destroyer Battalion to the 112th RCT. Table 5-6 indicates that in this situation nonbattle (NB) losses generally amounted to about 35 percent of the battle casualties (ratio of total losses to TBC of about 1.35). Also, for these data the major combat elements (RCTs, other maneuver elements, and DIVARTY) bear 99.13 percent of the TBC and 99.28 percent of the total losses (including nonbattle as well as battle casualties). In addition, these data suggest that the various regimental combat teams (RCTs) had rather different casualty experiences in the Battle of Schmidt. Nonbattle losses are roughly proportional to combat losses for each of the major components. Kuhn does not provide any information on how casualties are distributed internally within the division.

e. World War II (other Compton Data). This paragraph describes some other data from [Compton-1983] (see Appendix F for more detail on Compton's data). Table 5-7 gives the casualties to the US 6th Armored Division for operations in Northwest Europe during World War II from 31 December 1944 through 3 January 1945, inclusive. Shortly before this action, a narrow corridor had broken the encirclement of the US 101st Airborne Division at Bastogne. For the period under consideration, the US 6th Armored Division's operations consisted in pushing back German forces in the sector east of Bastogne. These German forces included the 78th Grenadier Regiment (of the 26th Volks Grenadier Division), 167th Volks Grenadier Division, 340th Volks Grenadier Division, and a small tank force of the 12th SS Panzer Division.

Table 5-6. Casualties to US 28th Infantry Division Components According to Compton

Component	KIA	WIA	MIA	NB	TBC number	Percent of total TBC	Total loss	Total loss, percent of total	Ratio total loss/ TBC
109TH RCT	50	675	162	325	887	22.63	1,212	23.70	1.37
110TH RCT	27	1,066	122	308	1,215	31.00	1,523	29.78	1.25
112TH RCT	77	830	872	503	1,779	45.39	2,282	44.61	1.28
12TH CT, 41ID	2	2	0	6	4	0.10	10	0.20	2.50
Subtotal	*156*	*2,573*	*1,156*	*1,142*	*3,885*	*99.13*	*5,027*	*98.28*	*1.29*
DIV HQ	1	2	1	10	4	0.10	14	0.27	3.50
DIV TRAINS	0	0	1	14	1	0.03	15	0.29	15.00
DIVARTY	4	25	0	30	29	0.74	59	1.15	2.03
Total	*161*	*2,600*	*1,158*	*1,196*	*3,919*	*100.00*	*5,115*	*100.00*	*1.31*
Percent of total TBC	4.11	66.34	29.55	30.52	100.00				
Total Loss, percent of total	3.15	50.83	22.64	23.38	76.62		100.00		

As was the case for most US armored divisions in World War II, the US 6th Armored Division included three major combat maneuver elements, known as combat commands (CCs) and designated CCA, CCB, and CCR. CCA and CCB were the principal combat components. The "R" in CCR stood for "reserve," and this component normally served either in reserve or as the division's principal or alternate headquarters. Table 5-7 shows that for these data the three Combat Commands accounted for close to 95 percent of either the total battle casualties or the total losses (which include nonbattle as well as battle losses). Nonbattle casualties (NB) in the three combat commands are about 70 percent of the battle casualties (ratio of total loss to TBC of about 1.7). The two principal combat commands (CCA and CCB) have roughly equal casualties. Nonbattle losses are roughly proportional to combat losses for each of the major components.

Table 5-7. Casualties to US 6th Armored Division Components According to Compton

Component	KIA	WIA	MIA	NB	TBC	Percent of total TBC	Total loss	Total loss, percent of total	Ratio total loss/ TBC
CCA	20	191	20	152	231	53.23	383	50.39	1.66
CCB	15	139	22	115	176	40.55	291	38.29	1.65
CCR	0	9	0	29	9	2.07	38	5.00	4.22
Subtotal	*35*	*339*	*42*	*296*	*416*	*95.85*	*712*	*93.68*	*1.71*
DIV HQS (FWD)	0	0	0	3	0	0.00	3	0.39	#N/A
DIV TRAINS	0	1	0	3	1	0.23	4	0.53	4.00
DIVARTY	1	13	3	24	17	3.92	41	5.39	2.41
Total	*36*	*353*	*45*	*326*	*434*	*100.00*	*760*	*100.00*	*1.75*
Percent of total TBC	8.29	81.34	10.37		100.00				
Total loss, percent of total	4.74	46.45	5.92	42.89	57.11		100.00		

Table 5-8 gives the casualties to the US 7th Armored Division for operations in Northwest Europe during World War II from 17 through 23 December 1944. In this period the division, together with the US 106th Infantry and 28th Infantry Divisions, fought a defensive, delay, and withdrawal operation to hinder the advance of the German Ardennes counteroffensive. Together, these US divisions denied German access to the St. Vith crossroads and surrounding westbound roads. German forces opposing the 7th Armored Division, either continuously or briefly, included the 9th SS Panzer Division, 1st SS Panzer Division, Fuehrer Begleit Brigade, 18th Volks Grenadier Division, and the 62d Volks Grenadier Division.

During a portion of this time, Combat Command B of the US 91st Armored Division was attached to the US 7th Armored Division, and its losses are included in those shown in Table 5-8. Including these with the three Combat Commands (CCA, CCB, and CCR) of the US 7th Armored Division, we find that these main combat elements account for about 87 percent of either the total battle casualties (TBC) or the total losses (nonbattle as well as battle). For the Combat Commands, nonbattle casualties (NB) are about 14 percent of the battle casualties (ratio of total loss to TBC of about 1.14). The combat commands have widely dissimilar casualty numbers. Nonbattle losses are (very) roughly proportional to combat losses for each of the major components. The source does not give the casualties to the division headquarters of the US 7th Armored Division separately from those of the "Division Troops" category.

Table 5-8. Casualties to US 7th Armored Division Components According to Compton

Component	KIA	WIA	MIA	NB	TBC	TBC as percent of total TBC	Total loss	Total loss as percent of total	Ratio total loss/ TBC
CCA	8	83	63	40	154	9.61	194	10.59	1.26
CCB	34	247	802	131	1,083	67.60	1,214	66.27	1.12
CCB (9AD)	1	67	55	10	123	7.68	133	7.26	1.08
CCR	0	11	15	8	26	1.62	34	1.86	1.31
Subtotal	*43*	*408*	*935*	*189*	*1,386*	*86.52*	*1,575*	*85.97*	*1.14*
DIV TRAINS	0	10	9	5	19	1.19	24	1.31	1.26
DIV TROOPS	8	81	89	28	178	11.11	206	11.24	1.16
DIVARTY	0	8	11	8	19	1.19	27	1.47	1.42
Total	*51*	*507*	*1,044*	*230*	*1,602*	*100.00*	*1,832*	*100.00*	*1.14*
Percent of total TBC	3.18	31.65	65.17	14.36	100.00				
Total loss as percent of total	0.00	2.78	27.67	56.99	12.55	87.45		100.00	

f. Korean War. The data in Table 5-9 are taken from [Reister-1986]. They are totals for the entire Korean War experience, and so encompass a variety of combat situations. Admissions (either WIA or DNBI) are those who were admitted to a medical treatment facility and remained at least overnight. The rates in this table are in units of per thousand personnel-years of exposure (kpy). The total battle casualties are in the last group of columns. These show that about 94 percent of all US Army battle casualties were borne by the divisions. Within the divisions, about 90.7 percent ($85.5 \div 94.3$) were borne by the regiments, another 4.6 percent ($4.3 \div 94.3$) by the artillery, and yet another 1.8 percent ($1.7 \div 94.3$) by the engineers. If we include all these among the division's major combat elements, they bear a total of about 97 percent of the division's casualties.

Figure 5-18 shows violin plots of the Box-Cox TBC rates for US Infantry Regiments in the Korean War. As for Table 5-9, these data are totals for the entire Korean War experience, and so encompass a variety of combat situations. However, there are only 52 data points (line items in the database). The division-level operation type codes used in Figure 5-18 (together with the number of data points in each) are listed below.

1 - Maintaining static defensive lines (8 cases)
2 - Withdrawal operations (7 cases)
3 - Pursuit and mopping up operations (11 cases)
4 - Defense against enemy offensive (8 cases)
5 - Limited operations from main battle position (8 cases)
6 - Major offensive operations (10 cases)

These sample sizes are too small and the variability of the infantry regimental data too large to reliably detect any differences in mean values among their TBC rates for the different division-level types of operation. This is confirmed visually in Figure 5-18, and is supported by computation (a one-way analysis of variance). If we lump together all 52 cases, we obtain the distribution of Box-Cox TBC rates for US Infantry Regiments in Korea shown in Figure 5-19. Although to the eye the normal distribution fit in Figure 5-19 does not appear to be very good, computation (Kolmogorov-Smirnov test) indicates that the data would deviate more widely from a normal distribution about 20 percent of the time by chance alone, and so the fit is actually quite acceptable.

We also note that *regimental* missions are not always strongly correlated to the *division-*level mission. Thus, in 20 (38.5 percent) of these 52 cases the regiment was assigned relatively light duty (characterized either as patrolling, mopping up, movement or redeployment, or reserve). In the other 32 cases the regiment was assigned relatively heavy duty (characterized either as attack against heavy or light resistance, airdrop attack, assault river crossing, defense against enemy counterattack, establishing or holding defensive position, or withdrawal and rear guard). Figure 5-20 shows a violin plot of TBC rates for US Infantry Regiments in Korea according the above duty types (0 for heavy duty and 1 for light duty). Light duty exposure amounted to 36,661 kpd, or 64.1 percent of the total regimental exposure of 57,234 kpd. Patrolling exposure *alone* amounted to 21,063 kpd, or 36.8 percent of the total regimental exposure. This figure shows that the TBC rate is significantly higher for heavy duty regimental operations than for light duty ones.

Figure 5-21 shows the TBC number versus exposure in kpd for US Infantry Regiments in Korea. The trend line indicates that the TBC number increases more slowly than would be the case for a direct proportionality between TBC number and exposure, and in fact that the relationship is non-linear.

Table 5-9. Casualties to US Divisional and Nondivisional Components in the Korean War

	Average mean strength		Killed in action			WIA-Admissions			DNBI-Admissions			KIA + WIA-Admissions		
Type of combat unit	Number	Percent	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
US Army	207,851	100.0	19,353	100.0	30.2	77,788	100.0	121.4	365,375	100.0	570.1	97,141	100.0	151.6
Non-division	100,387	48.3	699	3.6	2.3	4,827	6.2	15.6	189,390	51.8	611.9	5,526	5.7	17.9
Division	107,464	51.7	18,654	96.4	56.3	72,961	93.8	220.2	175,985	48.2	531.1	91,615	94.3	276.5
Divisional headquarters, headquarters and service companies	12,273	5.9	328	1.7	8.7	902	1.2	23.8	13,170	3.6	348.0	1,230	1.3	32.5
Regiments	63,862	30.8	16,764	86.7	85.1	66,329	85.2	336.9	126,175	34.5	640.8	83,093	85.5	422.0
Artillery battalions	20,018	9.6	928	4.8	15.0	3,268	4.2	53.0	20,645	5.7	334.5	4,196	4.3	68.0
Engineer battalions	5,372	2.6	394	2.0	23.8	1,299	1.7	78.4	7,790	2.1	470.3	1,693	1.7	102.2
Medical battalions	1,923	0.9	28	0.1	4.7	70	0.1	11.8	2,790	0.8	470.5	98	0.1	16.5
Tank battalions	4,016	1.9	212	1.1	17.1	1,093	1.4	88.3	5,415	1.5	437.3	1,305	1.3	105.4

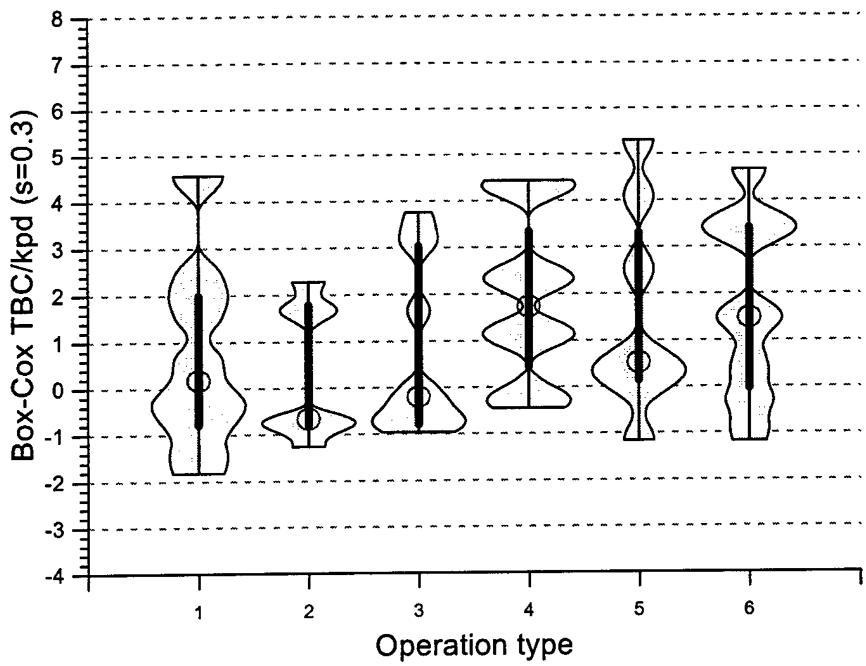

Figure 5-18. Casualty Rates for US Infantry Regiments, Korean War

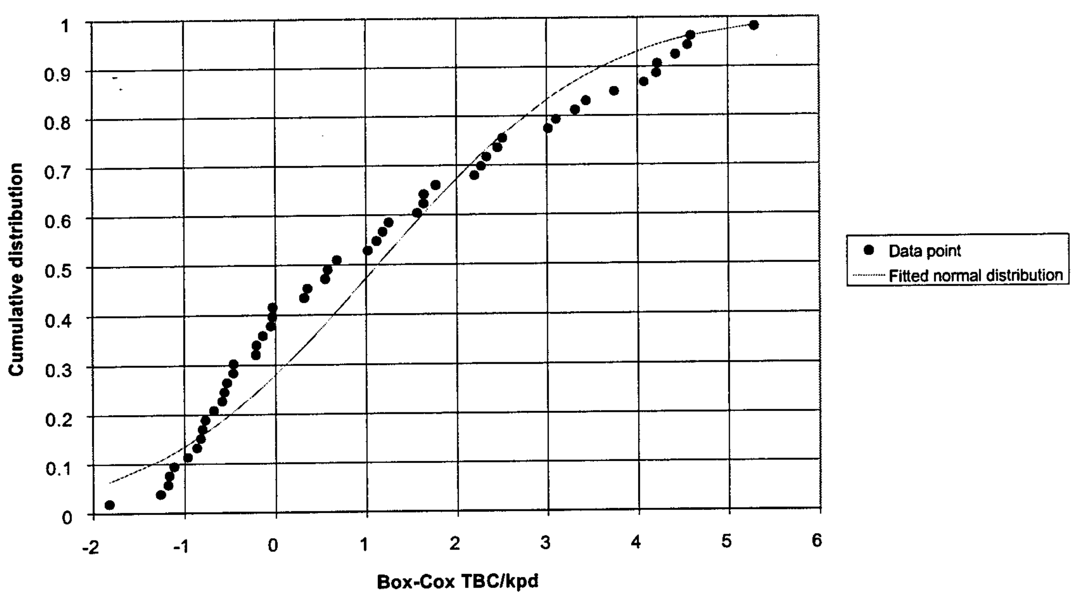

Figure 5-19. Distribution of Box-Cox TBC Rates for US Infantry Regiments, Korean War

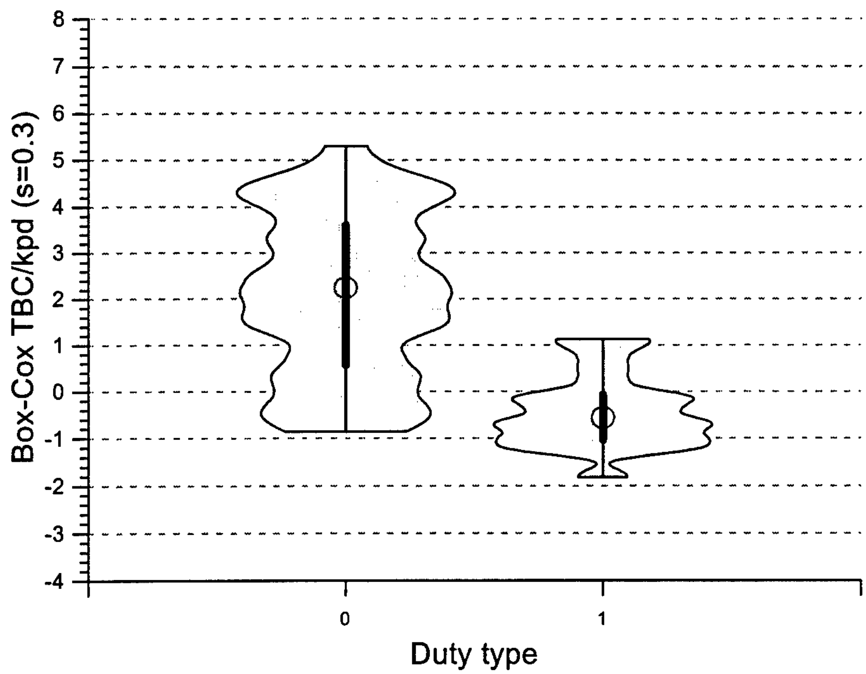

Figure 5-20. Violin Plot of TBC Rates for US Infantry Regiments, Korean War

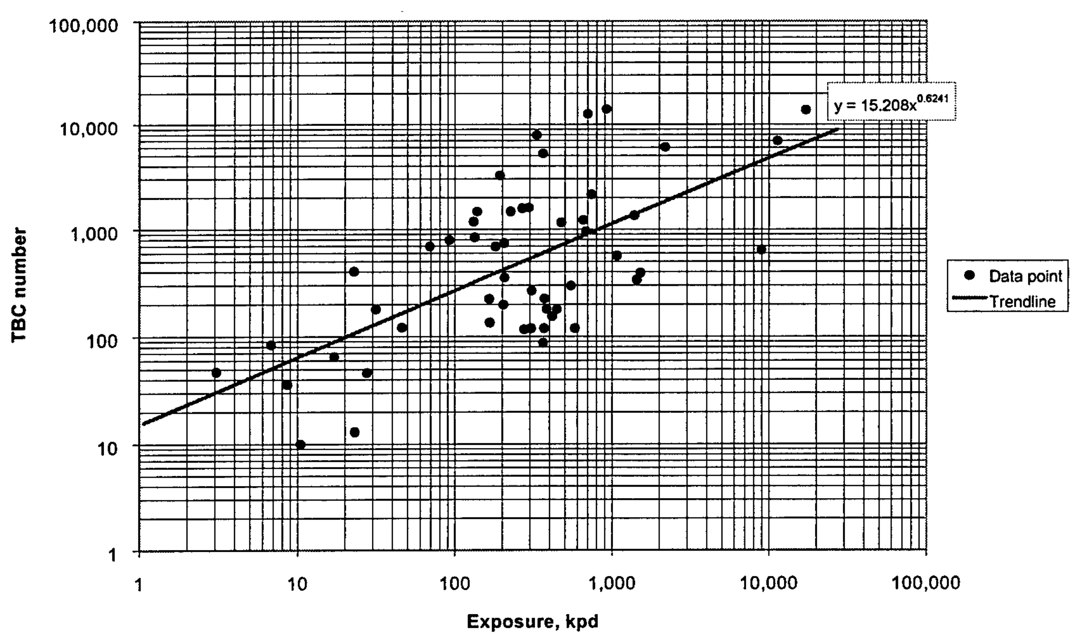

Figure 5-21. TBC Number versus Exposure for US Infantry Regiments, Korean War

CHAPTER 6
ANALYSIS OF DATA ON BATTALION AND COMPANY SIZED COMBAT MANEUVER FORCES

6-1. INTRODUCTION

a. Previous chapters dealt with the casualty data on divisions and their brigades, regiments, or combat commands. This chapter deals with casualties to units of battalion size or smaller. What constitutes an element of battalion size or smaller is sometimes in doubt, especially when varying military organizations and naming conventions are considered over many decades. For simplicity, we elected to treat a unit as of battalion size or smaller if it was called a battalion, company, or comparable unit (such as a battery, a squadron, *etc.*). In order to impose some degree of consistency in other cases, we consider a unit to be of "smaller than brigade size" (and so of battalion size) if its initial strength is less than 3,000 personnel. The remarks made in paragraph 4-2 about long-term trends and other considerations regarding total battle casualties apply equally to the material on units of battalion size or smaller.

b. In this chapter we concentrate almost exclusively on total battle casualties (TBC) to "combat maneuver" battalions and companies. Normally, casualties to other unit types are alluded to only to provide a comparison to the casualties of combat maneuver elements. Here we consider a "combat maneuver company" to be one that is organic to an infantry or tank battalion and which is normally employed in a fire and maneuver combat role. Heavy weapons and tank companies organic to combat maneuver battalions are included. Excluded are all tank destroyer, antiaircraft, engineer, reconnaissance, cavalry, artillery, antitank, signal, medical, quartermaster, ordnance, transportation, service, maintenance, military police, band, and similar types of units, as well as all battalion and higher headquarters units. Each of the excluded unit types may, on occasion, operate in a combat maneuver role, but for our purposes, we use the more stringent definition. Similarly, our "combat maneuver battalions" are infantry or tank battalions organic to or under the operational control of a combat maneuver brigade. Our "combat maneuver brigades" include infantry regiments or armor combat commands because they are of brigade size. However, the US World War II armor combat command "R" (*i.e.*, CCR) is excluded, since the "R" stands for "reserve," and the CCR normally functioned either as a division reserve, an alternate division headquarters, a skeleton organization, or in some other role not involving combat maneuver.

6-2. BRINKERHOFF'S DATA ON CONTINGENCY OPERATIONS

a. Here we consider some features of casualties to forces engaged in contingency operations. The data are from [Brinkerhoff-1985], who defines a contingency operation as "a military operation [that occurred between 1945 and 1985,] which is limited in scope, geographical area, duration, level of intensity, or combinations of the above," and includes raids, insurgencies, counterinsurgencies, peacekeeping operations, shows of force, invasions, interventions, and rescue operations. Brinkerhoff also divides his contingency operations into minor contingencies (having durations less than 6 months and radii of action less than 1,000 kilometers), peacekeeping operations, and extended insurgencies (*i.e.*, all contingency operations other than minor contingencies or peacekeeping operations). With these definitions, Brinkerhoff classified 290 military operations that occurred between 1945 and 1985 as shown in Table 6-1. However, not all of the 105 minor contingency operations had enough data for analysis. Because limiting the analysis to contingency operations with adequate data would result in a very small sample size, Brinkerhoff elected to collect data on engagements. This led to a data base containing a total of 81 combat engagements, each described using the terms listed below (with the number of times each term is used in parentheses). The numbers listed in parentheses sum to more than 81 because many engagement descriptions used more than one of these terms.

- INTRV – Intervention, a contingency arising from a decision to commit in a foreign nation, with or without its consent. (17)
- INSG – Insurgency, a contingency arising from revolt against a recognized or established government through the use of subversion and armed conflict that does not reach the proportions of civil war. (35)
- ASSIST – Military Assistance, a contingency arising from the deployment of troops, usually small in number, to train, develop, or in other ways aid in a noncombatant role the military forces of another nation. (0)
- PKPG – Peacekeeping, a contingency arising from the deployment of troops in a trouble spot, usually as part of a multinational force under the auspices of a multinational organization, with missions such as acting as a buffer between opposing forces, monitoring or enforcing treaty or cease-fire provisions, or in other ways helping to prevent the outbreak or spread of hostilities. (5)
- EVAC/RESC – Evacuation/Rescue, a contingency arising from the deployment of troops to help extract noncombatants from situations ranging from potentially dangerous to overtly hostile in nature. (13)
- POLACT – Police Action, a contingency arising from the deployment of troops in support of established civil law enforcement personnel to aid in their operations and provide military expertise and assistance in the conduct of operations. (3)
- RAID – Raid, a contingency arising from the deployment of troops in an operation, usually small in scale, involving a swift penetration of hostile territory to secure information, confuse the enemy, or destroy his installations or equipment. (2)
- CONV – Conventional, a nonnuclear contingency arising from the deployment of troops as part of a larger conflict involving traditionally organized and equipped forces on both sides engaged in overt hostilities. (17)

Two of Brinkerhoff's 81 engagements have no data on total battle casualties, and so the following quantitative analyses are all based on the remaining 79 engagements. As shown in Figure 6-1, about 85 percent of these engagements involved at least one force with an initial strength of less than 3,000 personnel. The initial strengths are distributed approximately lognormally.

Table 6-1. Classification of Conflicts During 1945-1985

Type of Operation	Number	Percent
Wars	38	13.10
Minor contingencies	105	36.21
Extended insurgencies	123	42.41
Peacekeeping operations	24	8.28
Total	290	100.00

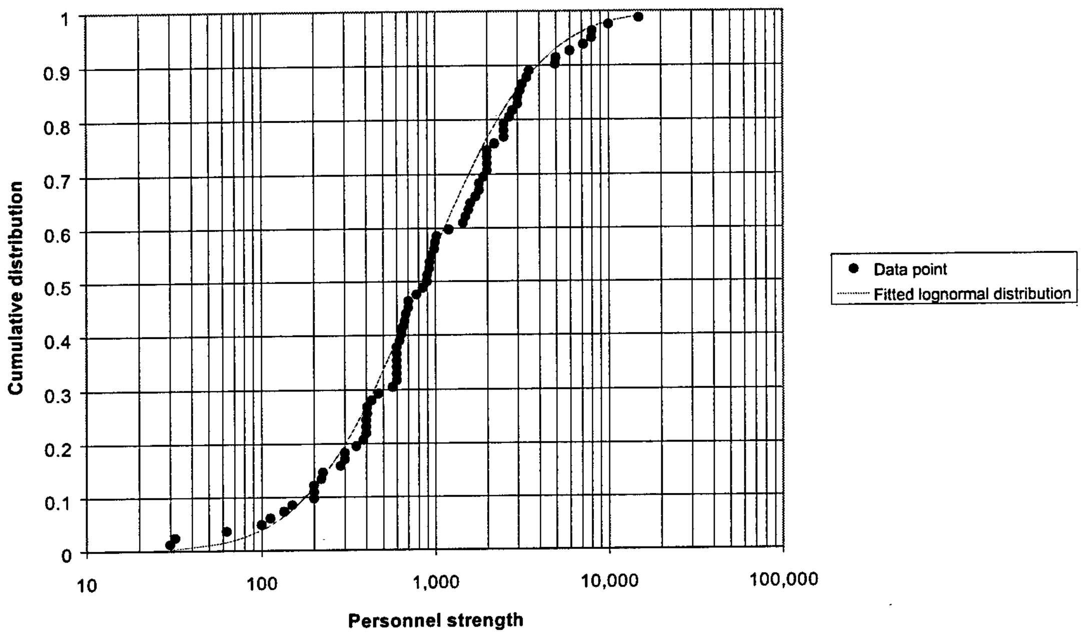

Figure 6-1. Distribution of Strength for Brinkerhoff Contingency Engagements

Figure 6-2 shows the distribution of Box-Cox TBC rates for these engagements. They are distributed approximately normally. Note that over 10 percent of them had no casualties (Box-Cox value of $-{}^{10}\!/_{3}$). Figure 6-3 shows the same data in the form of a violin plot. These data tend to have TBC rates a little lower than those of the brigade-size engagements of Chapter 5. Perhaps this is due in part to these engagements having dates more recent than most of the data used in Chapter 5, coupled with the long-term secular trend toward lower casualty rates. Perhaps it is also due in part to the more limited nature of Brinkerhoff's engagements. Indeed, nine of them are listed as having no battle casualties. All nine of these are for the highly trained and technologically advanced sides in operations where they were practically unopposed by poorly trained and technologically backward "third world" side. All but one took place between 1956 and 1964 (the single exception occurred in 1977). In those years, "third world" nations had no military forces that could compete with first or second world nations (*i.e.*, the nations of Europe or America).

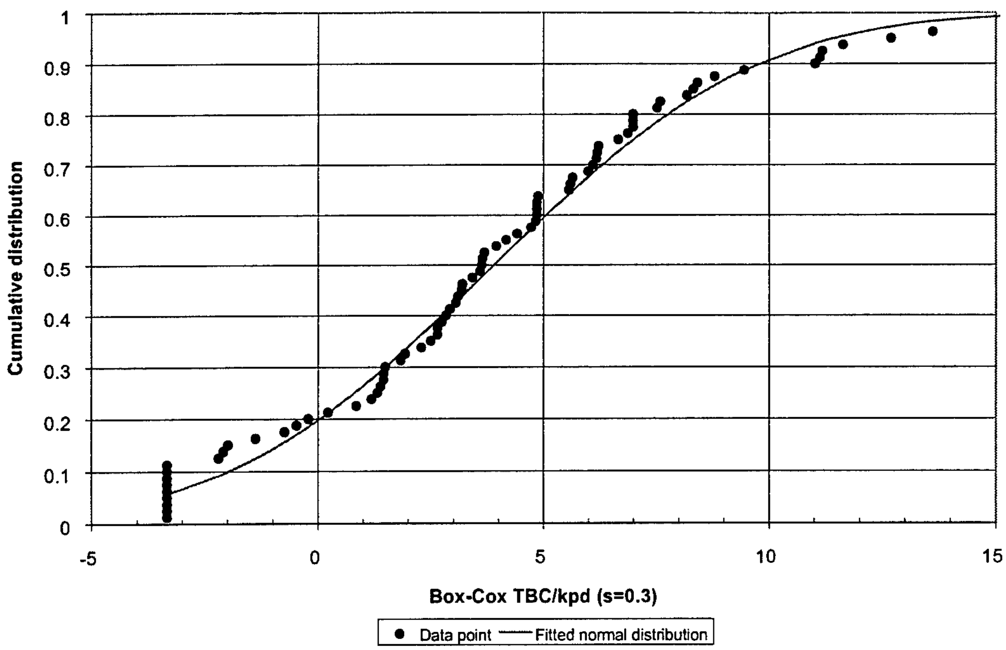

Figure 6-2. Distribution of Box-Cox TBC Rates for Brinkerhoff's Contingency Engagements

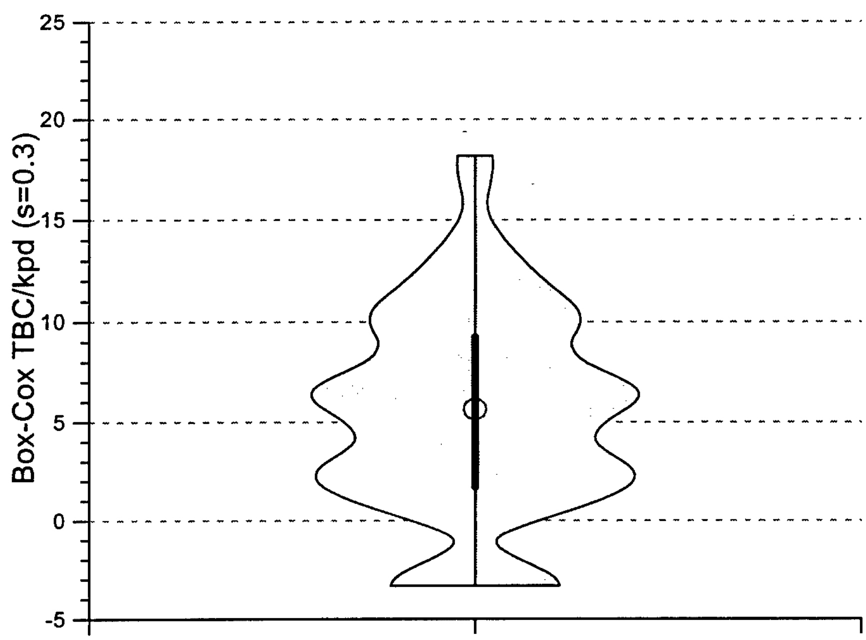

Figure 6-3. Violin Plot of Box-Cox TBC Rates for Brinkerhoff's Contingency Engagements

Figure 6-4 shows a plot of the Box-Cox TBC number versus exposure. The Box-Cox TBC number is used in this case because several of Brinkerhoff's engagements are listed as having no battle casualties. Figure 6-4 shows that for these data the TBC number increases more rapidly than directly proportional to exposure (*i.e.*, the coefficient of the logarithm of the exposure is greater than 1). A couple of points (those with Box-Cox TBC numbers over 20) appear to be "outliers" (that is, to represent rare and unusual circumstances). The point with Box-Cox TBC close to 25 is for the Cuban Exile force in the Bay of Pigs disaster of 15-20 April 1961. This operation involved an attempted invasion of Cuba by a brigade of Cuban exiles supported by the US Central Intelligence Agency. The exiles landed on the southern coast of Cuba, but about 90 percent of them were either killed or captured by Castro's Communist Cuba forces. The point with Box-Cox TBC close to 40 is for the Portuguese forces in Operation VIJAY. This operation was conducted by India on 17-19 December 1961. Portugal had maintained its enclaves of Goa, Daman, and Diu on Indian territory for about 400 years. After the breakdown of negotiations seeking voluntary evacuation of these enclaves, India successfully conducted Operation VIJAY to take them by force. Portuguese military resistance was light. Out of a total Portuguese military force of 4,888, 30 were KIA, 57 were WIA, and 4,801 (98.2 percent) were captured.

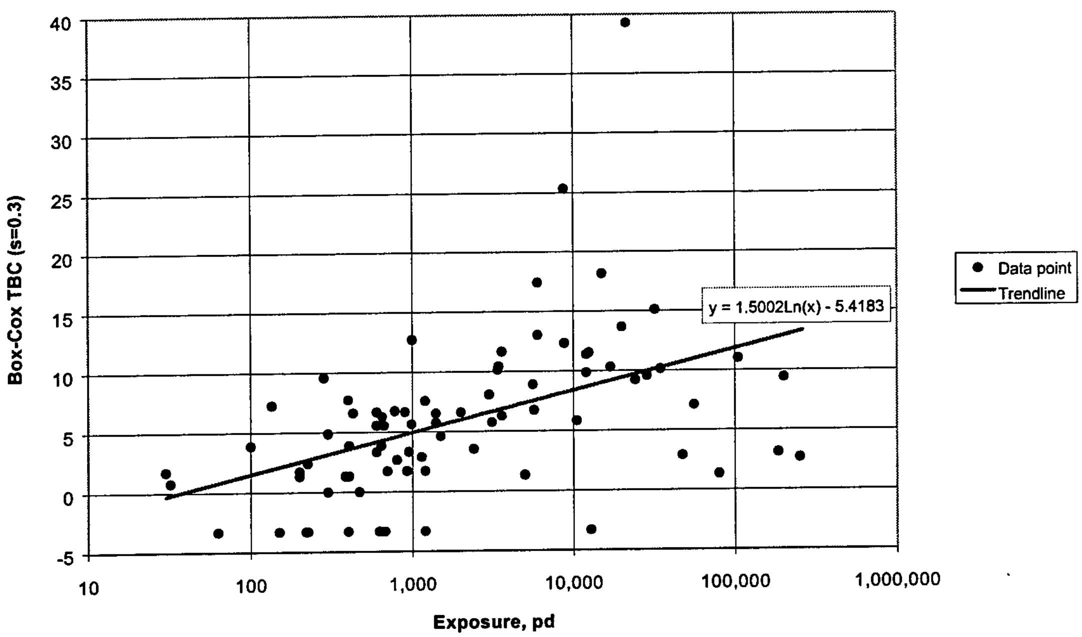

Figure 6-4. Box-Cox TBC Number versus Exposure for Brinkerhoff's Engagement Data

Multiple linear regression of the Box-Cox TBC number on the natural logarithms of the duration and initial personnel strength leads to the following regression equation

$$Box\text{-}CoxTBCNumber = -(15.00 \pm 3.68) - (1.01 \pm 1.47) \times \ln(Duration) + (7.24 \pm 1.30) \times \ln(Strength)$$
$$+N(0,\ 5.59)$$

where *Duration* is in days, *Strength* is in number of personnel, ln is the natural logarithm. The numbers after the ± signs give the standard errors of the regression coefficients and N(m, s) stands for a normal random variable with mean m and standard deviation s. The regression part of this expression accounts for about 32 percent of the variance in Box-Cox TBC number. Note that the coefficient of the logarithm of duration is not significantly different from zero, so nearly all of the variation on the RHS of the regression equation is accounted for by the strength term. Figure 6-5 shows that the residuals from this regression are approximately normal, except possibly for the two outlier cases mentioned earlier.

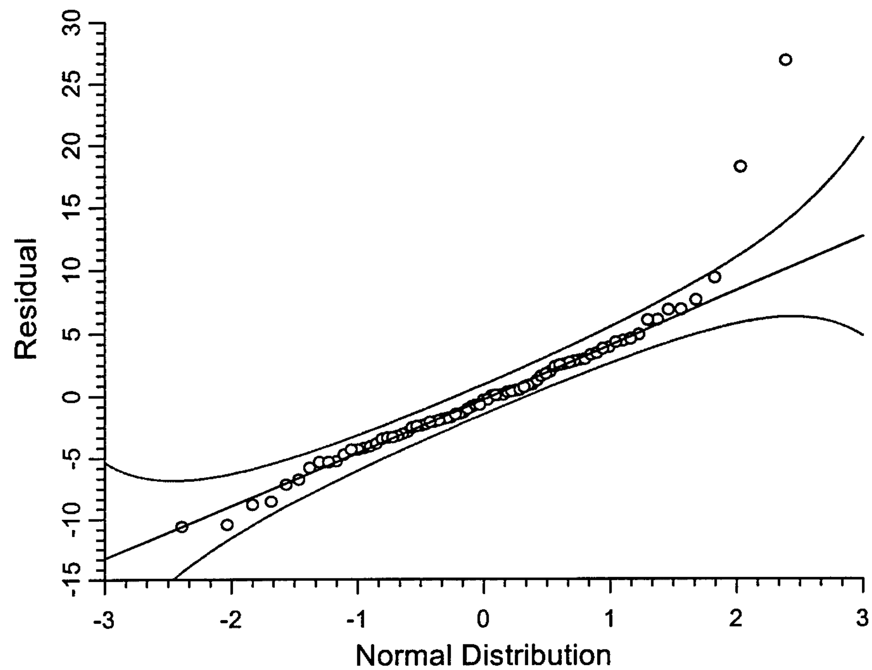

Figure 6-5. Distribution of Residuals of Regression Using Brinkerhoff Data

6-3. BARTLEY'S DATA ON US FORCES IN THE IWO JIMA CAMPAIGN. Figure 6-6 shows the proportion of total battle casualties to the major elements of the Marine regimental combat teams (RCTs) that participated in the Iwo Jima campaign, according to [Bartley-1954]. The main features of this campaign are described in paragraph 4-6. The distribution of total battle casualties to major elements of the Marine divisions that participated are presented in paragraph 5-3b. First, observe that well over 90 percent of the RCT's TBC casualties are borne by its infantry battalions. Second, the infantry battalions tend to share approximately equally in the TBC burden. Unfortunately, the sources consulted do not provide enough information on the battalion strengths to do more with these data.

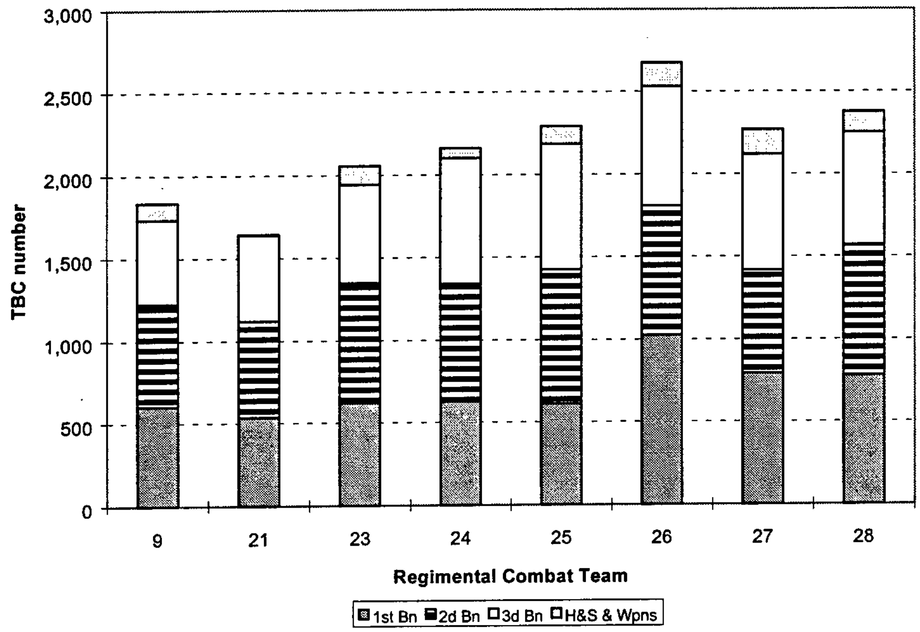

Figure 6-6. Proportion of TBC for Major Elements of Marine Regimental Combat Teams, Iwo Jima

6-4. COCKRELL'S DATA ON US AND GERMAN FORCES IN WORLD WAR II

a. The data used in this paragraph are based on [Cockrell-1974]. They are for opposing US and German forces during portions of the Ardennes and Lorraine campaigns in northwest Europe during World War II. Cockrell's data are for a total of 250 "battle days" during which the opposing forces were heavily engaged. There are 150 battle days of data from the Ardennes campaign and 100 from the Lorraine campaign. All of the Ardennes data are from the period 16 December 1944 through 2 January 1945. The Lorraine data are from the period 8 September 1944 through 27 November 1944, except that Cockrell gives no data for the month of October 1944.

b. Cockrell does not directly give the personnel strengths and casualties. However, we estimated those values using the following procedure. Cockrell gives the number of "platoons" involved in the action and states that this number is based on an assumed platoon size of 40 men. Accordingly, the personnel strengths are estimated as 40 times the number of platoons given by Cockrell. Cockrell gives the personnel casualty rate in units of casualties/kpd, and clearly implies that the duration is 1 day. Hence, the personnel casualties are estimated using the equation $C = RS/1000$, where C is the estimated number of personnel casualties on one battle day, R is Cockrell's figure for casualties/kpd, and S is the personnel strength estimated using the method previously indicated. We assume that Cockrell's "casualty" figures give the TBC.

c. Figure 6-7 shows the distribution of personnel strengths for all of Cockrell's 250 data points. The distributions are approximately lognormal, and about the same for the Germans as for the US (averages of 7.0 for both sides, standard deviations of 0.76 for the US and 0.66 for the Germans, medians of 1,200 for the US and 1,160 for the Germans, 75th percentiles of 2,080 for the US and 1,800 for the Germans). Typically, these actions involved forces that were about the size of a one- or two-battalion task force.

d. Figure 6-8 shows the distributions of Box-Cox casualty rates for these data, together with their fitted normal distributions. Cockrell's data are often missing casualty data for one side or the other. In particular, *all* the casualty data on the German side for the Lorraine campaign are missing. There are 25 usable data points on the German side for the Ardennes campaign. The US casualty rate distributions for the two campaigns were not significantly different, and so we lumped them together. In all, there are 144 usable data points on the US side when the Ardennes and Lorraine data are lumped together. A normal distribution is a fair fit to these data. For these data, the German casualty rates in the Ardennes campaign are generally higher than the US rates.

e. Figure 6-9 provides a graph of the TBC number versus exposure in personnel-days for Cockrell's data. Here the Ardennes and Lorraine data for the US are plotted separately. However, Cockrell gives no German TBC data for the Lorraine campaign. Note that in no case is the average TBC number either simply proportional to the exposure or linearly related to it. For the Ardennes data, German TBC numbers consistently average about twice those of the US at corresponding exposure levels.

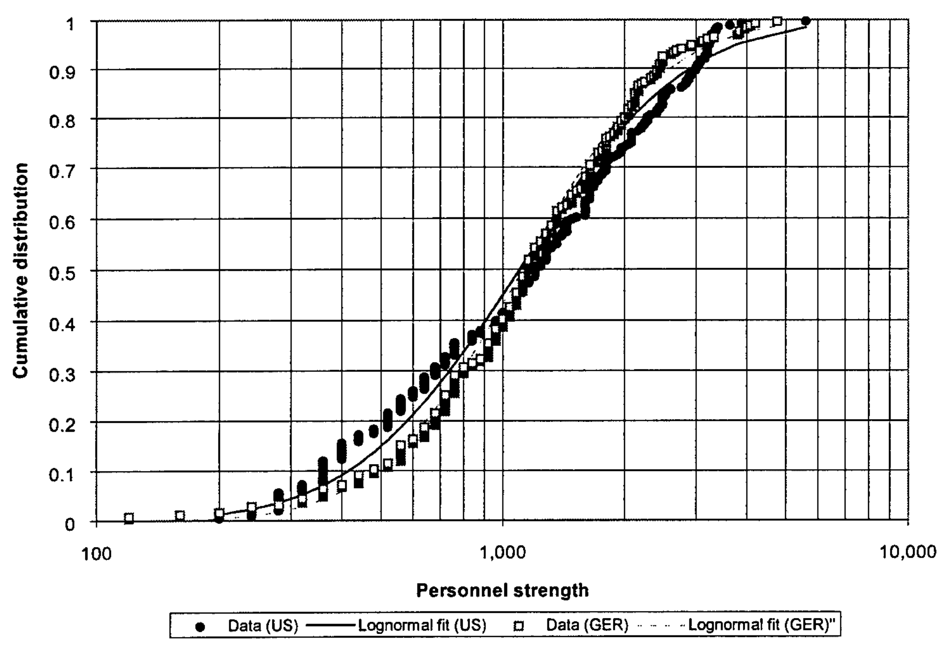

Figure 6-7. Distribution of Strengths for Cockrell's Data

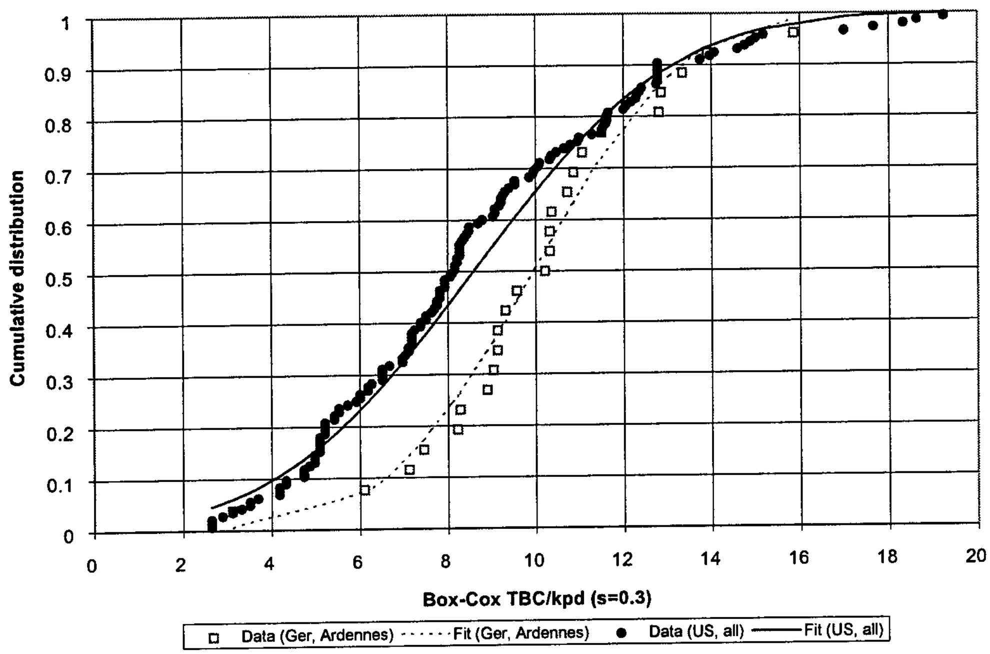

Figure 6-8. Distribution of the Casualty Rates for Cockrell's Data

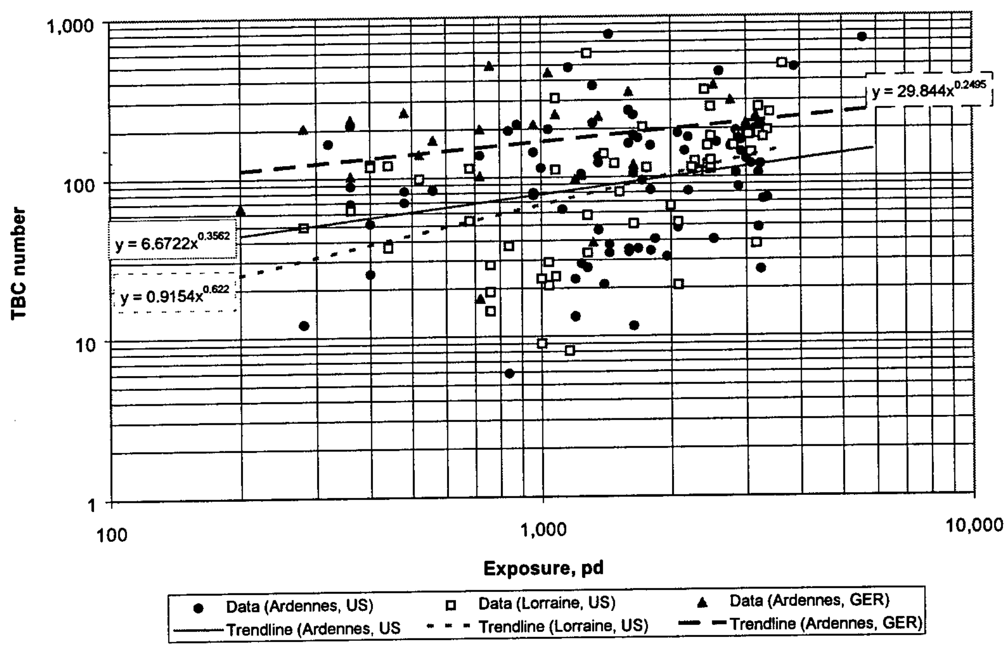

Figure 6-9. TBC Number versus Exposure for Cockrell's Data

6-5. CLARK'S DATA ON US INFANTRY BATTALIONS IN WORLD WAR II

a. The data in this paragraph, taken from [Clark-1954], are for heavily-engaged US infantry battalions in World War II. Clark gives data on 43 "breakpoint" incidents involving these battalions. All but four of her breakpoint incidents involve infantry battalions in infantry divisions; the other four involve infantry battalions in airborne divisions. These battalions consist of three infantry companies, a heavy weapons company, and a headquarters and headquarters company. Clark defines three types of breakpoint, as described below. The number of cases in each category is also indicated.

Type I Breakpoint.- a change from attack to a period of reorganization lasting for 4 to 24 hours, followed by a renewal of the attack (nine cases).

Type II Breakpoint.- a change from attack to defense. The battalion is either ordered into the defensive after severe fighting or temporary panic, or else its attempts to advance fail to gain ground and the battalion is finally ordered into defense. In the latter case, the breakpoint is taken to occur at the end of the successful advance (21 cases).

Type III Breakpoint.- a change from defense to withdrawal. The battalion is withdrawn by order to a quieter sector. Includes only cases where the withdrawal orders appear to have been dictated by the condition of the unit itself (13 cases).

Because the sample sizes in each category are too small to reliably assess the quantitative and qualitative differences between the various breakpoint types, we lumped all of Clark's 43 cases together into a single sample.

b. Clark defines losses to include *all* losses, nonbattle as well as battle, whether replaced or not (*note that this differs from our usual convention of dealing only with battle casualties*). She gives the fraction of these losses cumulated over each of three time spans ending in a breakpoint, defined as follows:

Entire.- fraction of cumulative total losses incurred during the entire course of the action up to (and including) the day of the breakpoint.

3-Day.- fraction of cumulative total losses incurred during the three-day period leading up to (and including) the day of the breakpoint. (If the entire course of the action takes no more than three days, this value is the same as for the entire action.)

1-Day.- fraction of cumulative total losses incurred on the day of the breakpoint.

Clark gives the *fraction* of losses in each of these time spans for both officers and enlisted men, but not for the aggregate battalion personnel strength. Apparently, these are fractions of the onhand personnel strength at the start of each of the respective time spans. Unfortunately, Clark gives no information on the actual *number* of losses nor on the personnel strength of the battalion (neither the aggregate personnel strength, nor the separate officer and enlisted strength). Nevertheless, our analysis uses an estimate of the fraction of losses to the aggregate battalion personnel strength. This estimate is obtained by weighting Clark's figures according to the equation

$$FracLossAgg = FracLossOfficer \times 35 / 871 + FracLossEnlisted \times 836 / 871$$

The weights in this equation (35/871 and 836/871) are based on an assumed nominal US World War II infantry battalion aggregate personnel strength of 871 consisting of 35 officers and 836 enlisted men. (Clark also gives the fraction of *net* losses for these three time spans, where net losses are total losses reduced by replacements and returnees, and so may be negative. However, we will not use Clark's net loss figures in our analysis.)

c. Figures 6-10 through 6-12 show the distribution of estimated Box-Cox loss/kpd rates for each of the three time periods. As can be seen, these distributions are approximately normal. Figure 6-13 shows a violin plot of the Box-Cox loss/kpd rates for the three time spans. This figure appears to show a tendency for the loss rate to accelerate as the breakpoint is approached. That is, the center of the distribution is lowest for the entire time span leading up to the breakpoint, somewhat higher for the 3-day time span, and highest for the 1-day time span (*i.e.*, the day of the breakpoint). Keep in mind that these figures use the total losses, including nonbattle as well as battle casualties, and so are not directly comparable to other figures that use only battle casualties.

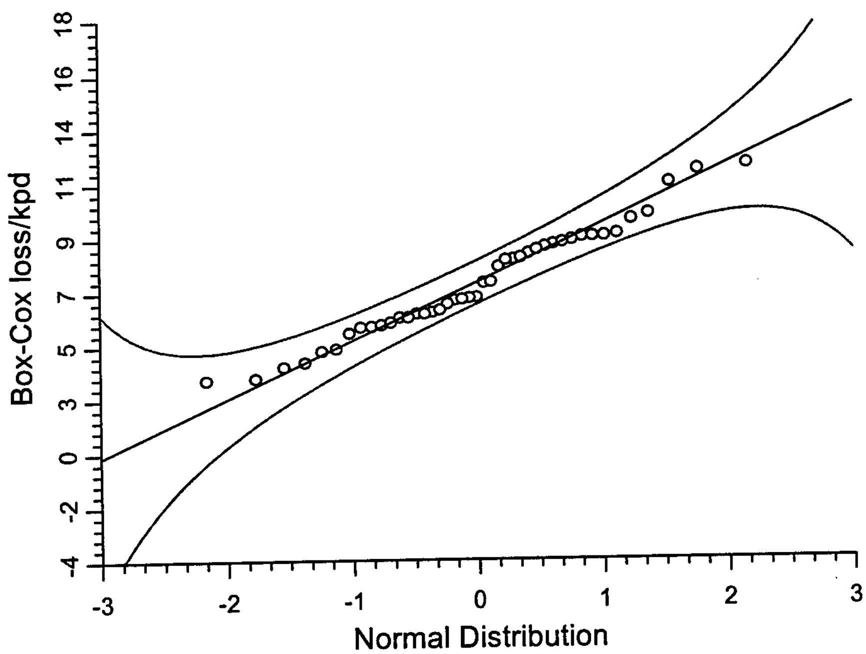

Figure 6-10. Distribution of Clark's Data on Infantry Battalion Loss Rates for the Entire Time Span Ending in a Breakpoint

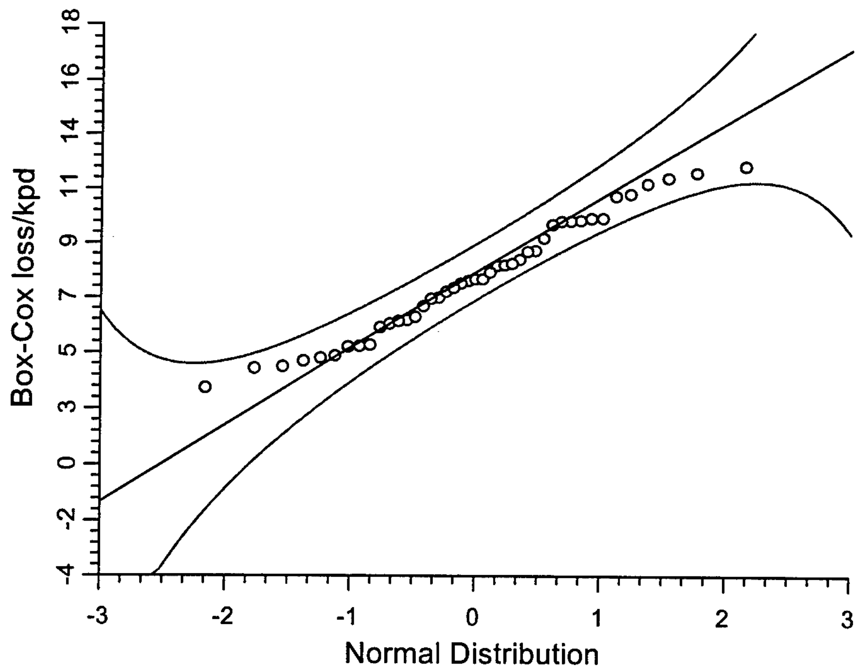

Figure 6-11. Distribution of Clark's Data on Infantry Battalion Loss Rates for the 3-Day Time Span Ending in a Breakpoint

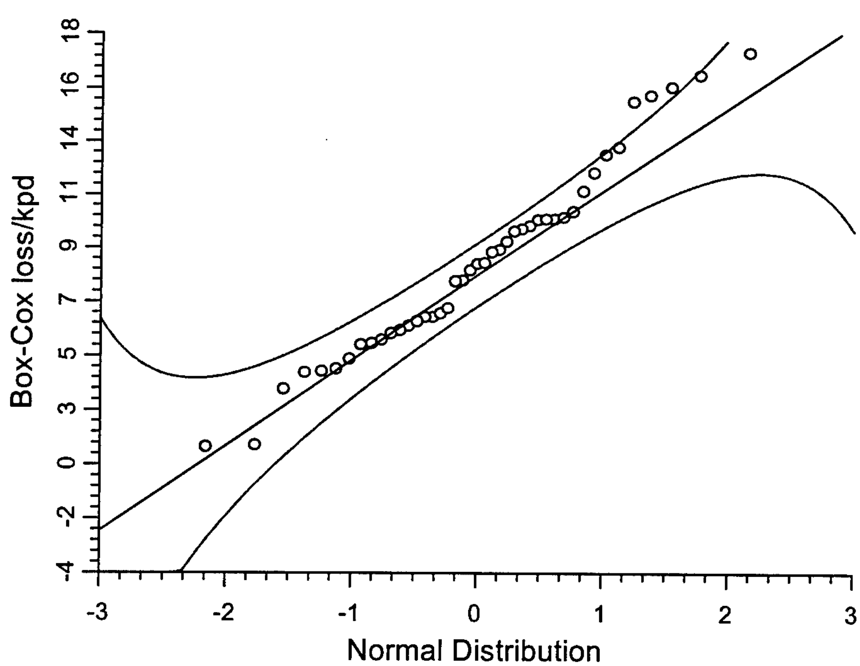

Figure 6-12. Distribution of Clark's Data on Infantry Battalion Loss Rates on the Day of a Breakpoint

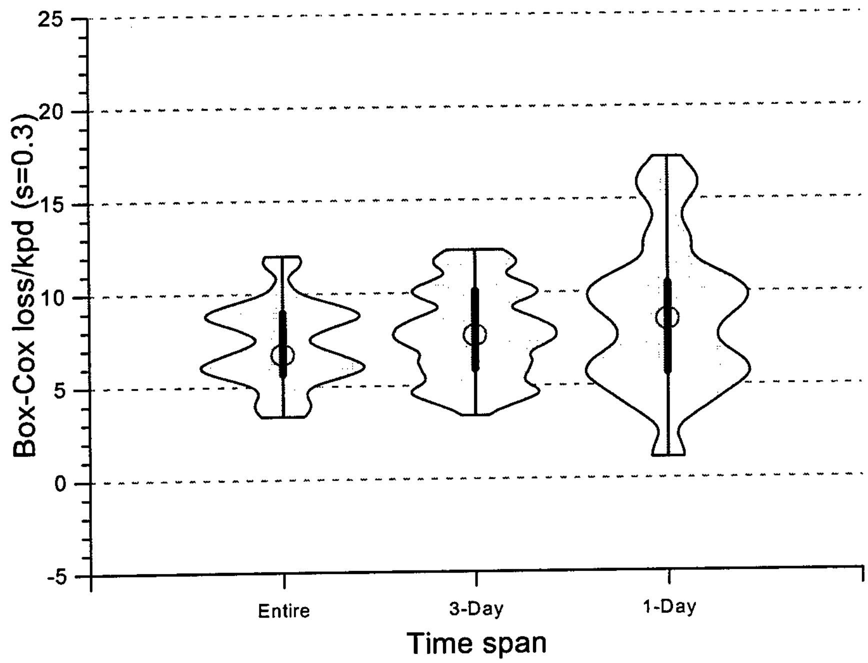

Figure 6-13. Violin Plot of Clark's Data on Infantry Battalion Loss Rates for Various Time Spans Ending in a Breakpoint

d. It is very unfortunate that the overused and ill-defined term "breakpoint" conjures up the mental image of a sudden, dramatic, unexpected, uncontrolled, and catastrophic collapse. None of Clark's three "breakpoint types" actually correspond to such an image. Instead, they correspond to a rational decision, based on circumstances, to substitute one course of action for another. In fact, for Clark's "breakpoints" this substitution is made in a controlled, directed, non-catastrophic manner. While not the ideal outcome, such "breakpoints" are part of the reality of combat and in that sense are hardly unexpected--a prudent commander will lay contingency plans for actions to be taken in case attacks do not progress according to plan. Of course, "breakpoints" as unexpected and uncontrolled catastrophic collapses do occasionally occur--and when they do, their consequences can indeed be dramatic. Nevertheless, they are actually rare phenomena in military operations.

e. Many studies have attempted to relate Clark-type rational changes in courses of action to either the casualty number, the casualty fraction, or the casualty rate experienced by *one* side of a battle. (See, for example, [Fain-1992], [Hammerman-1982], [Karis-1988], [Klingberg-1966], [Osipov-1915], [Voevodsky-1972], [Pearsall-1972], and [Wainstein-1986].) These attempts have universally failed to detect any consistent pattern of casualties associated with such changes. [Best-1966] offers the following sagacious comments on the futility of such attempts to relate *one* side's casualties to its combat action.

(1) "The effects of casualties on the tendency of battle are inadequately established and variously appraised by military practitioners and analysts. There is a paucity of detailed systematic data on the interrelation of casualties and tactical combat operations, and a lack of systematic comprehensive treatment of the data that exist."

(2) "Yet the typical end of deteriorating unit operability is not overt collapse but tactical inertia. And an admittedly insufficient sampling … suggests that it does not matter greatly whether combat is brief and exceptionally severe or protracted and less intense; the 'quantity' of stress—including casualties—appears to count the most."

(3) "Casualties are essential yet variously contingent determinants of combat, for they tend to diminish, constrain, depress, or derange the adaptive application of force to differing degrees in different situations; therefore they (a) reduce the tempo of tactical development to varying extents, and (b) exert a varying influence on the tactical outcome—disproportionate and decisive, proportionate and substantial, or none at all."

(4) "Casualties are a qualitatively, but not quantitatively, predictable diffuse depressant in overall operational effect."

(5) "Quantitative regularities in aggregated casualty rates are mainly expressions of the prevailing intensity of combat. Although in part determined by casualties, prevailing intensity is in greater part determined by other constraints and restraints on the functioning of tactical systems: uncertainty and risk; delays and deficiencies in communications, command, and adaptive maneuver; respites for redeployment, reorganization, or resupply; and logistic insufficiencies."

Recently, however, some progress on relating casualties to tactical outcomes has been attained by considering the casualty fractions on *both* sides, instead of on just *one* side. (See, for example, [Helmbold-1961], [Helmbold-1964], [Helmbold-1986], and [Helmbold-1987].)

6-6. BEST'S DATA ON BATTALIONS AND COMPANIES IN THE KOREAN WAR

a. These casualty data on operations of the US 1st Cavalry Division for the month of September 1950 during the Korean War are taken from [Best-1952]. The following sketch of this division's operations during that period are based on [Esposito-1959].

(1) At the end of August 1950, the US 1st Cavalry Division was defending a sector of the Pusan Perimeter. Its assigned sector was about 20 miles in length. (Esposito gives a figure of 103,600 yards as of late July 1950, and his figures indicate a length of about that size through mid-September.) The midpoint of the front line was at a point approximately 10 miles northwest of the center of Taegu, Korea. From that midpoint, the southern half of the front line ran nearly due south for about 10 miles, following the eastern bank of the Naktong River. From its midpoint, the northern half of the front line angled generally northeastward for about 10 miles. Between 26 August 1950 and 10 September 1950, the northern half of the 1st Cavalry Division front was pushed back about 10 miles, swinging counterclockwise about its midpoint, but nevertheless did not get any closer to Taegu than about 10 miles.

(2) The Inchon Landing by the X Corps took place on 15 September 1950. US forces in the Pusan Perimeter simultaneously launched a "breakout" offensive. By 20 September 1950, the American I Corps (consisting of the US 1st Cavalry Division, US 24th Infantry Division, ROK 1st Division, and UK 27th Brigade) broke out to the northwest of Taegu. On 26 September 1950, elements of the US 1st Cavalry Division thrust northward more than 100 miles ahead in 11 hours to link up with elements of the US 7th Infantry Division, which was moving southward from the Inchon/Seoul area. The linkup occurred near Osan. At that time, the US 1st Cavalry Division held a narrow corridor (frequently no more than 5 miles wide) stretching from Osan southward for about 100 miles. Esposito does not describe the US 1st Cavalry Division's operations for the rest of September 1950, but presumably it was engaged in consolidating the corridor joining the Pusan Perimeter and the Inchon/Seoul area, repulsing North Korean breakout attempts, and mopping up.

b. Best's casualty figures are for US forces only, exclusive of Republic of Korea (ROK) augmentation. However, Best notes that in the period 1-16 September 1950, ROK troops added to companies of the 1st Cavalry Division averaged 12 percent of US strength, and their interments in the Taegu Military Cemetery amount to about 14 percent of those for the US troops of the 1st Cavalry Division. The inference seems to be that their casualty fraction was about the same as for the US troops. Best's figures indicate that in this period the regiments of the 1st Cavalry Division contributed about 90 percent of the division's total battle casualty (TBC) number.

c. Figure 6-14 shows the distribution of Box-Cox TBC rates for the battalions of the US 1st Cavalry Division during the month of September 1950. The distribution is approximately normal. No battle casualties (*i.e.*, a Box-Cox transformed value of $-\frac{10}{3}$) were taken on about 18 percent of the battalion-days.

d. Figures 6-15 through 6-17 show time series plots of the Box-Cox TBC rates for the battalions of the US 1st Cavalry Division for the month of September 1950. Figure 6-18 shows a time series plot of the average Box-Cox TBC rate for these battalions. Unfortunately, these time series are too short to support a quantitative statistical analysis. There may be some tendency for the casualty burden to be shared more or less equally among the battalions within a particular regiment. The average Box-Cox TBC rate in Figure 6-18 does not exhibit any large change as the division moved from a defensive to an offensive posture in mid-September.

e. Figure 6-19 shows a plot of the Box-Cox TBC number versus exposure for the battalions of the US 1st Cavalry Division. The trend line has a strong negative slope, indicating that for these data the casualty numbers are not simply directly proportional to exposure, but instead are inversely related to it. Moreover, the relationship is nonlinear.

f. Figure 6-20 shows the distribution of the Box-Cox TBC rates for the companies of the 5th Cavalry Regiment, US 1st Cavalry Division during the month of September 1950. (Best does not give company TBC values for the other cavalry regiments of the US 1st Cavalry Division.) The rates in Figure 6-20 are for the *rifle* companies only--battalions included three rifle companies, a heavy weapons company, a headquarters, and a headquarters company. The TBC rate was zero on about half of the company-days (Box-Cox transformed value of $-\frac{10}{3}$). The overall distribution of Box-Cox TBC rates is approximately normal.

g. Figures 6-21 through 6-23 show time series plots of the Box-Cox TBC rates for the infantry companies of the 5th Cavalry Regiment, US 1st Cavalry Division in the month of September 1950. Figure 6-24 shows a time series plot of the average Box-Cox TBC rate for these companies. Unfortunately, these time series are too short to support a quantitative statistical analysis. There may be some tendency for the casualty burden to be shared more or less equally among the companies within a particular battalion. In this case, the average Box-Cox TBC rate in Figure 6-24 *does* exhibit a large change in mid-September as the division shifted from a defensive to an offensive posture.

h. A comparison of Figure 6-14 with Figure 6-20 indicates that, for Best's data, the battalions tended to have lower and less variable TBC rates than the companies. Indeed, the average and standard deviation of the Box-Cox TBC rates for battalions are 1.5 and 5.2 (193 data points); the corresponding values for companies are 2.6 and 3.6 (198 data points). There is no logical inconsistency here, for all of the company data of Figure 6-20 are for the *rifle* companies of the 5th Cavalry Regiment only, while the regimental data of Figure 6-14 include *all* the regiments in the division. To some extent, this phenomenon may also be due to a tendency to hold one or more infantry battalions in reserve, or to rotate battalions that have recently been heavily engaged to a less active role. Note that Figures 6-15, 6-21, and 6-23 show that the 1st and 3d Battalions of the 5th Cavalry Regiment were only lightly committed early in September. However, the other battalions of the US 1st Cavalry Division were about as heavily committed early in September as they were later in September.

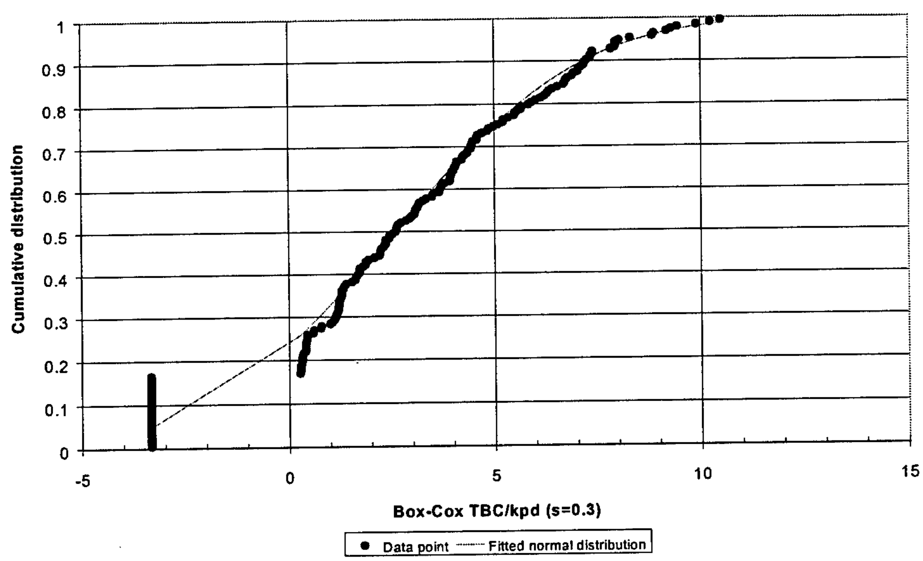

Figure 6-14. Distribution of Box-Cox TBC Rate for Battalions of the US 1st Cavalry Division, Korea

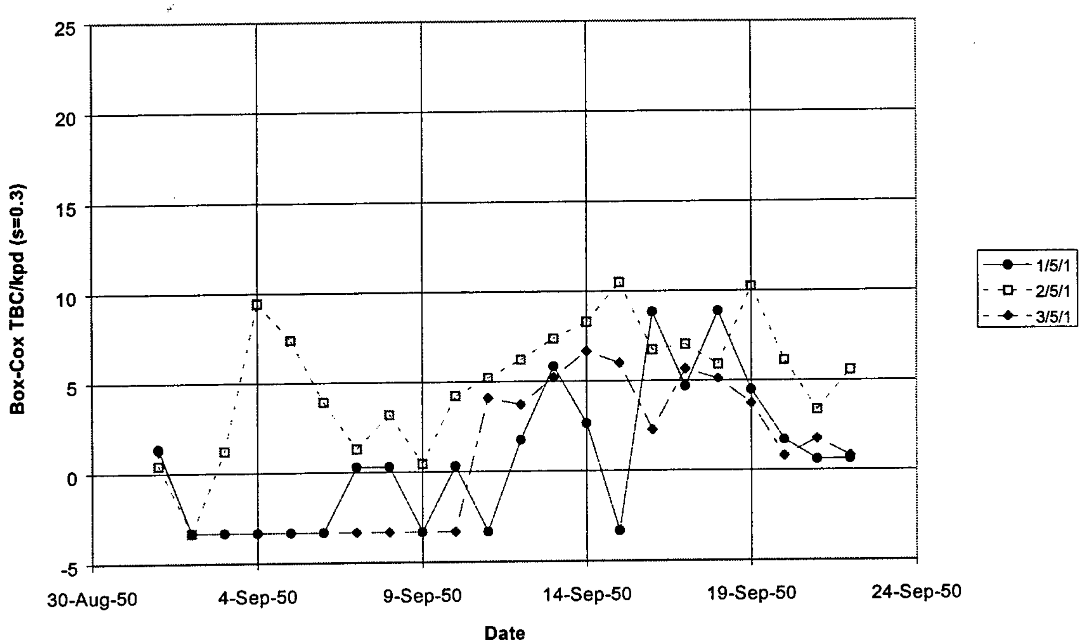

Figure 6-15. Box-Cox TBC Rate versus Date for Battalions of the 5th Cavalry Regiment, US 1st Cavalry Division, Korea

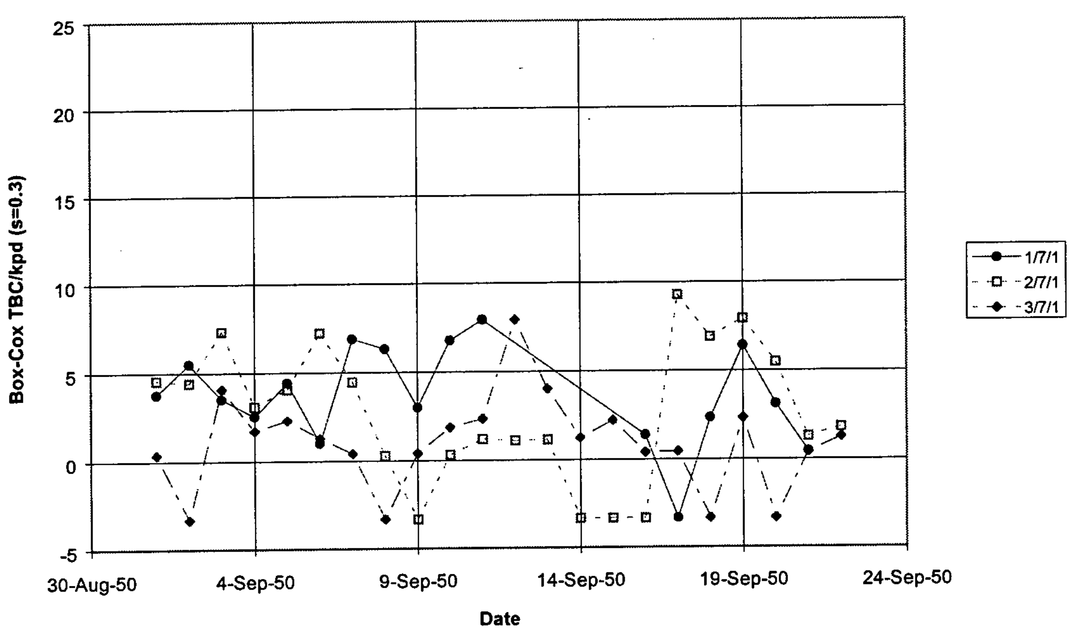

Figure 6-16. Box-Cox TBC Rate versus Date for Battalions of the 7th Cavalry Regiment, US 1st Cavalry Division, Korea

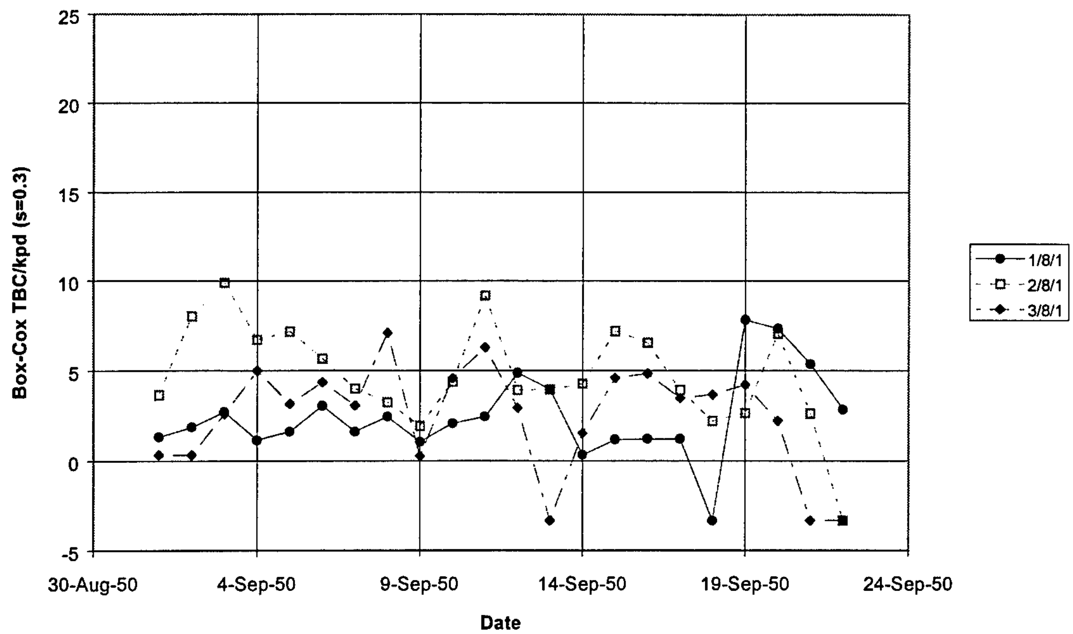

Figure 6-17. Box-Cox TBC Rate versus Date for Battalions of the 8th Cavalry Regiment, US 1st Cavalry Division, Korea

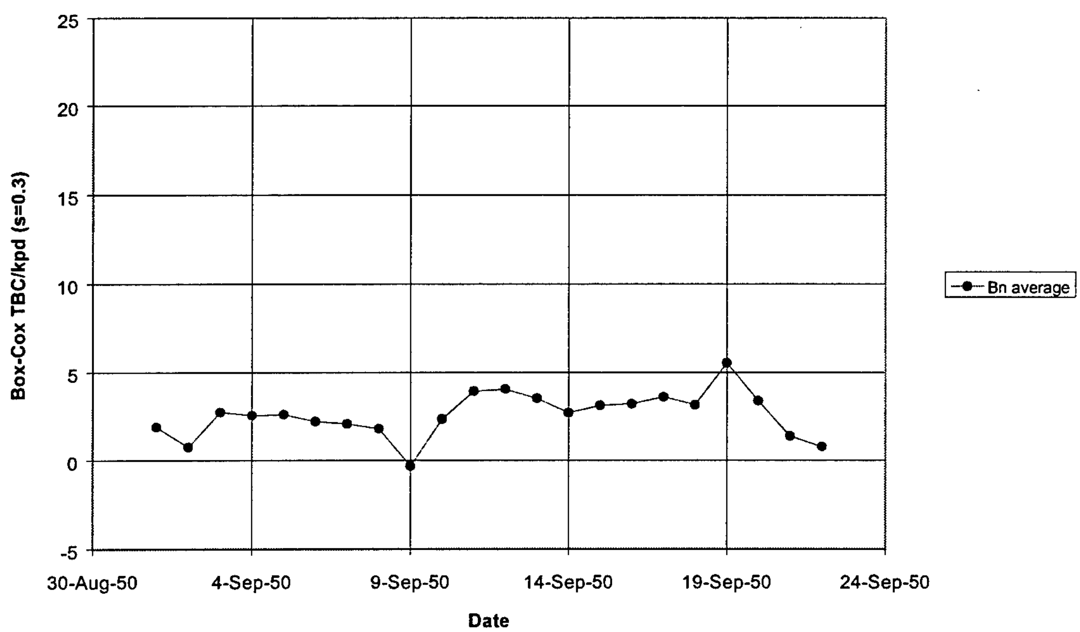

Figure 6-18. Average Box-Cox TBC Rate versus Date for Battalions of the US 1st Cavalry Division, Korea

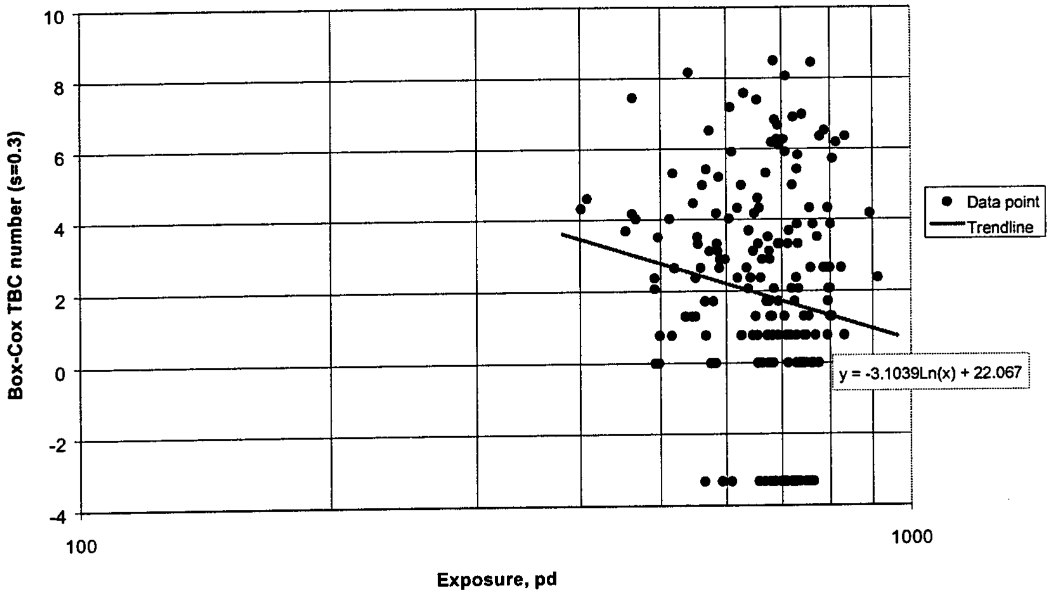

Figure 6-19. Box-Cox TBC Number versus Exposure for Battalions of the US 1st Cavalry Division, Korea

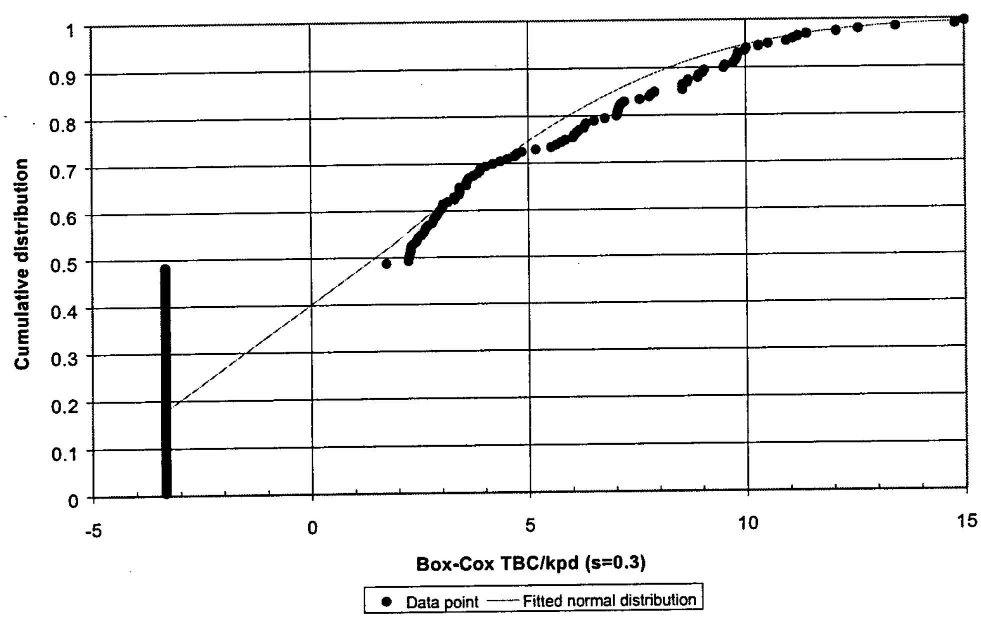

Figure 6-20. Distribution of Box-Cox TBC Rates for Companies of the 5th Cavalry Regiment, US 1st Cavalry Division, Korea

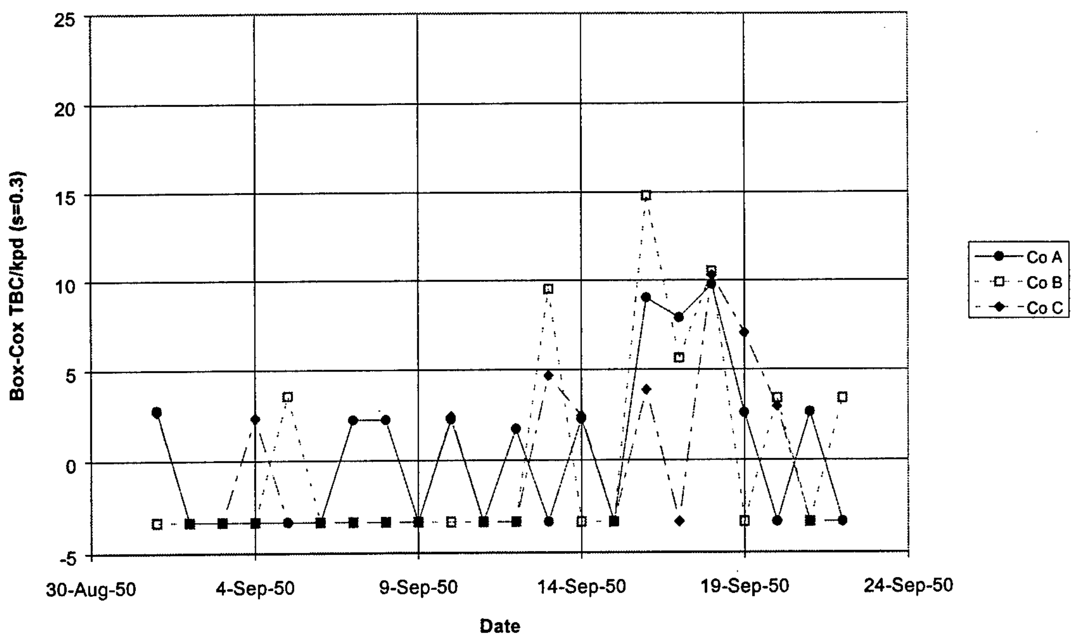

Figure 6-21. Box-Cox TBC Rate versus Date for Infantry Companies A–C of the 1st Bn, 5th Cavalry Regiment, US 1st Cavalry Division, Korea

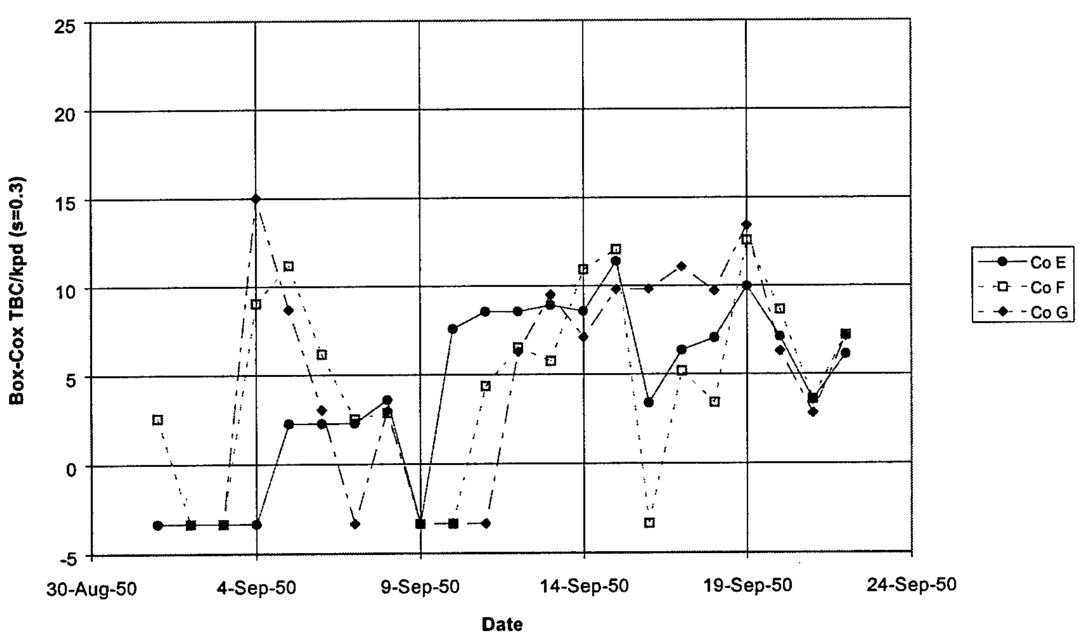

Figure 6-22. Box-Cox TBC Rate versus Date for Infantry Companies E–G of the 2d Bn, 5th Cavalry Regiment, US 1st Cavalry Division, Korea

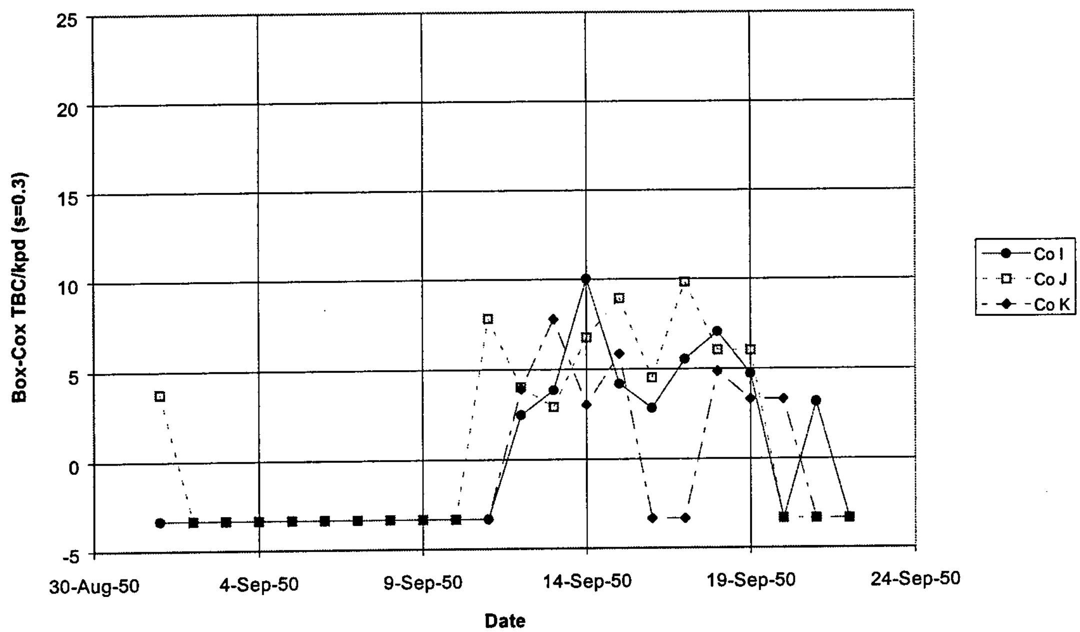

Figure 6-23. Box-Cox TBC Rate versus Date for Infantry Companies I–K of the 3d Bn, 5th Cavalry Regiment, US 1st Cavalry Division, Korea

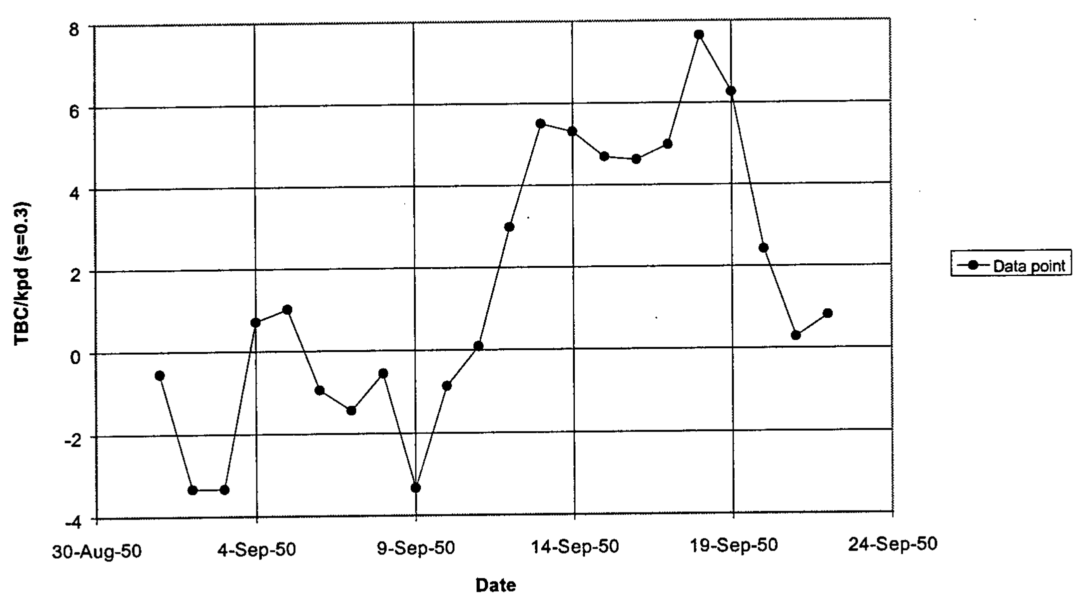

Figure 6-24. Average Box-Cox TBC Rate versus Date for Infantry Companies of the 5th Cavalry Regiment, US 1st Cavalry Division, Korea

i. Figure 6-25 shows a plot of the TBC number versus exposure for infantry rifle companies of the 5th Cavalry Regiment, US 1st Cavalry Division. The trend line has a strong negative slope, indicating that for these data the casualty numbers are not simply directly proportional to exposure, but instead are inversely related to it. Moreover, the relationship is nonlinear.

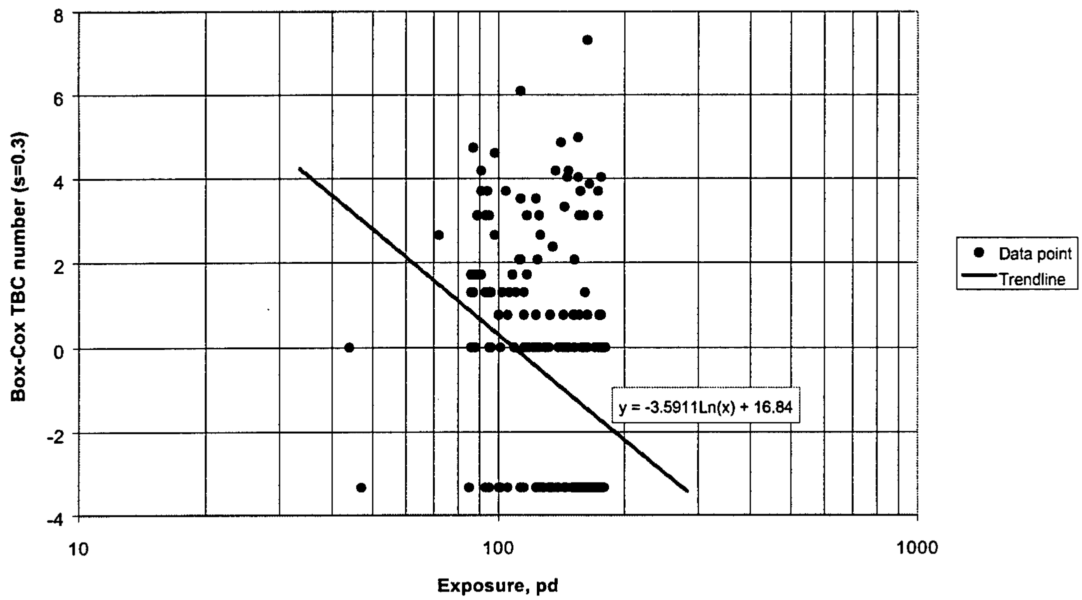

Figure 6-25. Box-Cox TBC Number Versus Exposure for Infantry Companies of the 5th Cavalry Regiment, US 1st Cavalry Division, Korea

6-7. COMPTON'S DATA ON BATTALIONS AND COMPANIES IN NORTHWEST EUROPE DURING WORLD WAR II

a. [Compton-1983]'s data are for the US 28th Infantry Division and the US 6th and 7th Armored Divisions during portions of their operations in Northwest Europe during World War II. The time periods covered by Compton's data and the general nature of the division's operations during those periods are described in paragraphs 5-3d and 5-3e. Those paragraphs also give some casualty data for the major divisional components. For more detail on Compton's data, see Appendix F. Here we analyze Compton's data on casualties to these division's "combat maneuver" companies and battalions. Recall that a "combat maneuver company" is one that is organic to an infantry or tank battalion and normally has a fire and maneuver role. This includes heavy weapons and tank companies organic to combat maneuver battalions, but excludes units such as tank destroyer companies, antiaircraft companies, engineer combat companies, reconnaissance and cavalry troops, and headquarters or service elements. Only the data on TBC *numbers* are covered by Compton's data. Compton does provide data on *total* loss numbers (nonbattle as well as battle), but because he does not provide information on strengths, neither TBC *fractions* nor total loss *rates* can be computed.

b. With these terminological conventions in mind, one summarization of Compton's battalion data can be presented in the form of Figures 6-26 through 6-28. For example, Figure

6-26 shows that, for these data, 79 percent of the division's TBC were borne by its combat maneuver companies and 5 percent by other elements of the combat maneuver battalions (such as the battalion headquarters, various medical and service elements, *etc.*). Due to rounding, some of the percentages shown may not add exactly. For these data, it is clear that the bulk of the division's TBC casualties were borne by the combat maneuver battalions (55 to 93 percent of the division's TBC number borne by its combat maneuver battalions). Indeed, a very high percentage of the division's TBC casualties were borne by the combat maneuver companies (42 to 88 percent of the division's TBC casualties borne by its combat maneuver companies).

c. Another summarization of Compton's battalion data is provided in Tables 6-2 through 6-4. To construct these tables, we assigned each entry in Compton's data base a "unit type" and an "echelon" descriptor. The unit type corresponds to the basic service branch indicated by the unit's designation (*e.g.*, a medical detachments are designated as "Med" unit types, tank destroyer units as "TD" unit types, *etc.*). The "echelon" corresponds to the echelons shown in Figures 6-26 through 6-28. Tables 6-2 through 6-4 again show that, for these data, the combat maneuver companies and battalions bear a very high percentage of the division's TBC burden. Tables 6-3 and 6-4 indicate that, even in *armor* divisions, a very high percentage of the division's TBC number are borne by its *infantry* companies and battalions.

d. Figures 6-29 through 6-31 show the distribution of TBC number for combat maneuver battalions, based on Compton's data. For this purpose, we consider a combat maneuver battalion to be one that is either an infantry or an armor battalion operating as part of a regiment or combat command other than Combat Command "R." This eliminates from consideration all battalions directly under division headquarters and all artillery, antitank, antiaircraft, reconnaissance, tank destroyer, engineer, signal, medical, quartermaster, ordnance, service, maintenance, military police, band, and similar types of battalions. Counting one data point for each combat maneuver battalion-day on which TBC numbers are reported in these data, there are 108 data points for the 28th Infantry Division, 18 for the 6th Armor Division, and 56 for the 7th Armor Division. Figures 6-29 through 6-31 show that the Box-Cox TBC numbers for these data are distributed approximately normally. They also show that combat maneuver battalions often experience days of either no casualties or very few casualties. For example, the combat maneuver battalions of the 28th Infantry Division had two or fewer TBCs (a Box-Cox transformed value of about 0.77 or less) on more than 10 percent of the battalion-days covered by these data. The combat maneuver battalions of the 6th Armor Division had zero or one TBCs (a Box-Cox transformed value of zero or less) on nearly 30 percent of the battalion-days, and the 7th Armor Division's combat maneuver battalions had zero or one TBCs on nearly 45 percent of the battalion-days. By contrast, it appears that data bases, such as Clark's and Cockrell's, that report no zero casualty days may have been deliberately selected to report only casualty days. Such data bases obviously provide no information on the relative proportion of casualty and non-casualty days, and distort the distribution of casualties over all days (including noncasualty as well as casualty days).

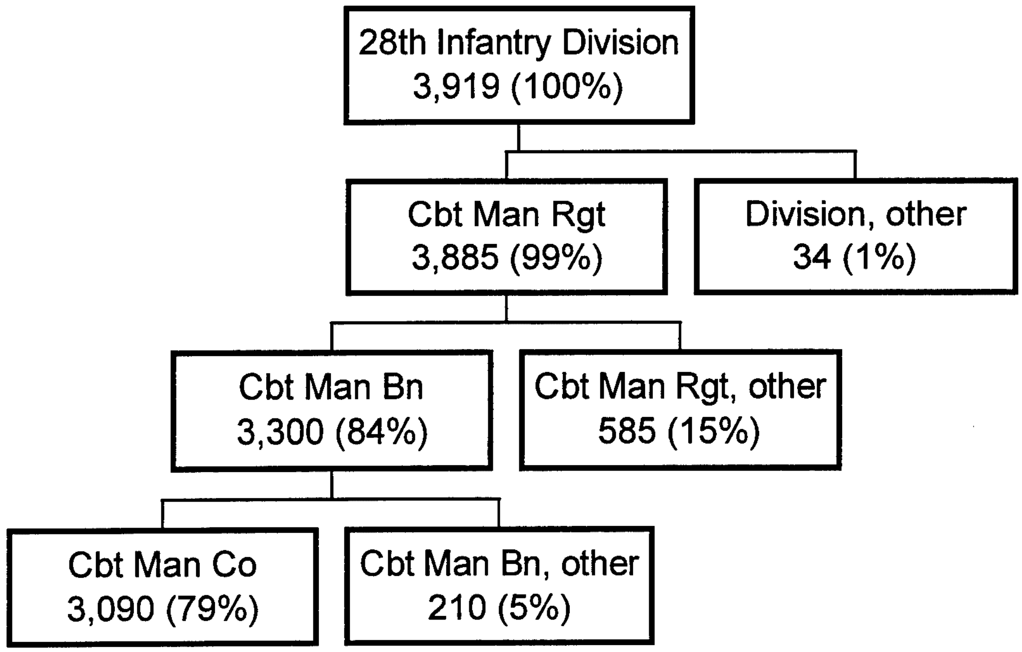

Figure 6-26. Distribution of TBC Number for the US 28th Infantry Division, Compton Data

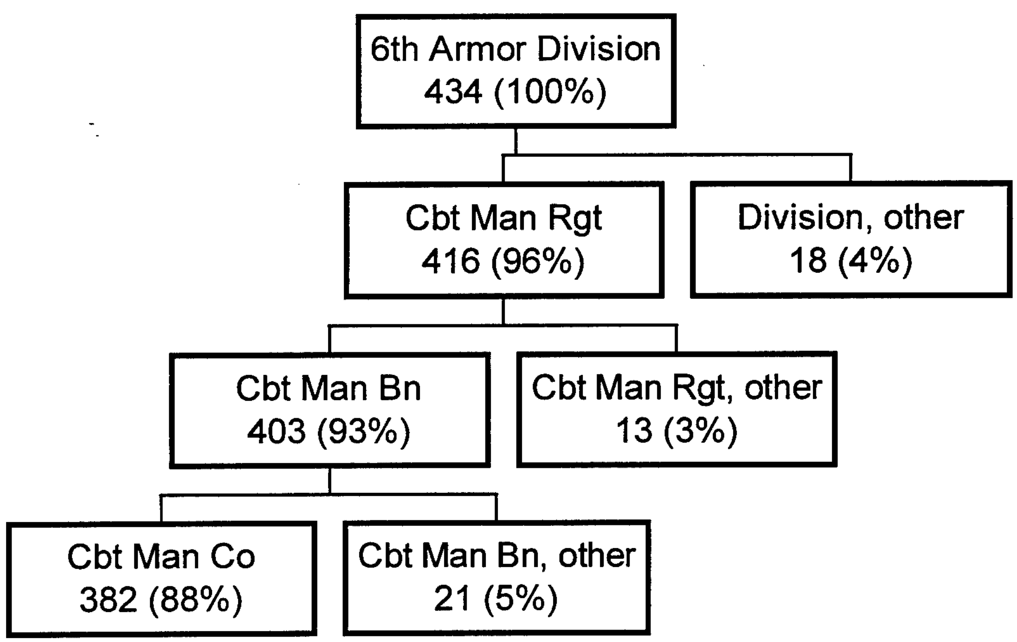

Figure 6-27. Distribution of TBC Number for the US 6th Armor Division, Compton Data

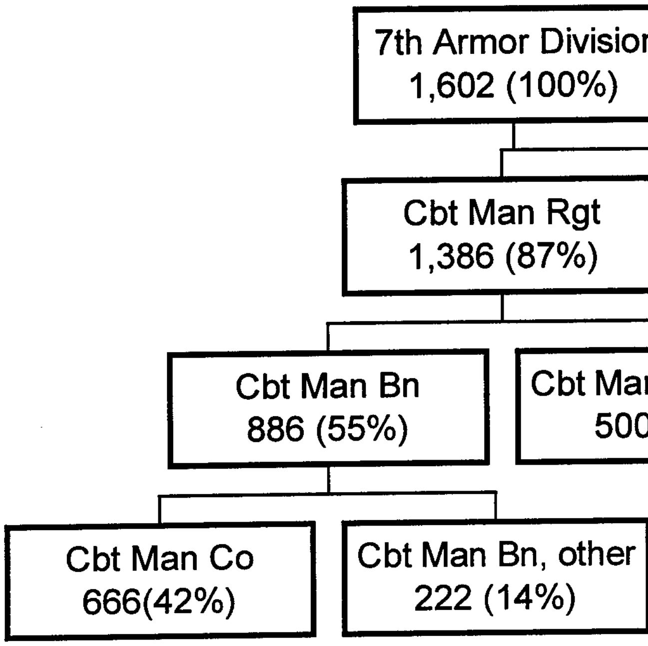

Figure 6-28. Distribution of TBC Number for the US 7th Armor Division, Compton Data

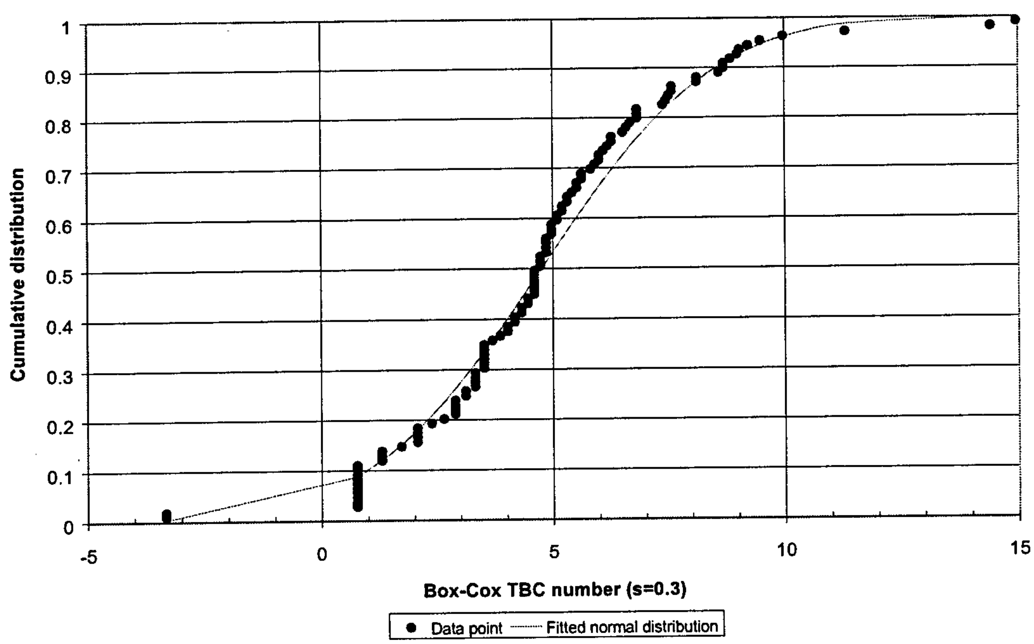

Figure 6-29. Distribution of TBC Number for Combat Maneuver Battalions of the US 28th Infantry Division, Compton Data

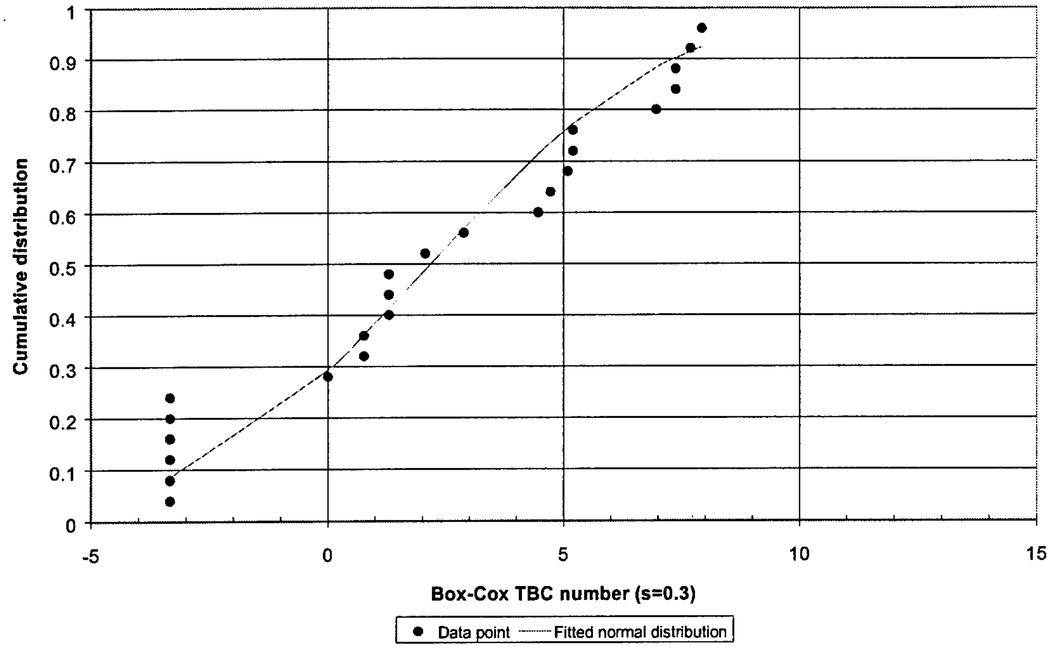

Figure 6-30. Distribution of TBC Number for Combat Maneuver Battalions of the US 6th Armor Division, Compton Data

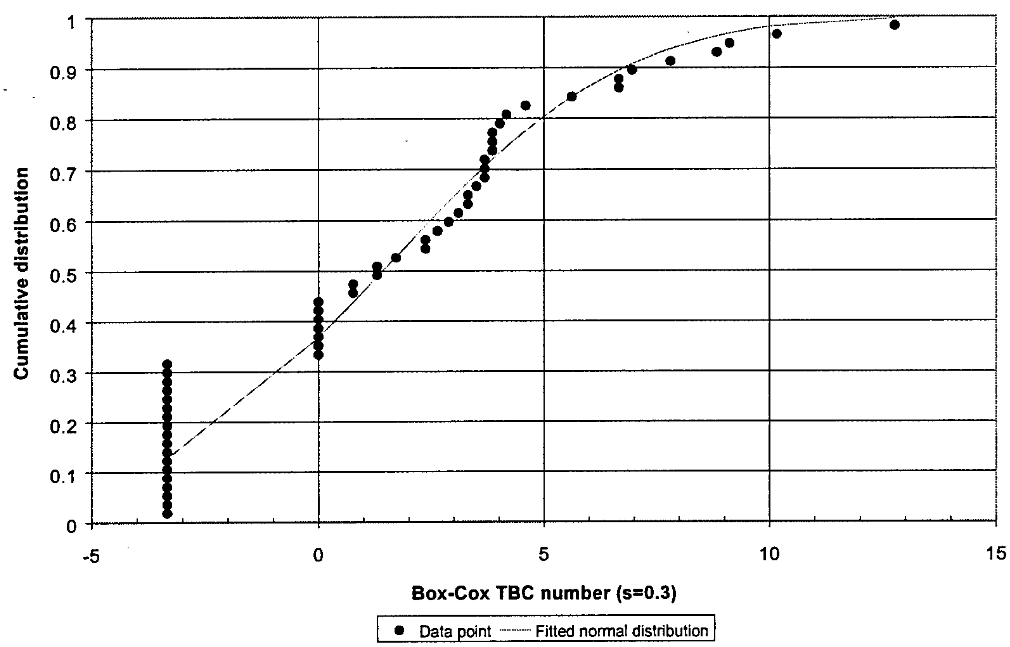

Figure 6-31. Distribution of TBC Number for Combat Maneuver Battalions of the US 7th Armor Division, Compton Data

Table 6-2. Distribution of TBC Number, US 28th Infantry Division, Compton Data

Unit type	Cbt man co	Cbt man bn other	Cbt man rgt other	Div other	Total
Inf co	3,019	0	0	0	3,019
Armor co	71	0	0	1	72
Inf Bn HQ	0	210	0	0	210
Engr cbt	0	0	292	0	292
Med	0	0	103	3	106
Arty	0	0	50	8	58
TD	0	0	47	1	48
Rgt HQ	0	0	36	0	36
AT	0	0	32	0	32
Arty HQ	0	0	13	3	16
Chem	0	0	5	7	12
Engr HQ	0	0	3	0	3
Svc	0	0	2	1	3
Arty svc	0	0	2	0	2
Recon	0	0	0	7	7
Armor HQ	0	0	0	2	2
QM	0	0	0	1	1
TD HQ	0	0	0	0	0
Chem HQ	0	0	0	0	0
Ord	0	0	0	0	0
Svc HQ	0	0	0	0	0
Med HQ	0	0	0	0	0
MP	0	0	0	0	0
Signal	0	0	0	0	0
Div troops	0	0	0	0	0
Band	0	0	0	0	0
Div HQ	0	0	0	0	0
Grand total	3,090	210	585	34	3,919

Table 6-3. Distribution of TBC Number for the US 6th Armor Division, Compton Data

Unit type	Cbt man co	Cbt man bn other	Cbt man CC other	Div other	Total
Inf co	303	0	0	0	303
Armor co	60	0	0	0	60
TD	19	0	0	0	19
Med	0	14	0	3	17
Inf Bn HQ	0	5	0	0	5
Svc	0	2	0	1	3
Recon	0	0	5	0	5
Arty	0	0	3	6	9
CC HQ	0	0	2	0	2
Engr	0	0	2	0	2
AAA	0	0	1	2	3
Arty svc	0	0	0	3	3
Arty HQ	0	0	0	2	2
Med HQ	0	0	0	1	1
AAA HQ	0	0	0	0	0
Armor bn HQ	0	0	0	0	0
Band	0	0	0	0	0
Div HQ	0	0	0	0	0
Engr HQ	0	0	0	0	0
MP	0	0	0	0	0
Ord	0	0	0	0	0
Ord HQ	0	0	0	0	0
Recon HQ	0	0	0	0	0
Signal	0	0	0	0	0
Svc HQ	0	0	0	0	0
TD bn HQ	0	0	0	0	0
Total	382	21	13	18	434

Table 6-4. Distribution of TBC Number, US 7th Armor Division, Compton Data

Unit type	Cbt man co	Cbt man bn other	Cbt man CC other	Div other	Total
Inf co	586	0	0	0	586
Armor co	80	0	0	0	80
Inf bn HQ	0	134	0	0	134
Med	0	41	8	6	55
Svc	0	23	0	0	23
Armor HQ	0	22	11	0	33
Engr	0	0	254	0	254
Recon	0	0	176	119	295
TD	0	0	20	21	41
Recon HQ	0	0	11	1	12
Arty	0	0	10	15	25
Arty HQ	0	0	8	0	8
Arty Svc	0	0	1	2	3
TD HQ	0	0	1	6	7
AAA	0	0	0	35	35
MP	0	0	0	4	4
Div HQ	0	0	0	3	3
Svc HQ	0	0	0	3	3
Engr HQ	0	0	0	1	1
AAA HQ	0	0	0	0	0
Band	0	0	0	0	0
Med HQ	0	0	0	0	0
Ord	0	0	0	0	0
Ord HQ	0	0	0	0	0
Signal	0	0	0	0	0
Total	666	220	500	216	1,602

e. Now we turn our attention to Compton's data on combat maneuver companies. For this purpose, we consider a combat maneuver company to be one that is either an infantry or an armor company operating as part of a battalion in one of the division's regiments or combat commands. This eliminates from consideration all headquarters and headquarters companies and all artillery, antitank, antiaircraft, reconnaissance, tank destroyer, engineer, signal, medical, quartermaster, ordnance, service, maintenance, military police, band, and similar types of companies.

f. Figures 6-32 through 6-34 show the distribution of Box-Cox TBC number for Compton's data on combat maneuver companies. Counting one data point for each company-day on which TBC numbers are reported in these data, there are 473 data points for the 28th Infantry Division, 86 for the 6th Armor Division, and 161 for the 7th Armor Division. Figures 6-32 through 6-34 show that the Box-Cox TBC numbers for these data are distributed approximately normally. They also show that combat maneuver companies often experience days of either no casualties or very few casualties. For example, the combat maneuver companies of the 28th Infantry Division had zero casualties (Box-Cox transformed value of $-{}^{10}\!/\!_{3}$) on about 25 percent of the company-days covered by these data, and either zero or one TBCs (Box-Cox transformed value of (Box-Cox transformed value of either $-{}^{10}\!/\!_{3}$ or 0) on about 42 percent of them. The combat maneuver companies of the 6th Armor Division had zero or one TBCs on nearly 60 percent of their company-days, and the 7th Armor Division's combat maneuver companies had zero or one TBCs on nearly 70 percent of their company-days. By contrast, data bases such as Clark's and Cockrell's, that report no zero casualty days may have been deliberately selected to report only casualty days. Such data bases obviously provide no information on the relative proportion of casualty and non-casualty days, and distort the distribution of casualties over all days.

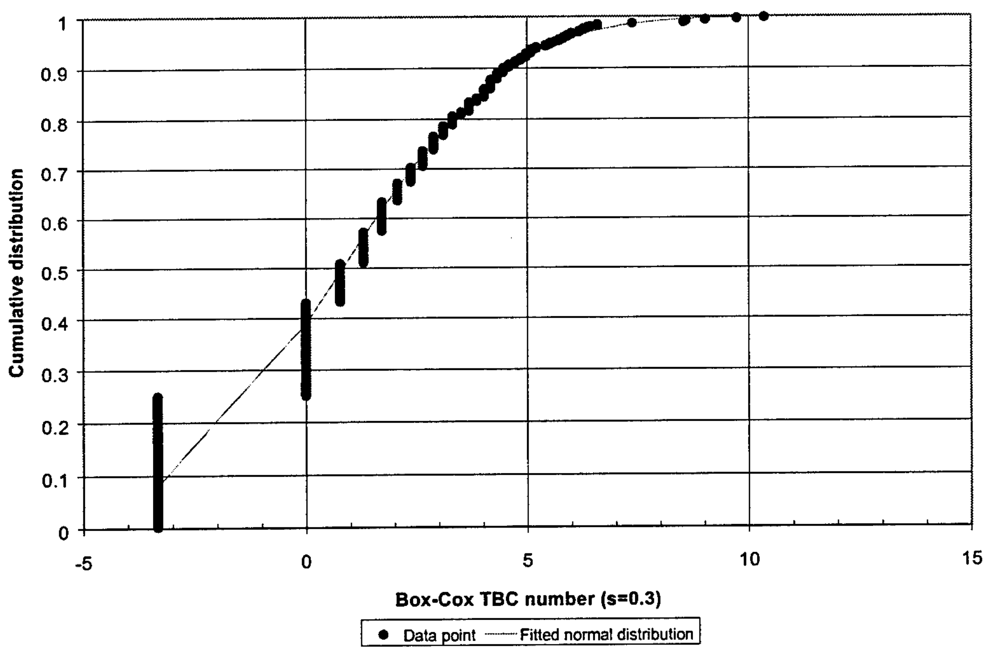

Figure 6-32. Distribution of TBC Number for Combat Maneuver Companies of the US 28th Infantry Division, Compton Data

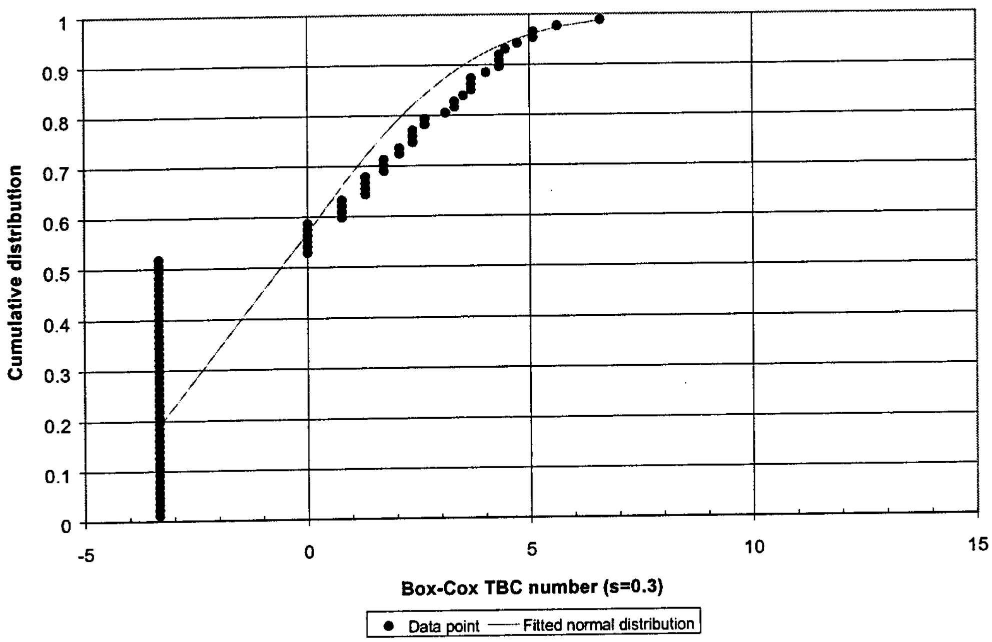

Figure 6-33. Distribution of TBC Number for Combat Maneuver Companies of the US 6th Armor Division, Compton Data

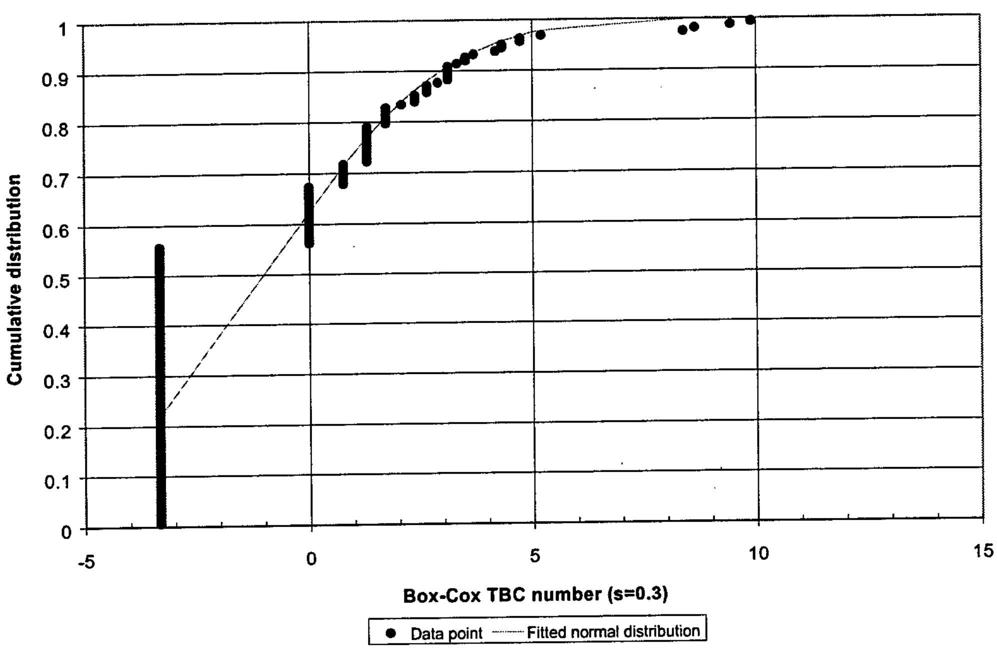

Figure 6-34. Distribution of TBC Number for Combat Maneuver Companies of the US 7th Armor Division, Compton Data

g. Compton's data (see Appendix F) are nearly unique in providing TBC numbers over a period of at least a few consecutive days for all division elements from companies through the largest components. However, extreme caution must be exercised in extrapolating his data to other situations. First, all three of his cases apparently were selected to emphasize episodes of relatively high intensity. This makes it impossible to extrapolate these data to the average or low intensity cases. Second, the sample size is very small (three divisions, each for a limited period of time). This makes it difficult, if not impossible, to reliably bracket the losses that might be suffered under different circumstances--even if they differ only slightly from those represented by this limited sample. Finally, all three of Compton's cases are from the same theater--indeed, they are all basically from the same general season of the year and same sector of the front. Hence, extrapolations to the experiences of divisions operating at other times and places are of uncertain reliability, even if their situations are otherwise analogous to those in Compton's data.

6-8. GOULD'S DATA ON BRITISH RIFLE COMPANIES IN WORLD WAR II

a. The data in this paragraph are from [Gould-1952]. They were collected from British War Diaries for the purpose of analyzing the nature of forward movements made by British Commandos (which correspond approximately to US infantry battalions). Accordingly, these data tend to represent fairly heavily engaged battalion-sized infantry task forces. The actions took place in the European theater of operations, specifically in northwest Europe during January-March 1945, or in the Mediterranean theater of operations (MTO), specifically in Italy during January, June, July, or October 1944.

b. For most of the actions studied, Gould provides the duration of the action, the number of infantry companies involved in it, and the total number of casualties (which apparently are the battle casualties only). However, Gould does not provide the number of personnel involved. Hence, in order to make use of these data, we elected to use the number of infantry companies involved as a measure of force size. Note that this differs from our usual practice. With this convention, Figure 6-35 shows the distribution of casualty rates (Box-Cox casualties per company-day, using $s = 0.3$) for the ETO and MTO theaters. Despite the rather rough approximation involved in using the number of companies as an index of strength, the distributions are approximately normal, as indicated by the fitted theoretical distribution lines shown in Figure 6-35. Note that about 20 percent of the MTO actions had no casualties, and about 7 percent of the ETO actions had no casualties. Since all of Gould's data are for cases of an advance against enemy opposition, these "without casualty" percentages appear to be reasonably consistent with those described earlier in this chapter. The ETO data has 109 usable data points, with an average Box-Cox casualty rate of 7.79 per company-day. The MTO data has 116 usable data points, with an average Box-Cox casualty rate of 5.83 per company-day.

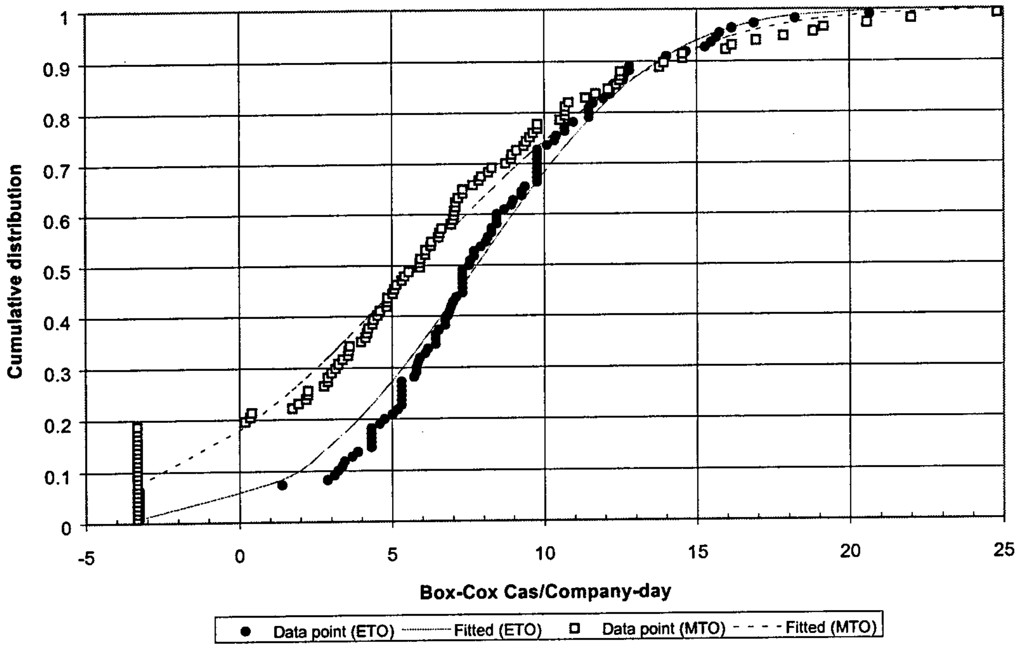

Figure 6-35. Box-Cox Casualty Rate Distributions for Some British Infantry Companies in World War II

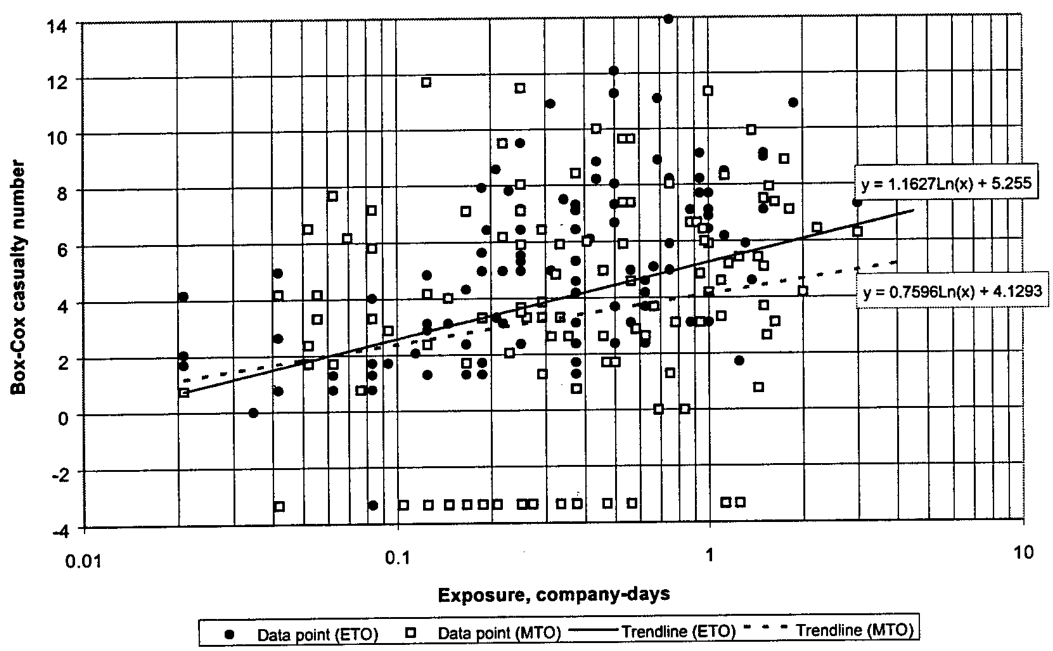

Figure 6-36. Box-Cox Casualty Number Versus Exposure for Some British Infantry Companies in World War II

c. The casualty rates of Figure 6-35 are very high. One reason they are so high may be that in Gould's data, the recorded duration of the actions is very short, often less than half a day. This is implied by the relatively low values of exposure (measured in infantry company days) shown on Figure 6-36. Several of the exposure values are less than 1/10 of a company-day. Thus, these data focus on the most intense periods of action. The corresponding casualty rates were not actually sustained--and perhaps *could* not have been sustained--for very long. The trend lines of Figure 6-36 suggest that the casualty number is neither simply proportional to the exposure nor linearly related to it. However, the data scatter very widely about these trendlines.

6-9. SUMMERS'S DATA ON COMBAT MANEUVER COMPANIES IN ITALY DURING WORLD WAR II

a. These data are drawn from [Summers-1970]. They are for some of the companies that participated in the Winter Line campaign in Italy during the period November 1943 through January 1945. By mid-November 1944 the German Tenth Army had established a defense in depth along the Winter Line, which ran across the Italian peninsula generally along the Garigliano, Rapido, and Sangro rivers. Much of the terrain was mountainous and the weather was typical of central Italy's mountain winters--wet, moderately cold, with intermittent fog and snow. Summers' data base includes 78 company-days' actions, distributed as indicated below.

- US 168th Infantry Regiment, 34th Division during 29 November-8 December 1943. Part of VI Corps secondary attacks in the mountainous area around Mt. Partatano in support of the II and X Corps' main effort: 16 company-days of data.
- US 179th Infantry Regiment, 45th Division during 3-7 December 1943. Part of VI Corps secondary attacks in the mountainous area around Mt. Partatano in support of the II and X Corps' main effort; 12 company-days of data.
- US 157th Infantry Regiment, 45th Division during 9-16 December 1943. Part of VI Corps secondary attacks in support of II Corps' main attack in the San Pietro area; 7 company-days of data.
- US 179th Infantry Regiment, 45th Division during 15-16 December 1943. Part of VI Corps secondary attacks in support of II Corps' main attack in the San Pietro area; 6 company-days of data.
- US 180th Infantry Regiment, 45th Division during 30-31 December 1943. Part of VI Corps local offensive operations preliminary to the main attack in the San Pietro–Cassino area; 6 company-days of data.
- US 135th Infantry Regiment, 34th Division during 5-8 January 1944. Part of VI Corps main attack on the San Pietro–Cassino axis; 10 company-days of data.
- US 168th Infantry Regiment, 34th Division during 4-11 January 1944. Part of VI Corps main attack on the San Pietro–Cassino axis; 21 company-days of data.

b. Since Summers wanted to investigate the empirical validity of the notion that unsuccessful actions produce more casualties than successful ones, he separated his data into 38 "successful" and 40 "unsuccessful" operations. Summers categorized operations as a successful advance if the rifle company continued its forward movement until it either (i) secured its objective, (ii) had its orders changed by higher headquarters, or (iii) "buttoned up" for the night. He categorized operations as an *un*successful advance if forward movement stopped under any other conditions. Defensive operations were categorized as successful if the company held its position and *un*successful if it was dislodged from its position. Casualties were recorded as KIA, seriously WIA, lightly WIA, and MIA (although in some cases the Morning Reports on file at the National Personnel Records Center in St. Louis did not differentiate between the seriously and lightly WIA). However, Summers expanded the usual definitions of these categories by including some injured in action. An example is the injury by rocks thrown by an exploding artillery or mortar shell. Summers included these injured with the WIA on the grounds that their "perceptual impact on the group would be tantamount to that of a wound." Similarly, Summers carried individuals listed as missing in action on the morning reports as such, even though some of them were later reclassified.

c. Figure 6-37 shows the distribution of TBC number for Summers' data. Summers does not report the strengths of these companies. Summers did not investigate the possibility that either the casualty *fraction*, the casualty *number rate*, or the casualty *rate* might be a better indicator of success than the casualty *number.* However, Figure 6-37 clearly demonstrates Summers's main conclusion: there is absolutely no evidence in these data that the casualty *number* differs significantly between successful and unsuccessful company actions. The distributions of Box-Cox TBC numbers are approximately normal. For both successful and unsuccessful actions, the proportion of company-days with no casualties is greater than 10 percent, and those with either zero or one casualty is about 20 percent.

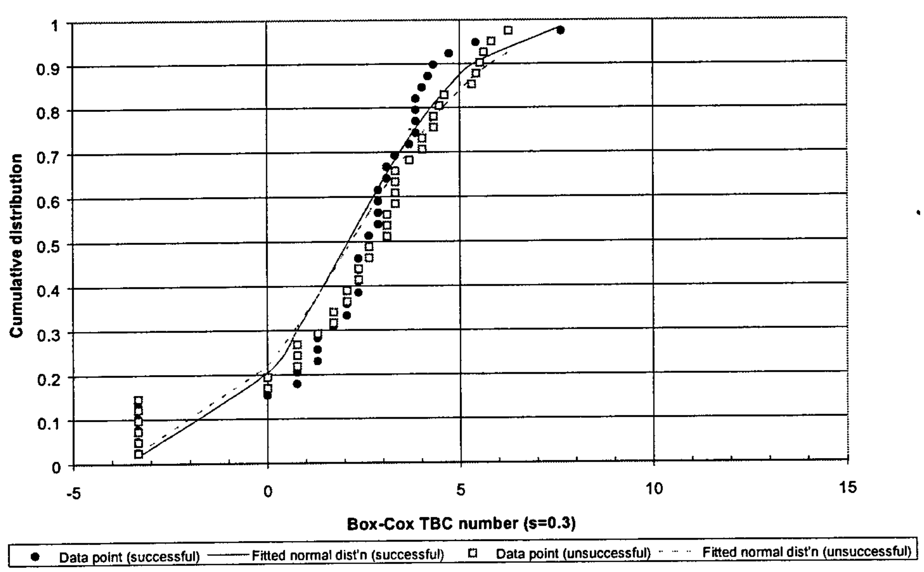

Figure 6-37. Summers' Data on Infantry Companies in Italy During WWII

6-10. BEST'S WORLD WAR II RIFLE COMPANY DATA

a. The data in Table 6-5 are given in [Best-1966]. They are for two sets of data carefully selected by random methods to represent the experience of rifle companies of US infantry divisions from the time each of them entered combat until the war in Europe ended on 8 May 1945. One set represents the ETO, 100 companies from 25 divisions; the other represents the MTO, 50 companies from 4 divisions. These company data are for companies in divisions that are at least nominally considered to be "in combat." Among the total company periods, Table 6-5 distinguishes basically between those with one or more battle casualties and those without battle casualties. In each casualty category the successive entries show the frequencies of periods of consecutive days of increasing length. For example, in the ETO company casualty periods amounted to 26.6 percent of all company periods in the ETO. Of those company casualty periods, $(5.65 + 4.19 + 3.05) / 26.60 = 48$ percent occurred in clusters of 3 consecutive days or less, and 91 percent in clusters of 9 consecutive days or less.

b. We analyzed these data by assuming a geometric distribution for the lengths of the consecutive periods. Let p be the conditional probability that a company's current status (*i.e.*, with or without casualty) persists for at least one more day. The probability p may be different for the ETO and MTO, and for the different types of status (*i.e.*, with or without casualty). However, we assume that, given the theater and the type of status, the probability p is independent of how many days the current status has so far persisted. We also assume that p is independent of anything that happened before the current status began. With these assumptions, the length j of the consecutive period throughout which a rifle company's status does not change is governed by the geometric distribution $\Pr(j = n) = qp^{n-1}$, where n is an integer that ranges from 1 to infinity and $q = 1 - p$ is the probability that the rifle company's status changes on the next day.

c. Table 6-6 gives the fitted values of p for the various theaters and types of status. Rifle companies in the MTO had a lower probability of continuing in the "with casualties" status, and a higher probability of continuing in the "without casualties" status, than rifle companies in the ETO. Figures 6-38 and 6-39 show that the assumed geometric distribution is a good fit to the observed data in Table 6-5. (The cumulative distribution values shown on these figures for 16 consecutive days is actually the cumulative distribution value for the "16 or more" category given in Table 6-5.)

Table 6-5. Percent of Rifle Company Periods With and Without Casualties (for companies of divisions in nominal divisional combat)

	ETO		MTO	
Consecutive days	With casualties	Without casualties	With casualties	Without casualties
1	5.65	3.39	4.51	2.39
2	4.19	3.18	3.93	2.81
3	3.05	3.37	2.67	2.48
4	3.08	2.93	2.12	2.43
5	2.52	2.88	1.35	2.21
6	2.06	2.62	0.99	1.95
7	1.60	2.43	0.78	2.07
8	1.18	2.36	0.48	2.04
9	0.81	2.13	0.29	1.88
10	0.82	2.41	0.14	1.41
11	0.36	1.98	0.24	1.70
12	0.25	2.50	0.13	1.17
13	0.16	1.91	0.00	1.27
14	0.06	1.77	0.00	1.17
15	0.00	1.96	0.00	1.34
16 and over	0.81	35.58	0.05	54.00
Total	26.60	73.40	17.68	82.32

Table 6-6. Fitted Values of p

Status	ETO	MTO
With casualties	0.7736	0.6908
Without casualties	0.9533	0.9708

d. Using the fitted values of p in Table 6-6, we calculate that *on the average*, in the MTO a rifle company experienced a period of 2.23 "with casualty" days followed by a period of 33.25 "without casualty" days, so that its percentage of "with casualty" days was about $100 \times 2.23 / (2.23 + 33.25) = 6.3$ percent, or roughly one out of every 16 calendar days. *On the average*, in the ETO a rifle company experienced a period of 3.42 "with casualty" days followed by a period of 20.41 "without casualty" days, so that its percentage of "with casualty" days was about 14.3 percent, or roughly 1 out of every 7 calendar days. These results are generally consistent with those presented earlier in this chapter which showed that battalions and companies often have "without casualty" days, even during operations that otherwise appear to be of high intensity.

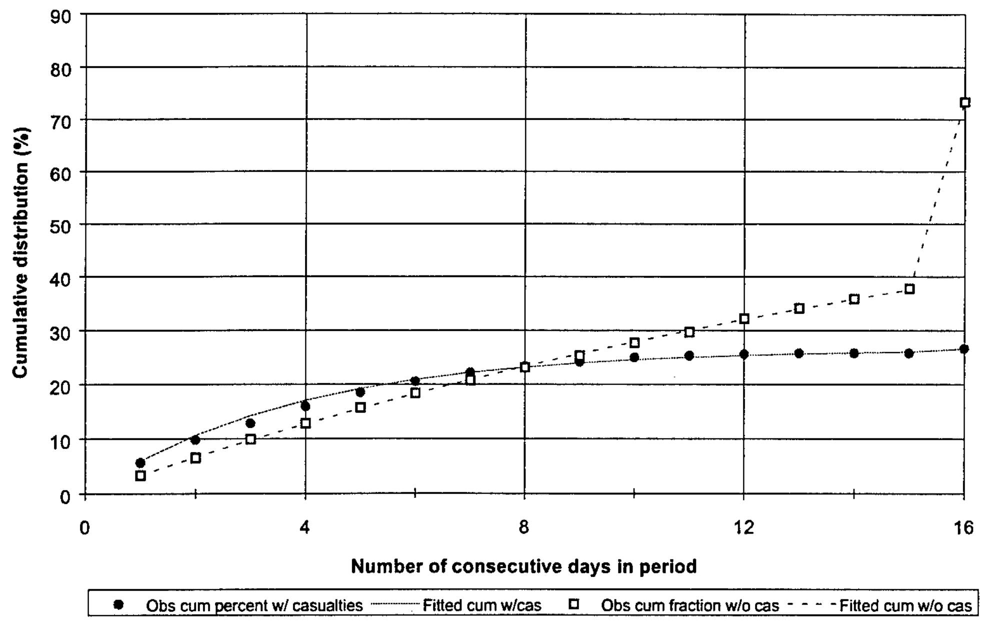

Figure 6-38. Distribution of Consecutive Company Days With and Without Casualties, ETO

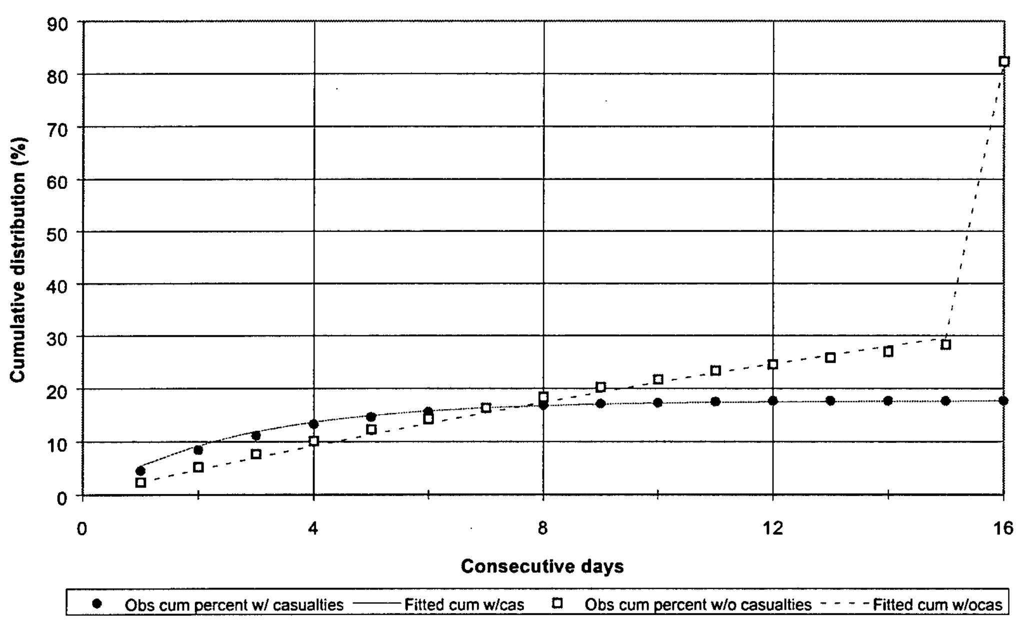

Figure 6-39. Distribution of Consecutive Company Days With and Without Casualties, MTO

6-11. KUHN'S NATIONAL TRAINING CENTER DATA

a. This paragraph examines some National Training Center (NTC) data reported in [Kuhn-1989]. These data are for 139 training events conducted at the NTC in 1986 through 1988. As was the practice at that time, in each of these events the force to be trained (BluFor) was a US battalion-sized task force and was opposed by a force (OpFor) representing the enemy. The OpFor corresponded to either a Soviet motorized rifle regiment, battalion, or company. The BluFor missions included the following (with the number of training events devoted to each in parentheses): movement to contact (20), defense in sector (41), defense of battle position (15), deliberate attack (61), and counterattack (2). The OpFor's size represented the following (with the number of events in parentheses): motorized rifle regiment (67), motorized rifle battalion (32), and motorized rifle company (32). Some of the statistics for this data base are shown in Table 6-7. The middle columns in this table give the nominal size of the OpFor. Because the OpFor strength varied over a much larger range than the BluFor strength, the force ratio favoring BluFor varied quite a bit, generally tending to increase as the OpFor size decreased. Accordingly, this data base is far from homogeneous.

Table 6-7. Some Statistics of Kuhn's NTC Data Base

Item	Regiment	Battalion	Company	Overall
BluFor Strength:				
Range	613-719	485-719	397-719	397-719
Average	712	694	695	703
Standard deviation	14	58	64	46
OpFor Strength:				
Range	162-873	129-474	62-216	62-873
Average	661	268	151	424
Standard deviation	132	92	35	255
Force Ratio (BluFor/OpFor):				
Range	0.81-4.44	1.09-5.57	2.53-11.60	0.81-11.60
Average	1.16	2.95	4.91	2.65
Standard deviation	0.49	1.14	1.61	1.93
BluFor TBC Fraction:				
Range				
Average	0.038-0.449	0.036-0.298	0.024-0.373	0.024-0.449
Standard deviation	0.158	0.175	0.163	0.163
	0.071	0.064	0.071	0.069
OpFor TBC Fraction:				
Range	0.079-0.857	0.108-0.881	0.117-0.905	0.079-0.905
Average	0.391	0.530	0.503	0.455
Standard deviation	0.180	0.195	0.208	0.079

b. A remarkable feature of the data in Table 6-7 is the relatively high TBC fraction taken by both sides. This is particularly noticeable on the OpFor side, with average TBC fractions ranging from about 39 to 53 percent. Figure 6-40 shows the distribution of TBC fractions for the NTC data and again illustrates the extremely high TBC fractions typically taken by the OpFor. Since the training events were all completed within a day, the TBC fraction per thousand personnel strength (*i.e.*, TBC/kp) is an approximate index of the total battle casualty rate (*i.e.*, TBC/kpd). Sometimes more than one training event is conducted during a day. In such cases, the effective TBC/kpd rate for the day would be a weighted average of that day's TBC/kp values, using the exposure values in each of the day's training events as the weights. However, the source does not provide the number of training events held on a given day (much less their corresponding exposure values), and so in Figure 6-40 they are simply weighted equally.

c. Figure 6-41 shows a violin plot comparing the NTC data with some of the data presented earlier in this chapter, and Table 6-8 provides a key to the case numbers used in it. Figure 6-41 illustrates the point that the NTC data have much higher casualty rates than the other data examined in this chapter. Considering that the Box-Cox transform is approximately a logarithmic one, Figure 6-41 shows that the OpFor casualty rates soar far above the other data in this chapter. Historically, such high loss rates appear to be exceedingly rare. Perhaps for some training purposes it is appropriate to face the BluFor with an OpFor ready, willing, and able to take such extremely high casualties in pursuit of its mission. However, that does make the NTC experience grossly unrepresentative of the historical norm. Certainly, it is clear that without massive replacements no actual enemy force could long sustain such high losses, for otherwise there soon would be no one left to fight. One might also question the appropriateness of encouraging BluFor trainees to believe that their relatively high NTC losses are either typical or acceptable as a norm for US battalion task forces in actual combat. For example, basing one sector's actual combat plans on such a mistaken belief may result in each battalion obtaining an overstrength condition, thus consistently violating the principle of economy of force to the possible detriment of important operations in other sectors of the front.

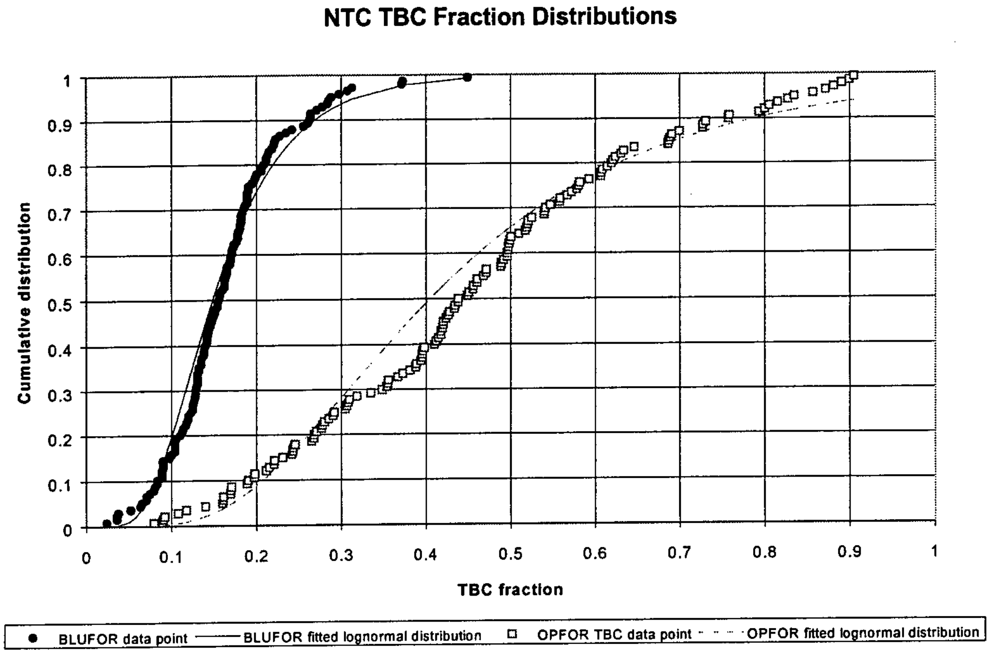

Figure 6-40. Distribution of TBC Fractions for the NTC Data

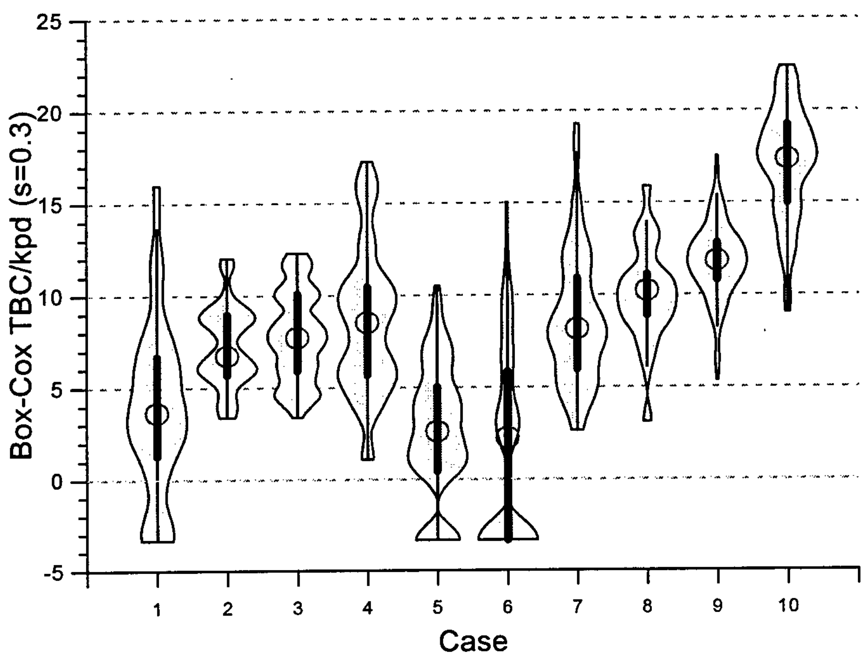

Figure 6-41. Violin Plot Comparing NTC to Other Data

Table 6-8. Key to the Case Numbers of Figure 6-34

Case number	Description
1	Brinkerhoff data
2	Clark data for the entire period preceding a breakpoint
3	Clark data for the 3-day period preceding a breakpoint
4	Clark data for the 1-day period preceding a breakpoint
5	Best data for 1st Cav Div Bns
6	Best data for 1st Cav Div Cos
7	Cockrell data for US forces (Ardennes and Lorraine Campaigns)
8	Cockrell data for German forces (Ardennes Campaign)
9	NTC data for BluFor bns
10	NTC data for OpFor forces

CHAPTER 7
SOME ASPECTS OF CASUALTIES TO INDIVIDUALS

7-1. INTRODUCTION. Previous chapters dealt with casualty data at the level of divisions, brigades, regiments, combat commands, or battalions and companies. The subject of casualties to individuals is too broad to cover exhaustively in this paper. Instead, we touch on just a few of its aspects of particular interest to those engaged in analyzing large-scale (*e.g.*, theater-level) combat operations. As in other chapters, we concentrate almost exclusively on total battle casualties (TBC).

7-2. CASUALTIES TO INDIVIDUALS BY BRANCH OR MILITARY OCCUPATIONAL SPECIALTY

a. Introduction. Here we address the relative proportion of casualties to individuals according to their branch of service or military occupational specialty (MOS). Some data relevant to this issue have already been presented. Tables 4-6 and 4-7 give some data for US Army forces on Okinawa during World War II. Table 4-8 gives some data for US forces in the Spanish-American War. Paragraph 5-3 contains some data for US AEF forces in World War I, for US Marine Corps divisions in the battle of Iwo Jima, for the US 28th Infantry division in the battle of Schmidt in northwest Europe during World War II, for the US 6th and 7th Armor divisions during the Ardennes Campaign of World War II, and for US divisions and major divisional components during the Korean War. Paragraph 6-7 gives some additional data on the US 28th Infantry division in the battle of Schmidt and the US 6th and 7th Armor divisions during the Ardennes Campaign. These results will not be repeated here. It should be noted, however, that most of those data are organized according to the *unit* designation, which is not the same thing as the *branch* designation.

b. World War I. [Love-1931] gives the information on casualties by branch in World War I and reproduced in Table 7-1. Clearly, those branches most exposed to enemy fire (infantry, machinegun, *etc.*) have far higher TBC rates than those branches less exposed to enemy fire.

c. World War II Iwo Jima Campaign. Figure 7-1 shows the distribution of TBC number by type of unit for US Marine Corps forces in the Iwo Jima campaign of World War II. Note that the ordinate is a logarithmic scale. Clearly, infantry battalions bore the overwhelming majority of the casualties. On Iwo Jima, the "Division Troops" generally included a reconnaissance company, an MP company, a signal company, a JASCO unit, a special weapons battalion, and several replacement draft units as well as the division's H&S company. One division's "Division Troops" also included a scout company, a war dog platoon, and a rocket detachment. These units obviously were exposed to much higher risks than might normally be expected from their status as "Division Troops." This is especially true for the replacement drafts--these units were used to replace casualties as they occurred in the infantry battalions. Also, the "Infantry Regiment Headquarters" includes the regiment's weapons unit as well as its headquarters and associated staff and security elements. So at least the weapons unit might be exposed to higher risks than usually associated with headquarters elements. Unfortunately, the sources consulted do not provide enough information on the strengths of these units to compute casualty fractions or rates.

Table 7-1. Relative Casualty Rates to US Soldiers in World War I (infantry taken as 100)

Branch	TBC Rate Relative to Infantry
Infantry	100.00
Machinegun	70.12
Signal Corps	16.46
Tank Corps	15.85
Artillery	11.58
Engineers	9.15
Medical Department	8.54
Quartermaster Department	3.05
Cavalry	3.05
Ordnance	1.83
Aviation	1.83

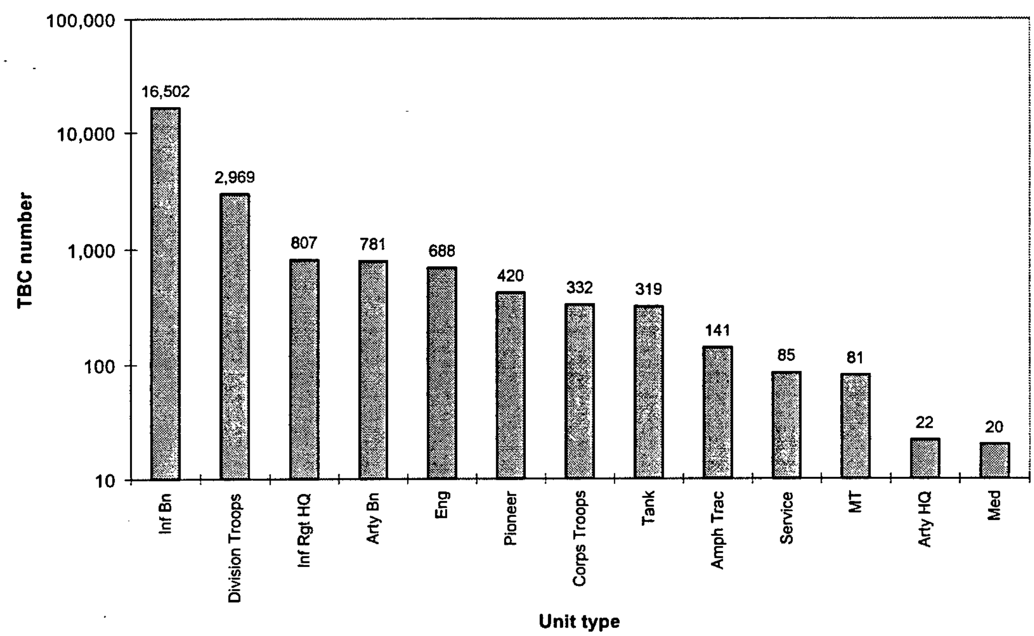

Figure 7-1. Distribution of TBC Number Among Unit Types for Marine Forces in the Iwo Jima Campaign

d. Some World War II Data. [Beebe-1952] gives the data reproduced in Table 7-2 on the rate of *wounding* per kpy by arm or service for the US Army in World War II. Note that the rates for the ETO are much higher than those for other theaters.

Table 7-2. Wounded per Thousand Strength Overseas per Year by Arm or Service, December 1941 Through March 1945, All Theaters and ETO

Arm or Service	All Theaters		ETO	
	Officers	Enlisted	Officers	Enlisted
All arms and services	56.4	71.8	87.3	123.6
Infantry	251.0	264.9	422.2	454.4
Armored	(see Note)	228.5	(see Note)	327.7
Cavalry	165.1	163.1	235.7	191.6
Field Artillery	88.1	50.7	124.3	66.8
Air Corps	35.9	9.9	44.3	12.0
Chemical Warfare	31.0	29.6	35.5	34.2
Medical Department	9.2	26.7	13.2	41.2
Engineers	28.0	21.8	43.6	33.7
Coast Artillery	10.6	9.7	24.1	24.8
Other	4.8	3.8	6.4	4.5

Note: during World War II, officers assigned to armored units were carried under such arms as Infantry and Cavalry, and the designation "Armored" was used only for enlisted personnel.

e. Additional Data on World War II. The Table 7-2 data do not include the Ryukus (Okinawa) or Luzon campaigns. In fact, the Table 7-2 data are based on about 50 percent of the wounded in the Pacific Ocean Area (POA), 65 percent in the Southwest Pacific Area (SWPA), 89 percent in the ETO, and 94 percent in the MTO. The data in [Anonymous-1953] can be used to augment [Beebe-1952]'s data on the *number* of casualties. Unfortunately, Anonymous does not give the corresponding strengths, so casualty *fractions* and *rates* cannot be computed from that data. We use Anonymous's casualty numbers for the ETO, MTO, China-Burma-India theater of operation (CBI), and the Pacific theater of operation (PAC--including both the POA and SWPA areas). Collectively, these four theaters accounted for 98.97 percent of all US Army casualties in World War II. All other theaters accounted for 1.03 percent of them. The other "theater" categories used in Anonymous's data tabulations are as follows (with their total number of casualties in parentheses): Africa-Middle East Theater (3,959), Caribbean and South Atlantic (57), Alaskan Department (1,875), US Strategic Air Forces (2,897), Theater Unknown (148), and Enroute--and therefore not chargeable to any command (725). The number and percentage of casualties by branch for the US Army in World War II are shown in Table 7-3. In Table 7-3, totals or subtotals are indicated by italicized entries. It appears that the data break down into two large subgroupings, in each of which the relative proportions of casualties are about the same. The two groupings are the ETO, MTO, and PAC theaters on one hand, and the CBI and all other theaters on the other hand. Some of these differences among theaters may be due to differing conventions used in accounting for various casualty dispositions. To the extent that the differences are real, it is interesting to contemplate the question of which grouping future conflicts will most resemble.

Table 7-3. Number and Proportion of Battle Casualties by Theater and Branch, US Army World War II

Branch	Number, All Theaters	Number, ETO	Number, MTO	Number, CBI	Number, PAC	Number, All other theaters	Percent, All Theaters	Percent, ETO	Percent, MTO	Percent, CBI	Percent, PAC	Percent, All other theaters
Column Total	*936,259*	*586,628*	*175,107*	*6,925*	*157,938*	*9,661*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
Officers	*95,998*	*56,804*	*19,079*	*2,295*	*14,512*	*3,308*	*10.25*	*9.68*	*10.90*	*33.14*	*9.19*	*34.24*
Male	*95,864*	*56,783*	*19,066*	*2,294*	*14,413*	*3,308*	*10.24*	*9.68*	*10.89*	*33.13*	*9.13*	*34.24*
General officers	72	21	12	3	36	0	0.01	0.00	0.01	0.04	0.02	0.00
General Staff Corps	56	27	8	2	19	0	0.01	0.00	0.00	0.03	0.01	0.00
Inspector General's Dept	5	1	1	0	3	0	0.00	0.00	0.00	0.00	0.00	0.00
Military Intelligence	21	6	3	0	11	1	0.00	0.00	0.00	0.00	0.01	0.01
Air Corps	46,769	26,479	10,057	1,921	5,290	3,022	5.00	4.51	5.74	27.74	3.35	31.28
Armored Forces	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Cavalry	2,054	1,386	229	28	409	2	0.22	0.24	0.13	0.40	0.26	0.02
Coast Artillery Corps	896	304	134	18	438	2	0.10	0.05	0.08	0.26	0.28	0.02
Field Artillery	4,798	3,093	916	29	749	11	0.51	0.53	0.52	0.42	0.47	0.11
Infantry	33,538	21,301	6,253	141	5,734	109	3.58	3.63	3.57	2.04	3.63	1.13
Adjutant General's Dept	34	7	4	1	22	0	0.00	0.00	0.00	0.01	0.01	0.00
Chemical Corps	266	128	81	2	55	0	0.03	0.02	0.05	0.03	0.03	0.00
Corps of Chaplains	204	106	22	0	70	6	0.02	0.02	0.01	0.00	0.04	0.06
Corps of Engineers	1,931	1,134	364	34	390	9	0.21	0.19	0.21	0.49	0.25	0.09
Corps of Military Police	60	32	7	4	17	0	0.01	0.01	0.00	0.06	0.01	0.00
Finance Department	20	4	0	0	16	0	0.00	0.00	0.00	0.00	0.01	0.00
Judge Advocate Gen's Dept	9	1	0	0	8	0	0.00	0.00	0.00	0.00	0.01	0.00
Medical Department	*1,205*	*597*	*178*	*19*	*403*	*8*	*0.13*	*0.10*	*0.10*	*0.27*	*0.26*	*0.08*
Dental Corps	117	52	15	0	49	1	0.01	0.01	0.01	0.00	0.03	0.01
Medical Admin. Corps	192	139	11	0	42	0	0.02	0.02	0.01	0.00	0.03	0.00
Medical Corps	884	406	151	19	301	7	0.09	0.07	0.09	0.27	0.19	0.07
Sanitary Corps	2	0	0	0	2	0	0.00	0.00	0.00	0.00	0.00	0.00
Veterinary Corps	10	0	1	0	9	0	0.00	0.00	0.00	0.00	0.01	0.00
Ordnance Dept	214	101	28	1	84	0	0.02	0.02	0.02	0.01	0.05	0.00
Quartermaster Corps	266	73	20	10	159	4	0.03	0.01	0.01	0.14	0.10	0.04
Signal Corps	282	117	51	4	108	2	0.03	0.02	0.03	0.06	0.07	0.02
Transportation Corps	71	35	13	0	23	0	0.01	0.01	0.01	0.00	0.01	0.00
No branch assigned	169	112	21	2	32	2	0.02	0.02	0.01	0.03	0.02	0.02
Warrant officers	308	134	46	2	124	2	0.03	0.02	0.03	0.03	0.08	0.02
Flight officers	2,616	1,584	618	73	213	128	0.28	0.27	0.35	1.05	0.13	1.32
Female	*134*	*21*	*13*	*1*	*99*	*0*	*0.01*	*0.00*	*0.01*	*0.01*	*0.06*	*0.00*
Army Nurse Corps	134	21	13	1	99	0	0.01	0.00	0.01	0.01	0.06	0.00
Enlisted	*840,261*	*529,824*	*156,028*	*4,630*	*143,426*	*6,353*	*89.75*	*90.32*	*89.10*	*66.86*	*90.81*	*65.76*
Male	*840,249*	*529,813*	*156,028*	*4,630*	*143,425*	*6,353*	*89.75*	*90.31*	*89.10*	*66.86*	*90.81*	*65.76*
Air Corps	65,997	34,081	14,356	1,824	11,476	4,260	7.05	5.81	8.20	26.34	7.27	44.09
Armored Force	6,827	5,778	310	1	733	5	0.73	0.98	0.18	0.01	0.46	0.05
Cavalry	19,649	11,046	1,896	243	6,441	23	2.10	1.88	1.08	3.51	4.08	0.24
Coast Artillery Corps	14,381	4,629	2,156	131	7,323	142	1.54	0.79	1.23	1.89	4.64	1.47
Field Artillery	37,894	23,387	8,463	60	5,926	58	4.05	3.99	4.83	0.87	3.75	0.60
Infantry	627,521	413,747	116,207	1,632	94,596	1,339	67.02	70.53	66.36	23.57	59.89	13.86
Adjutant General's Dept	40	16	6	0	18	0	0.00	0.00	0.00	0.00	0.01	0.00
Chemical Corps	3,233	1,416	1,194	6	607	10	0.35	0.24	0.68	0.09	0.38	0.10
Corps of Engineers	27,875	16,411	5,329	485	5,490	160	2.98	2.80	3.04	7.00	3.48	1.66
Corps of Military Police	1,234	588	326	8	306	6	0.13	0.10	0.19	0.12	0.19	0.06
Finance Department	56	5	1	0	45	5	0.01	0.00	0.00	0.00	0.03	0.05
Medical Department	22,623	13,971	3,534	75	4,903	140	2.42	2.38	2.02	1.08	3.10	1.45
Ordnance Department	3,031	1,037	380	32	1,557	25	0.32	0.18	0.22	0.46	0.99	0.26
Quartermaster Corps	4,557	1,638	696	84	2,087	52	0.49	0.28	0.40	1.21	1.32	0.54
Signal Corps	3,711	1,431	800	31	1,431	18	0.40	0.24	0.46	0.45	0.91	0.19
Transportation Corps	1,053	500	302	7	240	4	0.11	0.09	0.17	0.10	0.15	0.04
Detached enlisted men's list	228	27	19	8	169	5	0.02	0.00	0.01	0.12	0.11	0.05
No branch assigned	339	105	53	3	77	101	0.04	0.02	0.03	0.04	0.05	1.05
Female	*12*	*11*	*0*	*0*	*1*	*0*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Women's Army Corps	12	11	0	0	1	0	0.00	0.00	0.00	0.00	0.00	0.00

f. Further Data From World War II. Another perspective on the data of [Anonymous-1953] is provided by Figures 7-2 through 7-7. These figures give the proportional disposition of all US Army casualties (by number of casualties rather than by casualty rate) for selected theaters during World War II. For example, Figure 7-2 gives the proportional disposition of US Army casualties to all personnel (officers, enlisted, male, and female) for all theaters in World War II. It shows that 20.26 percent of all casualties were KIA, that 30.86 percent of the WIA were evacuated to the US, and that 99.95 percent of the WIA evacuated to the US were subsequently either returned to duty (RTD) or discharged from the service. In these figures, the "Captured, Interned" category includes those who were either captured by enemy forces or interned by other countries. The "Returned" subcategory under the "Captured, Interned" and "MIA" categories are those personnel who subsequently were returned to military control.

Observe that the disposition of casualties is about the same for the ETO and MTO, but that in general there are noticeable differences from one theater to another. Some of these differences among theaters may be due to differing conventions used in accounting for various casualty dispositions. To the extent that they are real differences, they challenge the analyst to determine which theater's experience is most indicative of future warfare trends.

The disposition of casualties for enlisted personnel only is close to that shown for all personnel. However, the disposition of casualties for officers differs from that for enlisted personnel, and hence also from that for all personnel. Figures 7-8 through 7-13 show the disposition of officer casualties for selected theaters. It appears that there is a strong and consistent tendency for officers to take proportionately more KIA and captured or interned casualties than enlisted personnel, but proportionately fewer WIA. The reasons for this are obscure.

g. Additional World War II Data. [Best-1966] gives the data shown in Table 7-4. Note that these values are TBC rates for personnel operating in a division that is considered to be "in combat," whereas those given in Table 7-2 are for *wounding* only and include *all* overseas experience (whether "in combat" or not). Thus, the rates in Table 7-4 can be expected to be much higher than those in Table 7-2.

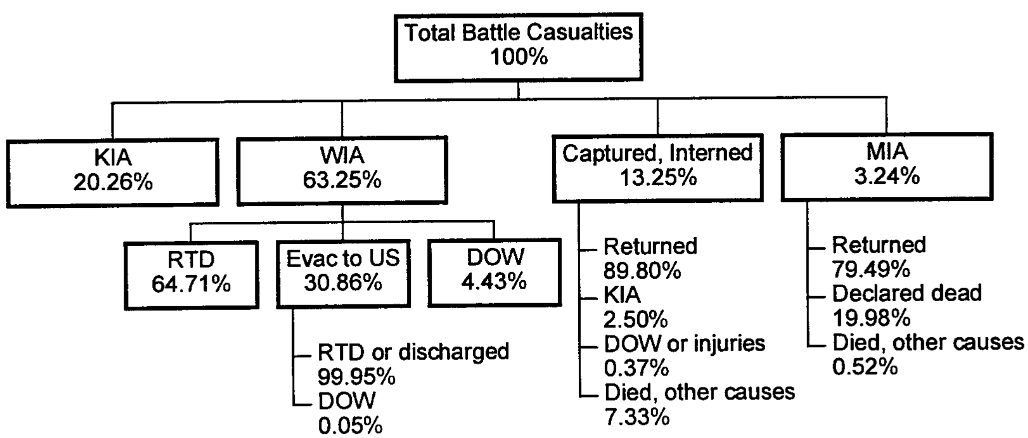

Figure 7-2. Disposition of Battle Casualties, US Army, All Personnel, All Theaters, World War II

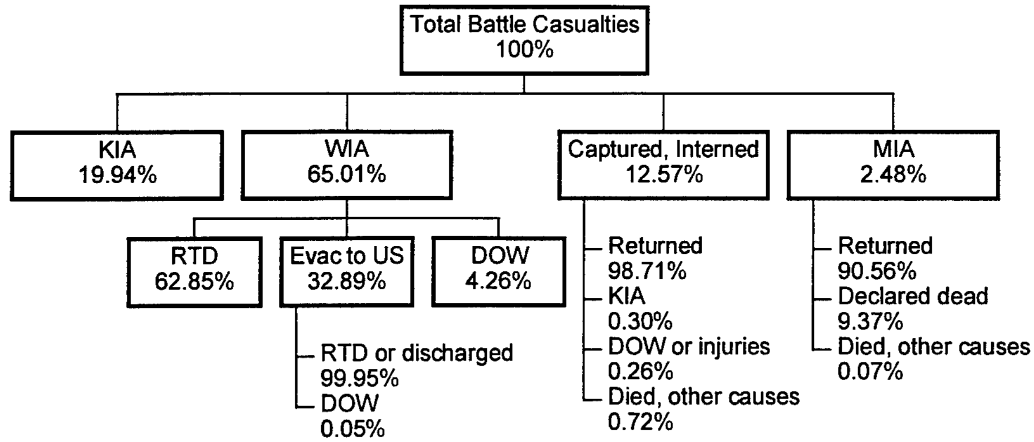

Figure 7-3. Disposition of Battle Casualties, US Army, All Personnel, ETO, World War II

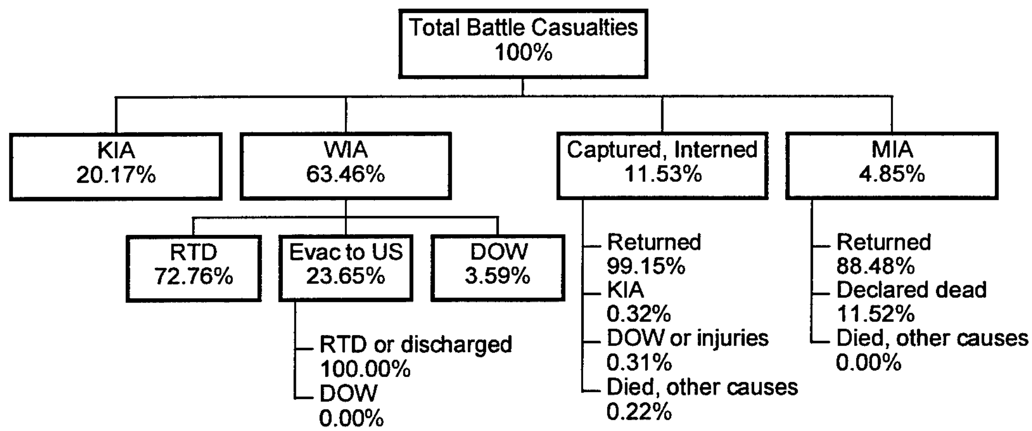

Figure 7-4. Disposition of Battle Casualties, US Army, All Personnel, MTO, World War II

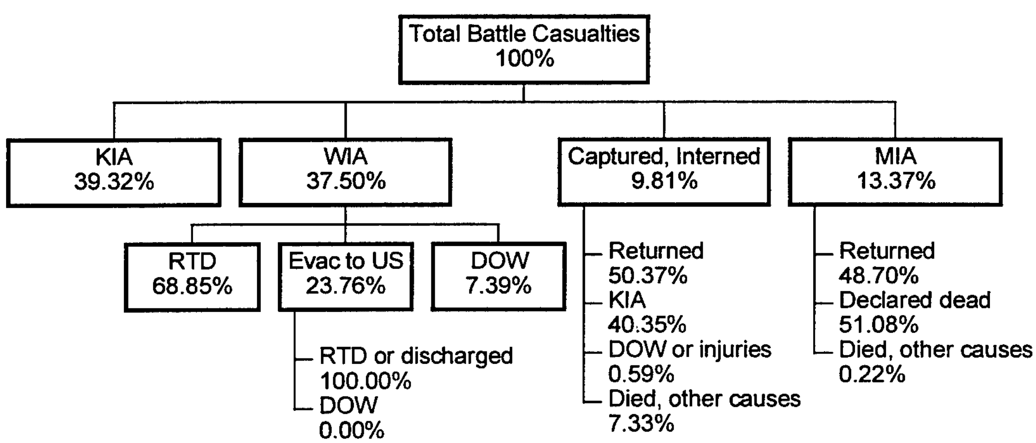

Figure 7-5. Disposition of Battle Casualties, US Army, All Personnel, CBI Theater, World War II

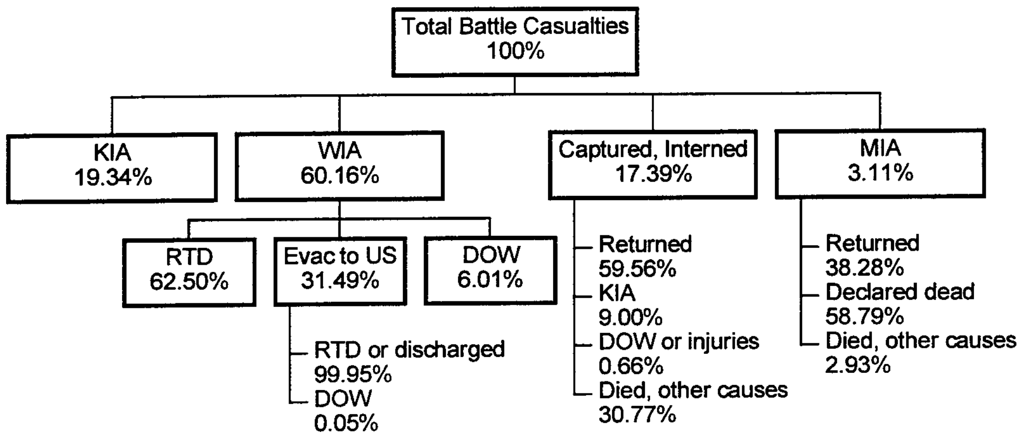

Figure 7-6. Disposition of Battle Casualties, US Army, All Personnel, Pacific Theater, World War II

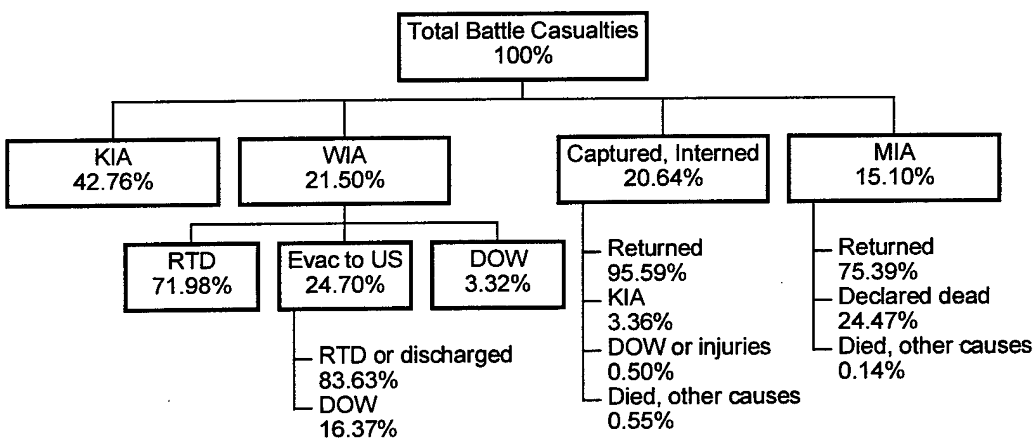

Figure 7-7. Disposition of Battle Casualties, US Army, All Personnel, All Other Theaters, World War II

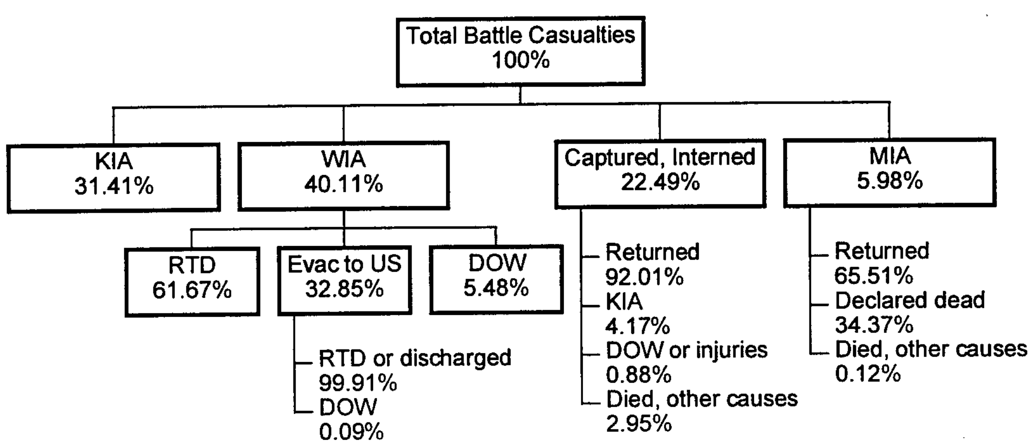

Figure 7-8. Disposition of Battle Casualties, US Army, Officers, All Theaters, World War II

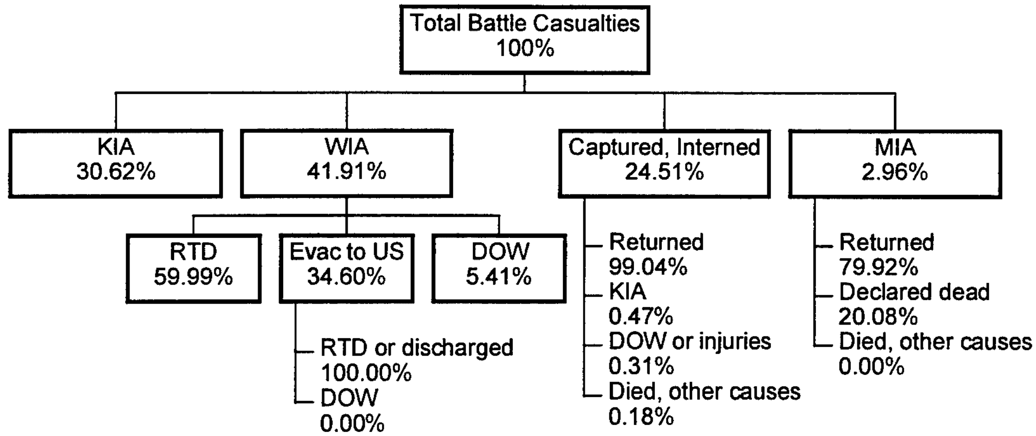

Figure 7-9. Disposition of Battle Casualties, US Army, Officers, ETO, World War II

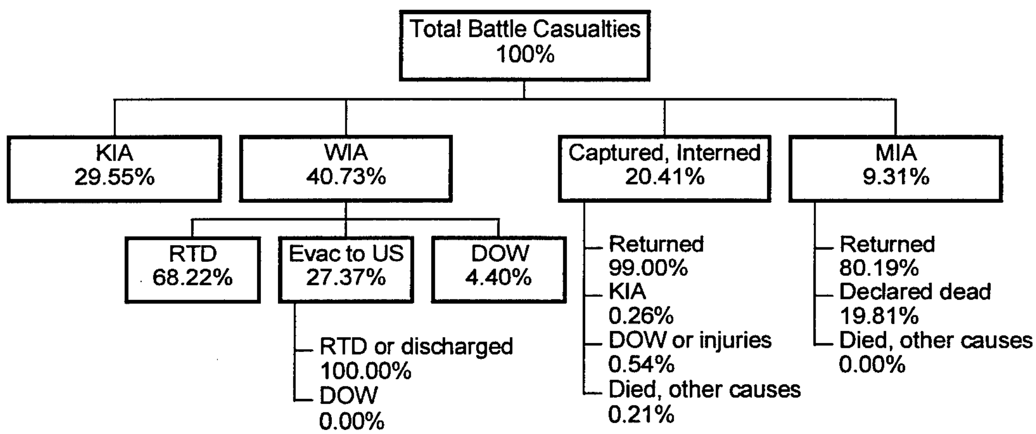

Figure 7-10. Disposition of Battle Casualties, US Army, Officers, MTO, World War II

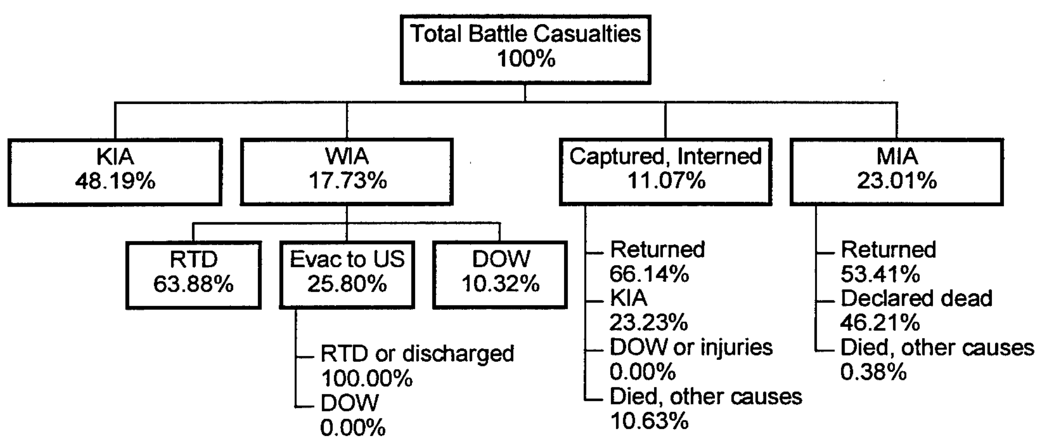

Figure 7-11. Disposition of Battle Casualties, US Army, Officers, CBI, World War II

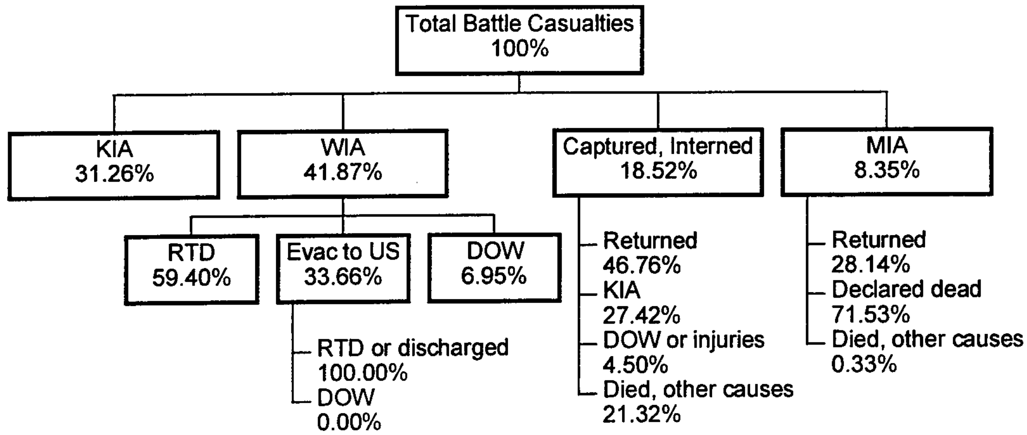

Figure 7-12. Disposition of Battle Casualties, US Army, Officers, PAC, World War II

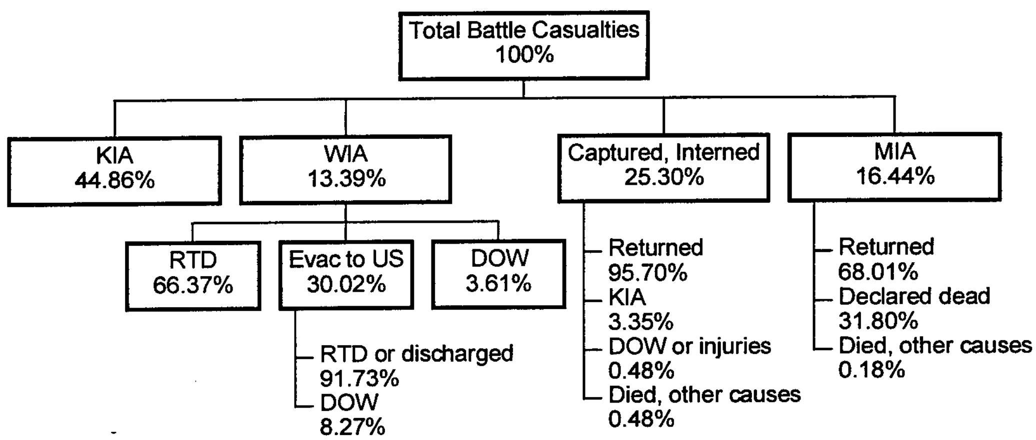

Figure 7-13. Disposition of Battle Casualties, US Army, Officers, All Other Theaters, World War II

h. Some Korean War Data. [Reister-1986] gives the data shown in Table 7-5. The figures for divisions are equal to the sum of their component types (headquarters, headquarters and service companies, regiments, artillery battalions, engineer battalions, medical battalions, and tank battalions). The figures for the US Army are the sum of its component types (non-divisional and divisional). Clearly the infantry regiments had both the highest number and highest rate of casualties. The other branches in the division had substantially lower casualty numbers and rates.

Table 7-4. US Army Battle Casualty Incidence by Military Specialty

Duty or rank	Battle casualty rate per kpd(1)		
	Italy(2)	Okinawa(3)	Saipan(4)
Rifleman	12.2	22.9	15.5
Automatic rifleman	4.6	10.7	19.4
Squad leader	5.2	8.6	12.1
Platoon sergeant	3.9	5.2	10.1
Ammunition handler	3.6	3.5	9.5
Gunner	6.2	4.9	4.6
Section leader	3.7	6.0	8.8
Litter bearer	3.4	2.9	11.7
Scout	4.9	4.2	4.9
Messenger	2.8	2.9	7.9
All other enlisted men(5)	1.2	#N/A	#N/A
2d Lieutenant	9.3	6.2	#N/A
1st Lieutenant	3.1	4.6	#N/A
Captain	2.1	1.9	#N/A
Field and general officers	1.4	1.2	#N/A
Enlisted men, overall	3.7	3.6	4.7
Officers, overall	4.0	3.5	4.7

Notes:
(1) Calendar day of divisional combat.
(2) Four infantry divisions.
(3) Divisional and army troops.
(4) One infantry division plus attachments.
(5) Range of 0.05 to 0.25 for 13 categories, including "other enlisted men."

Table 7-5. Battle Casualty Incidence, US Army, All Personnel, Korean War

Type of combat unit	Average mean strength		Killed in action			WIA-Admissions		
	Number	Percent	Number	Percent	Cases/kpy	Number	Percent	Cases/kpy
US Army	207,851	100.00	19,353	100.00	30.2	77,788	100.00	121.4
Nondivision	100,387	48.30	699	3.60	2.3	4,827	6.20	15.6
Division	107,464	51.70	18,654	96.40	56.3	72,961	93.80	220.2
Headquarters, headquarters and service companies	12,273	5.90	328	1.70	8.7	902	1.20	23.8
Regiments	63,862	30.80	16,764	86.70	85.1	66,329	85.20	336.9
Artillery battalions	20,018	9.60	928	4.80	15	3,268	4.20	53
Engineer battalions	5,372	2.60	394	2.00	23.8	1,299	1.70	78.4
Medical battalions	1,923	0.90	28	0.10	4.7	70	0.10	11.8
Tank battalions	4,016	1.90	212	1.10	17.1	1,093	1.40	88.3

7-3. BATTLE STRESS CASUALTIES TO INDIVIDUALS

a. Historically, battle stress casualties have been recorded under such varied categories as "shell shock," neuropsychiatric (NP), psychoneurotic (PN), combat fatigue, *etc.* The US Army traditionally carries these casualty types under the "nonbattle" casualty heading. Some other armies carry them as battle casualties, depending on the circumstances. The following paragraphs present some scattered data on these types of casualty.

b. [Cochrane-1959] presents some information on casualties to the US 3d Division at Chateau Thierry for the period 15-31 July 1918. During that time, 5,158 casualties were admitted to the division hospital. Of these, 36.2 percent were gas casualties, 52.7 percent were gunshot wound casualties, and 11.1 percent were psychoneurosis casualties. Accordingly, during this period the psychoneurosis casualties added about 12.5 percent to the sum of the gassed and gunshot casualty admissions. The number of psychoneurosis admissions was positively correlated with the sum of the gassed and gunshot wound (GSW) admissions, as shown on Figure 7-14. Figure 7-15 shows the variation in the proportions of gassed, GSW, and PN admissions. Aside from the apparent negative correlation between gassed and gunshot admissions, no special pattern is evident.

c. [Beebe-1952, pp 27-28] states that "The most uniform and strongest of these relationships [between battle and nonbattle casualties] is the correlation between wounding and psychiatric breakdown in combat troops. Correlation coefficients computed for echelons ranging from an infantry battalion to a combat theater, and (at the divisional level) for the greater part of the combat in World War II, average about +0.7 to +0.8." Citing DeVinney's study of the casualty experience of four infantry divisions in the Italian campaign from 9 September 1943 to 4 April 1944, Beebe reports that the average admission rates were 3.7 for battle casualties and 4.7 for nonbattle casualties per 1,000 men per divisional combat day, and that about 9 percent of the nonbattle casualties were neuropsychiatric casualties. Thus, the neuropsychiatric casualties added about $4.7 \times 9 / 3.7 = 11.4$ percent to the battle casualties.

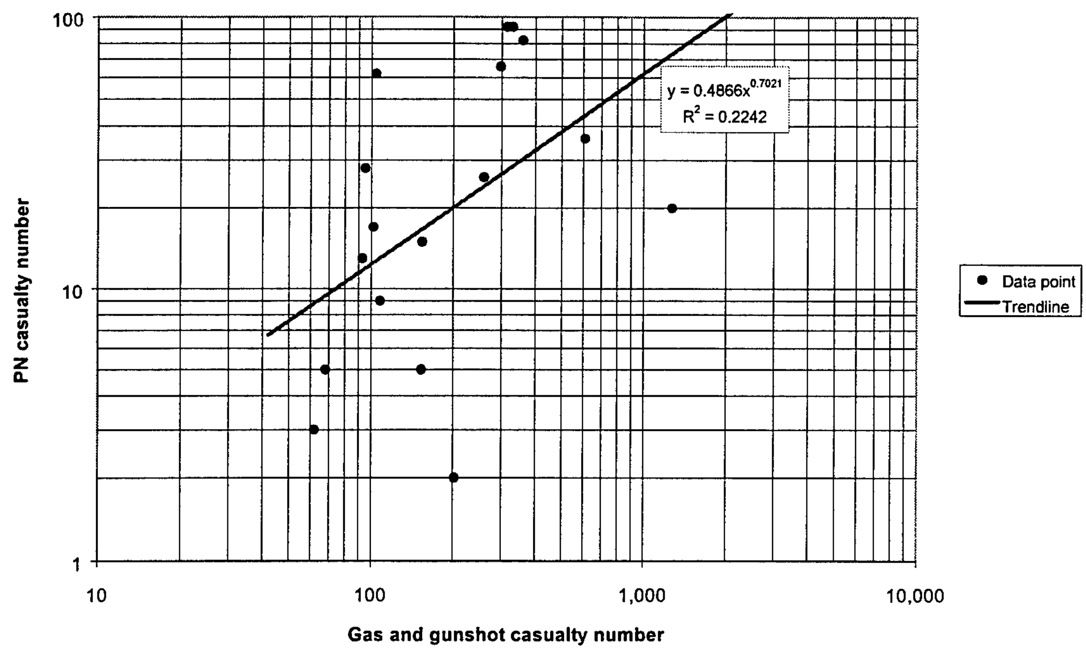

Figure 7-14. Correlation of Psychoneurosis and Other Battle Casualty Admissions, US 3d Division at Chateau Thierry, July 1918

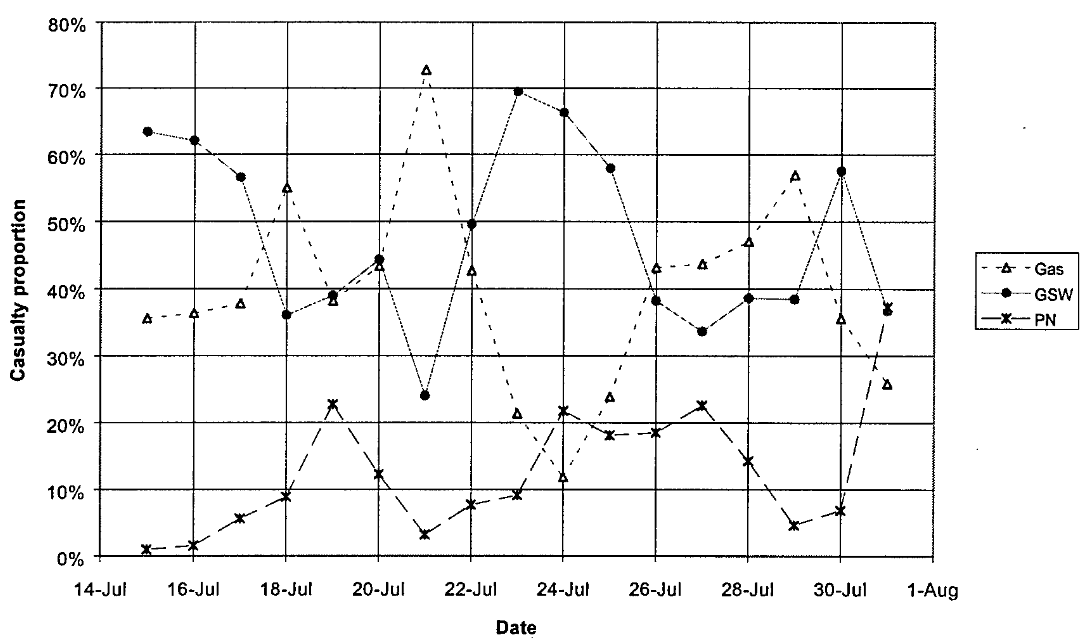

Figure 7-15. Relative Proportions of Psychoneurosis and Other Casualty Admissions, US 3d Division at Chateau Thierry, July 1918

d. [Mellor-1972] gives some data on battle casualties and mental losses for United Kingdom forces in World War II. Figures 7-16 through 7-18 show these data for the North African-Central Mediterranean, Northwest European, and Indo-Burman theaters. They suggest that the mental loss rate (including psychoses and neuropsychoses) could, on average, be estimated using an equation such as the following,

$$MentalRate = BaseMentalRate + K \times WIARate,$$

where *MentalRate* is the mental loss rate/kpy actually experienced, the *BaseMentalRate* is the theoretical mental loss rate/kpy that would obtain if the WIA rate were zero, and K is a coefficient indicating how the *MentalRate* varies with *WIARate.* From Figures 7-16 through 7-18, the coefficient K appears to be equal to about 10 to 12 percent.

Mellor also gives information indicating that the ratio of mental admissions to admissions for all diseases averaged about 1.6 percent for the North African-Central Mediterranean theater, 6.0 percent for the northwest Europe theater, and 0.8 percent for the Indo-Burman theater. There is considerable variation about these averages from year to year. Mellor also gives information indicating that the rate of discharges of males for medical reasons averaged about 20.7/kpy for all diseases, 3.8/kpy for injuries due to enemy action, and 8.1/kpy for mental reasons. Mellor comments that "By far the largest number of discharges each year was on account of mental disorders. In 1943, 35 percent of all discharges through disease were attributable to this cause. During the following year the proportion rose to 41 percent and in 1945 it declined very slightly to 40 percent. Anxiety state contributed to between 40 percent and 50 percent of discharges due to mental disorders; hysteria to between 16 percent and 20 percent. Psychopathic personality accounted for approximately 15 percent. Schizophrenia and mental deficiency accounted for 6 percent each. There was a marked decline (from about 6/kpy to 3/kpy) in discharges due to manic-depressive over the 3 years [1943-1945]." We also note that the number of discharges for mental reasons averaged about 3.8 times those for injuries due to enemy action.

[Reister-1975] indicates that close to 38 percent of all US Army discharges for nonbattle disability were attributed to psychiatric causes, which compares with the figure of 35 percent cited by Mellor.

e. [Best-1966] gives some data on the relation of NP to battle casualties among selected components of the US 6th Armored Division during its operations in Northwest Europe from 18 July 1944 to 8 May 1945. These data are shown in Figure 7-19. Note that this figure shows casualty fractions rather than rates, with the fractions based on the table of organization (TO) strengths of the division's components. Note also that this figure is for components of the division, so that the time period is the same for each data point, while each data point represents a different population at risk. This differs from the other charts presented in this paragraph, in which the population at risk is approximately the same for each data point, while each data point represents a different time slice. In Figure 7-19, the highest battle casualty and NP fractions are taken in the armored infantry battalions (battle casualty fractions ranging from 1.01 to 1.12 of their TO strength). The division's armored engineer battalion, tank battalions, tank destroyer battalion, and cavalry reconnaissance squadron took intermediate battle and NP casualty fraction (battle casualty fractions ranging from 0.29 to 0.56 of their TO strength). The armored field artillery battalions took the lowest battle and NP casualty fractions (battle casualty fractions ranging from 0.04 to 0.06 of their TO strength). If we lump all of these components together, then the NP casualties add about 36 percent to the battle casualties. Because the battle casualties include KIA, MIA, and POWs, as well as the WIA, this means that the NP casualties would add more than 36 percent to the WIA alone.

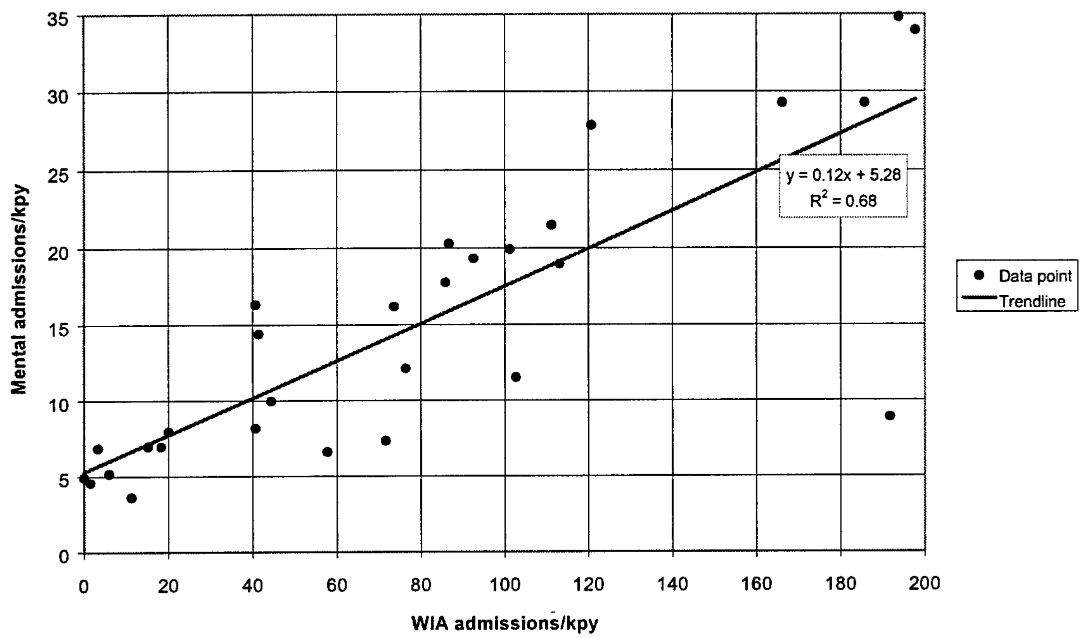

Figure 7-16. Mental and WIA Admission Rates, UK Forces, North African-Central Mediterranean Theater, 1942-1945

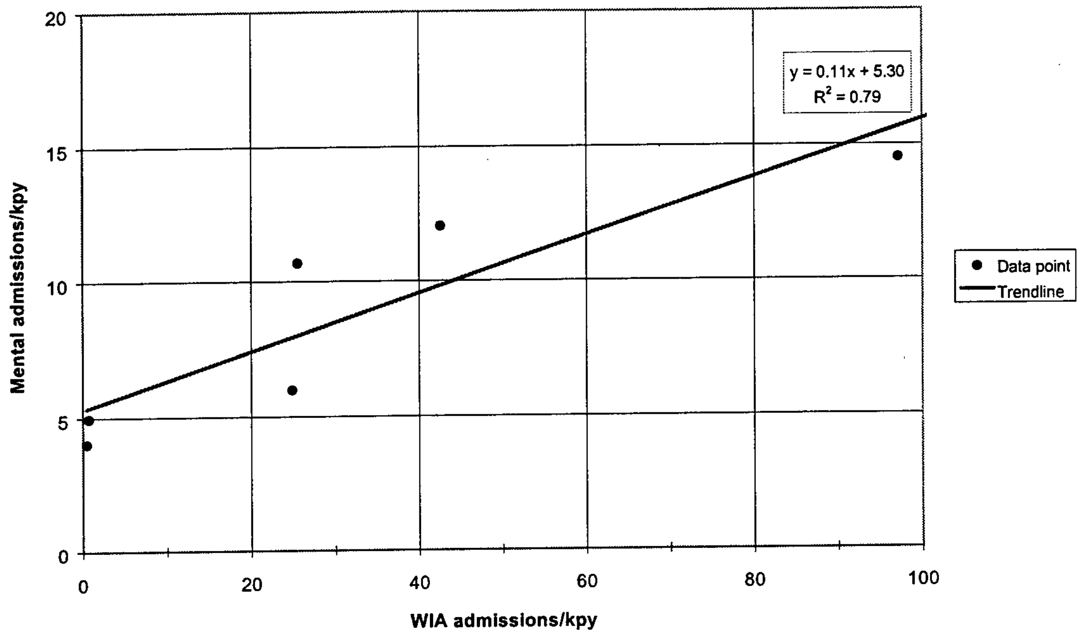

Figure 7-17. Mental and WIA Admission Rates, UK Forces, Northwest European Theater, 1942-1945

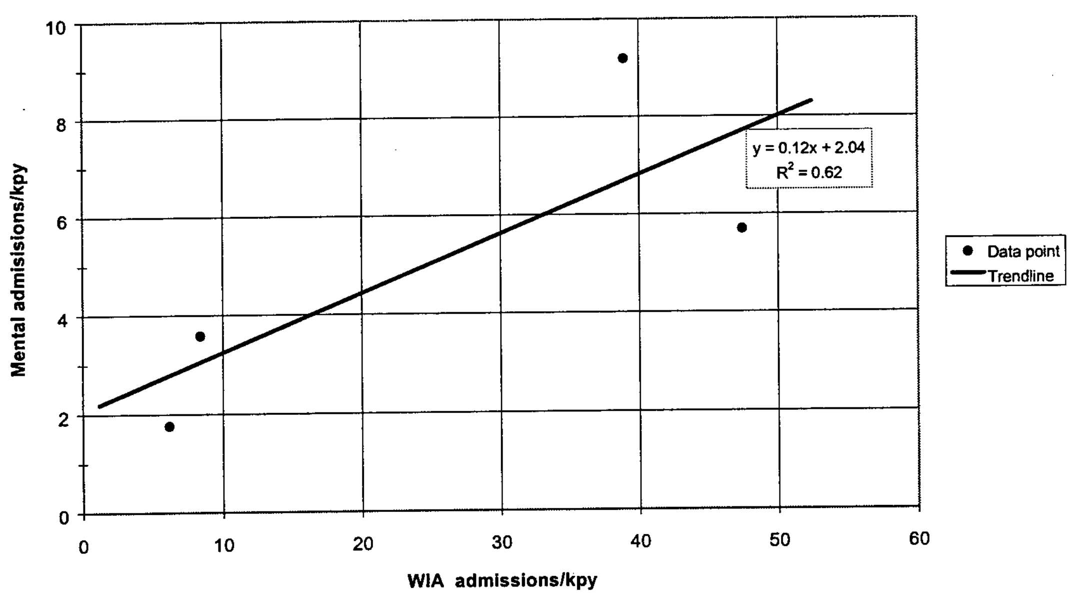

Figure 7-18. Mental and WIA Admission Rates, UK Forces, Indo-Burman Theater, 1942-1945

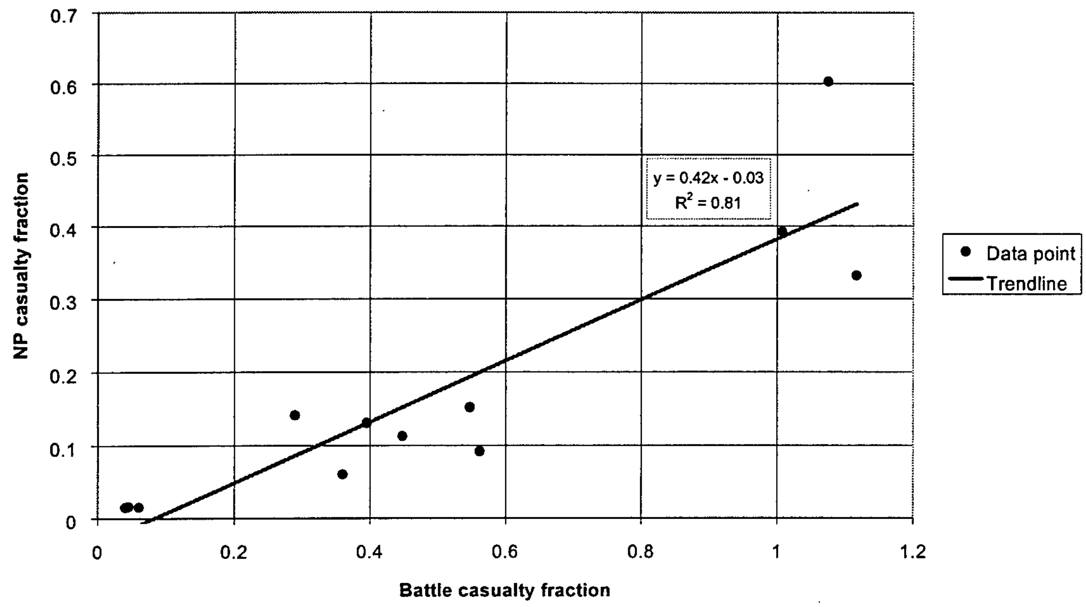

Figure 7-19. Neuropsychiatric and Battle Casualties to Components of the US 6th Armored Division, Northwest Europe, 18 July 1944-8 May 1945

f. [Reister-1986] gives data on psychiatric and WIA hospital admission rates for US forces by months during the Korean War. These data are graphed in Figure 7-20. As can be seen, the psychiatric hospital admission rate is roughly equal to a base or fixed rate of about 13 psychiatric admissions per kpy plus a variable number of psychiatric admissions amounting to about 14 percent of the WIA admissions.

Reister also reports that during the Korean War, in 1952 (the only year Reister reports this particular statistic), US Army personnel admitted to the second level neuropsychiatric hospitals in the Army rear area numbered 1,633. Of these, 1,251 subsequently were returned to duty, 168 were transferred to other hospitals in Korea, 188 were evacuated to Japan, 1 died, and the remaining 25 were still in second level neuropsychiatric hospitals as of the end of 1952. The average duration of stay in second level neuropsychiatric hospitals amounted to 7.4 days. Reister also reports that 5,426 (10.31 percent) of the 52,613 US Army personnel evacuated from Korea to the US between 2 September 1950 and 31 December 1953 required specialized neuropsychiatric treatment. In addition, Reister reports that about 0.52 percent of the outpatient treatments given at US Army medical treatment facilities between 1 June 1951 and 31 December 1953 were for neuropsychiatric conditions. Reister also reports that about 82 percent of the roughly 3,750 repatriated US military prisoners of war were diagnosed as having good mental health and morale. About 15 percent of them were considered to have psychoses, neuropsychoses, character and behavior disorders, or mental deficiencies. The remaining 3 percent were considered to have transient personality disorders. Reister also reports that between July 1950 and July 1953 there were 13,565 admissions for psychiatric disorders, as compared to 72,926 WIA admissions (psychiatric admissions amounting to about 18.6 percent of the WIA admissions). However, it should be remembered that some of these psychiatric admissions would have occurred even in the absence of WIA incidents (because the base rate of psychiatric admissions is not zero). Hence, the fraction of psychiatric admissions in Reister's data that are more or less directly attributable to the stress of combat (as reflected in the number of WIA admissions) is less than 18.6 percent of the WIA admissions.

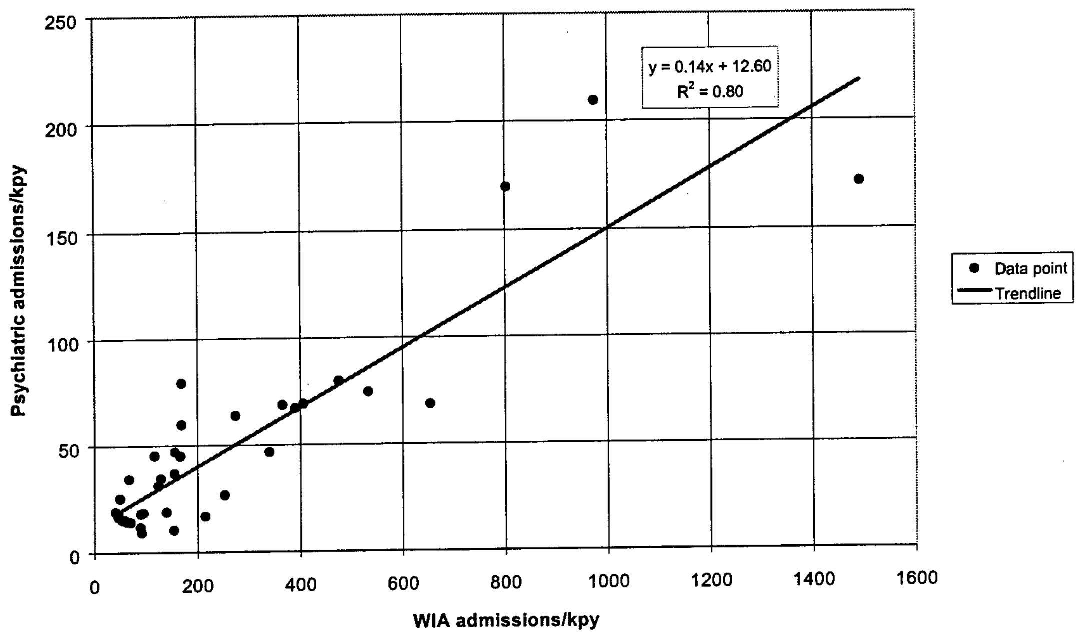

Figure 7-20. Psychiatric Versus WIA Admission Rates, US Forces, Korea, July 1950-July 1953

g. To sum up, we have the following estimates of number of NP casualties that should be added to the WIA [with their sources in square brackets]: 12.5 percent [Cochrane-1959], 11.4 percent [Beebe-1952], 10 to 12 percent [Mellor-1972], more than 36 percent [Best-1966], about 14 percent [Reister-1986]. Discarding the [Best-1966] estimate because it is not on the same basis as the others, it seems reasonable to anticipate that on the average NP casualties at the theater level can be estimated using the equation in paragraph 7-3d with a coefficient K equal to about 10 to 12 percent. However, the *BaseMentalRate* term in that equation may have values that depend on the theater, the type of unit under consideration, the nature of the operation being conducted, and other factors. Mellor's data suggest a value of about 5/kpy, or about 0.014/kpd. For the entire US Army in WWII, the NP admissions rate was about 43.57/kpy [Reister-1975], or about 0.12/kpd. Reister's figures overestimate the base mental rate because they include NP admissions attributable to the stress of combat, as well as those attributable to the to the base mental rate. When applied to short, intense combat operations, the *BaseMentalRate* contribution to the total NP casualty number may sometimes be numerically small enough to ignore without incurring a large error in the estimated total NP casualty number.

h. We note that [Neel-1973] remarks that the usual correlation of NP casualties to WIA is not observed in data from the Vietnam War. Whether this signals a real change in the usual relationship or is due to differences in the collection of the data is not known.

7-4. CAUSATIVE AGENTS OF BATTLE CASUALTIES

a. In this paragraph we present some data on the causative agents of casualties. Because some weapons tend to kill rather than wound, there usually is a difference between the frequency with which a give weapon is cited as a cause of a battle casualty death (KIA or DOW) as opposed to a cause of a surviving battle casualty (WIA-survived). Because most of the wounded that reach a hospital survive, surveys of hospital cases tend to be biased toward weapons that wound rather than cause deaths. The potential distortions need to be kept in mind when interpreting the data in this paragraph.

b. [Gilchrist-1928] gives some figures on the comparative casualties caused by gas in World War I. Based on his figures, it appears that gas casualties averaged over all of the nations engaged generally amounted to about 2.7 percent of the total casualties. So, on the average, gas casualties were relatively low. Moreover, averaged over all of the nations engaged, the ratio of WIA to died (KIA plus DOW) for gas is about 12.9, while the corresponding ratio for other causes of battle casualties is about 2.5. So a gas casualty had a much better chance of living than those who became casualties from other causes.

The US was an exception to the generally low incidence of gas casualties, for 19.39 percent of the casualties to the US American Expeditionary Force are attributed to gas. One reason for this is that American forces were at least initially ill trained in chemical defense. Another is that American forces entered the war after gas was in common and intensive use, and so their proportion of gas casualties was not diluted by many months of war during which gas played little or no part. Table 7-6, based on Gilchrist's data, shows the relative disposition of gas and other casualties for the US AEF. According to these figures, only about 200 were killed outright by gas, while about 34,249 were killed outright by other causes. About 1/3 of those hospitalized were gas admissions, but only about 1,221 of these died (a ratio of survived in hospital to died in hospital of about 57:1). About 2/3 of those hospitalized were other than gas admissions, and about 12,470 of them died (a ratio of survived in hospital to died in hospital of about 11:1). So, although in the AEF many gas casualties were taken, only about 2.0 percent of them either died outright or after hospitalization. These figures are for warwide averages. A specific instance of the relation of gas casualties to other causative agents for the US 3d Division at Chateau Thierry is illustrated by Figure 7-15 above. In that instance, gas casualties were about as numerous as gunshot wound casualties.

Table 7-6. Comparative Casualties due to Gas for the US AEF in World War I

Item	Number	Ratio (survived/died in hospital)
Total wounded	258,338	
KIA by gas	200	
KIA by other	34,049	
Total KIA	34,249	
Total hospitalized	224,089	
Hospitalized due to gas	70,552	
Hospitalized due to gas, died	1,221	
Hospitalized due to gas, survived	69,331	56.78
Hospitalized due to other than gas	153,537	
Hospitalized due to other than gas, died	12,470	
Hospitalized due to other than gas, survived	141,067	11.31

c. [Reister-1975] gives the causative agent data for all US Army experience in World War II shown in Table 7-7. He also cautions that, "It is impossible to make any meaningful comparison between the causative agent distributions given for wounded and died of wounds among the US Army Expeditionary Forces in Europe during World War I and the US Army experience in the European theater in World War II. World War I data record almost one-half of the wounded admissions in the category 'gunshot missile, kind not specified'." This being the case, it is uncertain what proportion of these cases should be attributed to bullets and what proportion to shrapnel. There is also the question of whether the gas casualties in World War I should be attributed to artillery, counted as a separate category, or omitted from the tabulation.

d. [Beyer-1962] gives the data on causative agents reproduced in Tables 7-8 through 7-11. These data appear to be generally consistent with Naisawald's summary conclusions presented in the following paragraph.

Table 7-7. Percentage Distribution for Causative Agents, by Category of Casualty, US Army, 1942-45

Causative agent	Deaths	Killed in action	Died of wounds	Nonfatal wounds
All agents	100.0	100.0	100.0	100.0
Small arms (bullets)	31.8	31.9	31.3	19.7
Explosive projectile shells	51.2	49.9	57.1	57.5
Rockets and bombs	1.5	1.4	2.1	1.6
Grenades	0.5	0.4	1.2	2.5
Boobytraps	0.2	0.2	0.4	0.5
Landmines	2.7	2.3	4.3	3.4
Other fragmentary explosions	0.3	0.3	0.3	0.6
All other	11.8	13.6	3.3	14.2

Table 7-8. Causative Agents of Casualties From the Casualty Survey of the New Georgia and Burma Campaigns

Causative agent	Total casualties		Total dead		Casualties returned to duty								Casualties evacuated to United States	
					Total		From aid station		From first echelon		From rear echelon			
	Number	Percent	Number	Percent[a]	Number	Percent[a]	Number	Percent	Number	Percent	Number	Percent	Number	Percent[a]
Machinegun	119	33.1	53	44.5	47	39.5	10	21.3	9	19.1	28	59.6	19	16.0
Rifle	94	26.1	24	25.5	64	68.1	17	26.6	14	21.9	33	51.5	6	6.4
Mortar	62	17.2	10	16.1	44	71.0	21	47.7	13	29.6	10	22.7	8	12.9
Grenade	52	14.4	6	11.5	42	80.8	16	38.1	16	38.1	10	23.8	4	7.7
Artillery	33	9.2	6	18.2	23	69.7	8	34.8	8	34.8	7	30.4	4	12.1
Total	360	100	99	27.5	220	61.1	72	32.7	60	27.3	88	40.0	41	11.4

[a] Percent for trichotomy: dead versus duty versus evacuated to US, by each causative agent and for total dead versus duty versus evacuated to US.

Table 7-9. Causative Agents of Casualties to Allied Forces from the Bougainville Casualty Study

Type of weapon	Number of casualties	Percent
Mortar	659	42.0
Rifle	393	25.1
Grenade	205	13.1
Machinegun	151	9.6
Artillery	151	9.6
Miscellaneous	10	0.6
Total	1569	100.0

Table 7-10. Causative Agents of Fifth US Army Hospital Battle Casualty Deaths, 1 January 1944 to 2 May 1945

Causative agent	Number of deaths	Percent
Rifle	31	2.1
Machinegun	45	3.1
Bullet, unclassified	143	9.9
Artillery shell	861	59.4
Mine	70	4.8
Boobytrap	2	0.1
Bomb	67	4.7
Blast	10	0.7
High explosive, unclassified	160	11.0
Unrecorded	61	4.2
Total	1450	100.0

Table 7-11. Causative Agents of WIA Admissions to a Turkish Brigade, Korean War

Causative agent	Number of hits	Percent of hits
Rifle	149	15.7
Pistol	10	1.1
Machinegun	59	6.2
Submachinegun	18	1.9
Unknown small arm	21	2.2
Mortar	559	58.8
Grenade	111	11.7
Secondary missile	2	0.2
Unknown fragment	20	2.1
Antitank gun	1	0.1
Total	950	100.0

e. [Naisawald-1953] summarizes his conclusions on the causative agents of battle casualties as follows:

"1. Small arms fire accounted for between 14 and 31 percent of the total casualties, depending on the theater of action; the Mediterranean Theater 14.0 percent, the European Theater 23.4 percent, and the Pacific Theater 30.7 percent.

"2. Based on limited and uncertain data, there appears to be very little difference in the percentage of casualties to rifle fire and that to machinegun fire. In the European and Pacific theaters the rifle receives credit for about 4 percent more than the machinegun, whereas in Italy there is less than 1 percent margin in favor of the machinegun.

"3. Artillery and mortar fire together accounted for 65 percent of the total casualties in the Western theaters: 64.0 in the ETO and 69.1 in the Mediterranean. In the Pacific they accounted for 47.0 percent."

Naisawald's percentages leave a small residue of cases involving grenades, land mines, boobytraps, bombs, *etc.*

f. Table 7-12 gives the Korean War causative agent distributions according to [Reister-1986]. It is in the same form as, and can be compared with, the World War II data in Table 7-7. In the Korean War the percent of nonfatal wounds from small arms and grenades was higher than in World War II, while the proportion of nonfatal wounds from explosive projectiles was lower.

Table 7-12. Percentage Distribution for Causative Agents, by Category of Casualty, US Army, Korean War

Causative agent	Deaths	Killed in action	Died of wounds	Nonfatal wounds
All agents	100.0	100.0	100.0	100.0
Small arms (bullets)	33.2	33.0	34.0	27.0
Explosive projectile shells	49.6	49.9	48.3	50.7
Rockets and bombs	0.1	0.1	0.1	0.1
Grenades	1.5	1.3	2.4	9.0
Boobytraps	0.1	0.1	0.2	0.4
Landmines	4.4	4.2	5.1	3.5
Other fragmentary explosions	7.4	7.8	5.8	1.8
All other	3.7	3.6	4.1	7.5

Table 7-12 (and similar ones presented elsewhere in this paragraph) generally excludes cases in which the causative agent is unknown or unrecorded. This is particularly a problem for the KIA, for whom the causative agent is often not known. Reister notes that in the Korean War the percentage of KIA for whom the causative agent is not known averaged about 20 percent and in some instances ranged as high as 64 percent. For personnel who die of wounds, the problem is somewhat less severe because their medical records often provide an assessment of the causative agent.

g. [Thayer-1986] provides the data shown in Table 7-13. It tabulates the percentage of all American combat *deaths* by cause through March 1973 (missing not included). The category

"Other explosion" includes grenades, mines, and bombs. Note that Table 7-13 is for combat *deaths*, and hence does not include all battle casualties.

Table 7-13. Causes of American Combat Deaths in Vietnam

Cause	Army	Marines	Navy	Air Force	Total
A/C loss, fixed wing	0.27%	1.02%	12.06%	77.42%	2.53%
A/C loss, helicopter	7.92%	3.42%	5.05%	7.59%	6.56%
Gunshot or small arms fire	40.29%	43.58%	27.91%	2.20%	40.00%
Artillery/rocket	7.63%	16.37%	22.37%	10.89%	10.62%
Other explosion	13.51%	23.69%	18.16%	1.50%	16.26%
Multiple fragmentation wounds	24.14%	7.76%	5.26%	0.10%	18.42%
Other causes	5.88%	4.00%	7.92%	0.30%	5.29%
Unknown or unreported	0.36%	0.16%	1.26%	0.00%	0.32%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

7-5. THE ANATOMICAL DISTRIBUTION OF WOUNDS

a. This paragraph reprises some of the anatomical distribution findings from an earlier CAA research paper on personnel attrition rates [Helmbold-1993]. For this purpose we define the major anatomical regions to be the conventional principal divisions of the body (that is, the head-neck, thorax, abdomen, arms, and legs). In this context, susceptibility is defined as the relative probability that a bullet or shell fragment will strike a particular major anatomical region, given that it hits somewhere on the whole body. Vulnerability is the conditional probability of being killed or wounded in action, given a hit on a major anatomical region. Estimates of the susceptibility and vulnerability of the major anatomical regions are clearly needed for evaluations of weapons effectiveness, personnel attrition, or protective equipment for personnel.

b. Some of the historical data on personnel casualties lends itself to an analysis in which the combined effects of susceptibility and vulnerability are disentangled. For example, Figure 7-21 shows the estimated susceptibility of US Army personnel during World War II, based on historical data. As that war progressed, US Army personnel became noticeably less susceptible to being hit in the head and neck, but more susceptible to being hit in the legs or arms. Figure 7-22 shows the estimated vulnerability of US Army personnel in World War II, based on historical data. It indicates that the vulnerability of US Army personnel declined considerably as the war progressed. No convincing quantitative explanation of the reasons for these changes in susceptibility and vulnerability has as yet been proposed.

c. For many purposes, some typical approximate (*i.e.*, nominal) values of susceptibility and vulnerability are useful. [Helmbold-1993] proposed some nominal values, based on his study of data from World War II, Korea, and Vietnam. For susceptibility, Helmbold suggests the nominal values shown in Table 7-14. For vulnerability, Helmbold suggests the nominal values shown in Table 7-15.

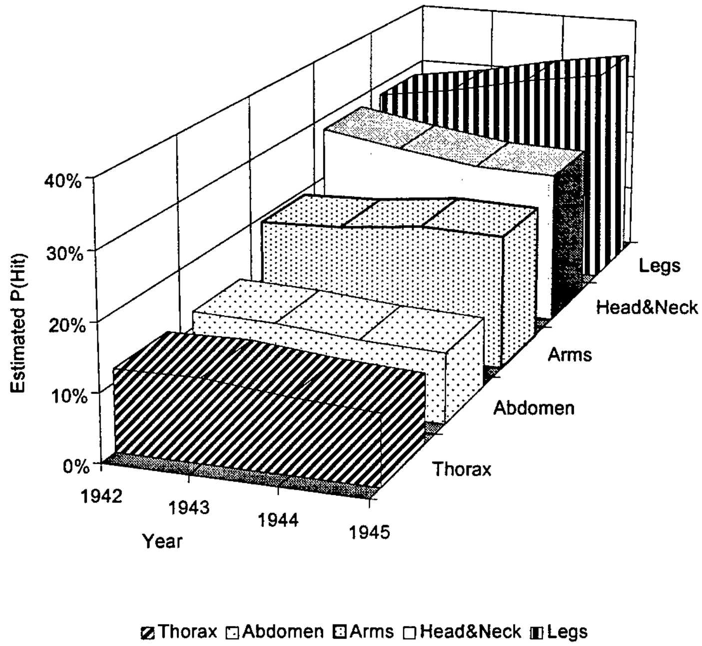

Figure 7-21. Susceptibility of US Army Personnel in World War II

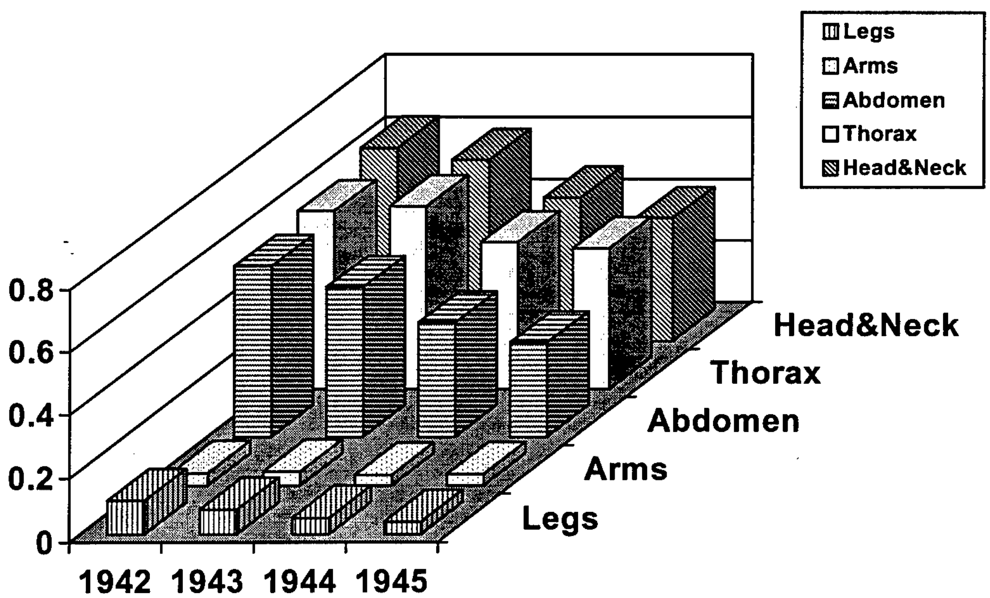

Figure 7-22. Estimated Vulnerability of US Personnel in World War II

Table 7-14. Suggested Nominal Values of Susceptibility

Anatomical region	Nominal P(hit)
Head and neck	0.23
Thorax	0.15
Abdomen	0.10
Arms	0.20
Legs	0.32
Total	1.00

Table 7-15. Suggested Nominal Values of Vulnerability

Anatomical region	Nominal P(KIA|hit)	Nominal P(WIA|hit)	Nominal P(DOW|hit)	Nominal P(NFW|hit)
Head and neck	0.45	0.55	0.03	0.52
Thorax	0.45	0.55	0.04	0.51
Abdomen	0.35	0.65	0.10	0.55
Arms	0.03	0.97	0.01	0.96
Legs	0.05	0.95	0.02	0.93

7-6. THE EFFECT OF FIRE SUPPORT ON BATTLE CASUALTIES

a. On occasion, it has been argued that friendly fire support reduces friendly personnel casualties. On the other hand, [Best-1966] found that, "As a rule, daily volumes of support fires seem to vary as widely as daily casualty incidences ... but the correlation is positive; the casualties of a force of jointly engaged maneuver units are proportionate not only to its size but to the amount of support it receives." This counterintuitive finding can be rationalized by recognizing that both the casualty incidence and the level of fire support are driven upward by the underlying tempo or intensity of combat activity, so that they share a common causative factor.

b. That at least on some occasions friendly casualties and friendly fire support are positively correlated can be illustrated by data taken from [Anonymous-1945] and shown in Figure 7-23. These data are for the US XII Corps's operations in northwest Europe during World War II and encompasses the corps' operations in Lorraine, Luxembourg, and Germany between 1 September 1944 and 8 May 1945. As can be seen, the corps' personnel casualties increased as the level of artillery support increased. However, the rate at which the corps captured German POWs also increased as the level of artillery support increased. A likely explanation is that all three quantities (artillery support, friendly casualties, and enemy POWs taken) are responding to the underlying tempo or intensity of combat.

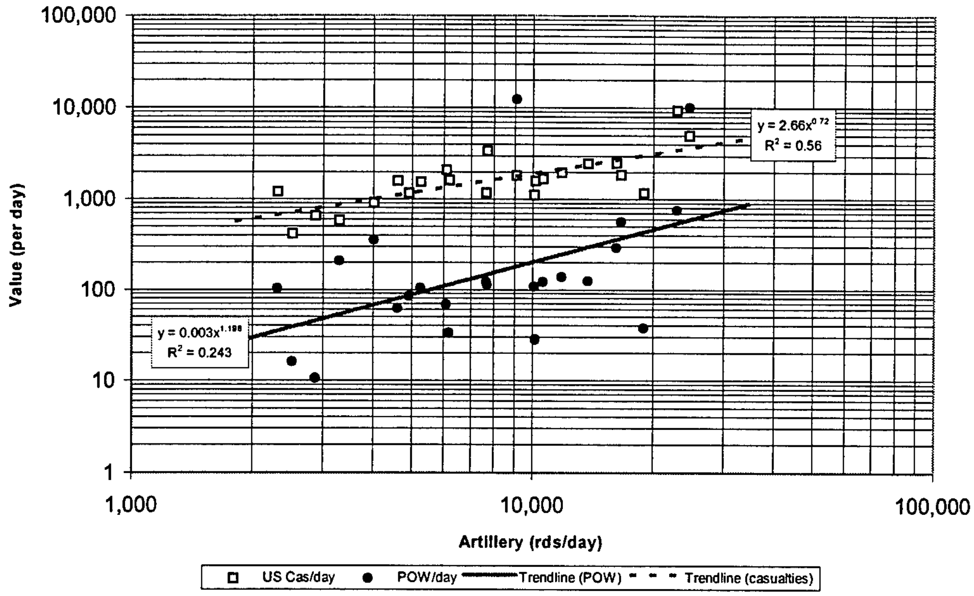

Figure 7-23. Personnel Casualties to and German POWs Taken by the US XII Corps, ETO, World War II

c. [Burt-1965] gives the data on 21 battles (5 from World War II and 16 from the Korean War) illustrated in Figure 7-24. Here friendly casualties are plotted against friendly artillery support, and enemy casualties are plotted against enemy fire support. Also, the artillery support is measured in tons rather than in number of rounds. When this is done, the relation between casualties to a side and its own artillery support is stronger and more distinct than when artillery support is measured in number of rounds fired. Burt's data have some missing values, so not all 21 battles are represented in Figure 7-24. For this figure, we have reduced Burt's figures for the volume of artillery fire by a factor of 1,000. We did this because his original figures appear to be too high by about that amount. For example, his figure for one battle involving a friendly regiment on the attack in Korea claims an *average* artillery expenditure rate of 25,000 pounds per minute over a period of 7 days. But this would be an average expenditure rate of 12.5 tons per minute, or 750 tons per hour. A 7-day average of about 25 pounds per minute (*i.e.*, 3/4 tons per hour) in support of a regimental attack is much more reasonable. However, even if our adjusted artillery expenditure figures are in error by a constant multiple, the qualitative relationship of casualties to artillery support will not be affected (although the quantitative values could still be in error).

d. [Best-1966] gives some data on the casualties and artillery support for the following armies and army groups during World War II: US 10th Army (Ryukus/Okinawa Campaign), the British 21st and the US 12th Army Group (northwest Europe), and the German Army Group Center (early Eastern Front operations). These data are plotted in Figure 7-25.

e. [Cockrell-1993] gives some data on the casualties and artillery support of US and German forces of roughly battalion to brigade size during the Ardennes and Lorraine campaigns of World War II. Cockrell's data include 150 Ardennes cases and 100 Lorraine cases, although some of these cases have missing values. (Paragraph 6-4 gives a more detailed description of Cockrell's data). Figures 7-26 and 7-27 (respectively) plot Cockrell's data on US and German casualties versus artillery support. For the Germans, Cockrell gives only a qualitative scale of the level of artillery support (which, by Weber's Law, can be expected to correspond approximately to a logarithmic scale). Also, the German casualty data have many missing data cases (in fact, there are no German casualty data for any of the Lorraine campaign cases).

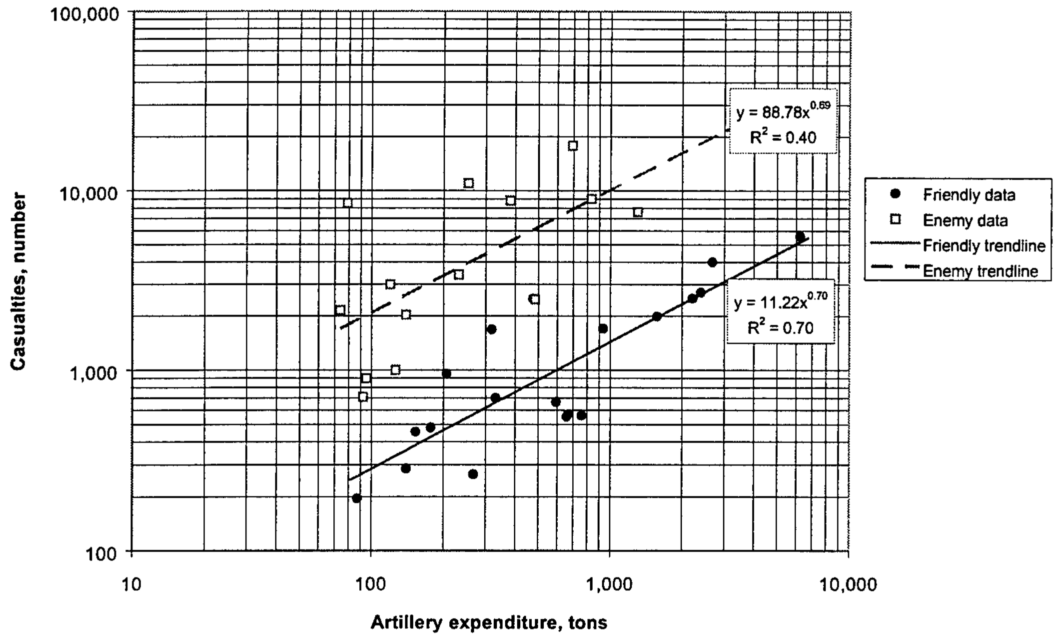

Figure 7-24. Casualties versus Artillery Expenditure, Burt Data

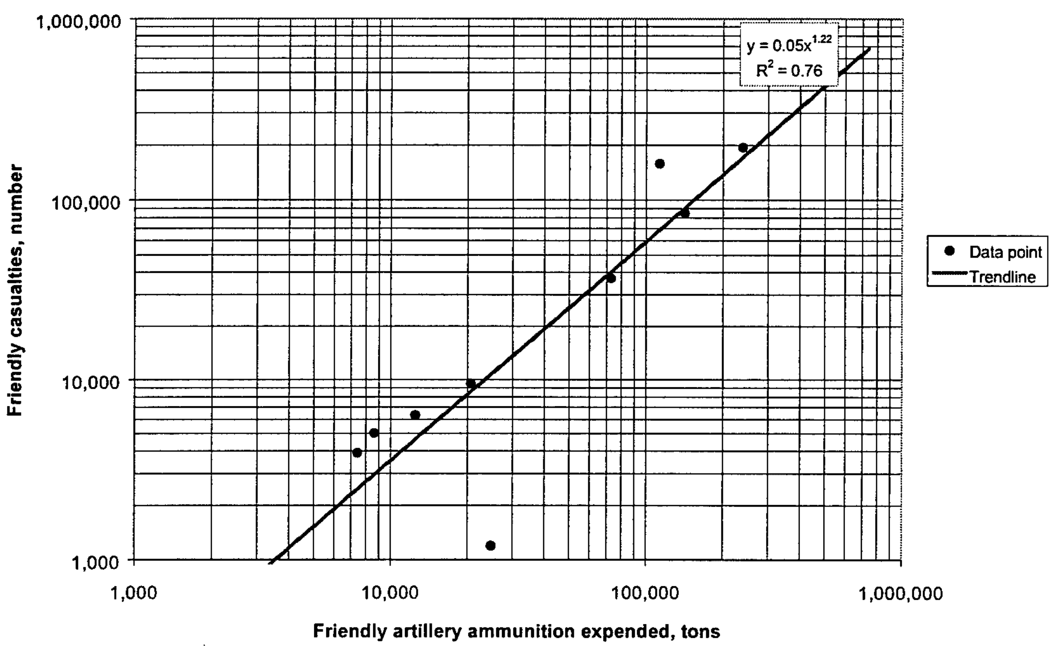

Figure 7-25. Casualties versus Artillery Support, Best Data

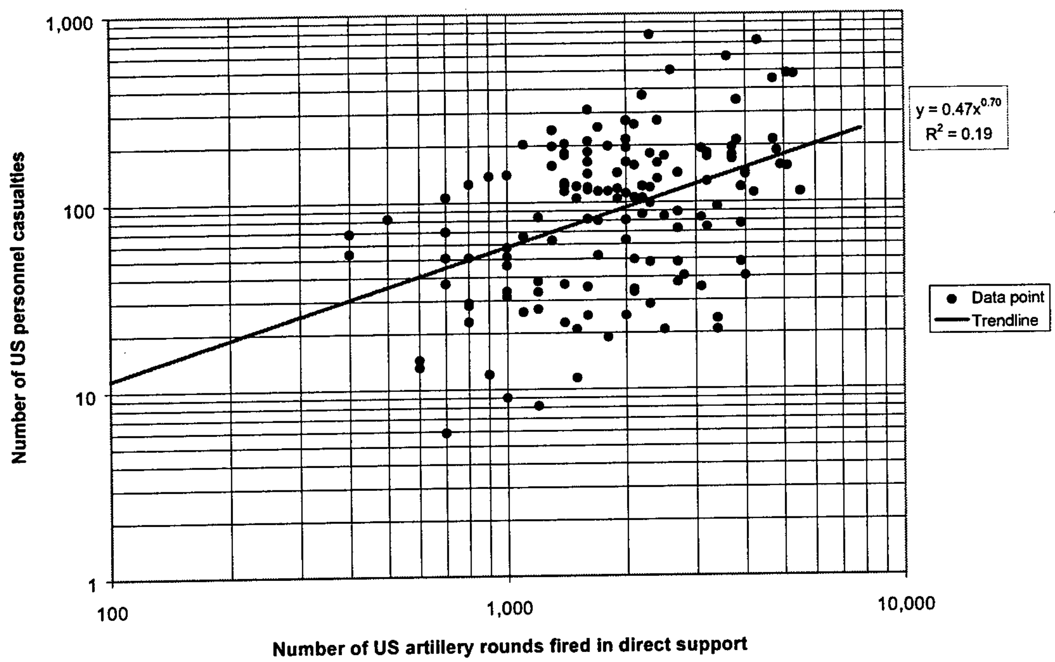

Figure 7-26. US Casualties versus Artillery Support, Cockrell Data

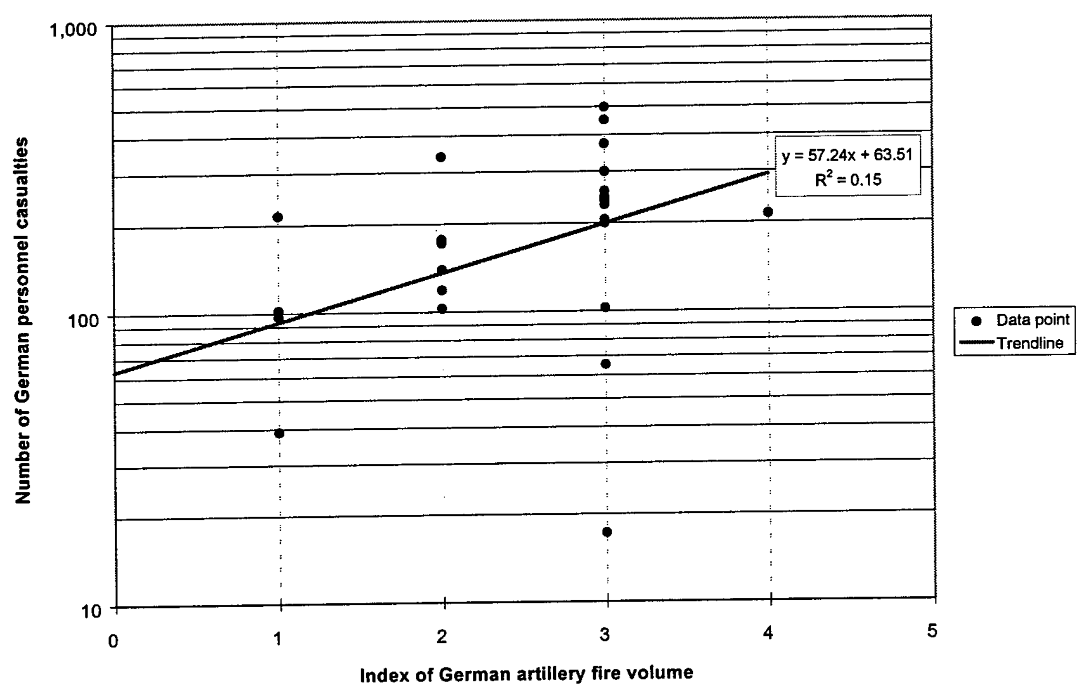

Figure 7-27. German Casualties versus Artillery Support, Cockrell Data

f. In each case, although the data varies with regard to the war, level of unit involved, and other circumstances, there is a positive correlation between personnel losses and the level of artillery support. The relationship appears to be stronger when artillery support is measured in terms of tons, rather than in rounds.

7-7. CASUALTIES DUE TO FRIENDLY FIRE

a. Casualties to friendly fire have long been a part of war. [Shrader-1992] gives the following quotation from the ancient Greek historian Thucydides's account of the Athenian defeat at the battle of Epipolae in 413 BC. "The Athenians now fell into great disorder and perplexity … seeking for one another, taking all in front of them for enemies, even though they might be some of their now flying friends. … They ended by coming into collision with each other in many parts of the field, friends with friends, and citizens with citizens, and not only terrified one another, but even came to blows and could only be parted with difficulty." It is well known that medieval knights wore elaborate coats of arms on their shields partly as an aid to identification of friend and foe in a melee. Nowadays, and partly for the same reason, local and national police forces, as well as military personnel, wear uniforms or other apparel emblazoned with their insignia. [Keegan-1993] observes that "everyone who handles weapons knows that the most dangerous ones are those held by immediate neighbors."

b. More recent instances of friendly fire have been reported. George Washington, in a letter dated 18 July 1755 to Robert Dinwiddie, relates his eyewitness account of how British soldiers during Braddock's defeat panicked and fired volleys into their own ranks. [Keegan-1978] reports that "… there are numerous authentic accounts of losses by 'friendly fire'—or even 'friendly' swordcuts—at Waterloo." [Visco-1996], [Shrader-1982], [Shrader-1992], and [Steinweg-1994] describe many other friendly fire incidents involving such diverse incidents as the death of Confederate general Thomas J. "Stonewall" Jackson during the US Civil War, French artillery fire on French troops in World War I, the United States's post-World War I punitive expedition against Pancho Villa, US Navy ships firing at other US Navy ships during World War II, fratricide during the joint US-Canadian invasion of (the unoccupied) Kiska Island in the Aleutians during World War II, Allied bombing during Operation Cobra in World War II that resulted in the death of US General McNair and many other friendly forces, fratricide incidents involving Israeli forces, Vietnam experiences, New York police officers, misdirected fire in Bosnia, the US National Training Center, Joint Readiness Training Center, Operation Urgent Fury (Grenada), Operation Just Cause (Panama), and Operation Desert Storm (Kuwait theater of operations). Friendly fire casualties occur even during training exercises. For example, the 22 July 1993 issue of the Fort Worth Star-Telegram newspaper reports that on the previous day, three Texas National Guard soldiers were killed by gunfire from other soldiers during overnight training at Fort Hood. The same article also notes that the last previous friendly fire fatality during training of the Texas National Guard occurred in 1987, when one soldier was killed and several were injured during a firing exercise. In 1996 a US Navy aircraft was shot down by a Japanese destroyer during a joint training exercise (fortunately, no loss of life resulted). At present, no nighttime exercises are conducted at the US National Training Center (NTC) at Fort Irwin--earlier attempts to do so led to an insupportable accidental death and injury rate. Civil War battle reenactors are not allowed to carry ramrods in their battle reenactments. Too many injuries resulted from them being accidentally left in the barrel--when the weapon was fired, the ramrods were shot into other enactors. Every year many US citizens are killed or wounded in hunting accidents, and even in stray bullets from drive-by shootings and gang warfare. For example, [Census-1995] reports that in 1992 there were 37,776 deaths caused by firearms, most of which were homicides. However, 1,409 of them were accidental deaths caused by firearms. So accidents added about 3.9 percent to the intentional deaths.

c. [Steinweg-1994] and [Visco-1996] both raise the question of how fratricide casualties should be reported. Steinweg notes that sometimes only the number of friendly casualties is reported, with no information on how that number compares with either friendly or enemy casualties from other causes. The most frequently used method reports them as the fraction of all friendly casualties. However, that fraction is strongly affected by the number of friendly casualties caused by enemy fire. Visco suggests that instead they might be reported as the fraction of all casualties (enemy as well as friendly) caused by friendly fire. However, there will in general be considerable difficulty in determining exactly how many enemy casualties were caused by friendly fire. It is probably fruitless to debate which of these reporting methods is the best or most suitable. Instead, it would be more helpful to try to obtain both friendly and enemy loss information and to present them in a cross-tabulation illustrated by the hypothetical example shown in Table 7-16. Such a cross-tabulation provides a much more complete picture of the effects of friendly fire than is afforded by any of the other methods mentioned above. This can be illustrated for the hypothetical example by noting that 20 percent of all friendly casualties are self-inflicted, while only 10 percent of all enemy casualties are self-inflicted. However, only 10 percent of all casualties inflicted by friendly fire were friendly casualties, while 20 percent of all casualties inflicted by enemy fire were enemy casualties. Of all 150 casualties, 20 (about 13 percent) were self-inflicted. The cross-tabulation presentation can be informative even when missing data requires that some entries be marked as not available (N/A).

Table 7-16. Hypothetical Tabulation of Losses Due to Friendly Fire

Caused by	Friendly casualties	Enemy casualties	Total
Friendly fire	10	90	100
Enemy fire	40	10	50
Total	50	100	150

d. [Beyer-1962] reports that, "Of the 369 casualties in New Georgia and Burma, 66 (17.9 percent) were caused by US fire, as were 219 (12.2) percent of the 1,788 Bougainville casualties. All types of weapons were represented, with rifle and artillery leading in both reports. It is doubtful that higher command is aware that US soldiers killed and wounded such a large proportion of their fellow soldiers as these figures suggest. Accurate figures exist only for isolated reports, such as the reports for the Bougainville and the New Georgia-Burma campaigns.

"There were a variety of reasons for this tragic situation: individual carelessness, usually on the part of the men hit; poor training in the use of weapons; poor unit discipline; lack of dissemination of information; poor leadership; and faulty judgment.

"Limited experience suggests that artillery casualties were for the most part due to poor fire direction by inexperienced observers and also suggests that many casualties could probably have been prevented if adequate containers had been provided for grenades and if the length of safety time had been stamped on each grenade.

"The majority of rifle and machinegun casualties occurred at night and were caused by mistaken identity. In most instances the casualty showed poor judgment--he stood up in his foxhole; moved about the perimeter; entered a perimeter without proper caution; or performed other foolish acts.

Beyer also reports that at Bougainville, "There were 219 [US] casualties (12.3 percent of the total) due to US weapons in the hands of American troops. Though the Japanese used some US weapons, particularly rifles and grenades, as a rule it was impossible to know when this occurred. Among Allied forces, there were 63 deaths (16.0 percent of the total dead) produced by US weapons.

"There were 52 casualties caused by the rifle, 16 of whom died ; 19 were wounded by the accidental discharge of a rifle by a fellow soldier. Mistaken identity resulted in 13 deaths and the wounding of 6 others. Of these deaths, 8 were occasioned by the soldier seeking to relieve himself at the toilet during the night. Self-inflicted wounds, accidental or intentional, were responsible for 10 casualties, 3 of whom died. Mortar and artillery fire accounted for 54 of the wounded and 22 of the dead. Among these, 13 were killed and 40 wounded by mortar and artillery 'shorts'. Among the 16 casualties who were wounded on patrol by US artillery, 8 died. The accidental tripping of landmines and boobytraps produced 14 deaths in a total of 40 wounded. Hand grenades, other than those used in boobytraps, were responsible for 8 deaths and 4 wounded. Miscellaneous weapons including bangalore torpedoes, bombs, pistols, knives, and powder explosions accounted for 38 casualties; 7 of these casualties died."

We can summarize Beyer's data in the form of Tables 7-17 and 7-18. It appears that US Army fire added about 22 percent to those caused by enemy fire in the New Georgia/Burma Campaign, and about 14 percent in the Bougainville Campaign.

Table 7-17. Fratricide in the New Georgia/Burma Campaign

Caused by	US Army casualties	Enemy casualties	Total
US Army fire	66	N/A	N/A
Enemy fire	303	N/A	N/A
Total	369	N/A	N/A

Table 7-18. Fratricide in the Bougainville Campaign

Caused by	US Army casualties	Enemy casualties	Total
US Army fire	219	N/A	N/A
Enemy fire	1,569	N/A	N/A
Total	1,788	N/A	N/A

e. [Reister-1986] reports the figures in Table 7-19 for the entire Korean War. Those figures suggest a much lower ratio (less than 1 percent) of US Army fratricides to total US casualties than was the case in Beyer's data.

Table 7-19. Korean War Fratricide Data

Caused by	US Army casualties	Enemy casualties	Total
US Army fire	112	N/A	N/A
Enemy fire	18,386	N/A	N/A
Total	18,498	N/A	N/A

f. [Command Magazine-1993] documents 14 US Army friendly fire engagements leading to fratricidal casualties during Desert Storm. These incidents resulted in 60 soldiers wounded and 21 killed. The incidents were attributed to such diverse factors as a high-speed antiradiation missile locking onto a secondary target, action in a village, night and/or low visibility conditions, misorientation, misidentification, lack of coordination, and so forth. [Visco-1996] reports that *all* US forces (not just the Army) took the casualties given in Table 7-20. From the figures in Table 7-20, it seems that US fire added about 20 percent to the KIA+WIA caused by enemy fire.

Table 7-20. Enemy and Friendly Fire Casualties to US Forces in Desert Storm

Cause	US KIA	US WIA	US KIA+WIA	Enemy casualties
US fire	35	72	107	N/A
Enemy fire	113	395	508	N/A
Total	148	467	615	N/A

g. On 14 April 1994, two F-15 pilots, flying under control of an AWACS aircraft out of Incirlik Air Base, Turkey, misidentified two US Army UH-60 Blackhawks as Iraqi Hind helicopters. The two F-15 pilots fired missiles at the helicopters. Both Blackhawks were destroyed, and all 26 people on board were killed.

h. [Hamza-1988] reports that at the US National Training Center at Fort Irwin, "Over five percent of all BlueForces (BluFor) pairings [*i.e.*, simulated direct fire events with an identifiable shooter and target] were on friendly units and three percent [of all BluFor pairings] inflicted damage." A "pairing" can be interpreted as either a kill, a hit, or a near miss. Hamza observes that the percentage of such fratricide "pairings" is practically the same in the second half of the training period as in the first (5.7 percent in the first half and 5.2 percent in the second, averaging 5.3 percent overall). Note that Hamza's study involves only those fratricidal events attributable to friendly direct fire from vehicle-mounted weapons. The effect of friendly fire from dismounted direct fire weapons or from indirect fire or air support weapons is not included. Including such fires would certainly increase the *number* of fratricide casualties. Whether including them would increase the *percentage* of fratricide casualties depends on the extent to which those weapons are prone to cause a higher percentage of fratricide casualties than direct fire vehicle-mounted weapons. However, those weapons may indeed have this characteristic. For example, [Goldsmith-1986], based on a sample of NTC experience, reports that 1 to 3 percent of Blue vehicle kills from direct fire are fratricidal, but about 9 percent of the artillery fires that hit military targets land on friendly troops.

Note that Hamza uses the ratio of friendly losses caused by friendly fire to the total of all losses (enemy plus friendly) caused by friendly fire. Hence her data can be summarized as in Table 7-21. The pattern of entries in this table shows clearly how Hamza's data differ qualitatively from those in (for example) Table 7-20.

Table 7-21. BluFor Fratricidal Pairings at the National Training Center

Cause	BluFor pairings	OpFor pairings	Total
BluFor fires	172	3,074	3,246
OpFor fires	N/A	N/A	N/A
Total	N/A	N/A	N/A

i. While not strictly either fratricide (killing of a brother) or amicide (killing of a friend), military operations often kill or injure neutrals and unarmed civilians. For example, during Desert Shield, an Iranian civil aviation airliner was mistakenly shot down by a US naval ship and all aboard were killed. Little has been done in the way of careful research on losses to noncombatants in wars. Deciding what noncombatant casualties to include presents various conceptual issues. It certainly seems appropriate to include, for example, noncombatant deaths due to the direct effects of military weapons (sometimes described as "collateral damage"), or from fires and buildings collapsed by bombing. However, it is not so clear how many of the casualties to noncombatants from the indirect adverse effects of military operations should be included. Such indirect adverse effects may impact on their access to proper food and water, clothing, shelter, medical care, and safe working or living conditions. Figure 7-28 illustrates some data prepared by [Eckhart-1988, 1993]. While it is not clear how many of the casualties in Eckhart's data are from the indirect effects of military operations, it does appear that noncombatant deaths in wars and other military operations have been large--often approaching or even exceeding the deaths to the military forces themselves. For example, the downing of Iran Air Flight 655 by the USS Vincennes (Aegis) cruiser on 3 July 1988 killed 290 passengers and crew aboard the Iranian Airbus. This one incident killed more noncombatants than the total killed in action among all US forces (not just the Army) during Operation Desert Storm. Also, a "Fact Sheet," prepared by the US Army's 50th Anniversary of World War II Commemoration Committee, lists World War II battle deaths as 14,904,000 and civilian deaths as 38,573,000.

Table 7-22 shows noncombatant deaths in the Vietnam War, as reported by [Mullin-1973]. He attributes his data for assassinations to the US Defense Department, for civilians killed to the Senate Subcommittee on Refugees and Escapees, and for the civilian Viet Cong killed to the US State Department. [Thayer-1985] presents an examination of the available data, and suggests that civilian casualties in the 1965-1972 period totaled about 1,025,000 (of whom about 427,000 were wounded and admitted to a hospital, 256,000 were less seriously wounded, and 171,000 were killed outright). To illustrate the uncertainty in such estimates, Thayer also considers an alternative estimate of 1,225,000 total civilian casualties (of whom about 515,000 were wounded and admitted to a hospital, an additional 515,000 were less seriously wounded, and 195,000 were killed outright). Thayer also notes that these estimates correspond to casualty rates of about 1 percent of the population per year, or 10/kpy.

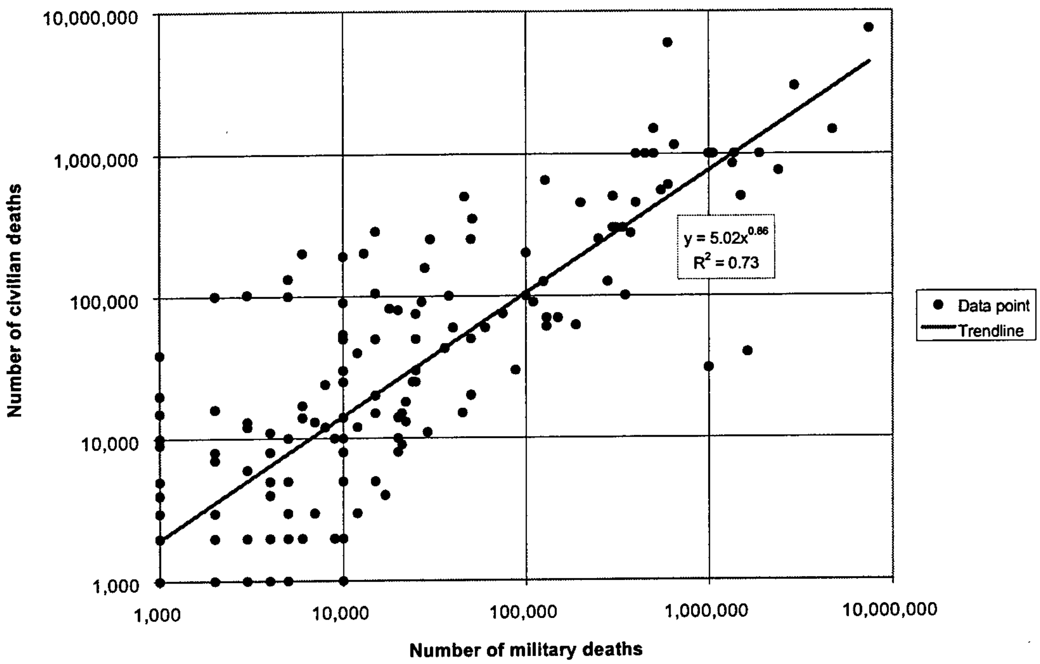

Figure 7-28. Eckhart's Data on Civilian Versus Military Deaths

Table 7-22. Noncombatant Deaths in the Vietnam War

Year	Killed	Assassinated by Viet Cong or North Vietnamese Army	Civilian Viet Cong killed by Saigon government	Total
1965	25,000	UNK	UNK	25,000
1966	50,000	1,732	UNK	51,732
1967	60,000	3,706	UNK	63,706
1968	100,000	5,389	2,559	107,948
1969	60,000	6,202	6,187	72,389
1970	30,000	5,947	8,191	44,138
1971	25,000	3,537	3,650	32,187
1972	65,000	4,194	#N/A	69,194
Total	415,000	30,707	20,587	466,294

APPENDIX A

CONTRIBUTORS

A-1. TEAM

a. Research Director

Dr. Robert L. Helmbold, Tactical Analysis Division

A-2. PRODUCT REVIEW BOARD

Mr. Ronald J. Iekel, Chairman

CPT Troy C. Figgins

CPT William M. McLagan

APPENDIX B

STUDY DIRECTIVE

MEMORANDUM FOR CHIEF, TACTICAL ANALYSIS DIVISION

SUBJECT: Personnel Attrition Rates in Historical Land Combat Operations, Phase 4 (PAR-P4)

1. PURPOSE OF THE STUDY DIRECTIVE. This Directive provides tasking and guidance for the conduct of the Personnel Attrition Rates in Land Combat Operations, Phase 4 (PAR-P4) study effort, which has the objectives of publishing a CAA Research Paper documenting and summarizing selected historical data on personnel losses of army forces engaged in division and lower-echelon land combat operations, and planning for the conduct of Phase 5 of PAR.

2. BACKGROUND

a. The results of US Army models and war games of combat are continually being challenged to demonstrate their validity. One of the key features of military combat is the infliction and suffering of personnel attrition. To provide an adequate basis for assessing the validity of US Army war games and models of combat, it is necessary that the reported data and past studies of personnel attrition rates in historical large scale combat operations be summarized and documented

b. PAR is limited to studying personnel strengths and battle casualties of land combat forces. Other types of attrition (non-battle losses, losses to equipment, casualties to other services, and so forth) are outside PAR's scope. PAR is concerned only with historical data on actual combat operations; it will not deal with personnel losses in models, simulations, war games, field experiments, or training exercises (like those of the National Training Center). PAR will focus mainly on either original or translated works in English, although the most important works in other languages should be included. Studies of personnel attrition are also included, provided they contain cogent analyses of a publicly available, non-proprietary body of tabulated data on attrition in actual combat operations. Since trends in attrition over long periods of time are of interest, data on ancient as well as recent battles are solicited. However, as no contract support is anticipated and in-house resources are limited, no systematic effort will be made to extract data from the archives or primary source materials, and no original archival research will be conducted. Thus, PAR will rely almost exclusively on secondary works that contain data in readily usable tabulated form.

c. Phase 1, or PAR-P1, was devoted to assembling the available data and past studies on personnel strengths and attrition rates in land combat operations, preparing a comprehensive annotated bibliography of it, and planning the approach to subsequent phases. It provided an annotated bibliography of over 200 relevant works, with several different types of indexes to aid retrieval.

d. Phase 2, or PAR-P2, was devoted to converting some of the most important data to electronic form in order to facilitate its analysis, and to performing selected analyses of the attrition data to derive information useful in US Army war games, studies, and analyses.

e. Phase 3, or PAR-P3, was devoted to analyzing the data available to CAA on operations of forces larger than divisions.

f. As of this writing, the following documents have been published under the PAR studies program, or are in preparation:

- Personnel Attrition Rates in Historical Land Combat Operations: An Annotated Bibliography, CAA Research Paper CAA-RP-93-2, June 1993, AD-A268-787.
- Personnel Attrition Rates in Historical Land Combat Operations: Susceptibility and Vulnerability of Major Anatomical Regions, CAA Research Paper CAA-RP-93-3, August 1993, AD-A270 766.

- Personnel Attrition Rates in Historical Land Combat Operations: A Catalog of Attrition and Casualty Data Bases on Diskettes Usable With Personal Computers, CAA Research Paper CAA-RP-93-4, September 1993, AD-A279 069 (report), AD-M000 344 (diskettes).

- Personnel Attrition Rates in Historical Land Combat Operations: A Note on the Probability of Readmissions and Multiple Wounds, CAA Research Paper, CAA-RP-94-2, April 1994, AD-280-498.

- Personnel Attrition Rates in Historical Land Combat Operations: Some Empirical Relations Among Force Sizes, Battle Durations, Battle Dates, and Casualties, CAA Research Paper CAA-95-1, 1 March 1995, AD-A298-124.

- Personnel Attrition Rates in Historical Land Combat Operations: Addenda to the Annotated Bibliography, CAA Research Paper CAA-RP-95-2, 1 April 1995, AD-A294-527.

- Personnel Attrition Rates In Historical Land Combat Operations: Losses Of National Populations, Armed Forces, Army Groups, and Lower Level Land Combat Forces, CAA Research Paper CAA-RP-95-5, April 1996, AD-(TBD).

3. STUDY SPONSOR AND SPONSOR'S STUDY DIRECTOR. The Director, US Army Concepts Analysis Agency (CAA) will sponsor this study. The Sponsor's Study Director will be Dr. Robert L. Helmbold of the Tactical Analysis Division (CSCA-TA).

4. STUDY AGENCY. CAA's Tactical Analysis Division will conduct this study. Augmentation and assistance will be provided as outlined in Paragraph 6 of this Study Directive.

5. TERMS OF REFERENCE.

a. Scope. This study directive is intended to provide for PAR-P4, the fourth phase of the Personnel Attrition Rates (PAR) study.

b. Objectives. The main objectives of PAR-P4 are to publish a CAA Research Paper documenting and summarizing selected historical data on personnel losses of army forces engaged in division and lower-echelon land combat operations, and planning for the conduct of Phase 5 of PAR.

(1) A major objective of PAR-P4 is to publish a CAA Research Paper documenting and summarizing selected historical data on personnel losses of army forces of division size and below engaged in land combat operations. The criteria for inclusion of a database are as follows (roughly in order of importance). The database must be:

(a) In the public domain, so that copies can be made available to Governmental agencies and others without restriction and for (at worst) a nominal cost. However, for the sake of completeness, some important proprietary databases can be described, even if their data cannot be made available through DTIC.

(b) In data base form (i.e., consist primarily of tabulations rather than narratives).

(c) Such as to contain information on large-scale military operations and their personnel losses.

(d) Available on diskettes usable with personal computers.

(e) Useful to many military operations analysts; developers, users, and assessors and validators of the inputs and/or outputs of war games and analogous combat simulations; military historians; students of military art and science; and others with similar interests.

(2) The combat databases are envisioned to possibly include those listed below.

ACSDB-1990, Ardennes Campaign Simulation Data Base (ACSDB).
BERNDT, Data from Berndt's *Zahl im Kriege*.
BWSH, Data from Bodart's *Kriegslexicon*.
INCHON, Busse's data on the Inchon-Seoul campaign.

IWOJIMA, Various interpretations of the Iwo Jima casualty experience.
LMI-1990, Logistics Management Institute database of Twelfth Army casualty experience, collected by George Kuhn.
POGOGORO, Data on the Pogoroloye-Gorodische battle.
WESTWALL, Data on the Westwall battle of World War II.

(3) Additional data will be sought from other sources as appropriate. Such sources may include the following:

Livermore's monograph on losses in the US Civil War.
The Kursk Combat Simulation Data Base.
Campaign data bases created by other quadripartite countries (UK, Canada, Australia).

c. Timeframe. Not applicable.

d. Assumptions. Not applicable.

e. Essential Elements of Analysis for PAR-P4. What can be learned about personnel losses from the databases currently available to CAA?

f. Environmental and Threat Guidance. Not applicable.

g. Estimated Cost Savings or Other Benefits.

(1) It is important that the validity (or range of validity) of US Army war games and models of combat be assessed as accurately as possible. This can only be done through the application of the scientific method to historical data. This study is a necessary step in that process.

(2) US Army studies and analyses often need summary quantitative relationships applicable throughout a broad range of combat situations. It would be costly and inefficient to have each study review the literature, assemble the applicable information, convert it to electronic form, and make its own analyses of the reported data on personnel attrition. Making the results of this study available to a wide audience will help avoid unnecessary duplication of effort.

6. RESPONSIBILITIES. CAA's Tactical Analysis Division will conduct the study. Administrative support will be provided by CAA's Management Support Division.

7. LITERATURE SEARCH. A detailed annotated bibliography of sources was prepared during PAR-P1. While no formal literature search is specifically planned for subsequent phases of the PAR studies, we intend to continue informal efforts to identify and acquire additional relevant data.

8. REFERENCES

a. Administrative and Procedural.

b. Substantive. "Personnel Attrition Rates in Land Combat Operations: An Annotated Bibliography," US Army Concepts Analysis Agency Research Paper, CAA-RP-93-2, August 1993.

9. ADMINISTRATION

a. Funding. Funding will be provided by CAA.

b. Administrative Support. Administrative support will be provided by CAA's Management Support Division.

c. Cost Limitations. Not applicable.

d. Contract Studies. Not applicable.

e. Automatic Data Processing Equipment (ADPE) Support. Personal computers and associated equipment (such as monitors, printers, etc.) will be required, as will appropriate software systems for databases, spreadsheets, word processing, statistical analyses, and programming languages such as BASIC. No need is currently anticipated for other ADPE support.

f. Milestone Schedule. The published Research Papers describing the large-scale operations results and the addenda to the annotated bibliography, together with the draft Study Directive for Phase 5 and its supporting ARB presentation, are to be completed by 30 April 1997.

g. Sponsor's Study Director (SSD) & Study Advisory Group (SAG). Not applicable.

h. Responsibility for DD Form 1498. Tactical Analysis Division.

i. Study Format. The results will be documented in the form of CAA Research Papers. An outline approach to subsequent phases is to be presented as a draft Study Directive and supporting ARB.

j. Action Documents. Written evaluation of study results will be provided by the sponsor in accord with AR 5-5.

E. B. VANDIVER III
Director

APPENDIX C

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APPENDIX D

TECHNICAL NOTES

D-1. DEFINITION OF AVERAGE LOSS RATE. This paragraph introduces terminology that is used consistently throughout the remainder of this paper.

a. In this paper, loss rates are expressed as the average number of losses of a certain type per thousand personnel in the exposed population per unit of time. With time measured in days, the defining formula for computing the (average) loss rate per 1,000 personnel-days is given by the formula

$$\mathrm{L/kpd} = \frac{1{,}000 \times \text{No. of losses of type L in the exposed population}}{\int_{t_1}^{t_2} p(t)dt},$$

where $p(t)$ is the number of personnel in the exposed population at time t, and the time interval runs from t_1 to t_2. In this paper the total elapsed time, $T = t_2 - t_1$, is normally expressed in units of days. The integrated population size in the denominator is used as a measure of the total exposure to the risk of loss. With time expressed in units of days, that integral's "physical dimensions" are personnel-days. Note that, strictly speaking, L/kpd depends on the starting and ending points of the time interval and the type of population exposed, as well as on the type of loss being considered. These dependencies are often suppressed for convenience. An expression such as "the (average) loss rate per thousand personnel in the US 24th Infantry Division for the period 1 July 1917 through 19 July 1917, inclusive" can be used whenever it is important to call attention to the specific population and time period used to compute the average rate.

b. For example, suppose that the personnel exposed to a risk of battle death (BD) rose linearly from 0 at time t_1 to 1,000,000 over the course of 10 months, so that $t_2 - t_1 = 10$ months. Then the time integral of the number of exposed personnel is equal to 5,000,000 personnel-months for the period t_1 to t_2. If during this 10 month period they suffered 10,000 battle deaths, then their (average) battle death rate is defined to be $10{,}000/5{,}000{,}000 = 0.002$ battle deaths per personnel-month, or 2.0 BD/kpm for the period t_1 to t_2. This is equivalent to an average loss rate over that 10-month period of $1.2 \times 2.0 = 2.4$ BD/kpy, or to $2.0/30.44 = 0.066$ BD/kpd. An analogous approach applies to figuring the average loss rates for other types of losses, such as killed in action (KIA), wounded in action (WIA), died of wounds (DOW), captured or missing in action (CMIA), and disease or nonbattle injured (DNBI).

c. If the detailed history of personnel strength, $p(t)$, is not known, then various approximations to it may be adopted. For example, the available data may report only the average value, $pavg$, of $p(t)$ over some period of time, T. Then the time integral of $p(t)$ over that same period is estimated as equal to the product $pavg \times T$. Various approximations for the other quantities used in loss rate computations may be used on occasion. Paragraph D-2 discusses the effect of various approximations for the case where the initial strength, final strength, total endogenous casualties, and total exogenous gains are known, but the detailed history of personnel strength, $p(t)$, is not known.

d. On occasion we may be concerned with the *population* size at some instant of time, $p(t)$, with the *number* of losses of type L that occurred over some period of time, or with the *fraction* of losses of type L incurred by some nominal population size, p_0. The latter is usually expressed as the number of losses of type L per thousand of the nominal population and defined by the formula

$$\mathrm{L/kp} = \frac{1{,}000 \times \text{No. of losses of type L in the exposed population}}{p_0}.$$

D-2. VARIOUS MODELS FOR ESTIMATING AVERAGE CASUALTY RATES

a. Paragraph D-1c noted that approximations to the average casualty rate are needed when the available data are such that the detailed history of personnel strength, $p(t)$, is not known. This paragraph discusses the effect of various approximations for the case where the initial strength, final strength, total endogenous casualties, and total exogenous gains are known, but the detailed history of personnel strength, $p(t)$, is not known. Accordingly, we assume that the available information comprises all, and only all, of the following:

x_0 = the initial force strength at the start of the battle,

x_1 = the final force strength at the end of the battle,

C = the casualties taken during the entire battle,

G = the gains to strength during the entire battle, and

T = the duration of the battle, in days.

b. The gains G are considered exogenous, that is, not due to combat with the opponent, but imposed by other considerations. Where helpful for emphasis, the casualties C are often referred to as the endogenous losses. In reality, exogenous gains may be either positive or negative. For example, reinforcements to the unit correspond to a positive exogenous gain, while detachments from it correspond to a negative exogenous gain. However, this paragraph considers only the case where the exogenous gains are nonnegative. This assumption is needed to justify the inequalities in paragraph D-2e(2).

c. For the sake of definiteness, we will consider throughout the numerical examples shown in Table D-1.

Table D-1. Data for Numerical Examples

Item	Case 1	Case 2	Case 3
x_0	10,000	20,000	30,000
x_1	5,000	15,000	25,000
C	10,000	10,000	10,000
G	5,000	5,000	5,000
T	20	20	20

d. We desire to use the given information, and *only* the given information, to estimate $\bar{x}$, the average strength of the force over time during the battle, and from that the average casualty rate per thousand personnel-days of exposure (/kpd). When the duration of the battle is given in days, the average casualty rate /kpd is, by definition,

$$AvgCasRate = 1000\frac{C}{T\bar{x}},$$

that is, the ratio of the casualties to the total exposure given by the integral with respect to time of the instantaneous strength. For example, by definition,

$$T\bar{x} = \int_0^T x(t)dt.$$

Although we will not discuss its properties here, we note for the record that the *instantaneous* casualty rate is (apart from its algebraic sign), *by definition*, given by

$$\frac{\dot{x}(t)}{x(t)} \equiv \frac{d}{dt}\{\ln[x(t)]\}.$$

e. A unique value of the quantity $\bar{x}$ is not obtainable from the available information. However, the given information places bounds on it, and hence also on the average casualty rate. This comes about as follows.

(1) We begin by defining the function $C(t)$ to be the total or cumulative number of endogenous losses experienced during the time period from 0 up to time *t*. Obviously, $C(t)$ is a nonnegative and increasing function of *t*. It starts at zero at $t = 0$ and rises to $C(T) = C$ at $t = T$. Consequently, for all values of *t* during the battle

$$0 = C(0) \le C(t) \le C(T) = C.$$

(2) Analogously, we define the function $G(t)$ to be the total or cumulative number of exogenous gains during the time period from 0 up to time *t*. As noted earlier, we assume that these gains are nonnegative. This makes $G(t)$ a nonnegative and increasing function of t. Also, $G(T) = G$, the total exogenous gains during the battle, and

$$0 = G(0) \le G(t) \le G(T) = G.$$

(3) We also have the "mass balance" equation, which states that the onhand strength at any point in time is equal to the starting strength, plus the cumulative exogenous gains up to that time, minus the cumulative endogenous losses up to that time:

$$x(t) = x_0 + G(t) - C(t).$$

(4) Substituting from the inequalities in paragraphs D-2e(1) and D-2e(2) into the mass balance equation of paragraph D-2e(3), we obtain the following inequalities bounding the on-hand strength at any point in time.

$$x_0 - C \le x_0 - C(t) \le x(t) \le x_0 + G(t) \le x_0 + G.$$

Actually, since we know that $x(t)$ can never be negative, we replace the lower limits with their positive parts and write

$$[x_0 - C]^+ \le [x_0 - C(t)]^+ \le x(t) \le x_0 + G(t) \le x_0 + G,$$

where $[z]^+$ is defined to be equal to z when $z \ge 0$ and equal to zero when $z < 0$.

(5) It follows from the inequality in paragraph D-2e(4) that

$$[x_0 - C]^+ \le \bar{x} \le x_0 + G,$$

and hence that

$$\frac{C}{T(x_0 + G)} \le AvgCasRate \le \frac{C}{T[x_0 - C]^+}.$$

(6) If both of the bounds on the average casualty rate are finite, then we might take some mean value (such as the arithmetic, geometric, or harmonic mean) of them to represent the its nominal or best estimate value. For example, if we take the arithmetic mean value, then we have the nominal average casualty rate

$$ArithMeanCasRate = \frac{C}{2T}\left(\frac{1}{x_0 + G} + \frac{1}{[x_0 - C]^+}\right) \pm Q,$$

where Q is the difference of this estimate from either of the possible bounds, *i.e.*,

$$Q = \frac{C}{T}\frac{1}{2}\left(\frac{1}{[x_0 - C]^+} - \frac{1}{x_0 + G}\right).$$

We could dispense with the positive part qualification in these formulas because we have assumed a finite upper limit on the average casualty rate. However, we have retained it as a reminder that this assumption is needed.

(7) For the numerical data of Case 2 in Table D-1, we find

$$ArithMeanCasRate = (35 \pm 15) / \text{kpd},$$

that is, the nominal average casualty rate is 35/kpd and that value is bounded above by 50/kpd and below by 20/kpd.

(8) In the important special case where the exogenous gains (or losses) are zero, $x_0 + G = x_0$ and $[x_0 - C]^+ = x_0 - C = x_1$. We then have

$$ArithMeanCasRate = \frac{C}{2T}\left(\frac{1}{x_0} + \frac{1}{x_1}\right) \pm Q$$

where

$$Q = \frac{C}{T}\frac{1}{2}\left(\frac{1}{x_1} - \frac{1}{x_0}\right).$$

Note that in this case the expression for the average strength involves the harmonic mean of the initial and final strengths, rather than its arithmetic mean.

(9) The geometric and harmonic mean casualty rates (*GeomMeanCasRate* and *HarmMeanCasRate*) are defined analogously, using the casualty rate's upper and lower limits.

f. To go further requires additional assumptions regarding the functions $G(t)$ and $C(t)$. We will often do this by making assumptions about their derivatives $g = \dot{G}(t)$ and $l = \dot{C}(t)$. Given the exogenous and endogenous rates of change in strength, it follows from the mass balance equation of paragraph D-2e(3) that the total rate of change in strength is

$$\dot{x} = g - l.$$

Throughout the following, we assume that the exogenous gain rate g is a constant. Hence the cumulative gain function $G(t) = gt$.

We will entertain the following assumptions regarding the endogenous loss rate, l:

(1) Assume that the endogenous rate at which the force loses personnel is proportional to its instantaneous strength, so that

$$\dot{C}(t) = l(t) = kx(t),$$

where k is some constant of proportionality.

(2) Assume that the exogenous rate, g, is constant, while the endogenous gain rate is a power function of the time, so that

$$\dot{x} = g - abt^{b-1}$$

where a and b are some constants.

g. We first consider the case where the gain rate g is constant, but that the instantaneous rate at which the force loses personnel is proportional to its instantaneous strength. In this case,

$$\dot{x} = g - l = g - kx(t).$$

Here g has dimensions of personnel/unit time and k has dimension of 1/unit time. The solution of this differential equation can be written as

$$x(t) = x_0 e^{-kt} + \frac{g}{k}\left(1 - e^{-kt}\right) = x_0 + \left(\frac{g}{k} - x_0\right)\left(1 - e^{-kt}\right).$$

(1) The parameters g and k can be found from the given data as follows. First, because the casualties are given by the mass balance equation

$$C = x_0 + gT - x_1,$$

the gain rate is easily obtained as

$$g = \frac{C - x_0 + x_1}{T}.$$

The parameter k can then be found from the equation for the final strength,

$$x_1 = x_0 e^{-kT} + \frac{g}{k}\left(1 - e^{-kT}\right) = x_0 + \left(\frac{g}{k} - x_0\right)\left(1 - e^{-kT}\right),$$

although an iterative process must be used as there is no explicit solution. A procedure based on the observation that

$$\varphi(k) = x_0 - x_1 + \left(\frac{g}{k} - x_0\right)\left(1 - e^{-kT}\right),$$

is equal to $x_0 - x_1 + gT = C > 0$ when $k = 0$ and to $-x_1 < 0$ when $k = \infty$ using *regula falsi* seems to work well. (Note that the case $g = 0$ has to be treated separately.) A sample of the program AvgCasRt.Bas is shown below. It is initiated with $k0 = 0$ and $k1 =$ a value large enough to make Phi($k1$) negative.

```
while IterNo<MaxIter and Change>eps
   Oldk=k
   k=k0-Phi(k0)*(k1-k0)/(Phi(k1)-Phi(k0))
   if Phi(k)>0 then
        k0=k
   else
        k1=k
   end if

   Change=abs(Oldk-k)
   incr IterNo
wend
```

(2) Once the parameters g and k are known, we can find the average strength during the engagement from

$$\bar{x} = \frac{1}{T}\int_0^T x(t)\,dt = x_0 + \left(\frac{g}{k} - x_0\right)\left(1 - \frac{1-e^{-kT}}{kT}\right).$$

(3) In this case, the average casualty rate can be shown to be equal to k. This can be done as follows. By definition the average casualty rate (in units of per personnel-day or /pd) is

$$ExpAvgCasRate = \frac{C}{T\bar{x}}.$$

Using the equations developed above for C and $\bar{x}$, we can write this as

$$ExpAvgCasRate = \frac{x_0 + gT - x_1}{T\left[x_0 + \left(\frac{g}{k} - x_0\right)\left(1 - \frac{1-e^{-kT}}{kT}\right)\right]}.$$

Substitute in this the second expression given above for x_1. Then expand and simplify numerator and denominator. The result will be

$$ExpAvgCasRate = k.$$

h. We now consider the case where the exogenous gain rate g is constant while the endogenous loss rate is a power function of the time, so that $\dot{x} = g - abt^{b-1}$. In this case, we have the strength equation $x(t) = x_0 + gt - at^b$, so that

$$\begin{aligned}\bar{x} &= x_0 + \tfrac{1}{2}gT - \frac{a}{b+1}T^b \\ &= \frac{bx_0 + x_T - \tfrac{1}{2}gT}{b+1}\end{aligned}$$

The last form is obtained by substituting into the first form the result of solving the strength equation, evaluated at $t = T$, for the quantity aT^b. Thus, the average strength is a (convex linear) weighted average of x_0 and $(x_T - \tfrac{1}{2}gT)$ with weights b and 1, respectively. If $b = g = 0$, then the average strength is the final strength. If $b = \infty$ and g is finite, then the average strength is the initial strength.

(1) In the important special case where the endogenous losses are a linear function of the time, we have $b = 1$. In this case, the first form for the average strength $\bar{x}$ reduces to the arithmetic average of the initial and final strengths. This is perhaps the most common approximation made in estimating average casualty rates from incomplete data on the evolution of the on-hand strength as a function of time.

i. As an *ad hoc* approximation, we introduce an average casualty estimate called the "adjusted exponential" estimate. It is defined by the equation:

$$AdjExponentialCasRate = \ln\left(\frac{x_0 + G/2}{x_0 - C + G/2}\right).$$

It was suggested by adding the quantity $G/2$ to what the initial and final strengths would be if the gain G were zero.

j. The following table shows the numerical results of these considerations. All casualty rates are expressed in casualties per thousand personnel-days, abbreviated as /kpd. The linear average casualty rate is equivalent to taking $b = 1$ in paragraph D-2h, and uses the average of the initial and final strengths as an approximation to the true average on-hand strength during the battle.

Table D-2. Results for the Example Cases

Item	Case 1	Case 2	Case 3
x_0	10,000	20,000	30,000
x_1	5,000	15,000	25,000
C	10,000	10,000	10,000
G	5,000	5,000	5,000
T	20	20	20
ArithMeanCasRate	***infinity***	**35.00**	**19.64**
$\pm$ Q	*infinity*	15.00	5.36
GeomMeanCasRate	***infinity***	**31.63**	**18.90**
HarmMeanCasRate	**66.67**	**28.57**	**18.18**
Exp $\bar{x}$	6,918	17,260	27,348
ExpAvgCasRate	**72.28**	**28.97**	**18.28**
Power b	3	3	3
Power $\bar{x}$	8,125	18,125	28,125
PowerAvgCasRate	**61.54**	**27.59**	**17.78**
LinearAvgCasRate (b = 1)	**66.67**	**28.57**	**18.18**
AdjExponentialCasRate	**80.47**	**29.39**	**18.39**

(1) In Case 1, the upper and lower bounds are infinite, and so give no usable information on the casualty rate. In the other cases, although both upper and lower bounds are finite, they still span a fairly wide band of casualty rate values. The band of uncertainty is both absolutely and proportionately narrower in Case 3.

(2) Except for the very high casualty rates of Case 1, all of the estimates of average casualty rate that assume some type of change in the strength during the battle give generally similar results.

D-3. VIOLIN PLOTS

a. In statistical work, box plots are useful for displaying the mean and spread of a set of data. Several box plots may be displayed side by side to facilitate comparing the average and spread of several groups. Although the box plot is useful in a lot of situations, it does not represent data that are clustered (multimodal). On the other hand, although the density trace shows the distribution of the data, it is hard to see the mean and spread. The obvious answer to these shortcomings is to combine the two plots. Dr. Jerry Hintze [Hintze-1955] has invented a new plot which is a hybrid of the density trace and the box plot. He calls it the violin plot because one of the first data sets he tried had the appearance of a violin. Figure D-1 gives an example of a violin plot.

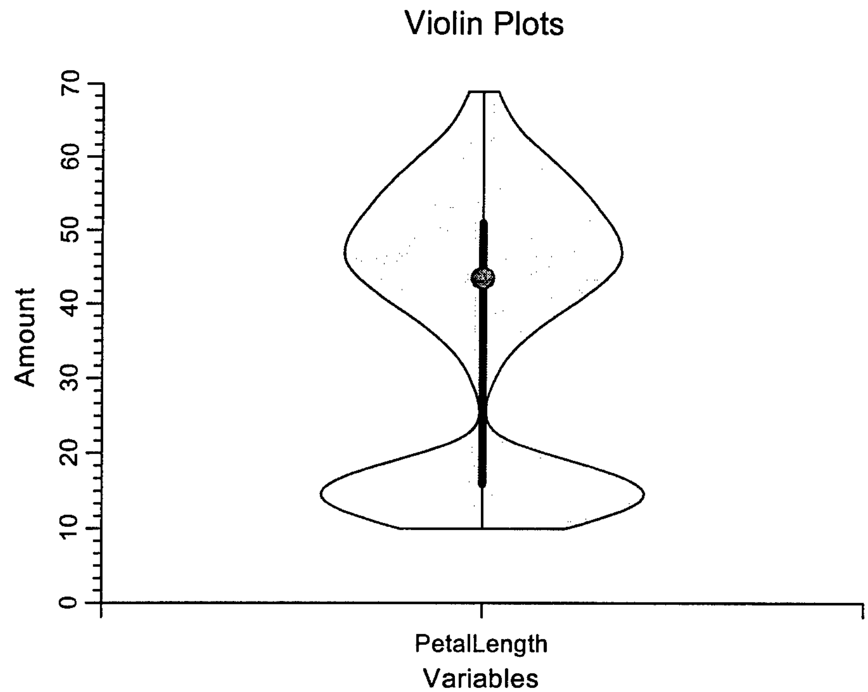

Figure D-1. Example of a Violin Plot

b. A violin plot is made by combining a form of box plot with two vertical density traces. One density trace extends to the left while the other extends to the right. There is no difference in these density traces other than the direction in which they are extended. Both are shown for symmetry, which makes it much easier to compare batches. A violin plot highlights the peaks and valleys of the variables' distribution. The box plot is changed slightly by showing the median as a circle. This was done so that quick comparisons of the medians could be made. The ends of the heavy vertical bar are at the upper and lower quartiles (25th percentile and 75th percentile points) of the distribution. Its length is therefore the interquartile range (IQR, the distance between the 25th and 75th percentile points). The upper and lower ends of the lighter weight extensions of the heavy interquartile bar are located at the so-called *adjacent values.* The upper adjacent value is the largest observation that is less than or equal to the 75th percentile plus 1.5 times the IQR. The lower adjacent value is the smallest observation that is greater than or equal to the 25-th percentile minus 1.5 times the IQR.

c. Figure D-2 shows violin plots of the four variables in Fisher's iris data. It illustrates how easily you can compare the medians, the box lengths (the spread), and the distributional patterns in the data. In this example, notice that the two petal variables show two peaks (bimodal) while the two sepal variables are unimodal (one peak).

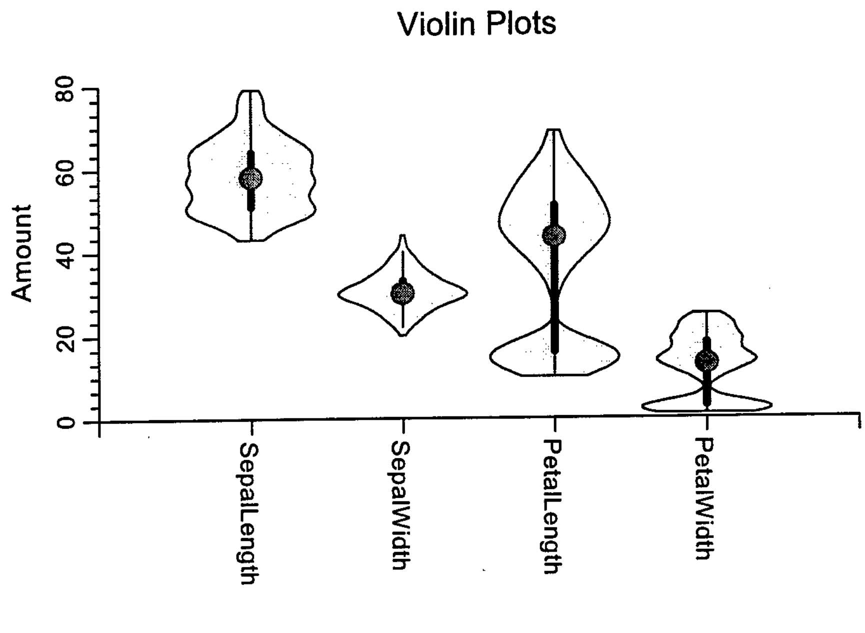

Figure D-2. Examples of Violin Plots

D-4. A TBC RATE TIME SERIES MODEL. This paragraph describes the time series model used in this paper.

a. We fitted a time series model to our Box-Cox TBC rate values as a function of time. (See Appendix D-5 for a description of Box-Cox transforms.) Where necessary, we estimated missing data values by linear interpolation of their Box-Cox transforms. The time series model fitted to the resulting data consists of a linear deterministic trend plus an autocorrelated residual. Because the residuals are correlated, conventional regression theory is not applicable. Instead, we used the so-called autoregressive integrated moving average (ARIMA) model that was popularized by Box and Jenkins. The simplest time series model having an acceptable fit to the data is:

$$\text{Box - Cox}[\mathit{TBCRate}(i)] = \beta_0 + \beta_1 \times i + z(i),$$

where

$\text{Box - Cox}[\mathit{TBCRate}(i)] =$ the natural logarithm of the TBC rate / kpd on day number i,

β_0, β_1 = parameters of a linear trend in Box - Cox TBC rate,

$z(i) = \gamma \times z(i-1) + \text{N}(0, \sigma)$, where

γ = an autoregressive coefficient, and

$\text{N}(0, \sigma)$ = a normal random variable with mean zero and standard deviation σ.

Thus, the Box-Cox residuals, $z(i)$, are given by a simple autoregressive process. There are four parameters to be estimated from the time series data on Box-Cox TBC rates: β_0, β_1, γ, and σ. Parameter values for the cases treated are shown in the main body of the report.

b. The day number used for all of the time series of US 12th Army Group data start with day zero defined as 1 June 1944. Thus, day number 30 is 1 July 1944. D-day, 6 June 1944, is day number 5. There is a large gap in all of the US 12th Army Group data from 11 August 1944 through 30 September 1944. These are day numbers 71 through 121. The fall of Aachen and a period of extensive preparations for further Allied offensives against the Siegfried Line took place on day numbers 130 to 160. The German Ardennes offensive (Battle of the Bulge) started around day number 200. German resistance went into a sharp decline after day number 300, and Germany surrendered on day number 338.

D-5. THE BOX-COX TRANSFORMATION. This paragraph describes the Box-Cox transformation, which is used extensively throughout the remainder of this paper.

a. Previous work (PAR-P3, and others), has consistently demonstrated that casualty distributions are so highly skewed that a normal distribution gives a very poor fit to them. Instead, a lognormal distribution fits these data reasonably well. However, historical data, especially when casualties are reported on a daily basis, often report zero casualties to organizations the size of corps and below. This is true even when their parent corps or army is fairly heavily engaged. Unfortunately, whenever zero casualties are reported, it is impossible to fit a lognormal distribution to the raw data because the logarithm of zero is undefined. The same difficulty arises in other areas. For example, in plotting time series of TBC/kpd (the logarithm of the total battle casualty rate per thousand personnel-days) versus the day on which the casualty rates were experienced, as well as in plotting the total battle casualty number (TBC) versus the corresponding exposure in personnel days (pd).

b. One approach would be to simply omit all zero values of TBC or TBC/kpd from the analysis and display of results. However, that approach has several undesirable features. In effect, it discards valid data. This is inefficient use of the valid data values. It also seriously biases the magnitude of battle casualties toward higher values than those actually experienced, distorts their overall distribution, and corrupts the relationship of casualties to other factors. Hence, an alternative approach is in order.

c. The Box-Cox transformation method (named after the world-famous statisticians who are its chief proponents) was developed specifically to handle this sort of difficulty. This method transforms the raw data according to the transformation equation

$$\tilde{x} = \frac{x^s - 1}{s},$$

where x is a raw datum value, $\tilde{x}$ is the corresponding transformed value, and s is a positive numerical parameter that may be chosen at will. Observe that the inverse of the Box-Cox transform is:

$$x = (1 + s\tilde{x})^{1/s}.$$

The transformed value is also sometimes written as x'.

d. By a well-known mathematical lemma, as s tends to zero the inverse of the Box-Cox transformation tends to $x = \exp(\tilde{x})$. As the following shows, for small values of s the transformed value is approximately equal to the logarithm of x (provided that $x \neq 0$):

$$\begin{aligned}\tilde{x} &= \frac{\exp(s\log(x)) - 1}{s} \\ &\approx \frac{1 + s\log(x) - 1}{s} \\ &\approx \log(x)\end{aligned}$$

When s is not small, then $\tilde{x}$ is essentially a power transform of the x values.

e. The proponents of the Box-Cox transformation advocated selecting the parameter s to give the best fit to the data. That advice was offered in the context where a single data set with homogeneous statistical properties was being analyzed. However, in our situation we must deal with several data sets, each with its own statistical properties. Changing the parameter s from one data set to the next might be a desirable ideal, but certain practical considerations mitigate against it in our situation. First, adjusting the parameter s to each data set and analysis objective would be too much effort to be practical. Second, changing values of s would make it difficult to compare different data sets.

f. Accordingly, in order to maintain uniformity, we decided to use the same value of s throughout our work, even though in a few selected cases a different value of s might have given a somewhat better statistical result. After some experimentation, we found that the value $s = 0.3$ gives reasonable and acceptable results. Although this choice is somewhat arbitrary, small variations in s do not appreciably affect the principal findings. Thus, Box-Cox transformations using $s = 0.3$ were applied to the total battle casualty (TBC) number to construct the exposure charts—the graphs of Box-Cox TBC number versus exposure in personnel-days (kp). Box-Cox transformation using $s = 0.3$ were also applied to the TBC rate (TBC/kpd) to construct the distribution and time series charts—the graphs of the cumulative distribution of Box-Cox TBC/kpd and of Box-Cox TBC/kpd versus day number.

g. The chart below shows a comparison between the Box-Cox and natural logarithm transformations of x. As can be seen, there is very little difference between them for values of x ranging from about 0.1 to 10. The Box-Cox, $s = 0.3$ transform is always somewhat larger than the logarithmic transformation.

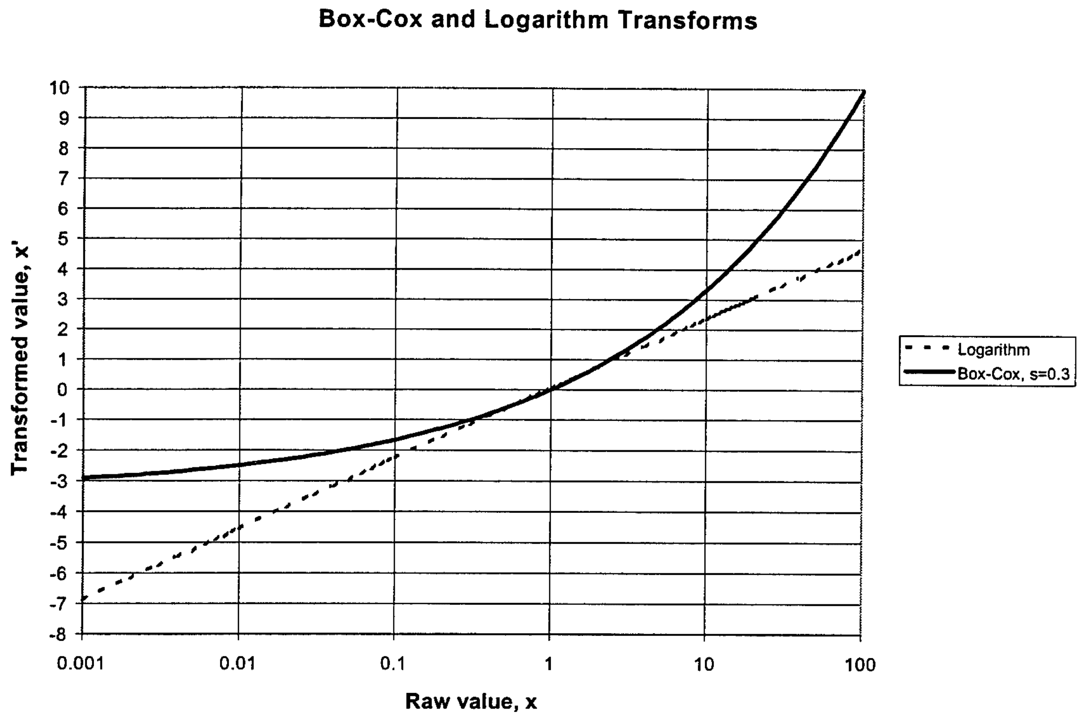

Figure D-3. Comparison of Box-Cox and Logarithm Transforms

h. The following chart (Figure D-4) provides a graphical method for quickly estimating untransformed values, given transformed values. It is applicable only to the case $s = 0.3$.

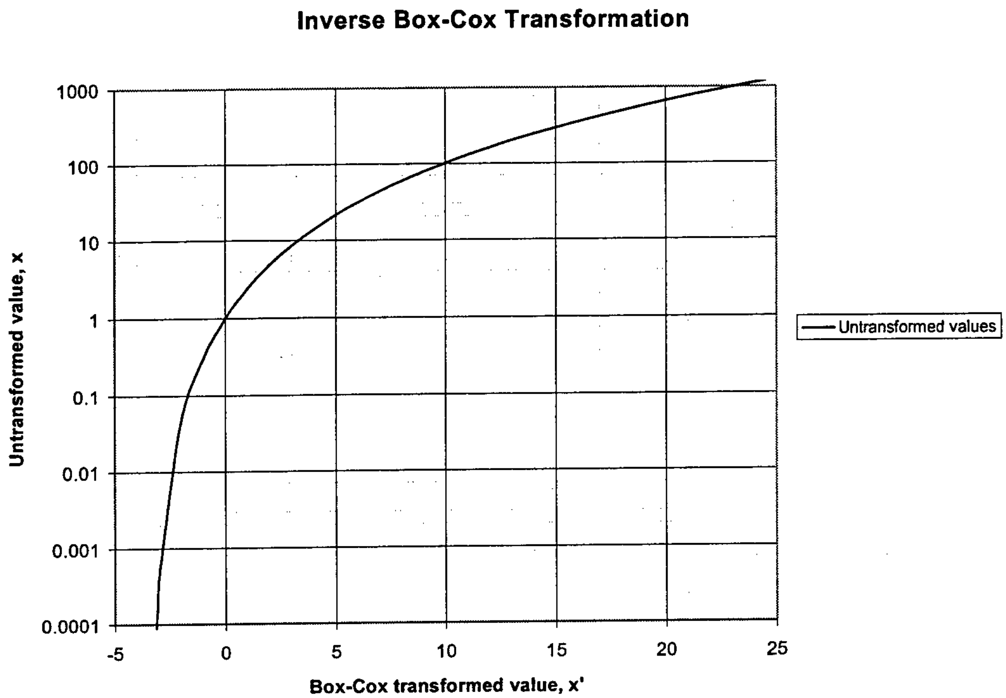

Figure D-4. Inverse Box-Cox Transform

D-6. ON THE RELATION OF TBC TO WIA

a. Use of Total Battle Casualties. Throughout the main body of this paper we use total battle casualties (TBC) as the basis for most of our comparisons. Here TBC is defined to be the sum of the KIA, WIA, and CMIA. Unfortunately, a few of our data sources provided figures for the WIA and/or KIA, but not for the TBC. Accordingly, in a few places in the main body, we used an estimated number of TBC. For the purposes of this paper, we used the estimating relationship $TBC = 1.5 \times WIA$. This technical note provides some of the rationale for this procedure.

b. US World War II Experience. We relied most heavily on the US experience in World War II, as documented in Table 15 on pages 48 through 57 of Beebe and DeBakey. Figure D-5 shows a plot of TBC versus WIA for those data. As can be seen, the relationship inferred from this figure is $TBC \approx 1.46 \times WIA$. For simplicity, and because other data may differ from that presented by Beebe and DeBakey, we elected to round this off to 1.5.

c. A Cautionary Note. We did not attempt an in-depth study, using a variety of data set, of the relationship of TBC to WIA. However, we do note that the ratio of TBC to WIA was somewhat lower for US 12th Army Group operations in northwest Europe during World War II. Those data give estimates of the TBC/WIA ratio that vary from about 1.3 to 1.4, depending on what statistical model is assumed for the deviations from trend. Accordingly, the figure of 1.5 TBC for every WIA should be considered as an initial rough estimate subject to further refinement and analysis.

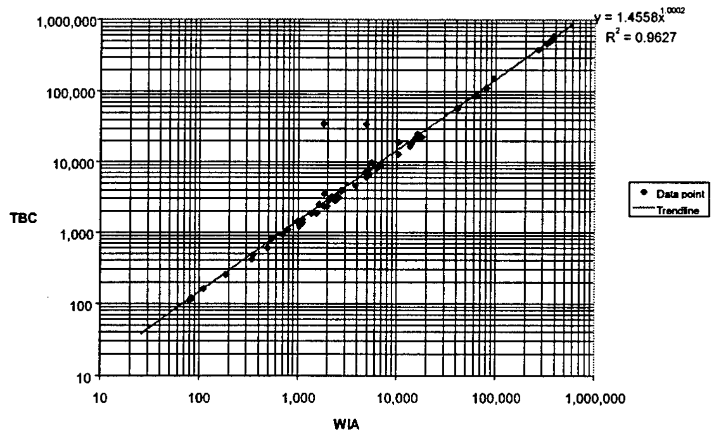

Figure D-5. TBC Versus WIA for Various Forces

APPENDIX E

FIGURES FOR CHAPTER 3

E-1. INTRODUCTION. This appendix contains figures for the US 12th Army Group data discussed in Chapter 3. Composite or aggregate figures summarize all of the data on a particular unit type. The figures are located on the following pages.

a. Box-Cox TBC Rate Distributions. These are figures E-1 through E-50 on pages E-2 through E-26. Figures E-1 through E-3 give composite distribution plots for airborne, armor, and infantry division types of the US 12th Army Group. Distribution plots for the individual divisions with enough data to warrant plotting are provided as follows:

- Airborne divisions– Figures E-4 through E-6 on pages E-3 and E-4.
- Armor divisions– Figures E-7 through E-16 on pages E-5 through E-9.
- Infantry divisions– Figures E-17 through E-50 on pages E-10 through E-26.

b. Box-Cox TBC Rate Violin Plots. These are figures E-51 through E-57 on pages E-27 through E-30. Figure E-51 on page E-27 gives composite violin plots for the airborne, armor, and infantry division types of the US 12th Army Group. Violin plots for the individual divisions with enough data to warrant plotting are provided as follows:

- Airborne divisions– Figure E-52 on page E-27.
- Armor divisions– Figure E-53 on page E-28.
- Infantry divisions– Figures E-54 through E-57 on pages E-28 through E-30.

The division's number is shown on the abscissa of these violin plots.

c. Box-Cox TBC Rate Versus Day Number. Plots of the time series of Box-Cox TBC numbers for the individual divisions with enough data to warrant plotting are provided as follows:

- Airborne divisions– Figures E-58 through E-60 on pages E-30 and E-31.
- Armor divisions– Figures E-61 through E-70 on pages E-32 through E-36.
- Infantry divisions– Figures E-71 through E-104 on pages E-37 through E-53.

d. Box-Cox TBC Number Versus Exposure. These are figures E-105 through E-154 on pages E-54 through E-78. Figures E-105 through E-107 on pages 54 and 55 give plots of the Box-Cox TBC number versus exposure plots for the composite airborne, armor, and infantry division types of the US 12th Army Group. Similar plots for the individual divisions with enough data to warrant plotting are provided as follows:

- Airborne divisions– Figures E-108 through E-110 on pages E-55 and E-56.
- Armor divisions– Figures E-111 through E-120 on pages E-57 through E-61.
- Infantry divisions– Figures E-121 through E-154 on pages E-62 through E-78.

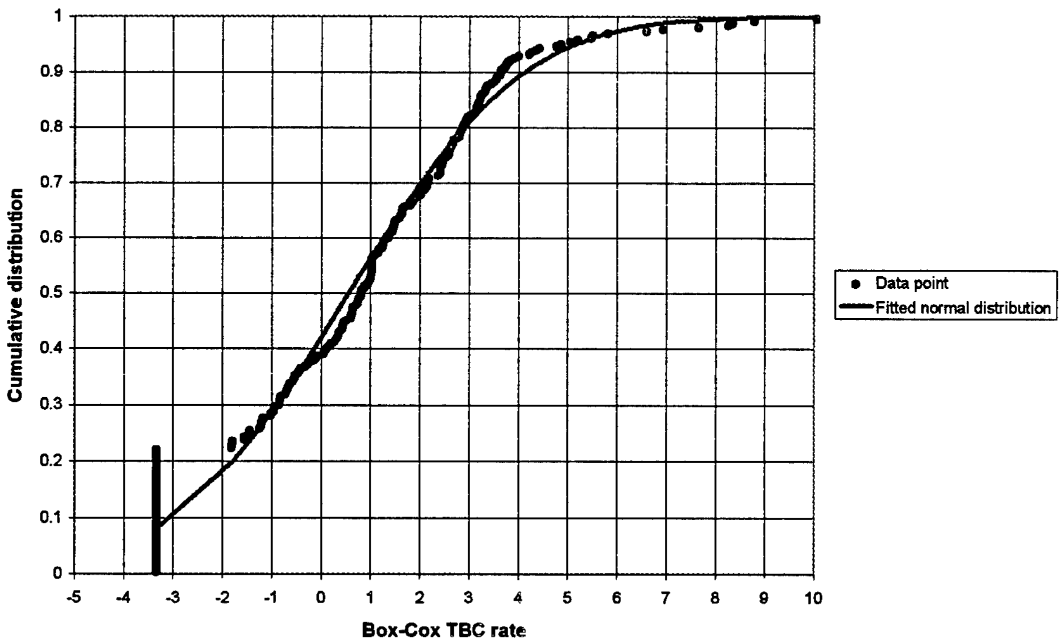

Figure E-1. Composite Distribution of TBC Rates for Airborne Divisions

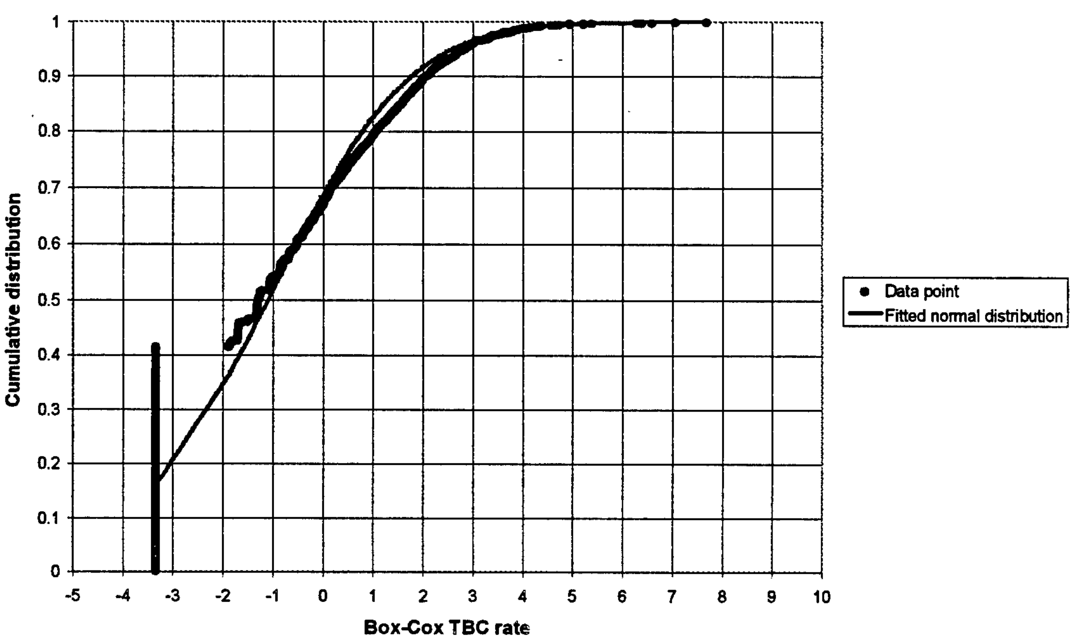

Figure E-2. Composite Distribution of TBC Rates for Armor Divisions

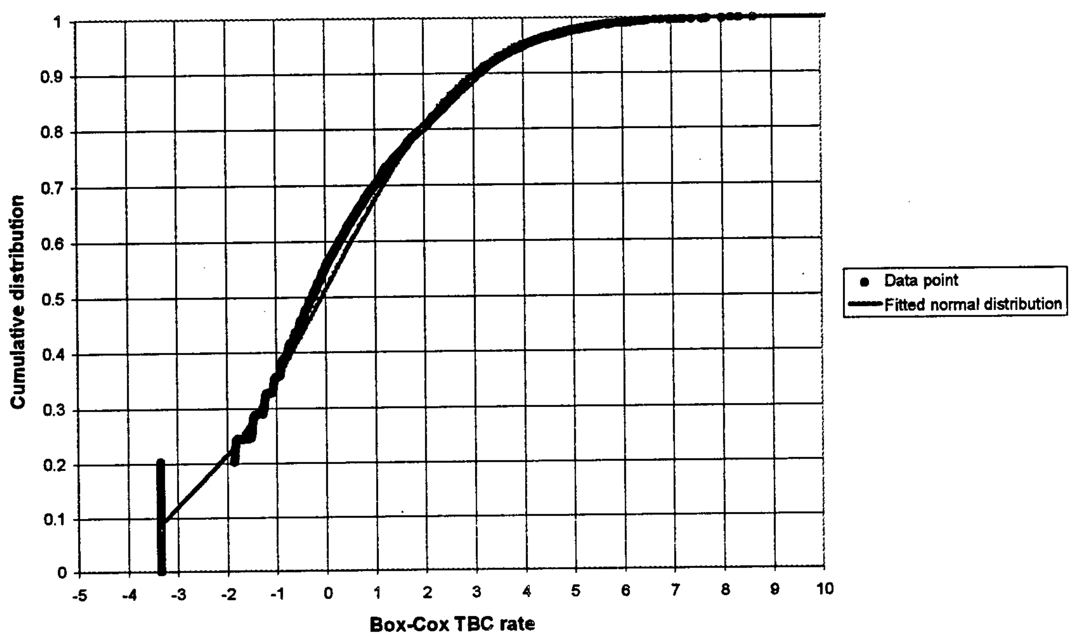

Figure E-3. Composite Distribution of TBC Rates for Infantry Divisions

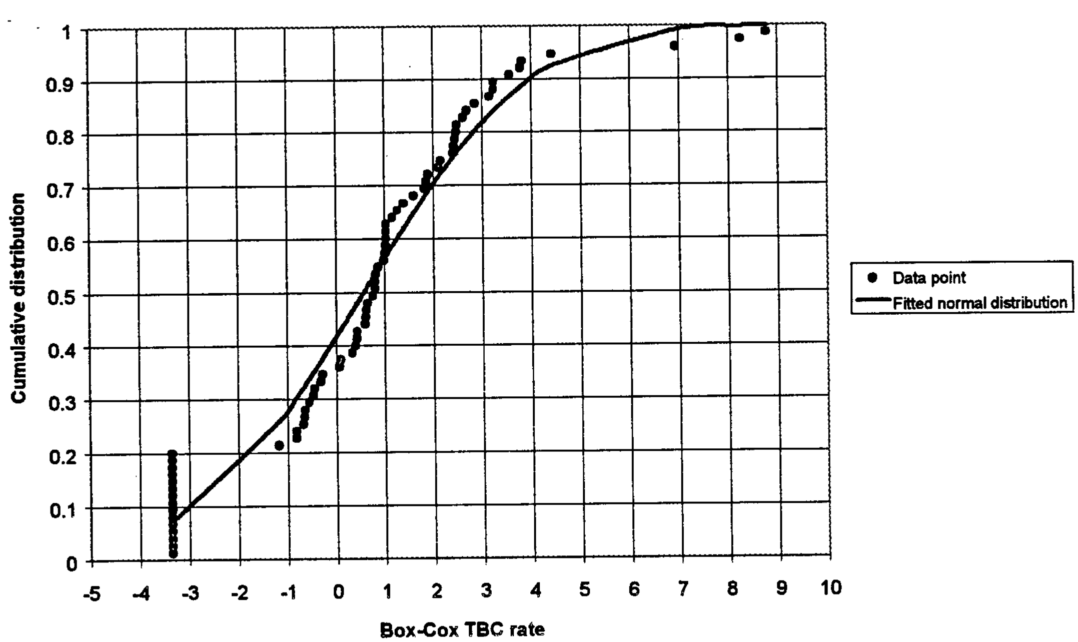

Figure E-4. TBC Rate Distribution for the US 17th Airborne Division

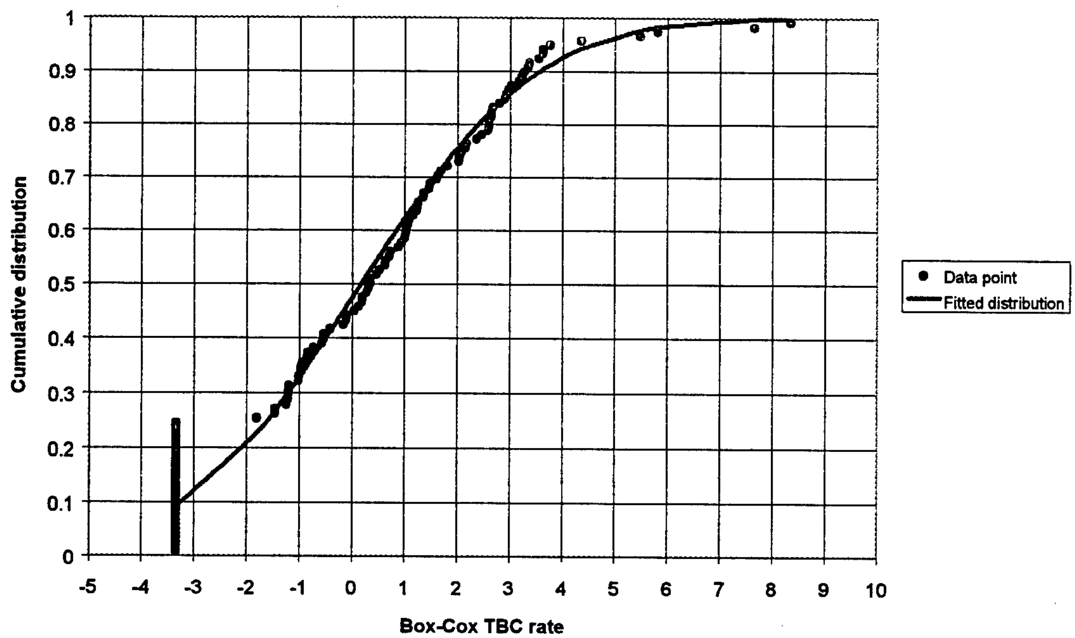

Figure E-5. TBC Rate Distribution for the US 82d Airborne Division

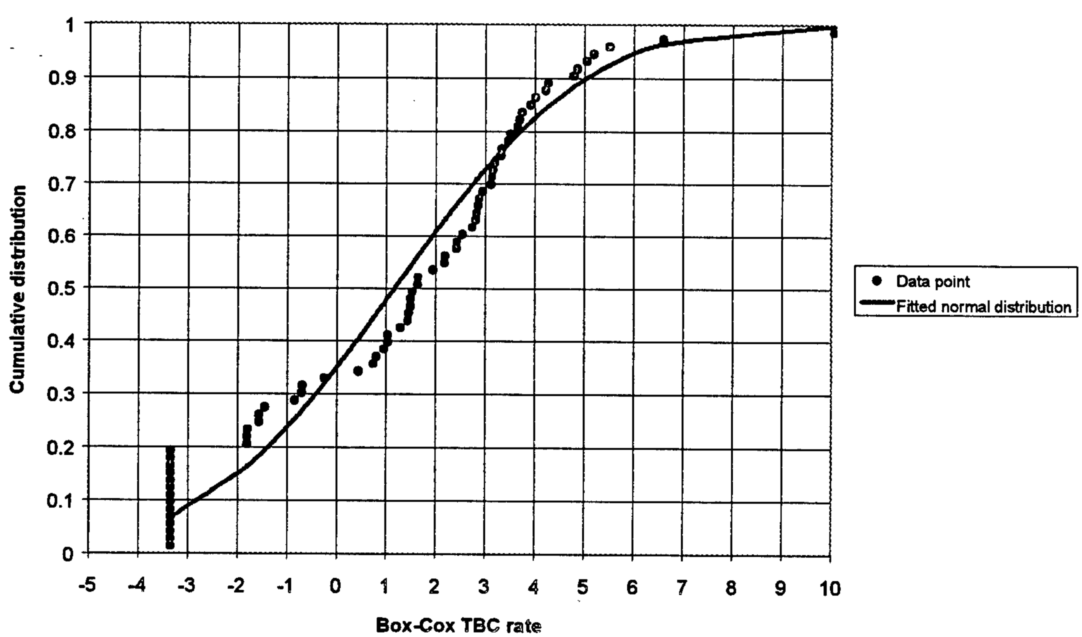

Figure E-6. TBC Rate Distribution for the US 101st Airborne Division

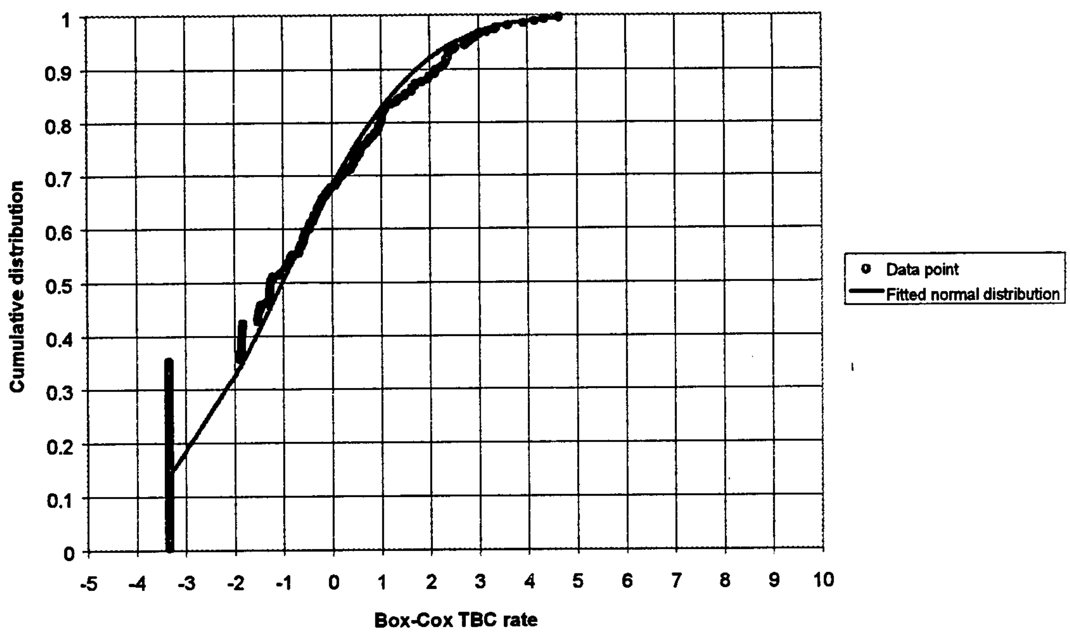

Figure E-7. TBC Rate Distribution for the US 2nd Armor Division

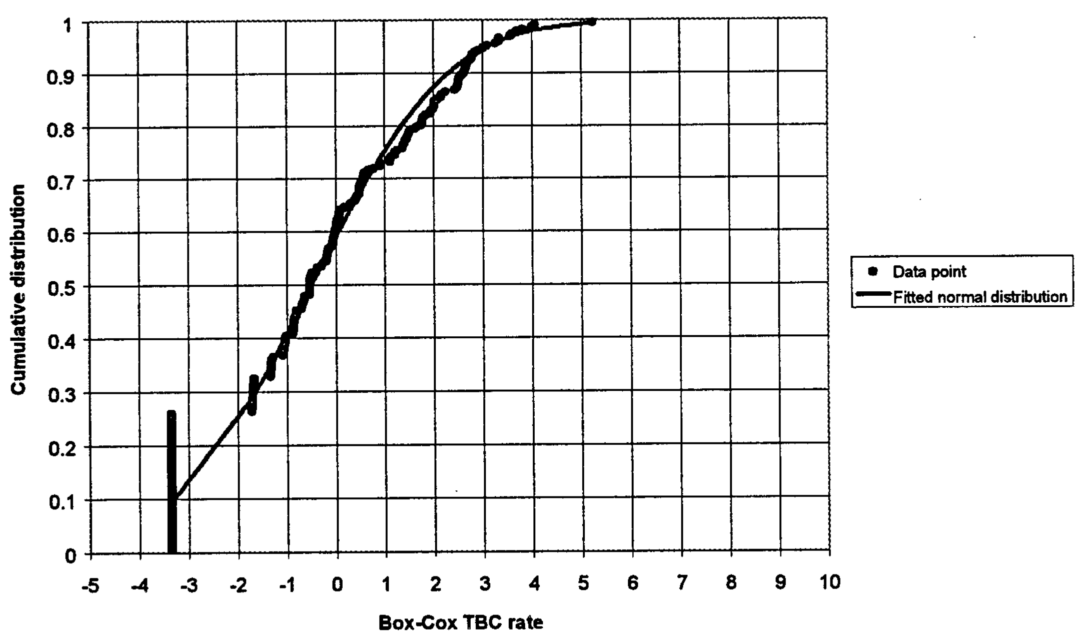

Figure E-8. TBC Rate Distribution for the US 4th Armor Division

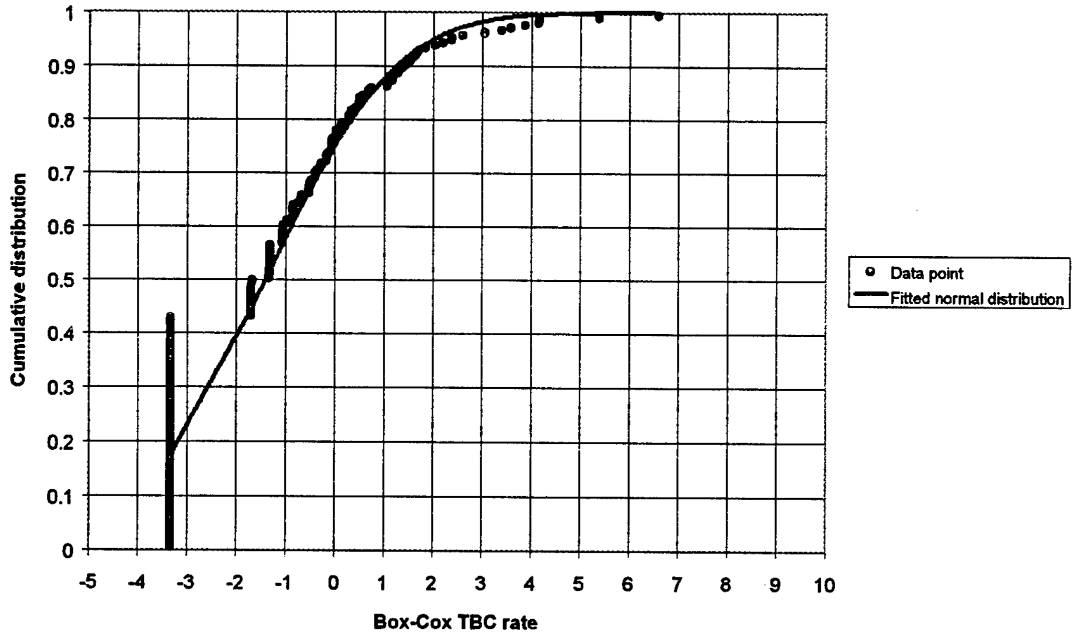

Figure E-9. TBC Rate Distribution for the US 5th Armor Division

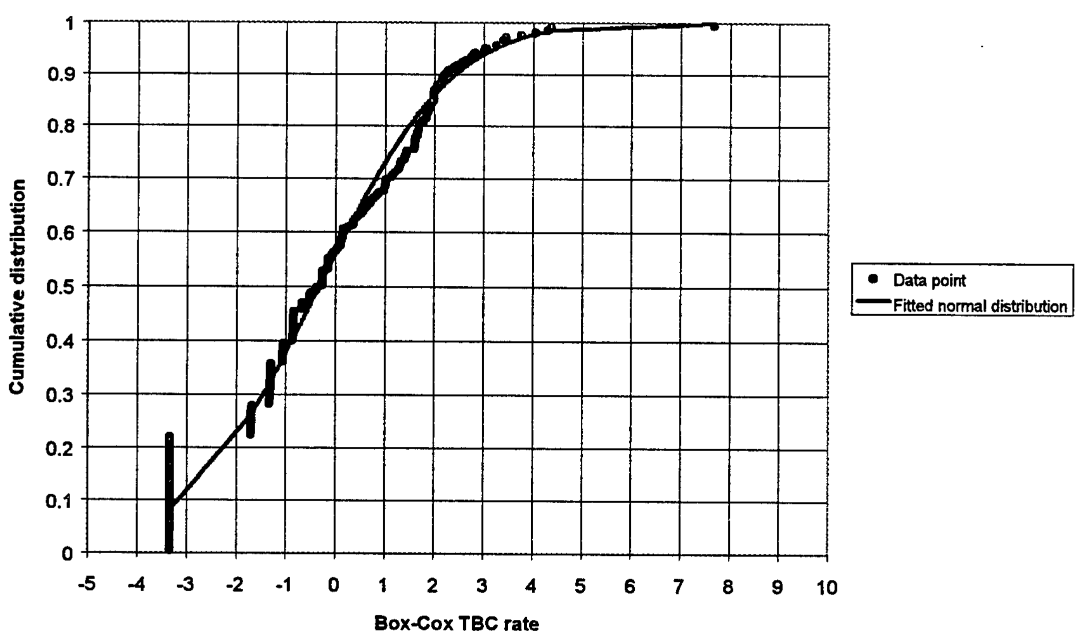

Figure E-10. TBC Rate Distribution for the US 6th Armor Division

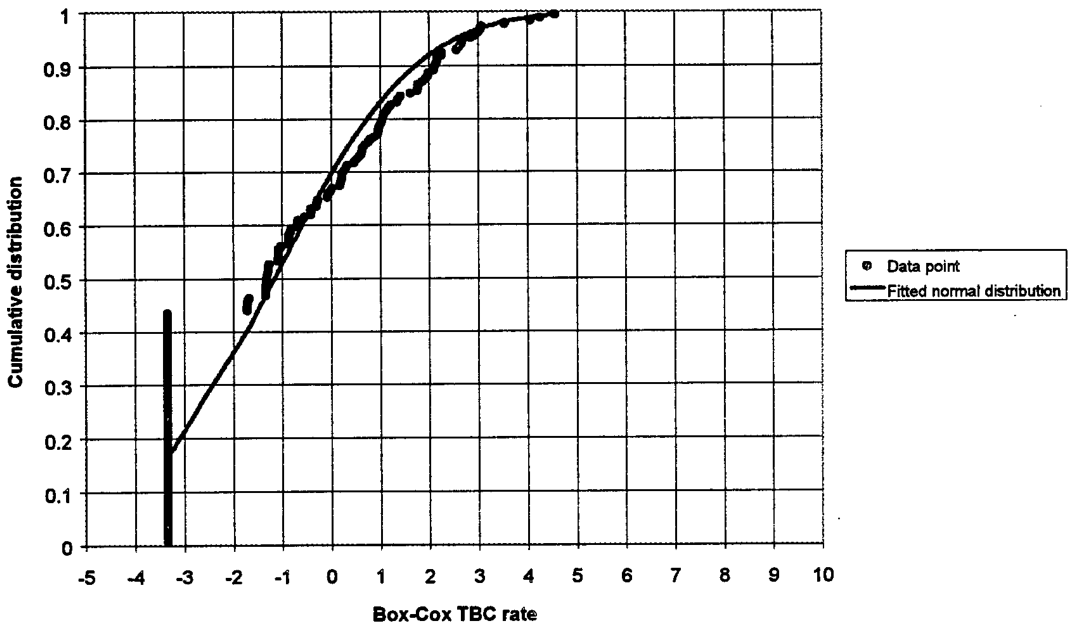

Figure E-11. TBC Rate Distribution for the US 7th Armor Division

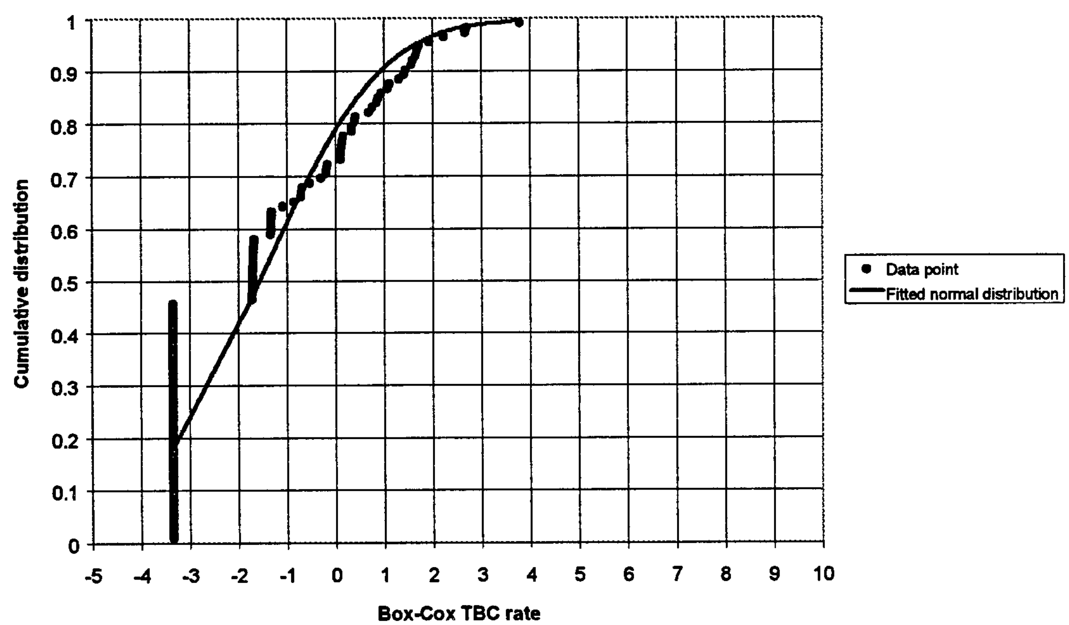

Figure E-12. TBC Rate Distribution for the US 8th Armor Division

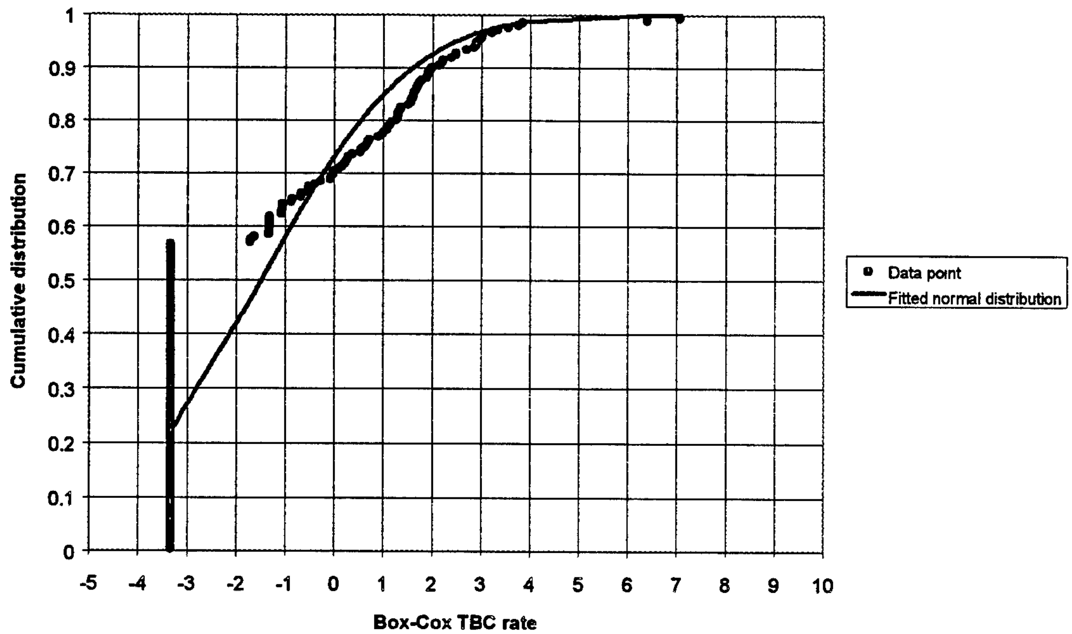

Figure E-13. TBC Rate Distribution for the US 9th Armor Division

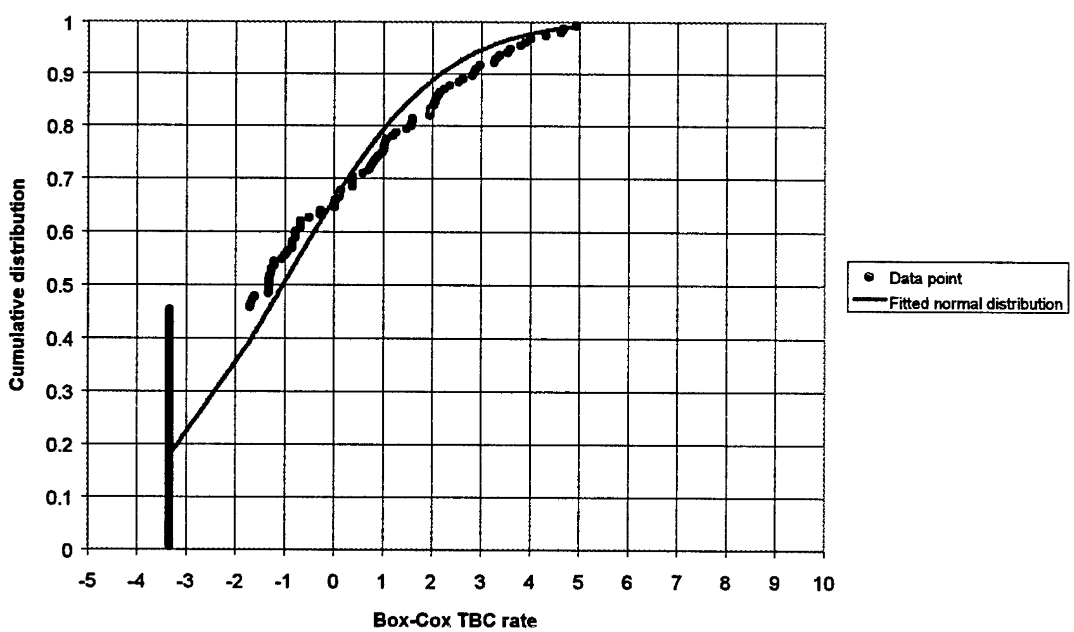

Figure E-14. TBC Rate Distribution for the US 10th Armor Division

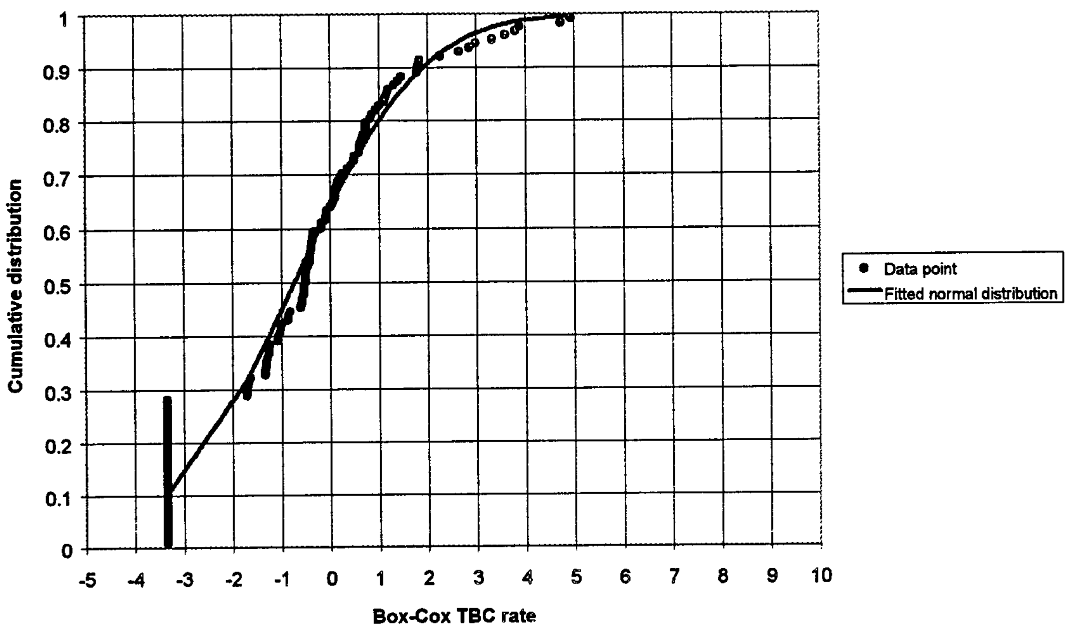

Figure E-15. TBC Rate Distribution for the US 11th Armor Division

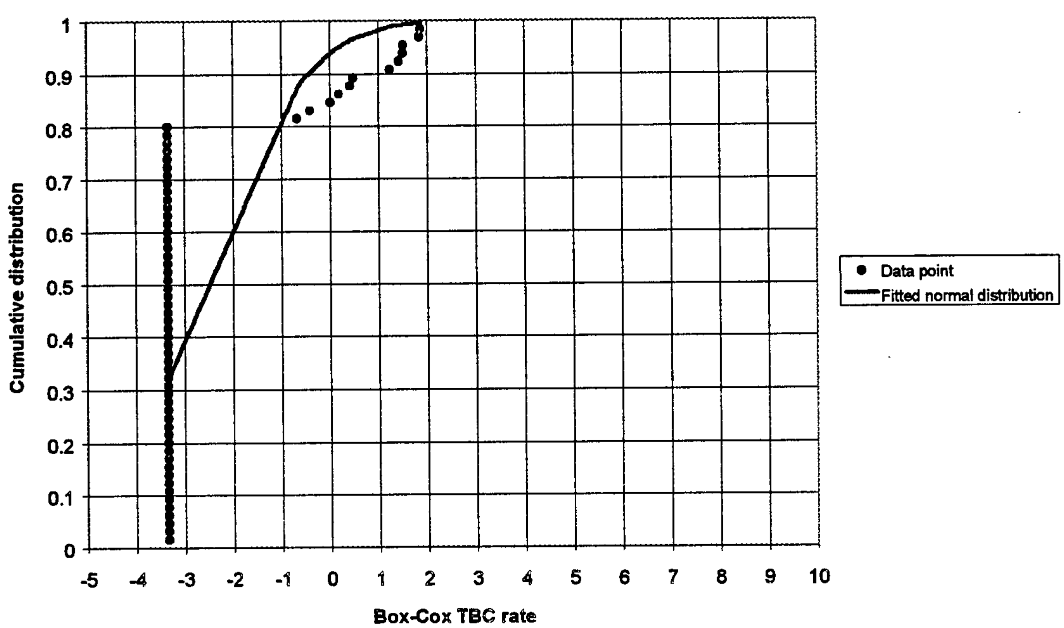

Figure E-16. TBC Rate Distribution for the US 13th Armor Division

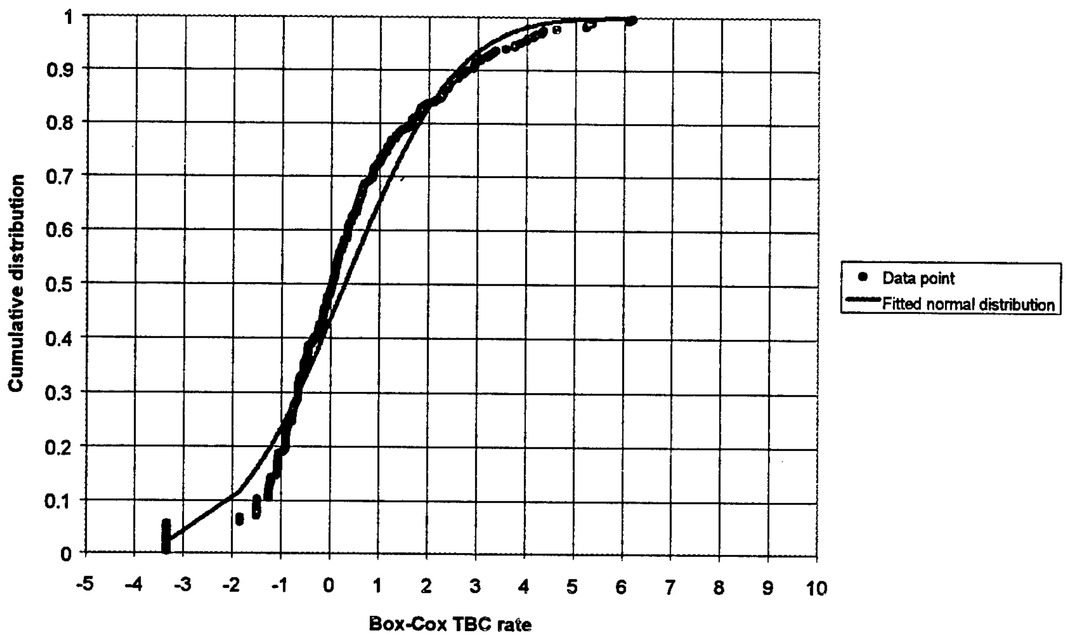

Figure E-17. TBC Rate Distribution for the US 1st Infantry Division

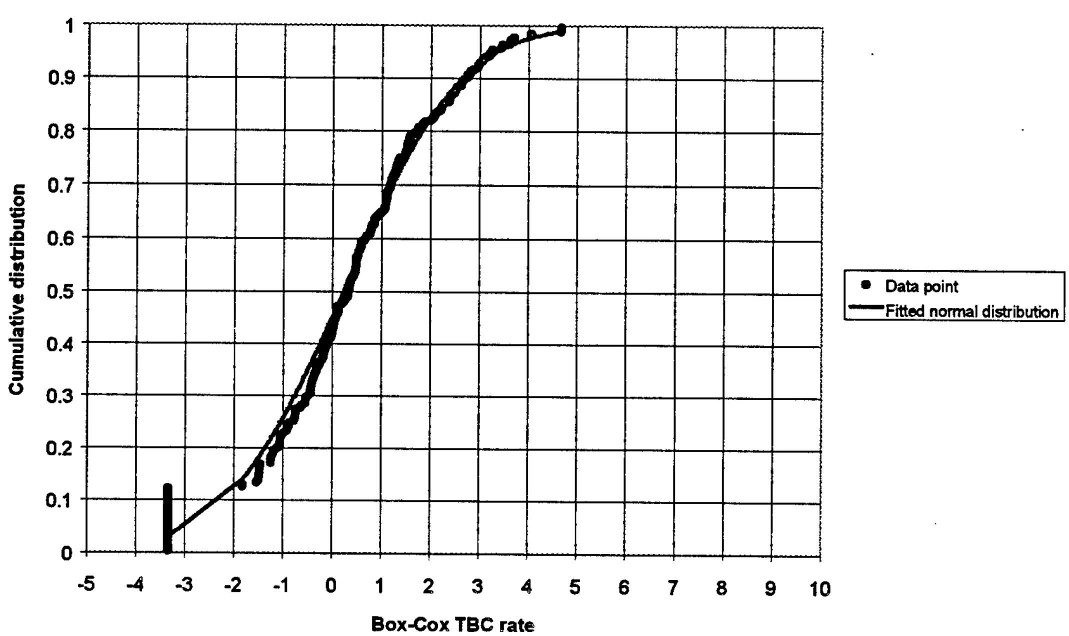

Figure E-18. TBC Rate Distribution for the US 2d Infantry Division

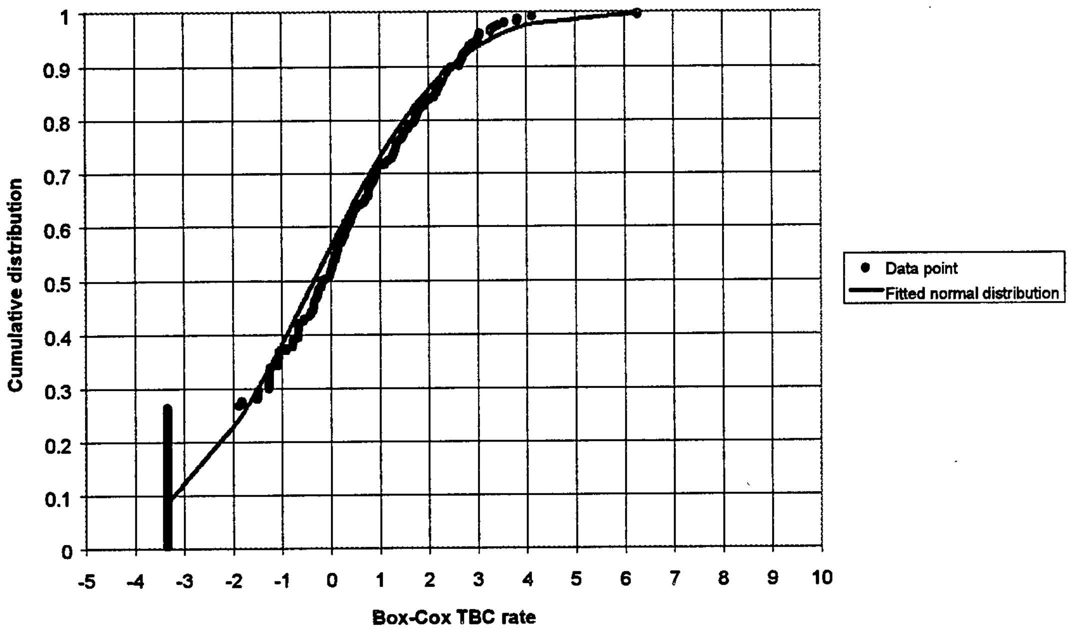

Figure E-19. TBC Rate Distribution for the US 3d Infantry Division

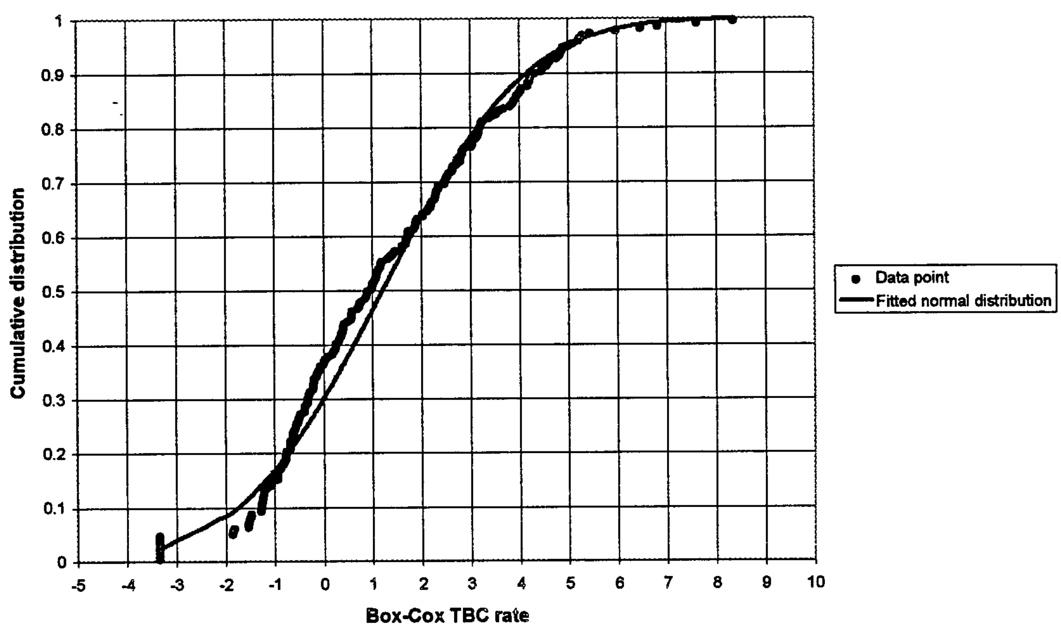

Figure E-20. TBC Rate Distribution for the US 4th Infantry Division

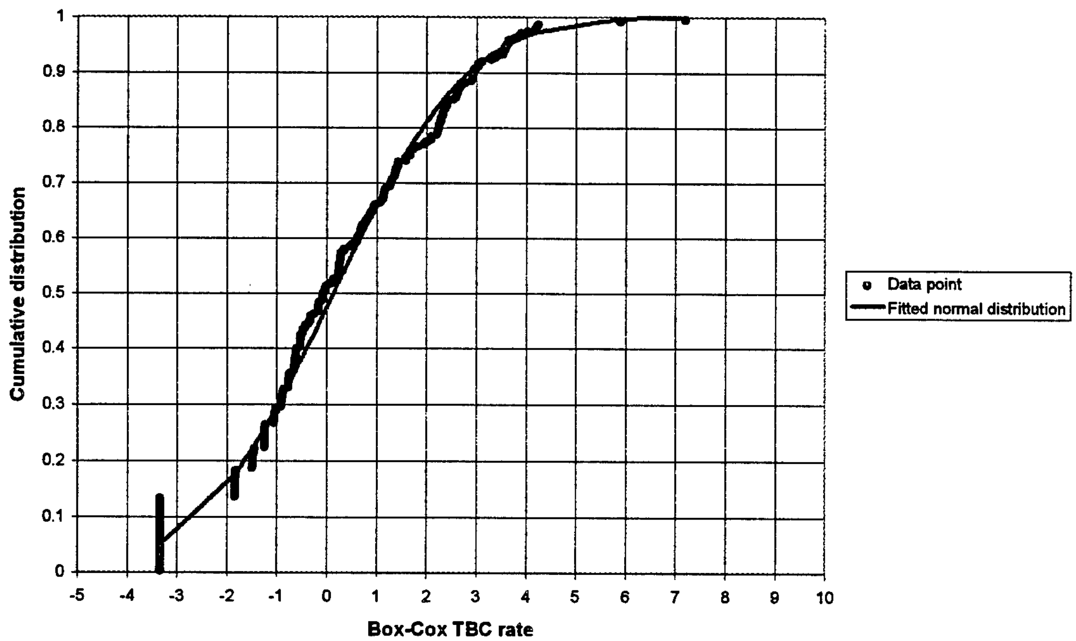

Figure E-21. TBC Rate Distribution for the US 5th Infantry Division

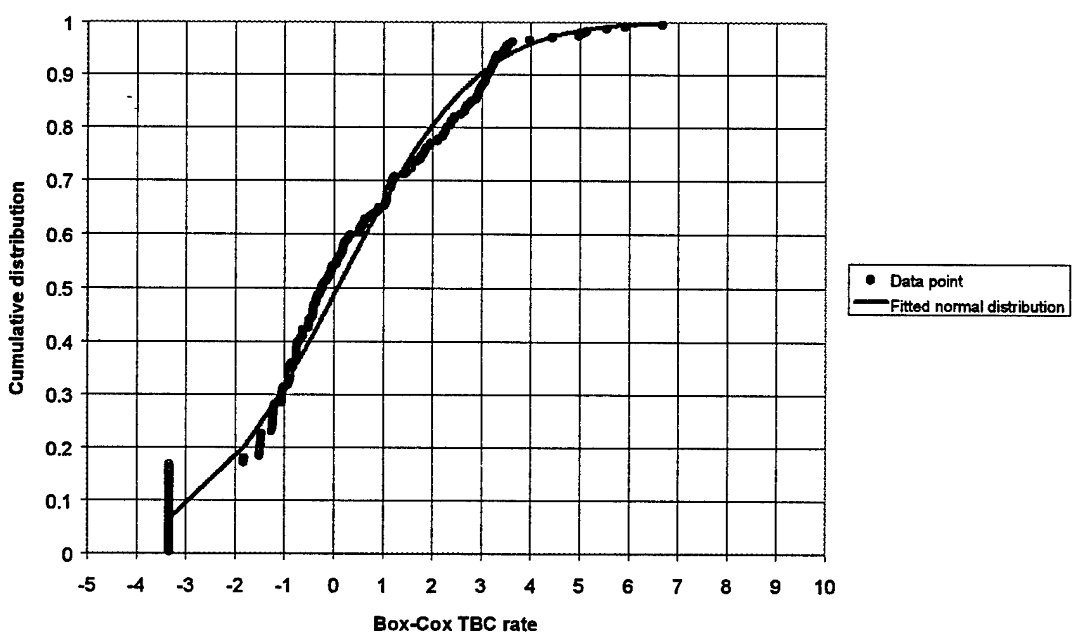

Figure E-22. TBC Rate Distribution for the US 8th Infantry Division

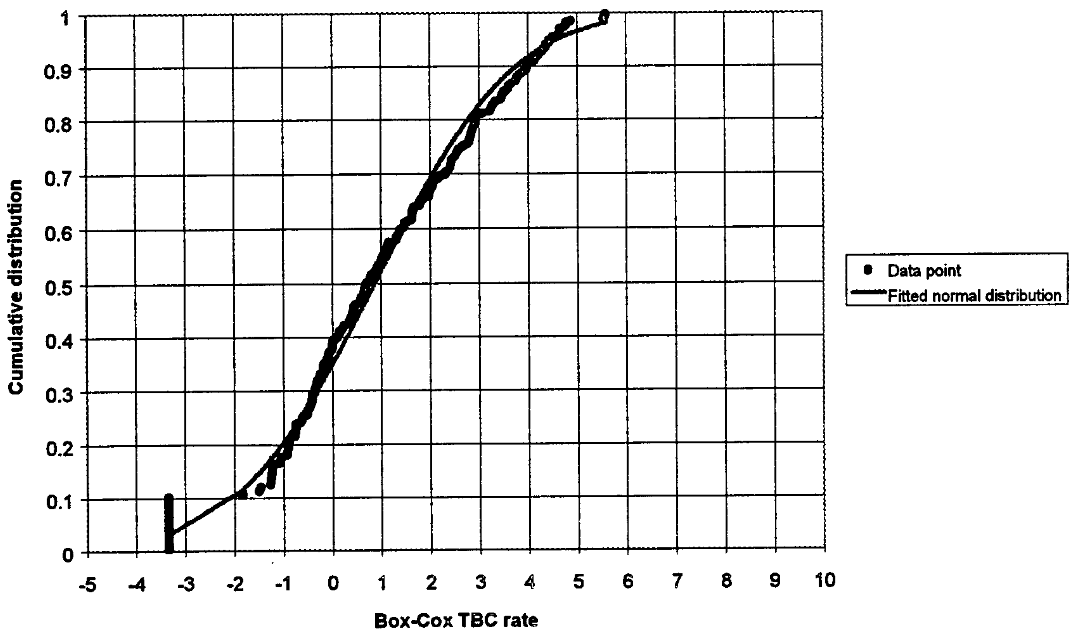

Figure E-23. TBC Rate Distribution for the US 9th Infantry Division

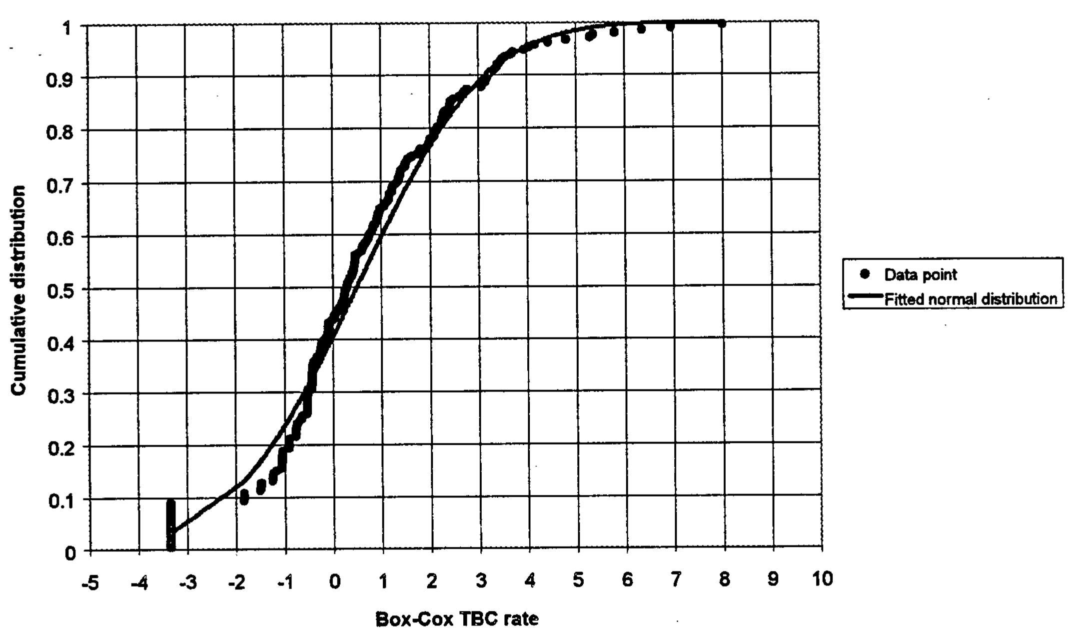

Figure E-24. TBC Rate Distribution for the US 26th Infantry Division

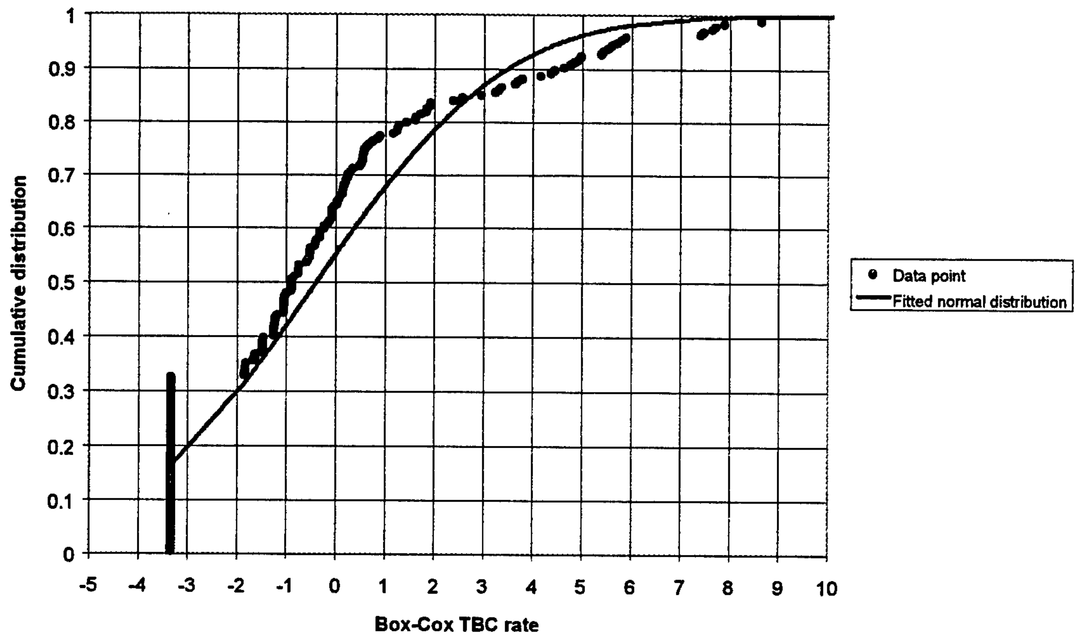

Figure E-25. TBC Rate Distribution for the US 28th Infantry Division

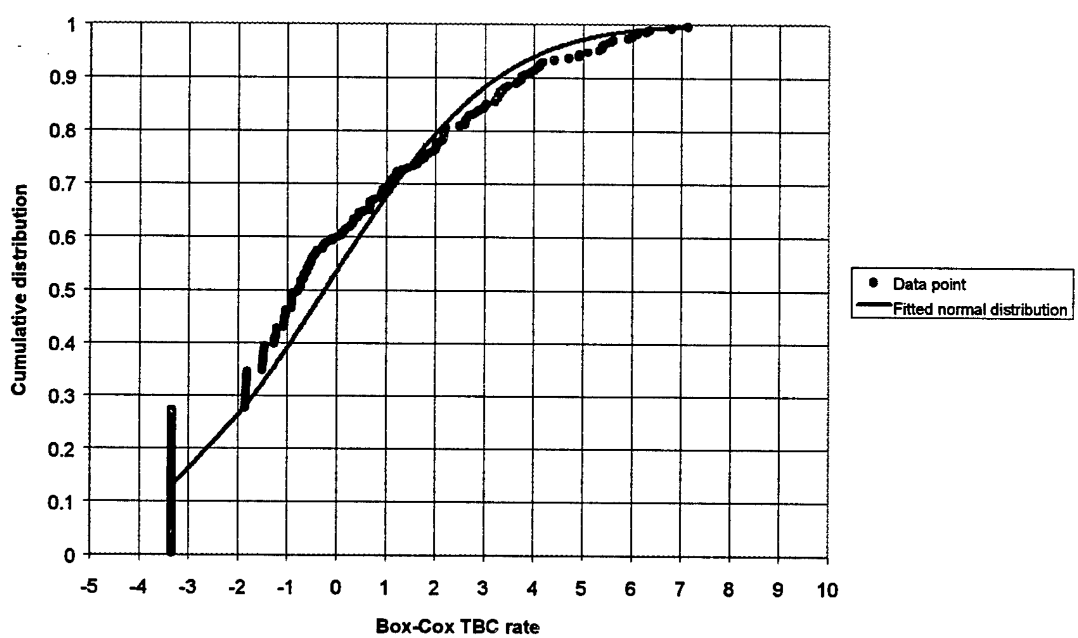

Figure E-26. TBC Rate Distribution for the US 29th Infantry Division

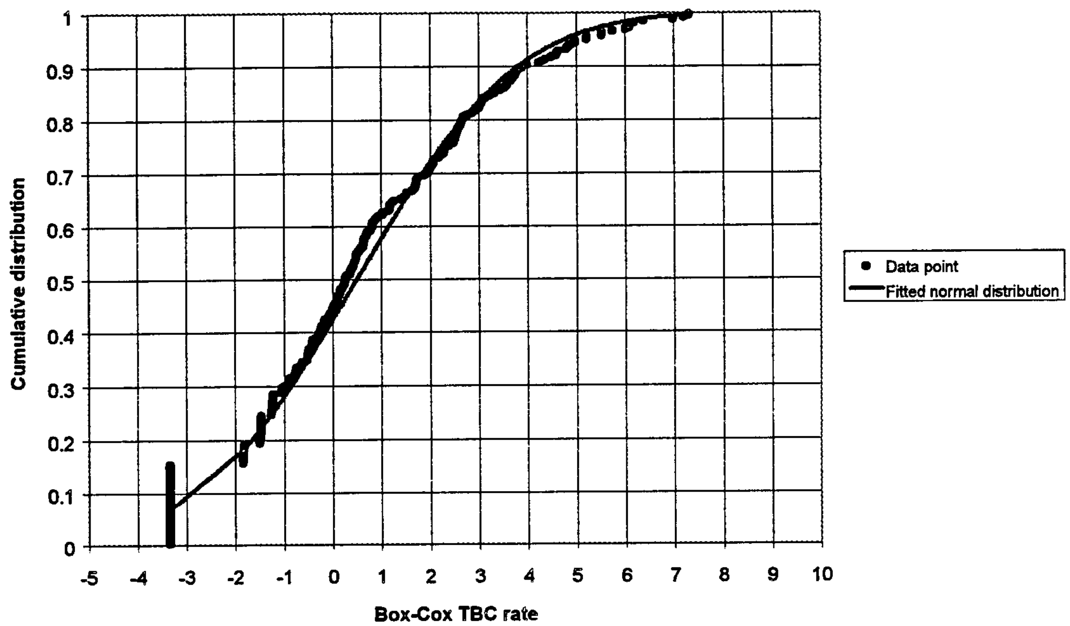

Figure E-27. TBC Rate Distribution for the US 30th Infantry Division

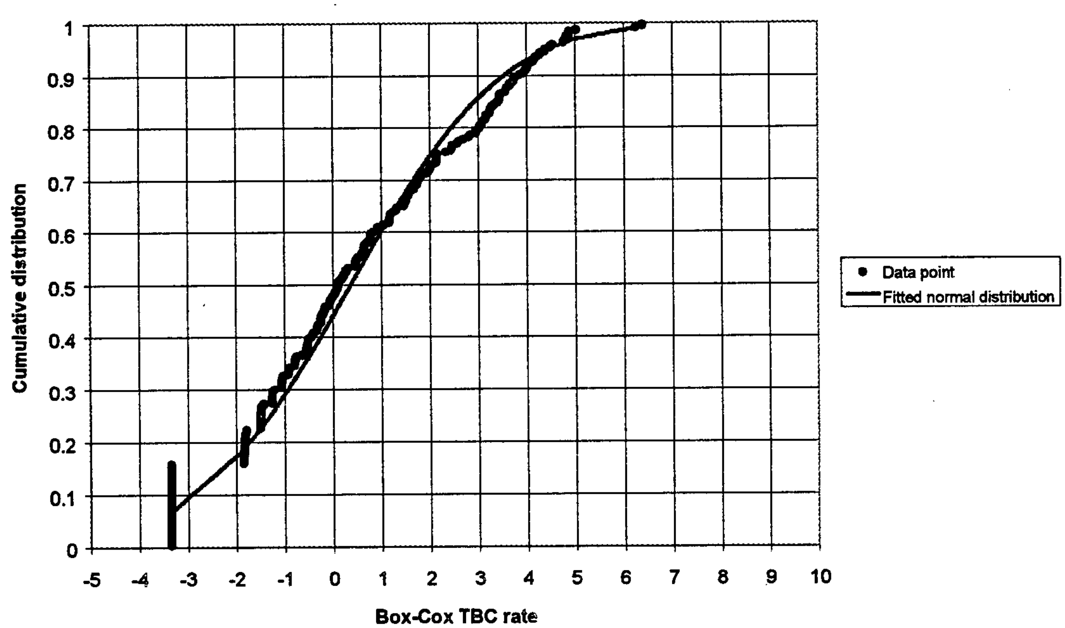

Figure E-28. TBC Rate Distribution for the US 35th Infantry Division

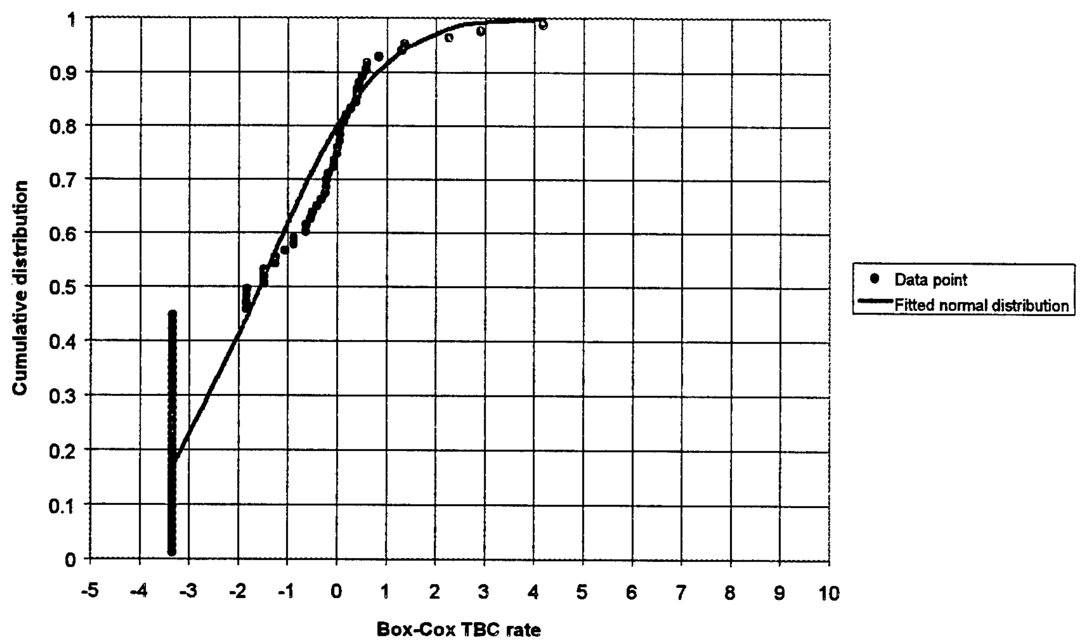

Figure E-29. TBC Rate Distribution for the US 65th Infantry Division

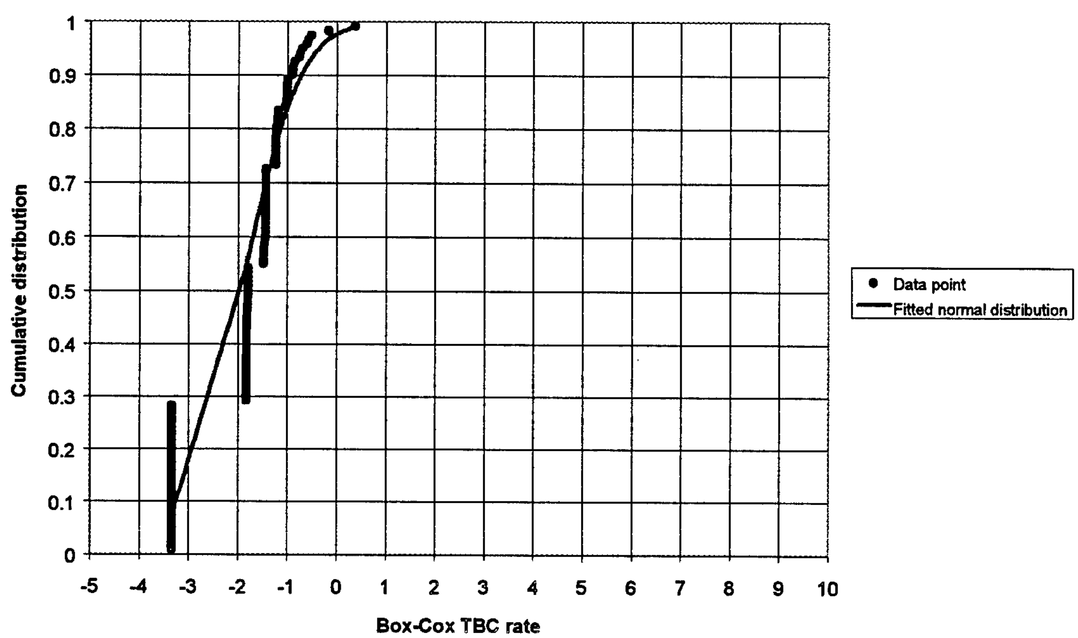

Figure E-30. TBC Rate Distribution for the US 66th Infantry Division

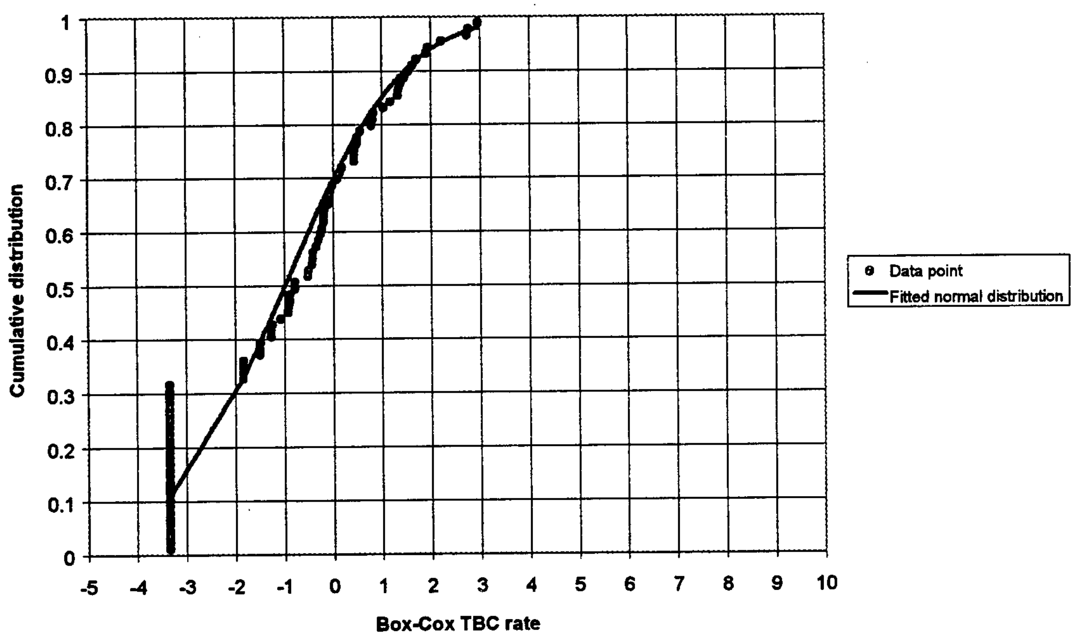

Figure E-31. TBC Rate Distribution for the US 69th Infantry Division

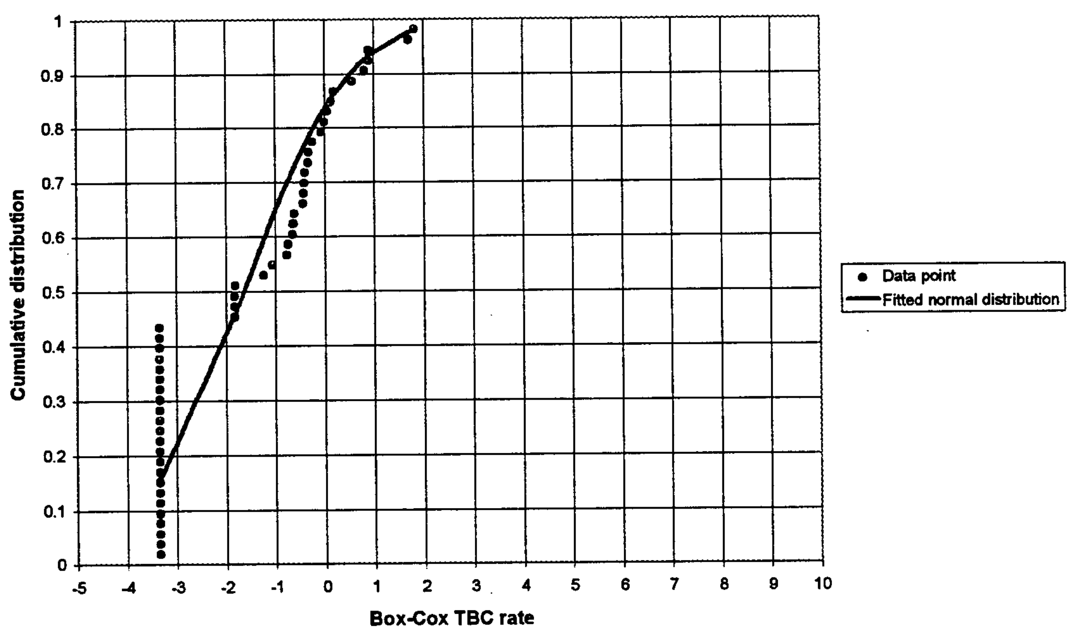

Figure E-32. TBC Rate Distribution for the US 71st Infantry Division

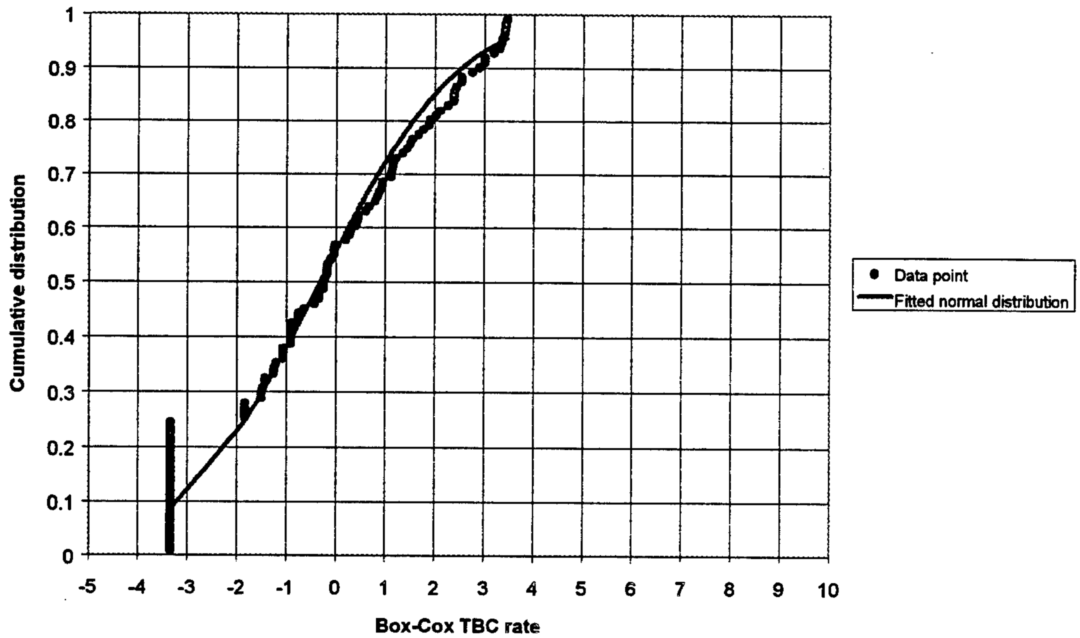

Figure E-33. TBC Rate Distribution for the US 75th Infantry Division

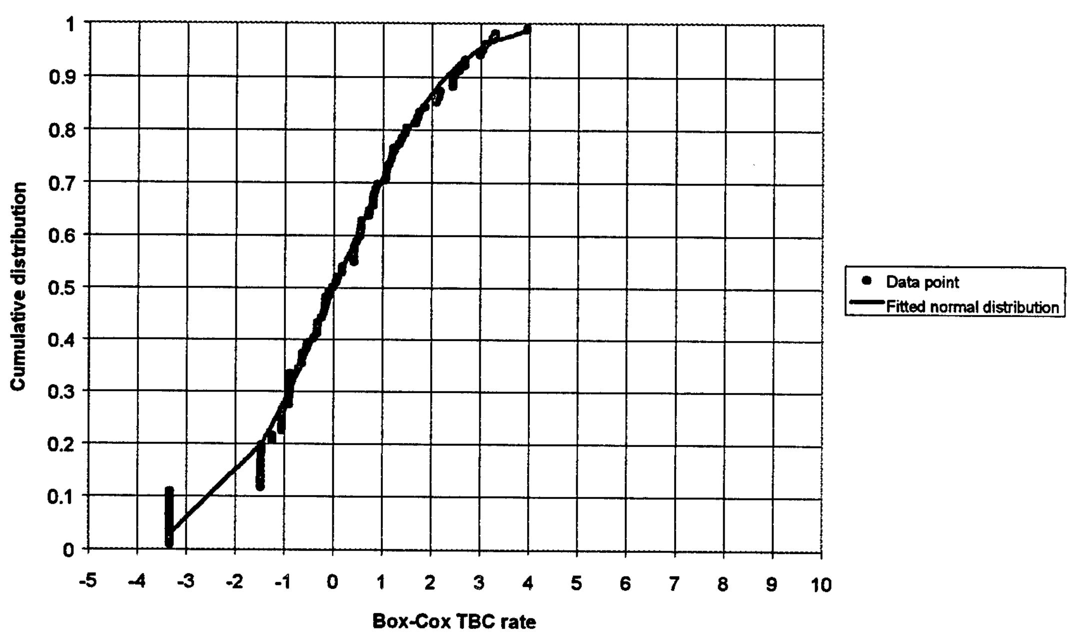

Figure E-34. TBC Rate Distribution for the US 76th Infantry Division

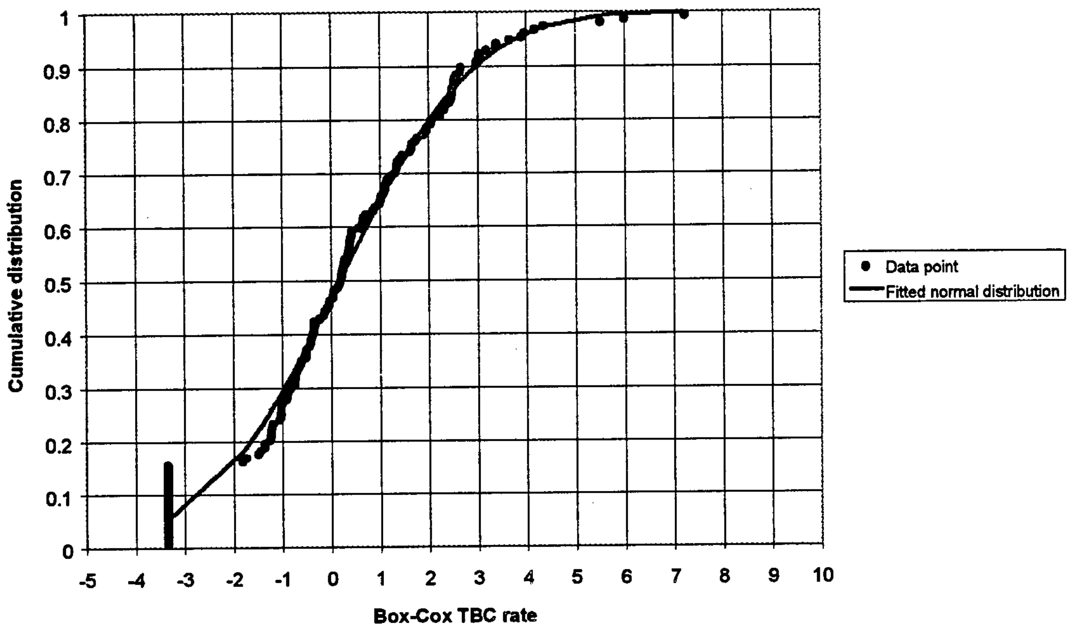

Figure E-35. TBC Rate Distribution for the US 78th Infantry Division

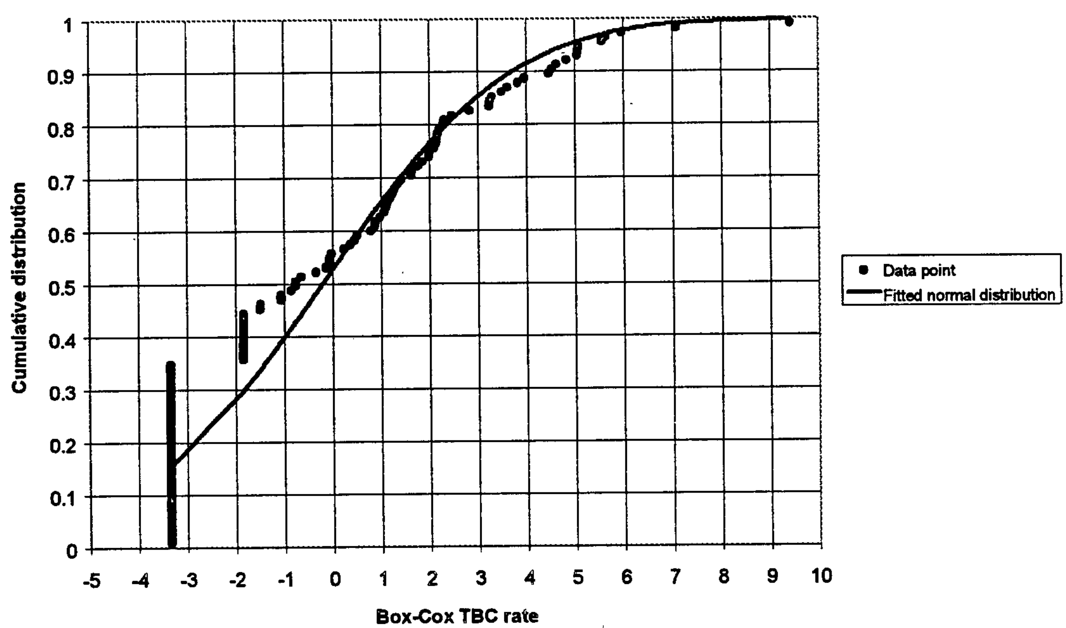

Figure E-36. TBC Rate Distribution for the US 79th Infantry Division

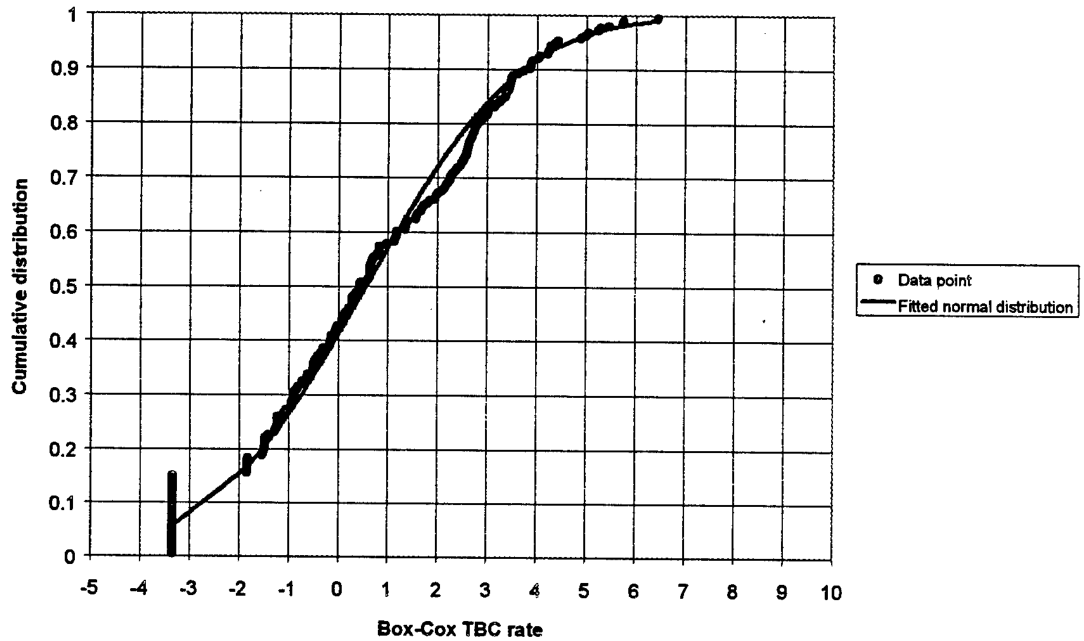

Figure E-37. TBC Rate Distribution for the US 80th Infantry Division

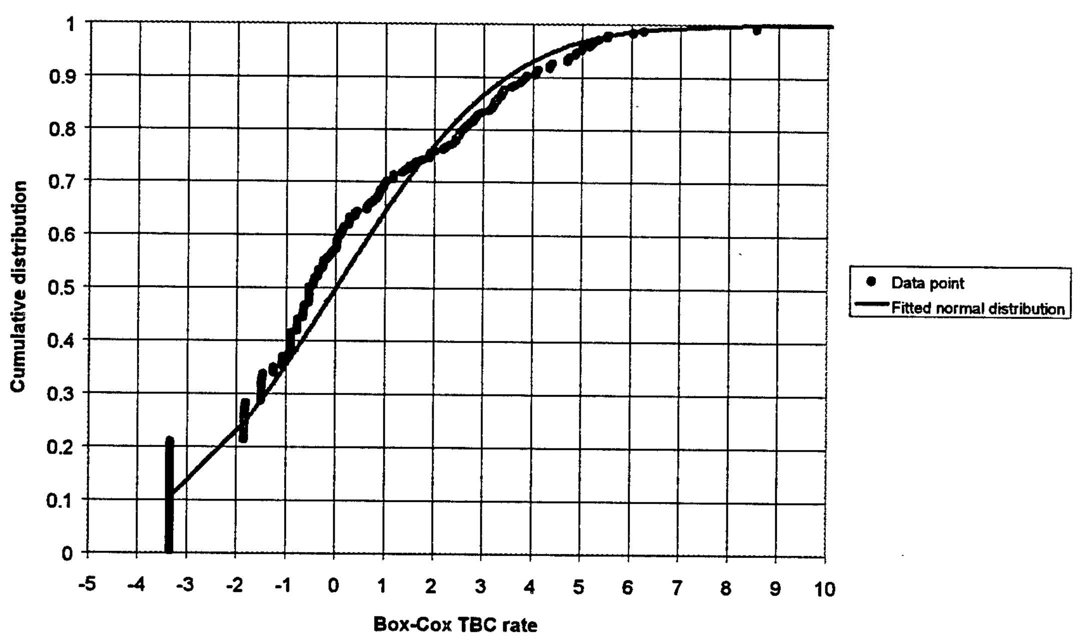

Figure E-38. TBC Rate Distribution for the US 83d Infantry Division

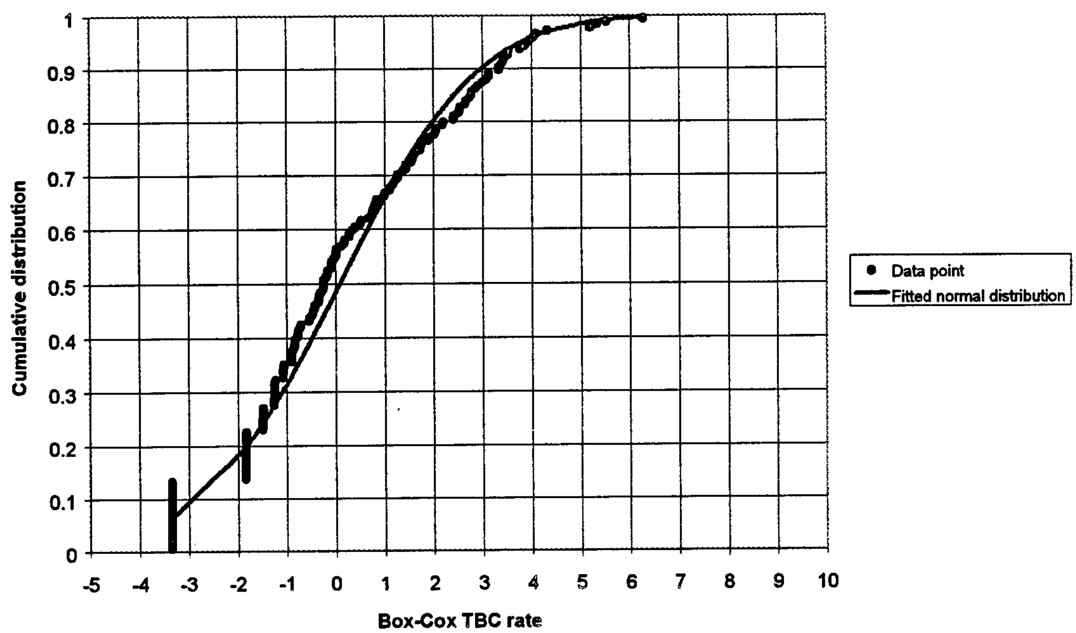

Figure E-39. TBC Rate Distribution for the US 84th Infantry Division

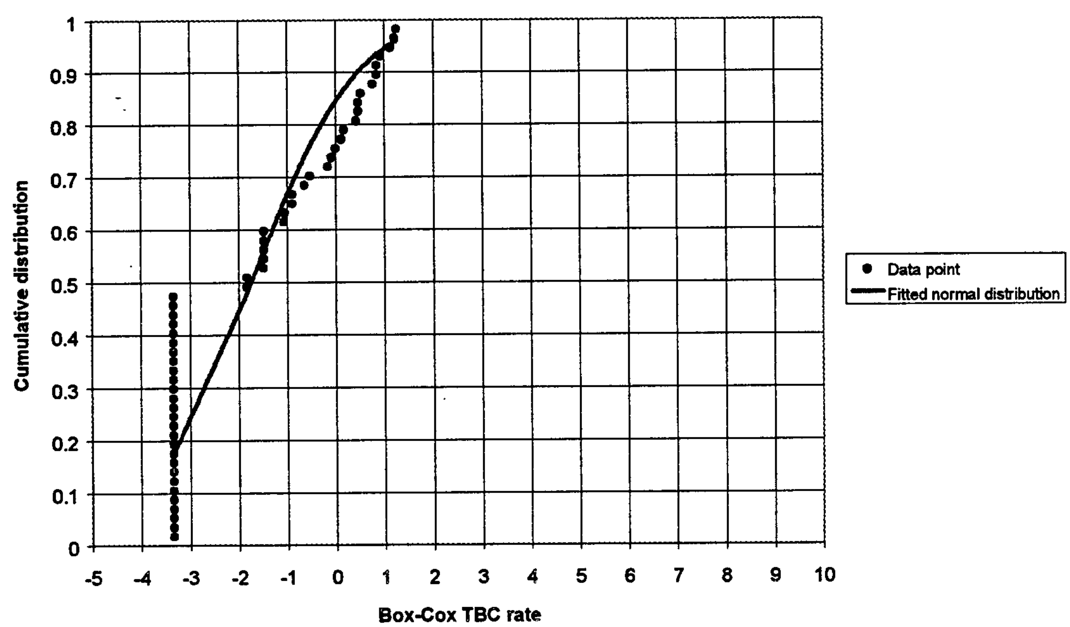

Figure E-40. TBC Rate Distribution for the US 86th Infantry Division

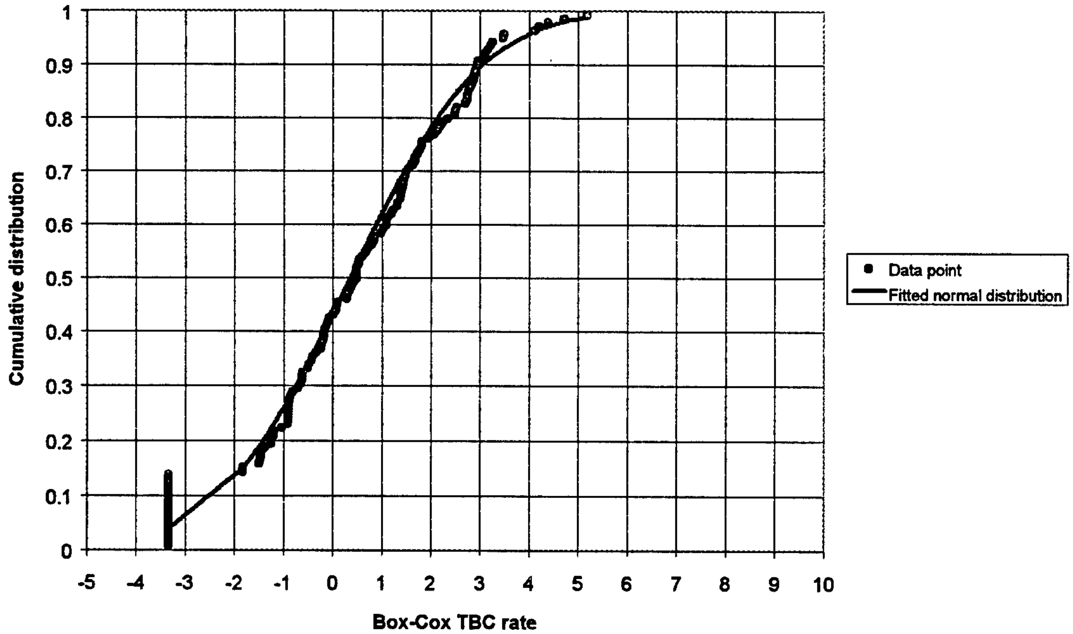

Figure E-41. TBC Rate Distribution for the US 87th Infantry Division

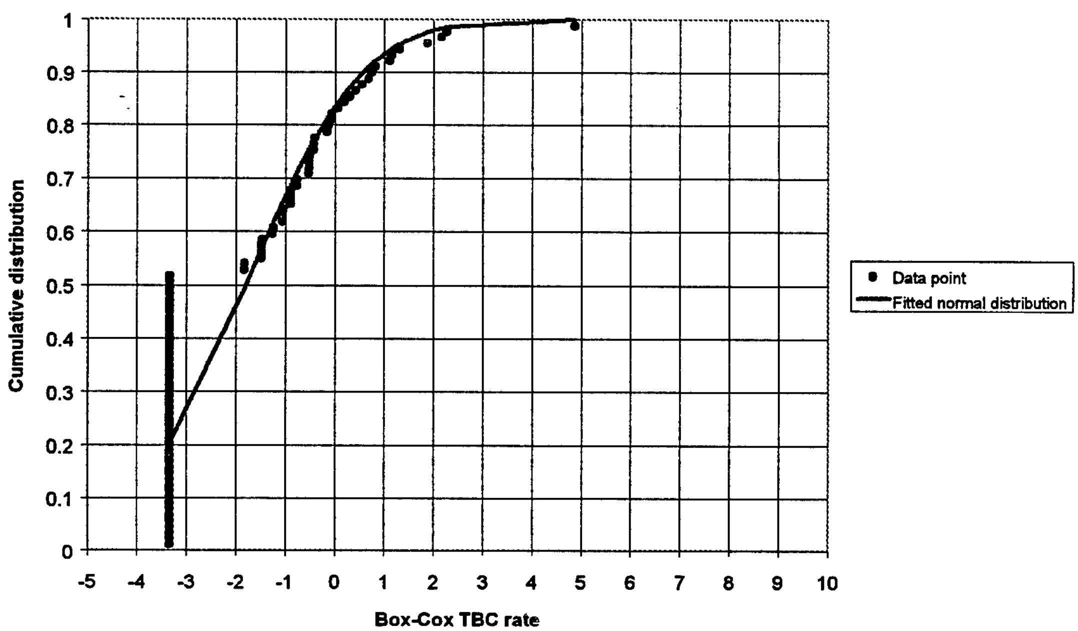

Figure E-42. TBC Rate Distribution for the US 89th Infantry Division

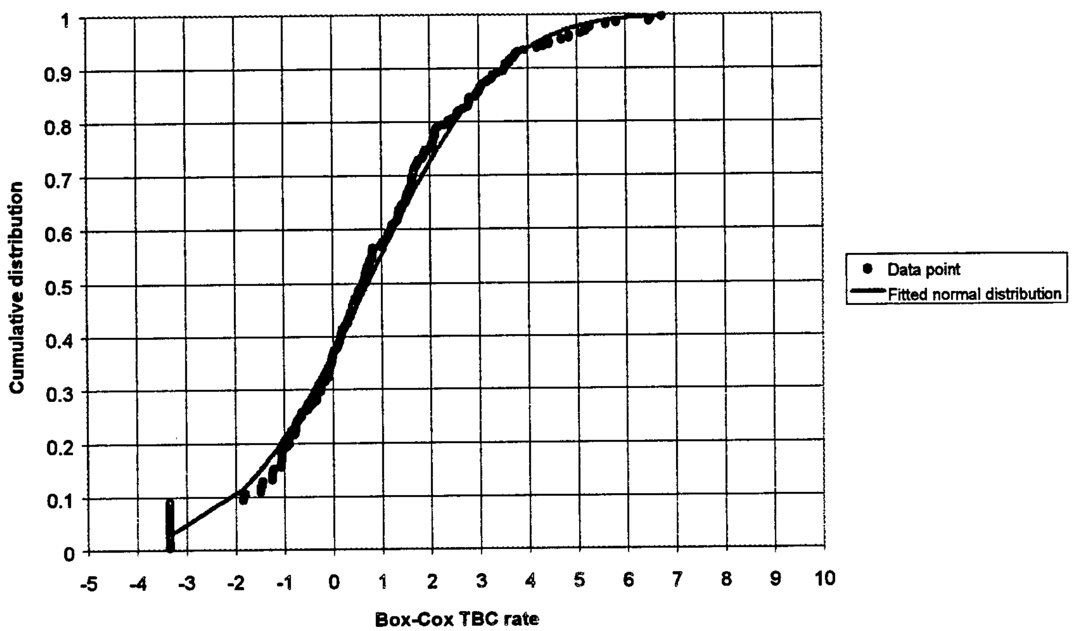

Figure E-43. TBC Rate Distribution for the US 90th Infantry Division

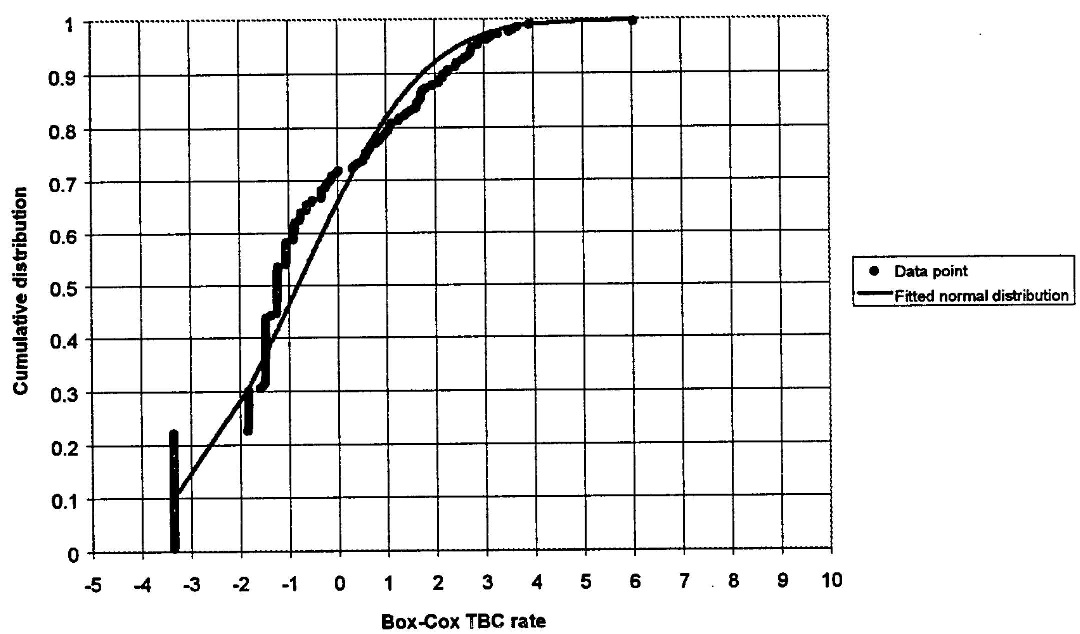

Figure E-44. TBC Rate Distribution for the US 94th Infantry Division

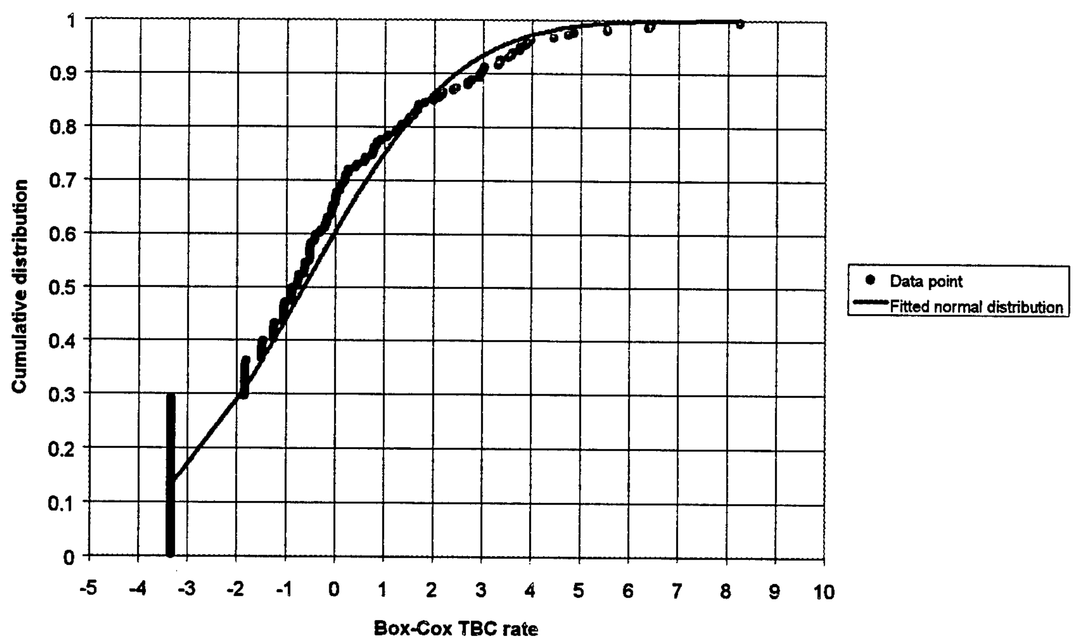

Figure E-45. TBC Rate Distribution for the US 95th Infantry Division

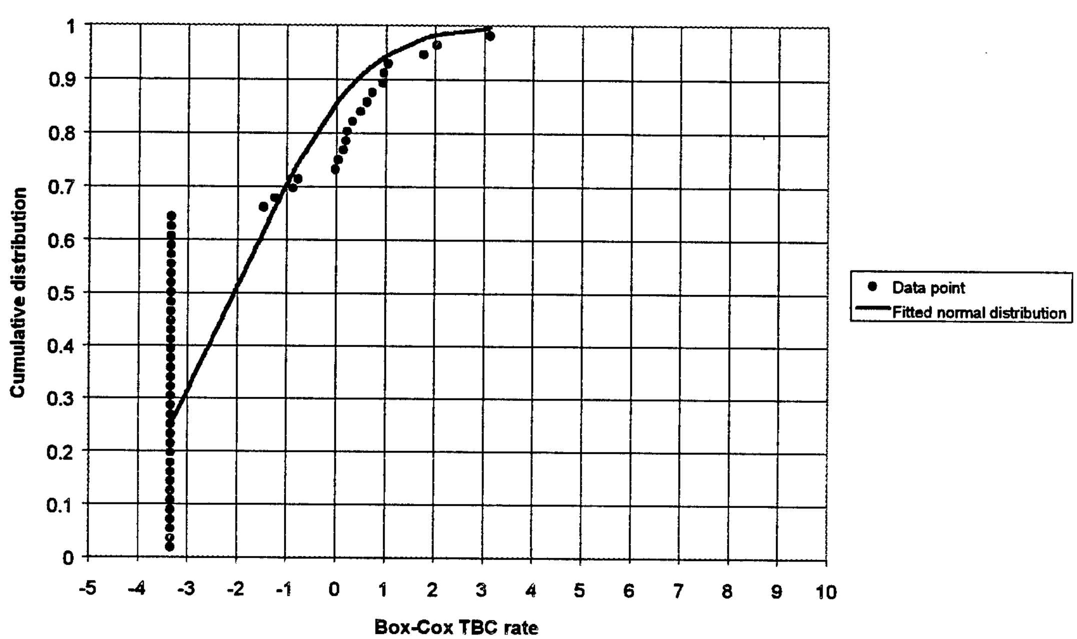

Figure E-46. TBC Rate Distribution for the US 97th Infantry Division

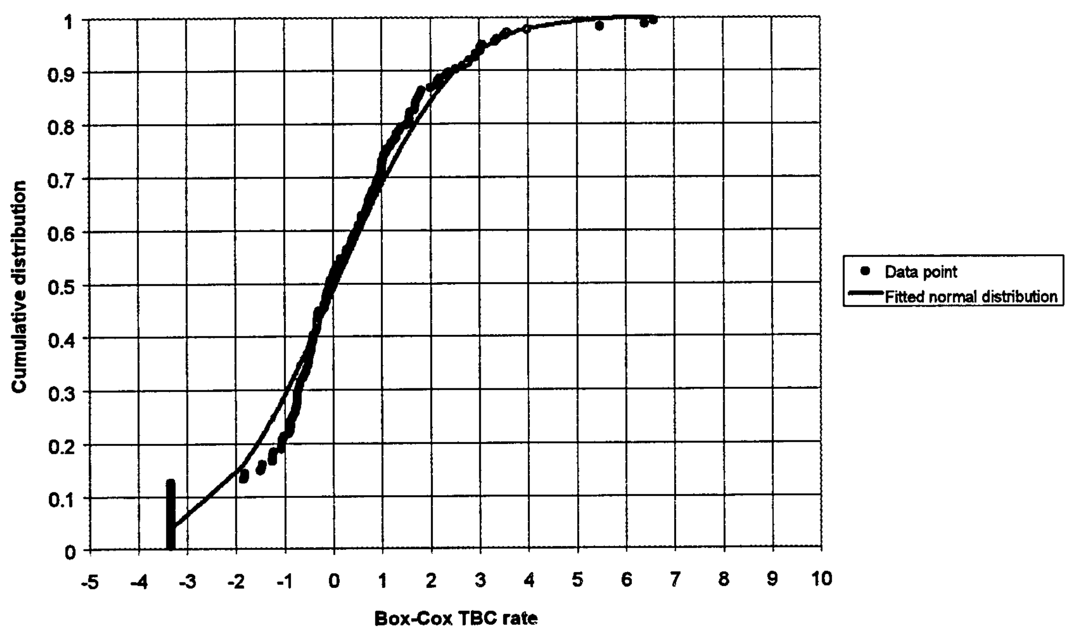

Figure E-47. TBC Rate Distribution for the US 99th Infantry Division

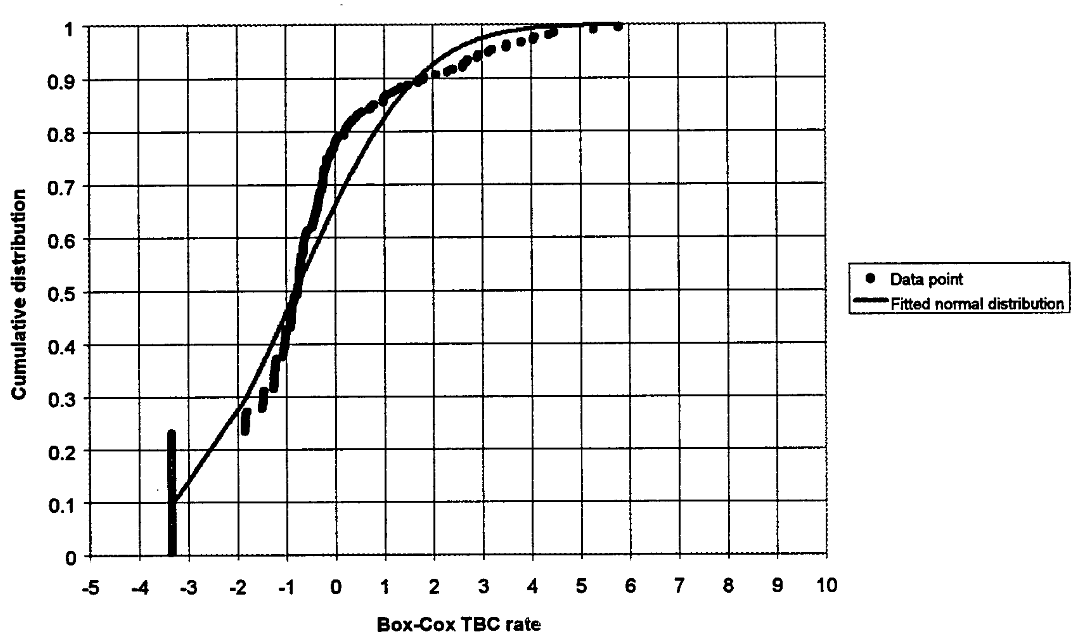

Figure E-48. TBC Rate Distribution for the US 102d Infantry Division

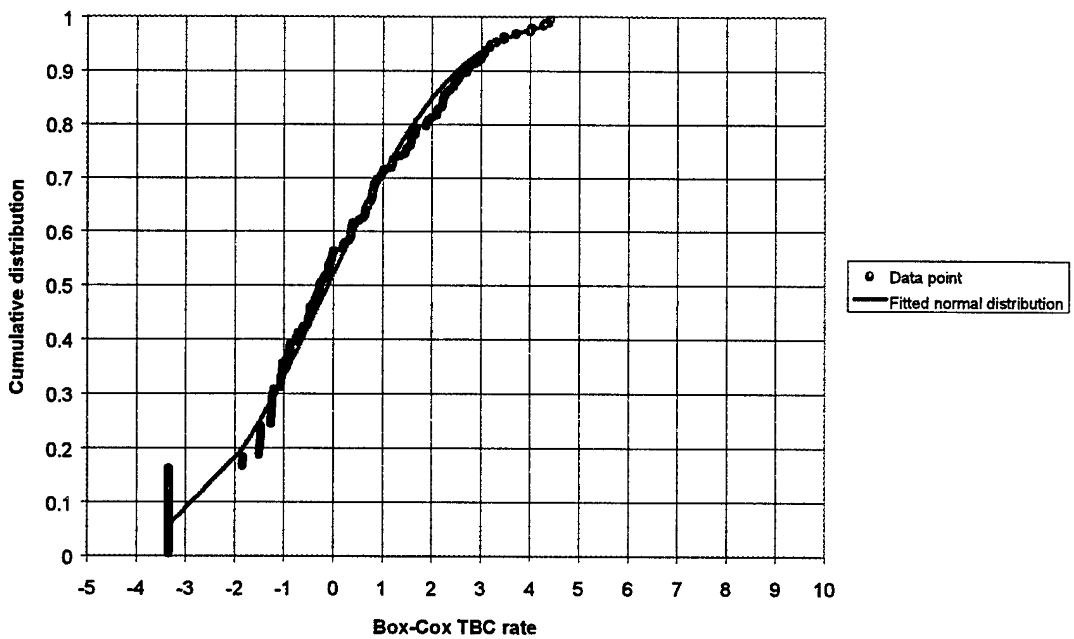

Figure E-49. TBC Rate Distribution for the US 104th Infantry Division

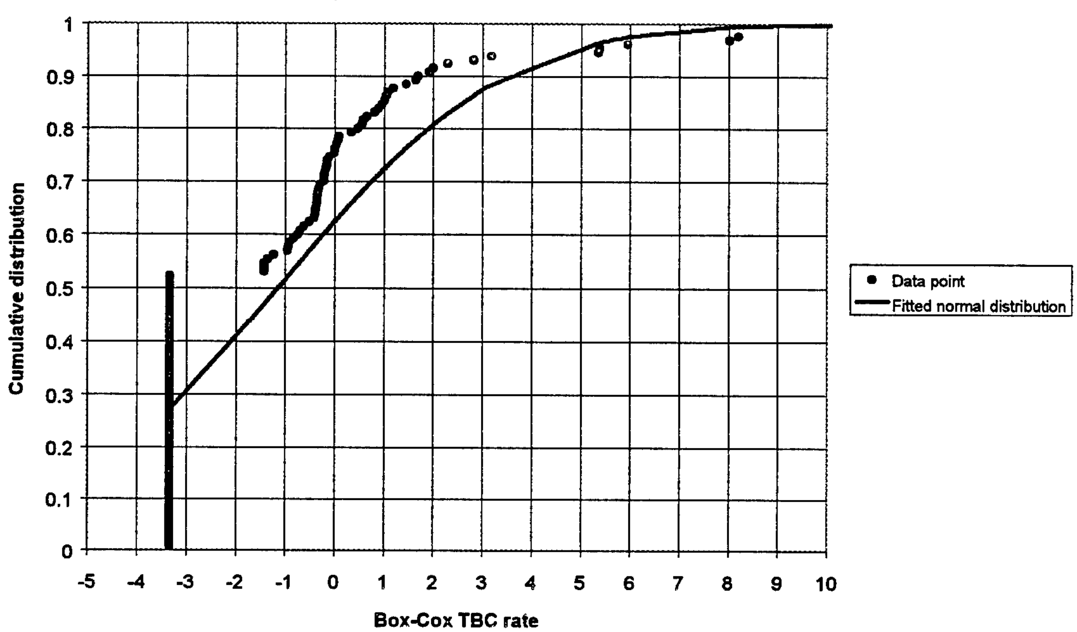

Figure E-50. TBC Rate Distribution for the US 106th Infantry Division

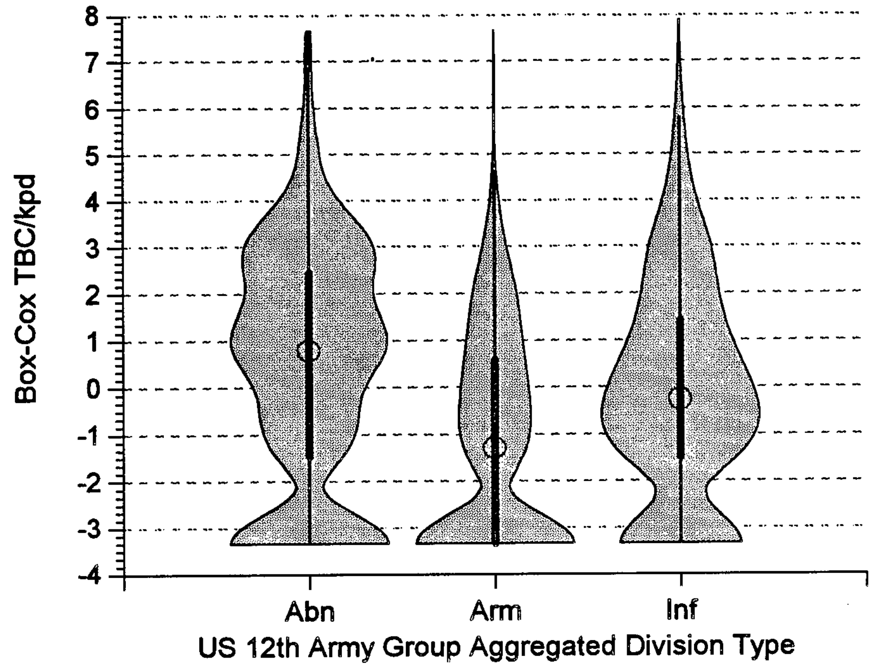

Figure E-51. TBC Rate Violin Plots Aggregated by 12th Army Group Division Type

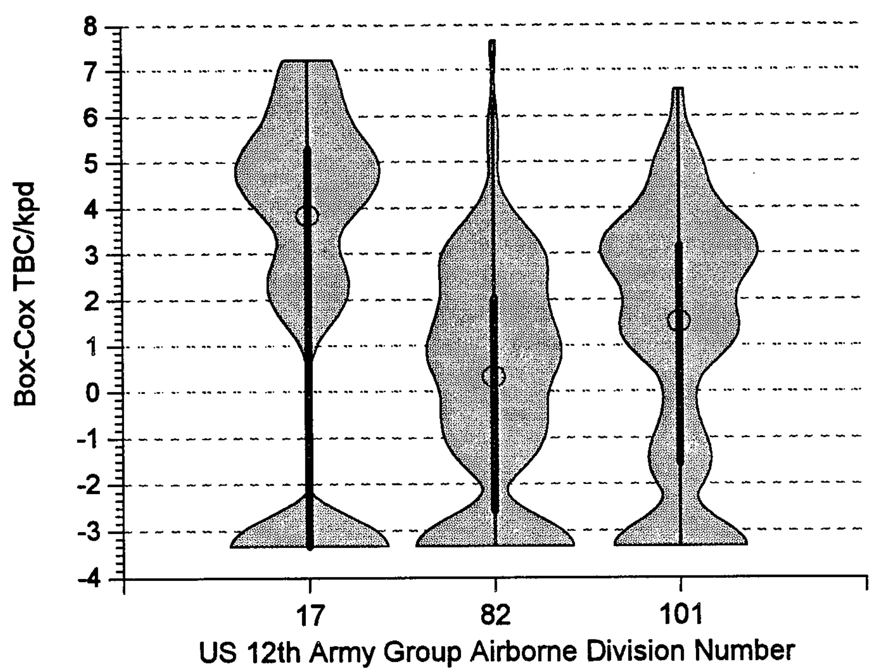

Figure E-52. TBC Rate Violin Plots for 12th Army Group Airborne Divisions

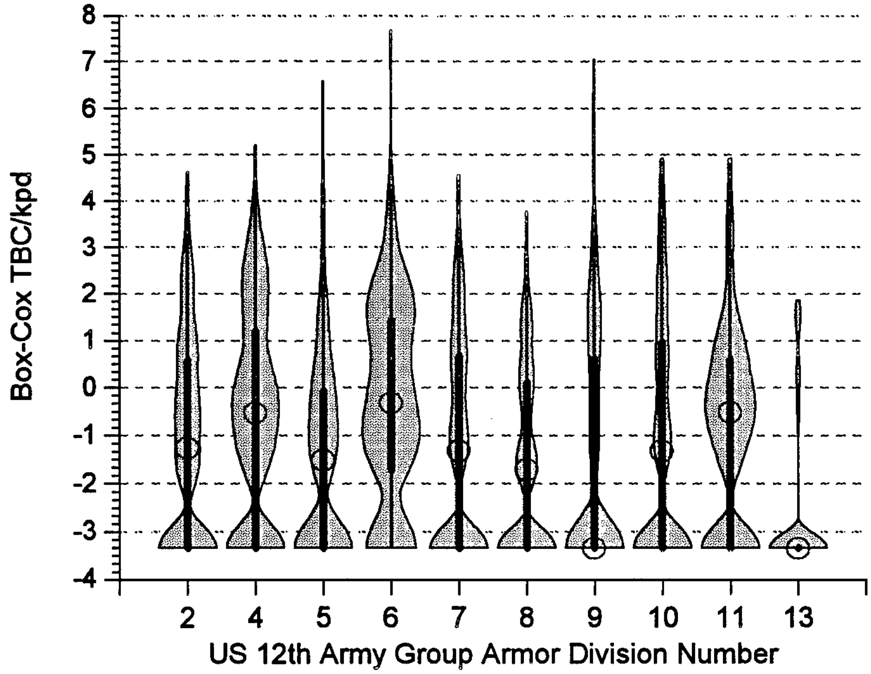

Figure E-53. TBC Rate Violin Plots for 12th Army Group Armor Divisions

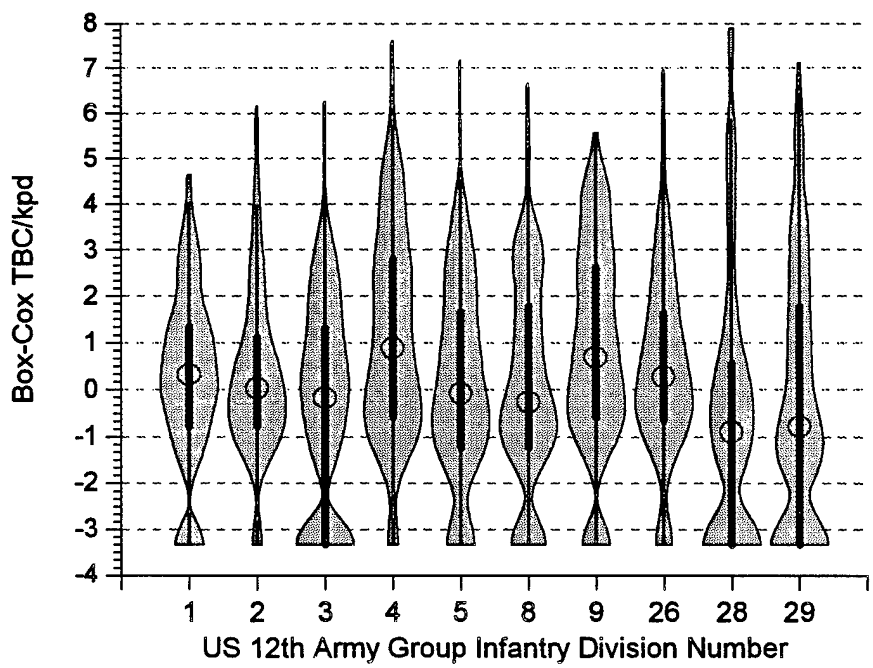

Figure E-54. TBC Rate Violin Plots for 12th Army Group Infantry Divisions 1 Through 29

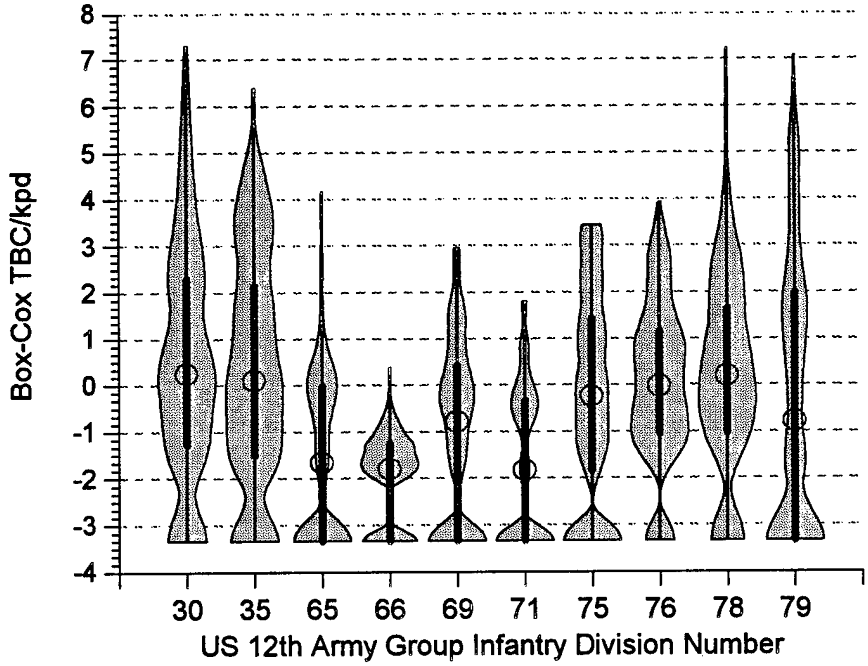

Figure E-55. TBC Rate Violin Plots for 12th Army Group Infantry Divisions 30 through 79

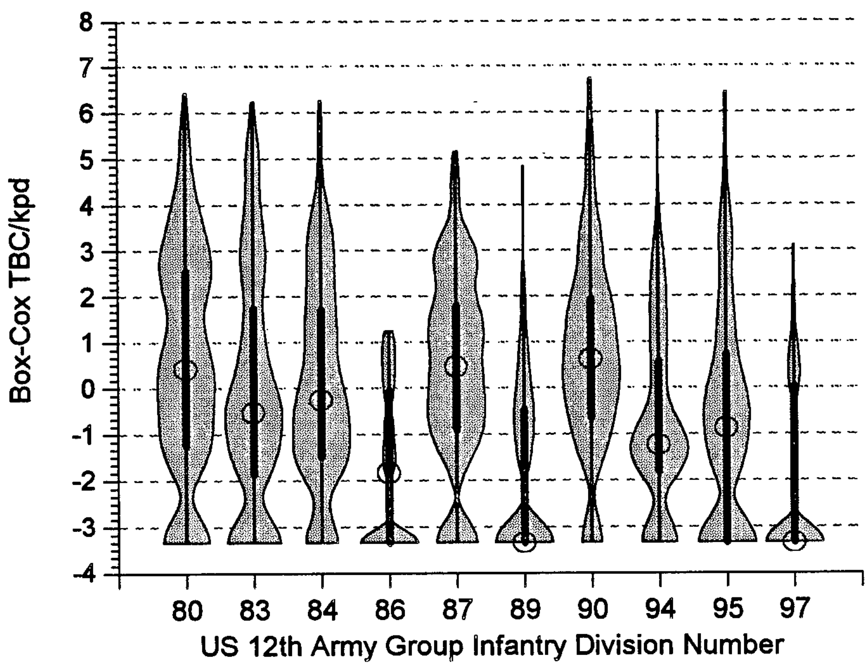

Figure E-56. TBC Rate Violin Plots for 12th Army Group Infantry Divisions 80 Through 97

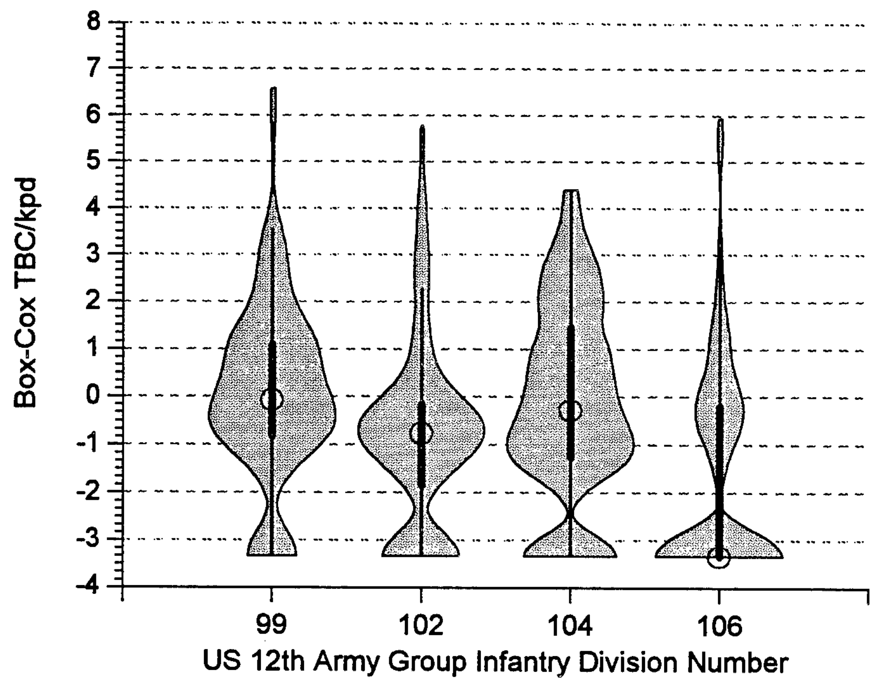

Figure E-57. TBC Rate Violin Plots for 12th Army Group Infantry Divisions 99 Through 106

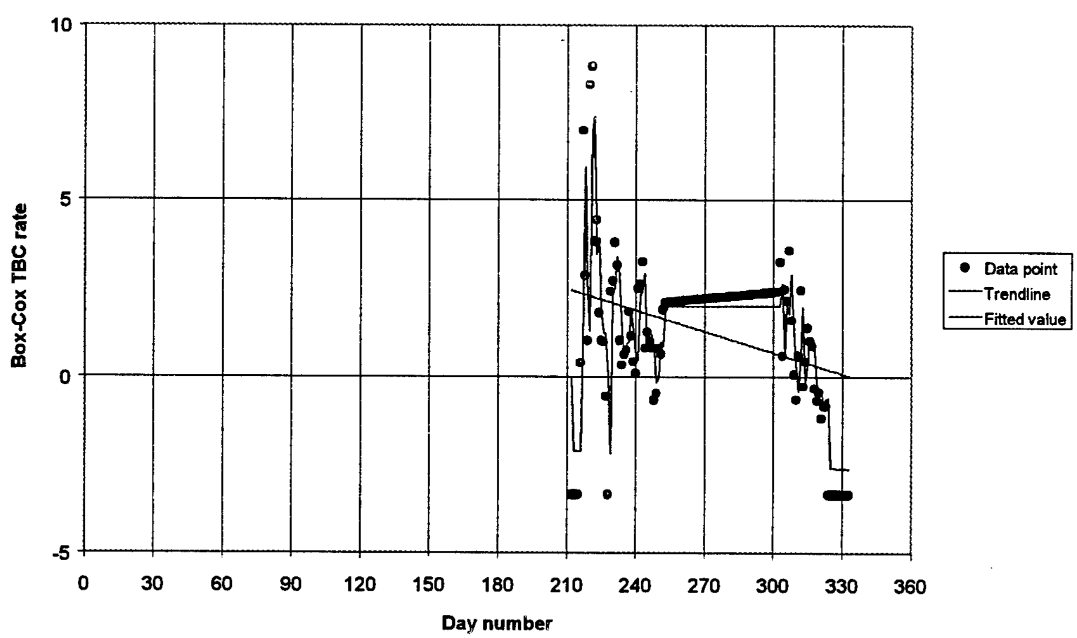

Figure E-58. Time Series Plot for the 17th Airborne Division, US 12th Army Group

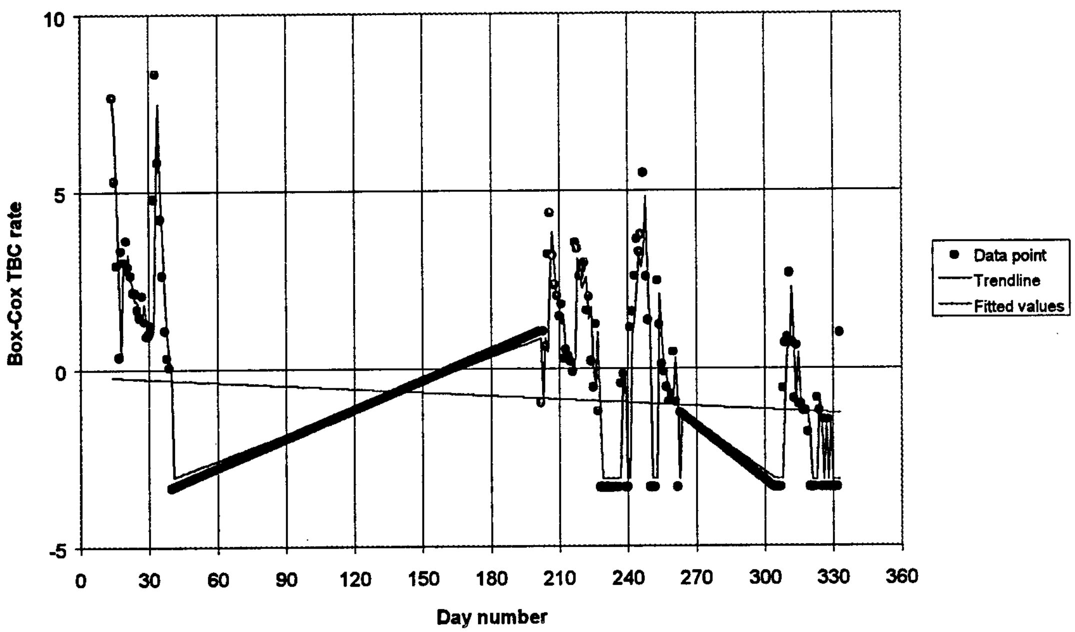

Figure E-59. Time Series Plot for the 82d Airborne Division, US 12th Army Group

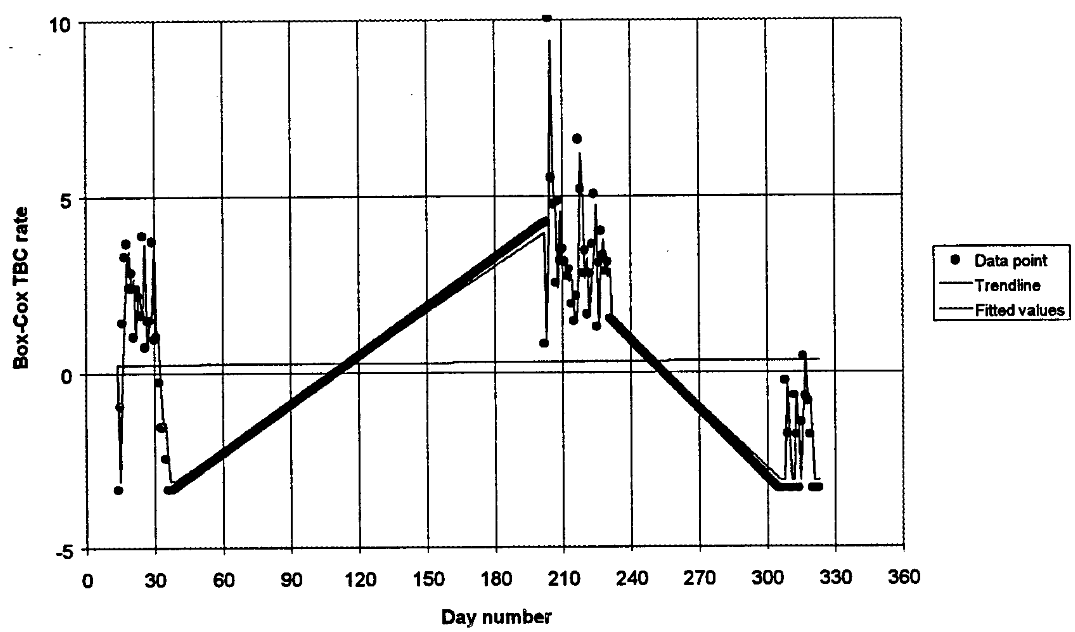

Figure E-60. Time Series Plot for the 101st Airborne Division, US 12th Army Group

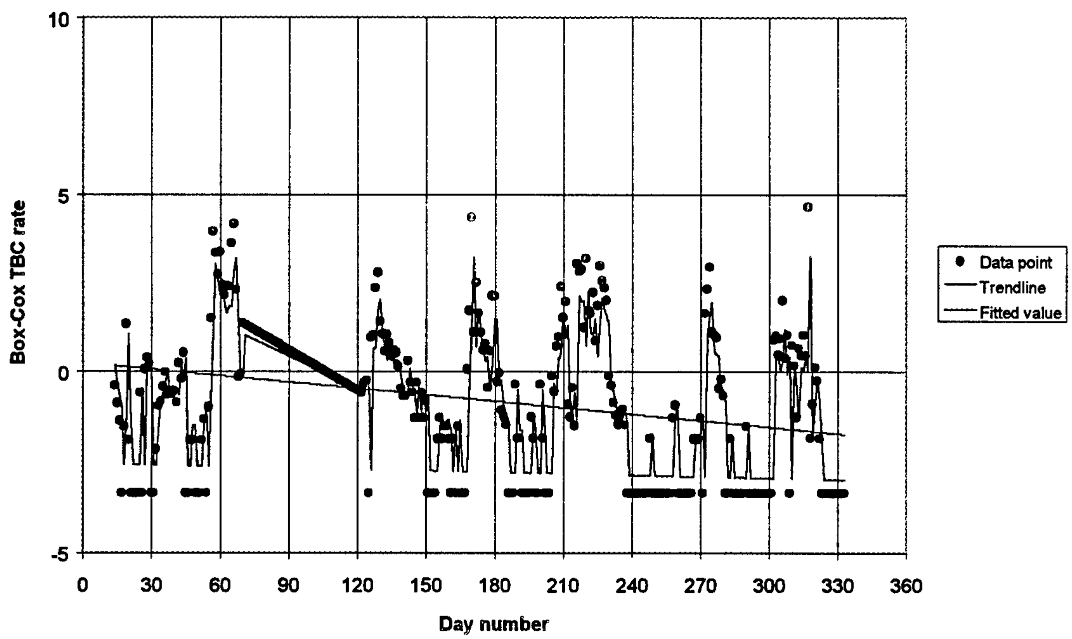

Figure E-61. Time Series Plot for the 2d Armor Division, US 12th Army Group

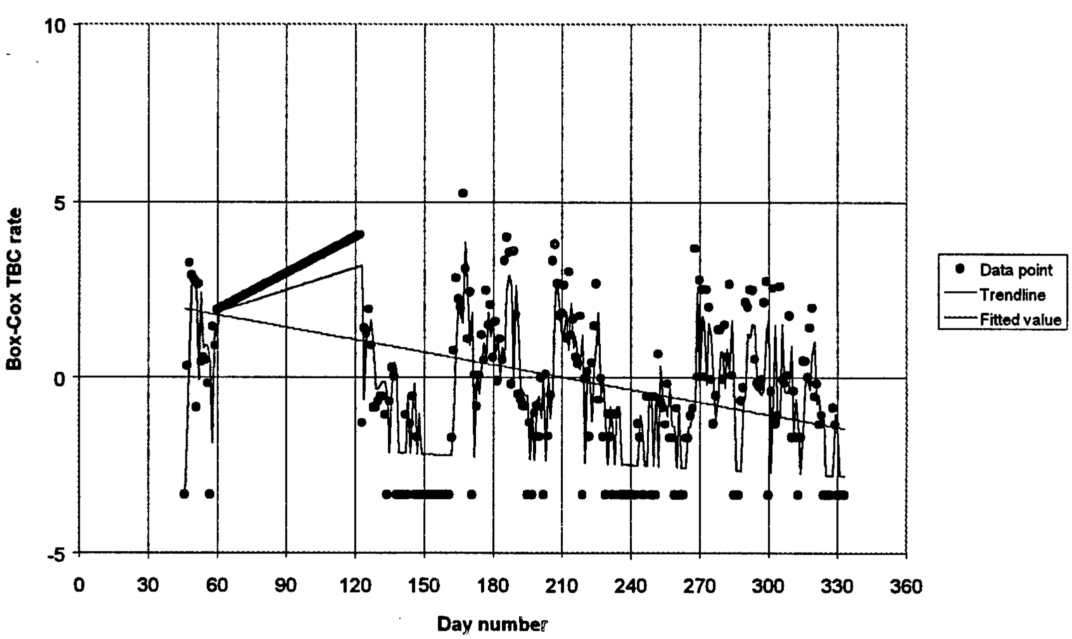

Figure E-62. Time Series Plot for the 4th Armor Division, US 12th Army Group

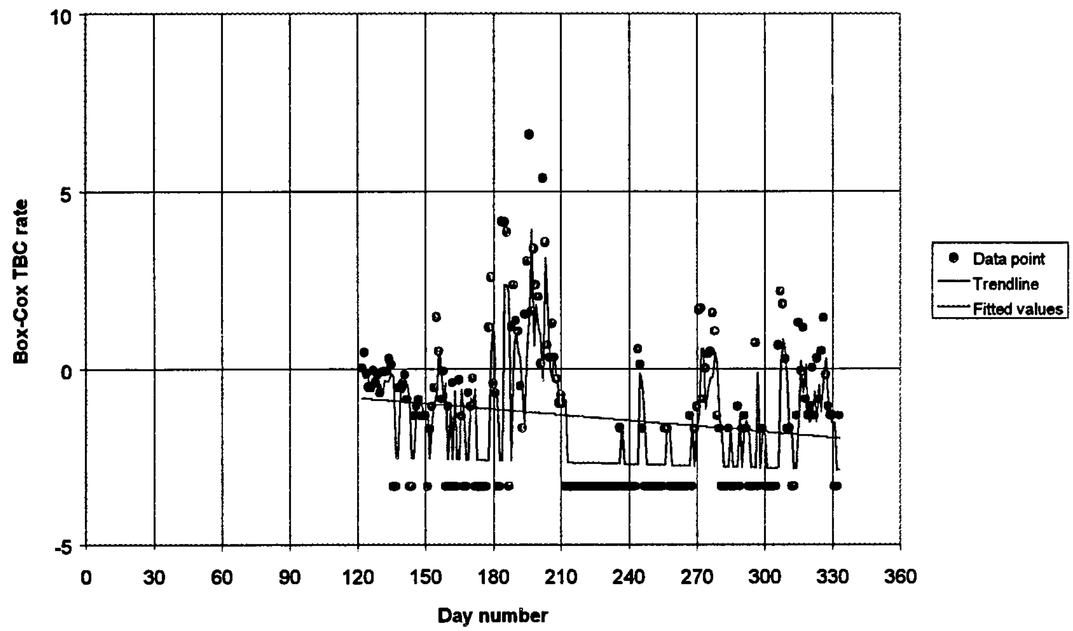

Figure E-63. Time Series Plot for the 5th Armor Division, US 12th Army Group

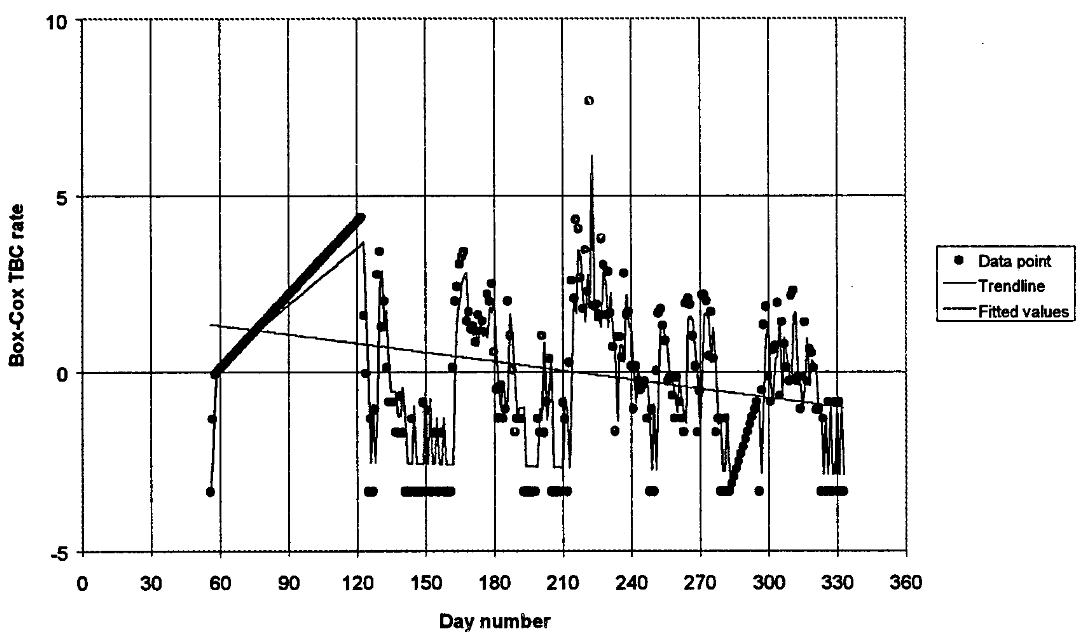

Figure E-64. Time Series Plot for the 6th Armor Division, US 12th Army Group

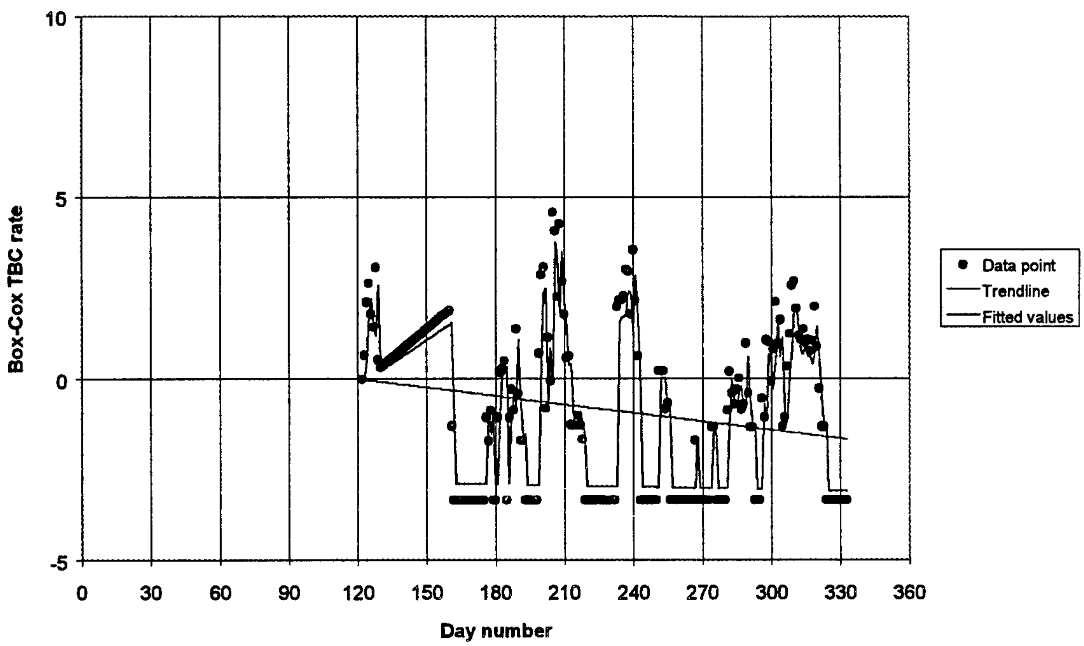

Figure E-65. Time Series Plot for the 7th Armor Division, US 12th Army Group

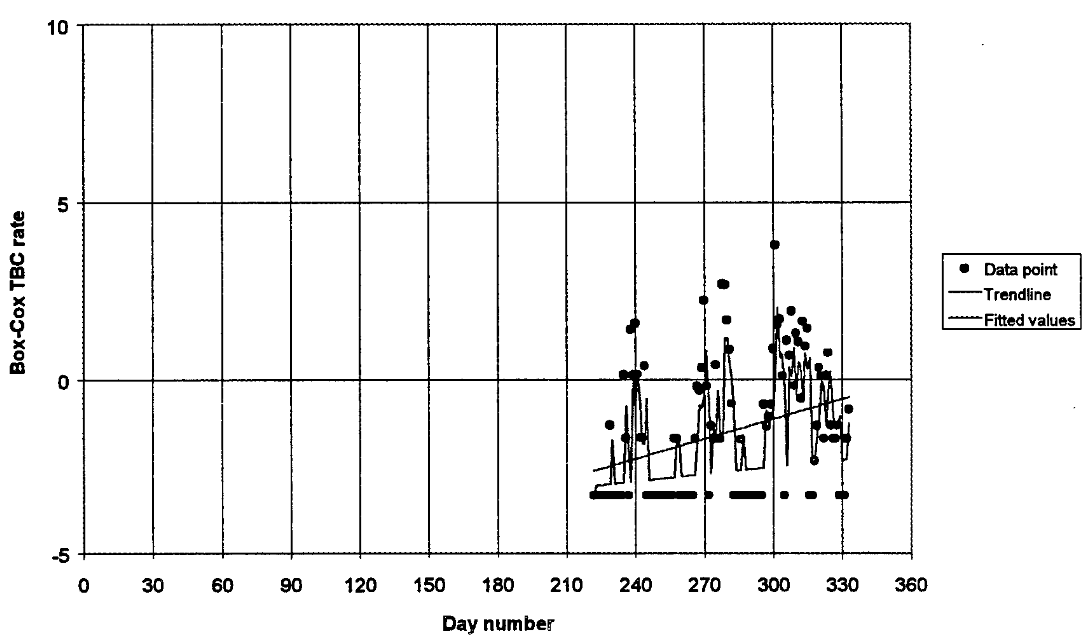

Figure E-66. Time Series Plot for the 8th Armor Division, US 12th Army Group

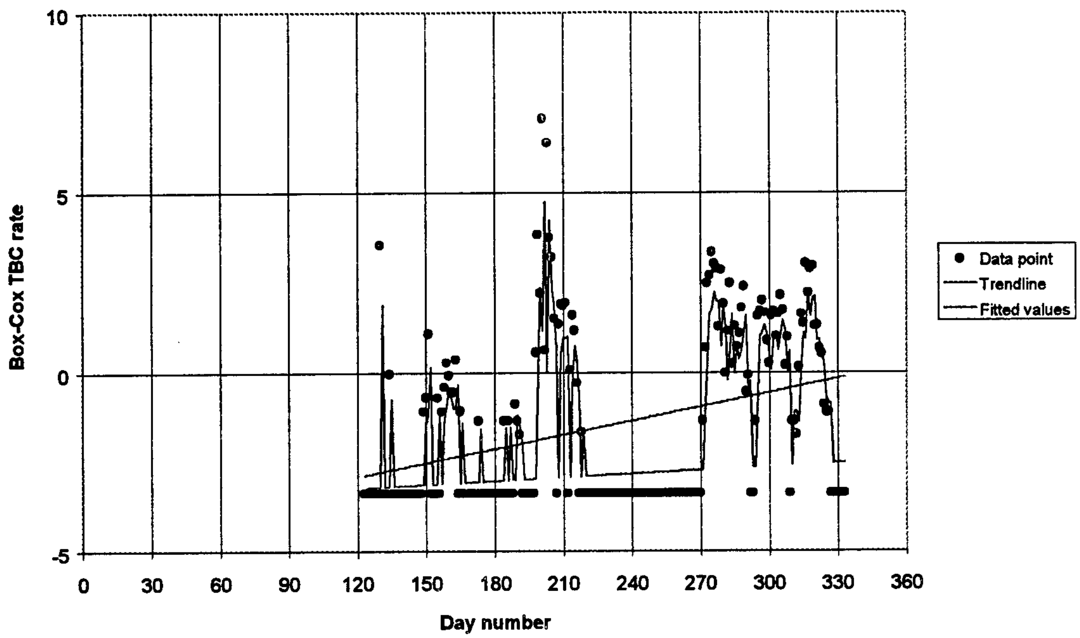

Figure E-67. Time Series Plot for the 9th Armor Division, US 12th Army Group

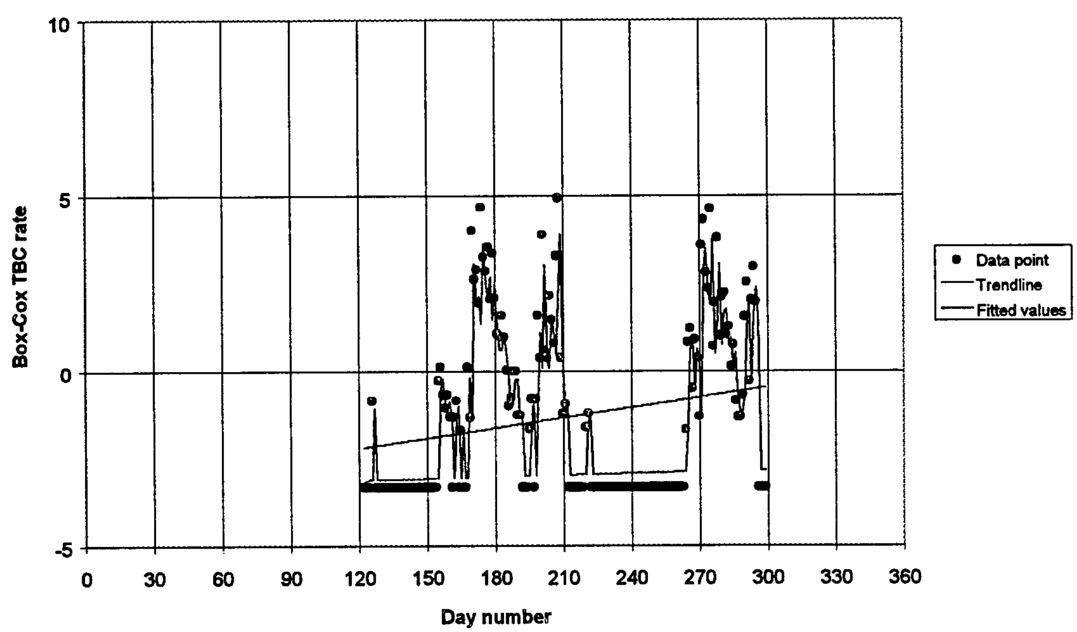

Figure E-68. Time Series Plot for the 10th Armor Division, US 12th Army Group

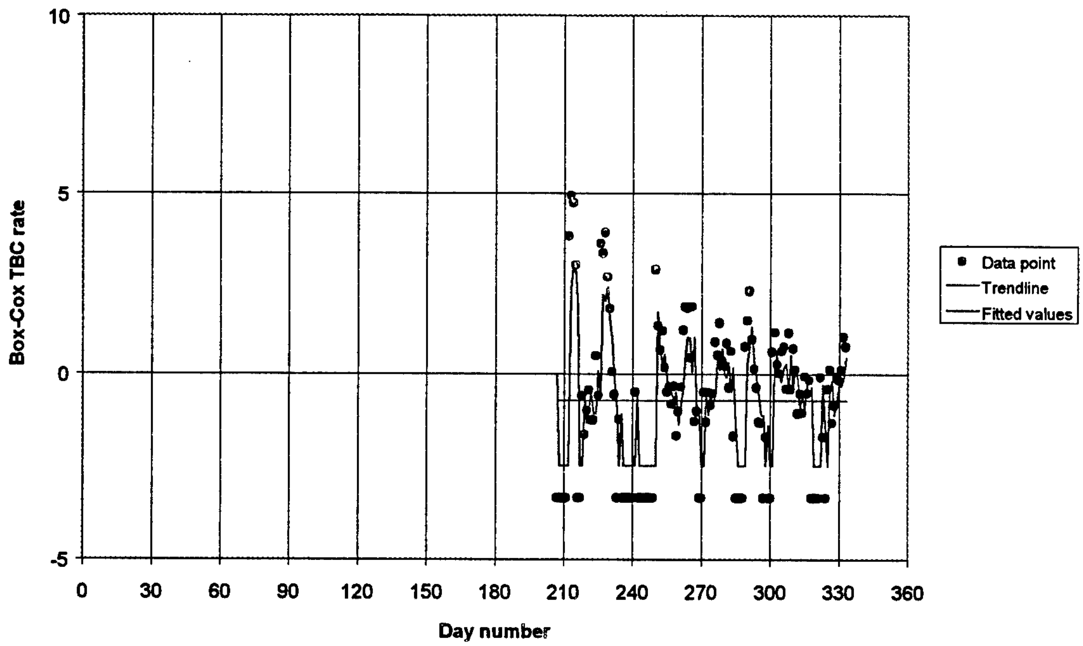

Figure E-69. Time Series Plot for the 11th Armor Division, US 12th Army Group

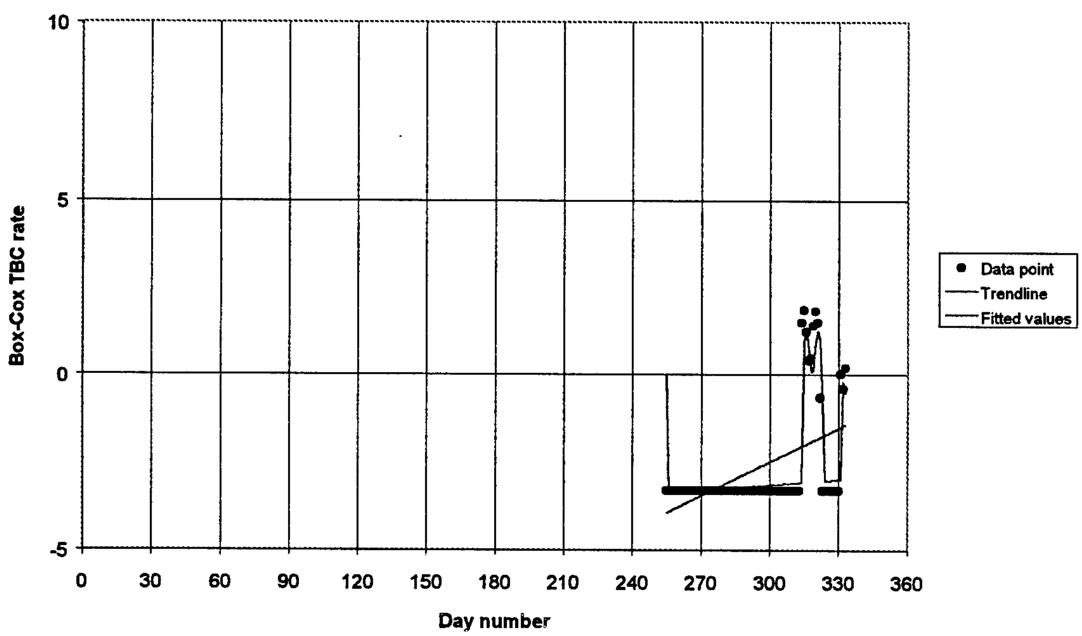

Figure E-70. Time Series Plot for the 13th Armor Division, US 12th Army Group

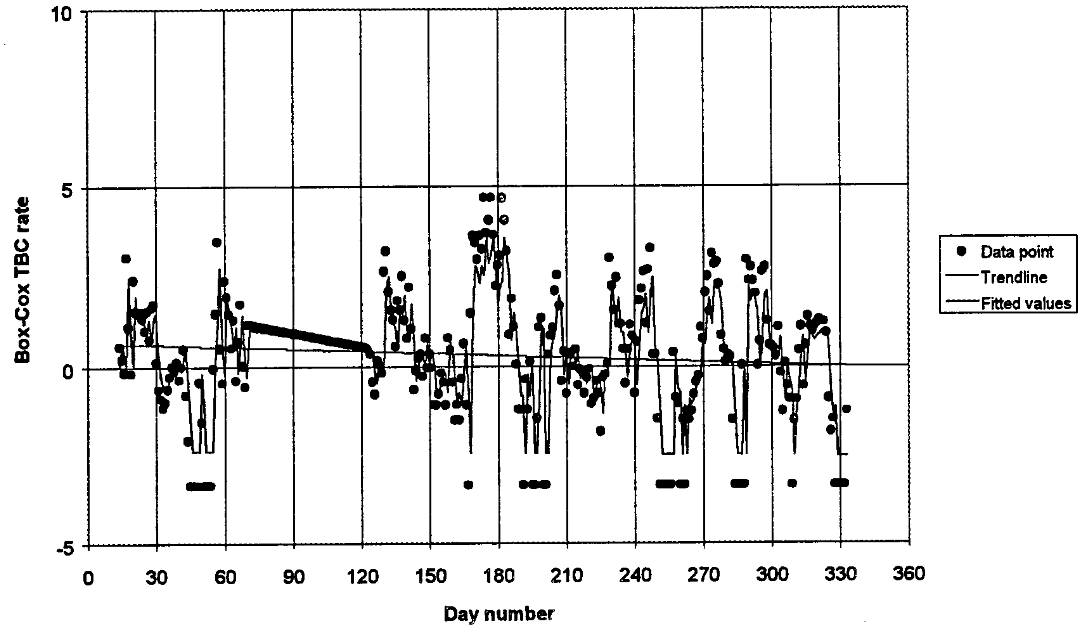

Figure E-71. Time Series Plot for the 1st Infantry Division, US 12th Army Group

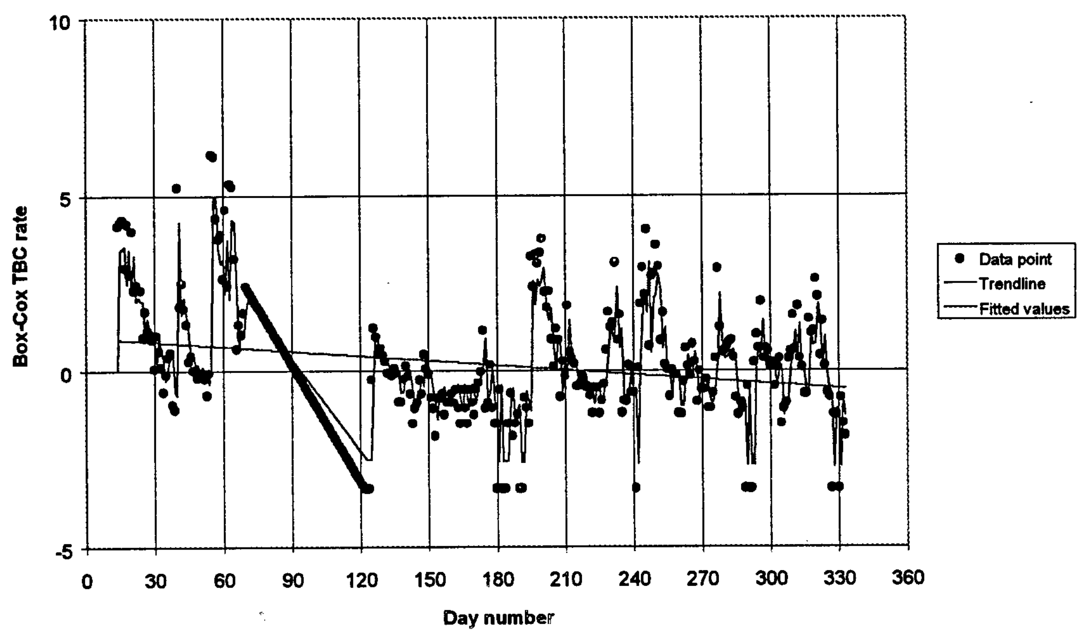

Figure E-72. Time Series Plot for the 2d Infantry Division, US 12th Army Group

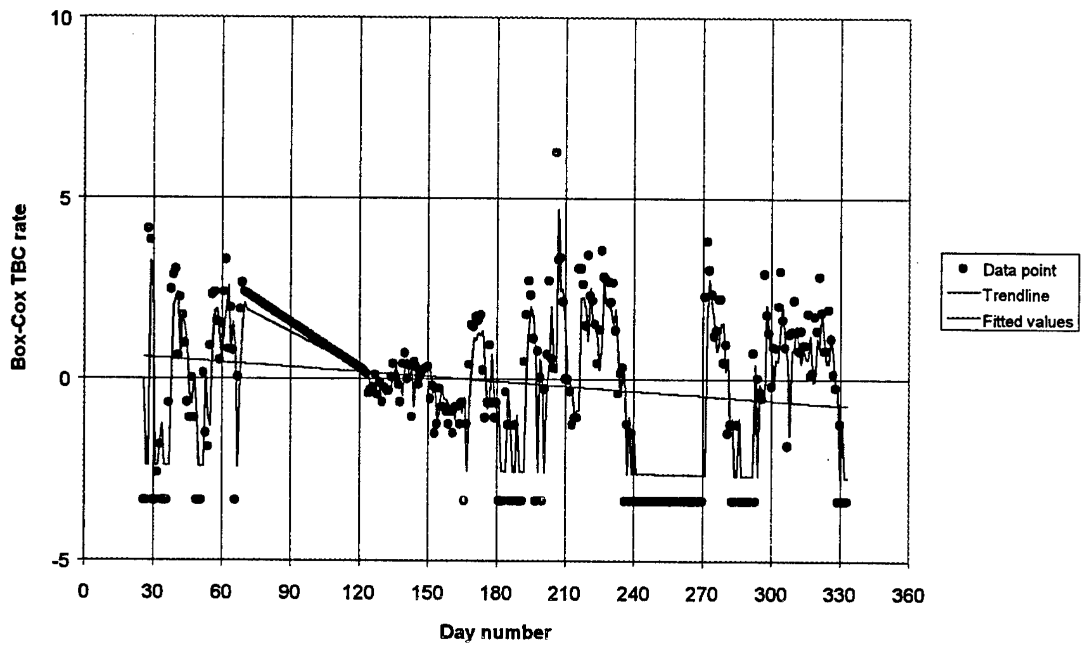

Figure E-73. Time Series Plot for the 3d Infantry Division, US 12th Army Group

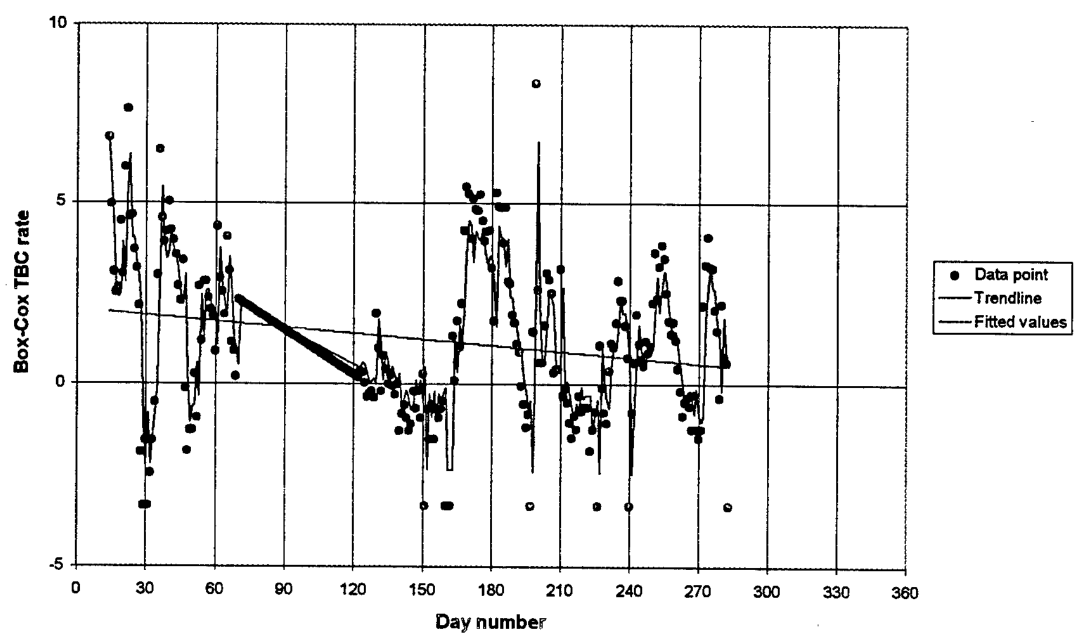

Figure E-74. Time Series Plot for the 4th Infantry Division, US 12th Army Group

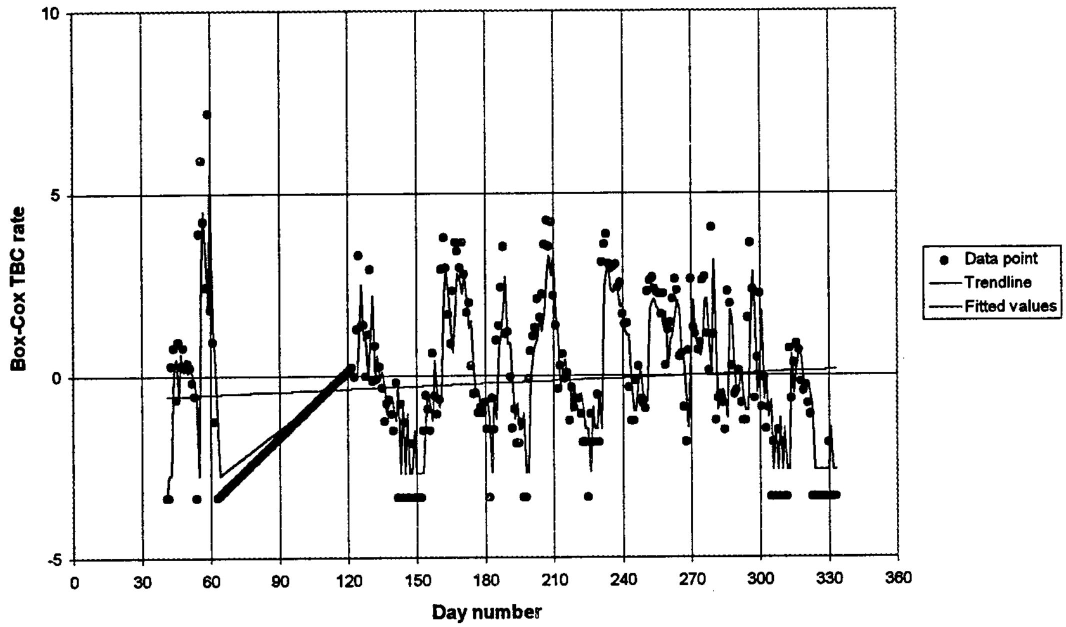

Figure E-75. Time Series Plot for the 5th Infantry Division, US 12th Army Group

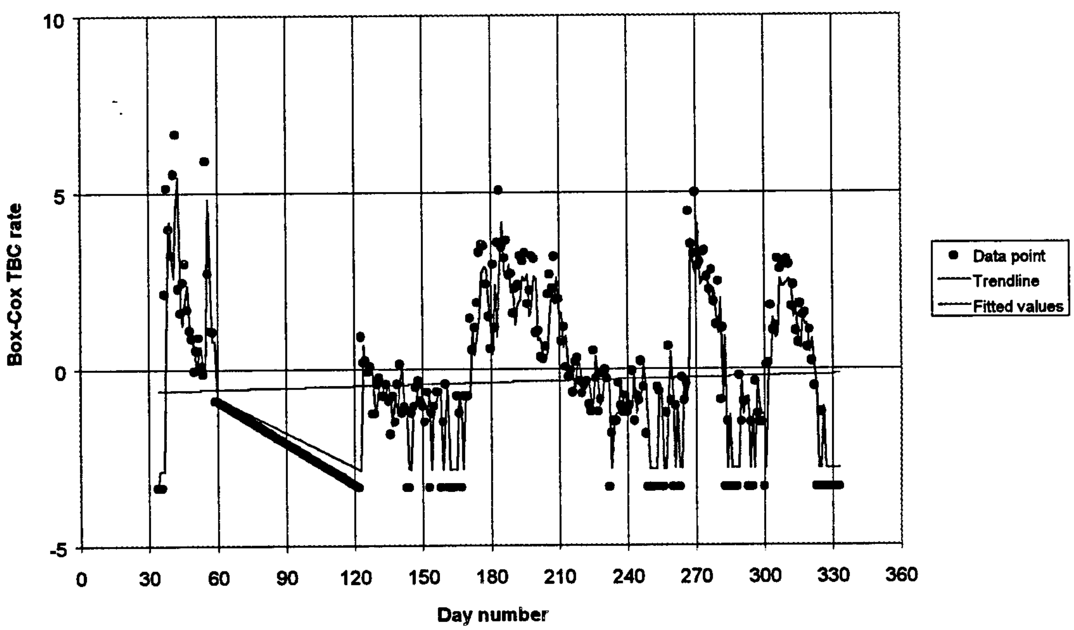

Figure E-76. Time Series Plot for the 8th Infantry Division, US 12th Army Group

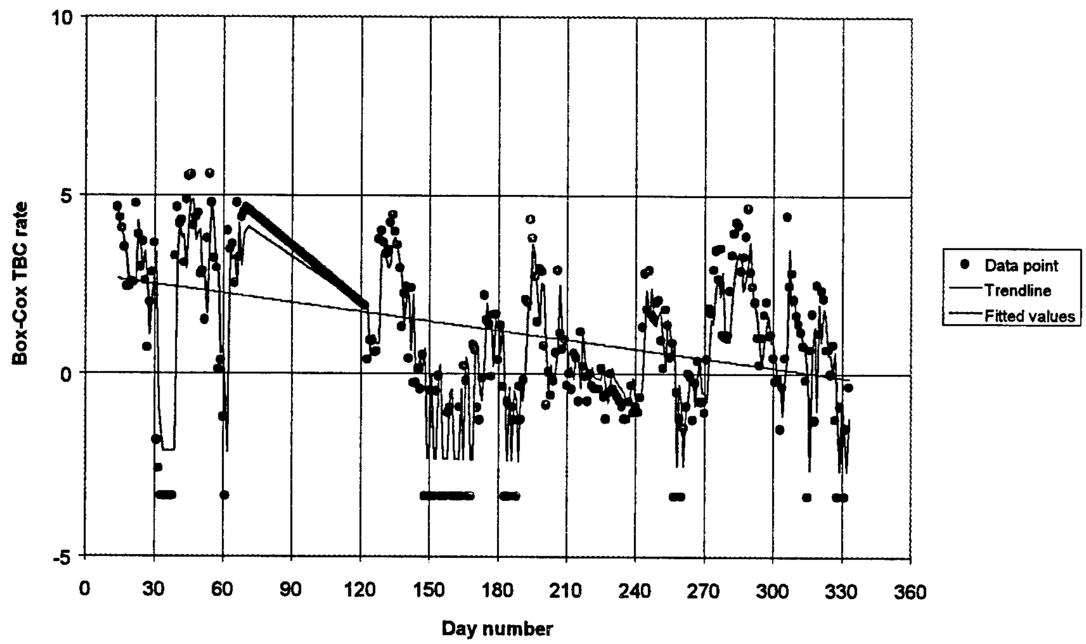

Figure E-77. Time Series Plot for the 9th Infantry Division, US 12th Army Group

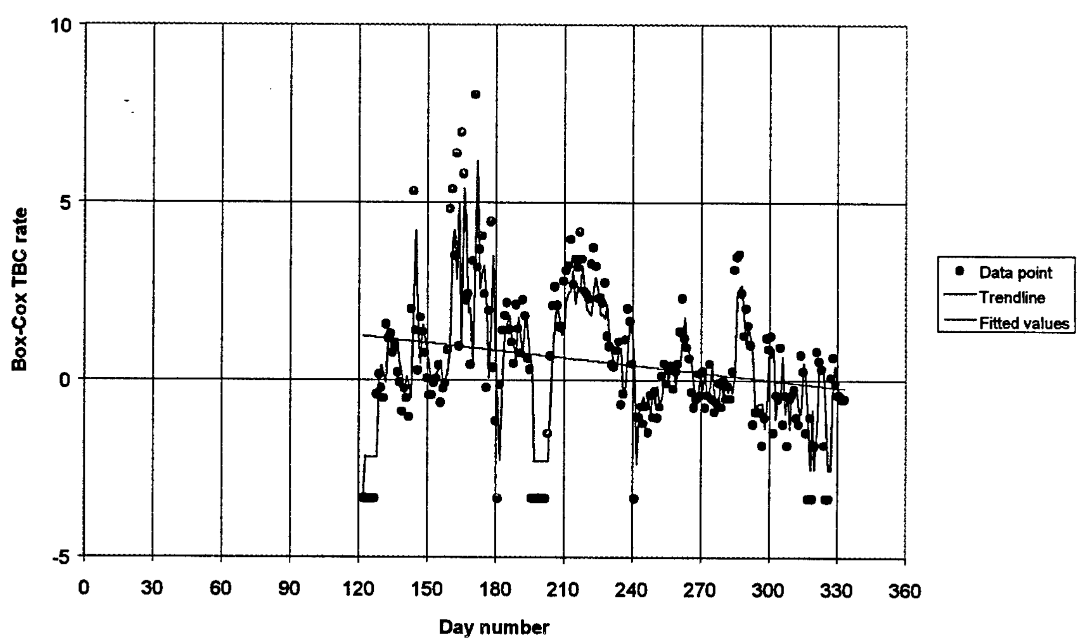

Figure E-78. Time Series Plot for the 26th Infantry Division, US 12th Army Group

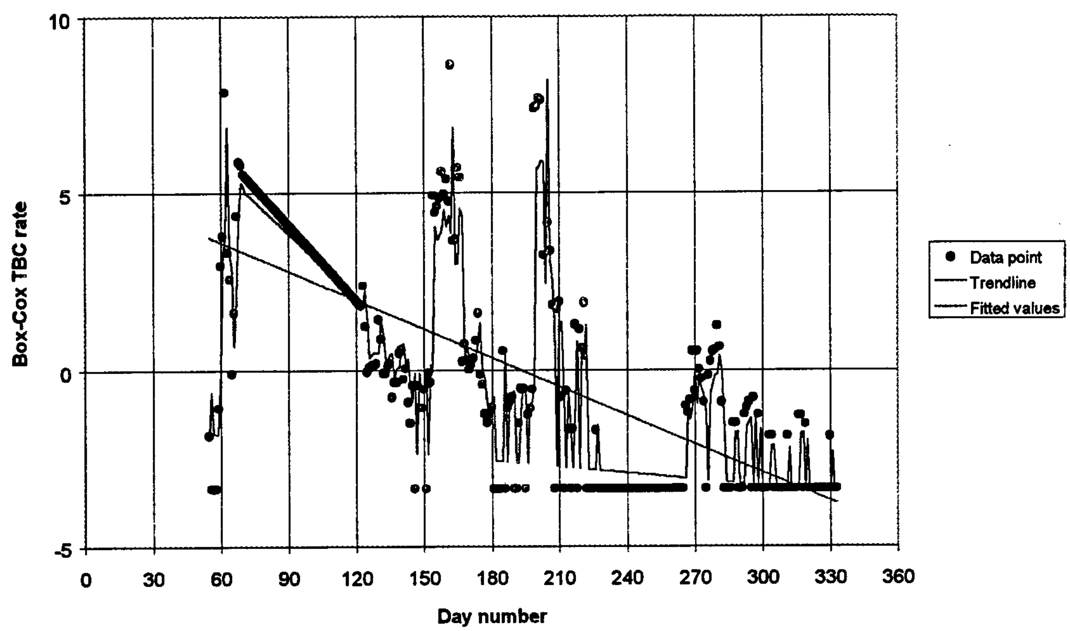

Figure E-79. Time Series Plot for the 28th Infantry Division, US 12th Army Group

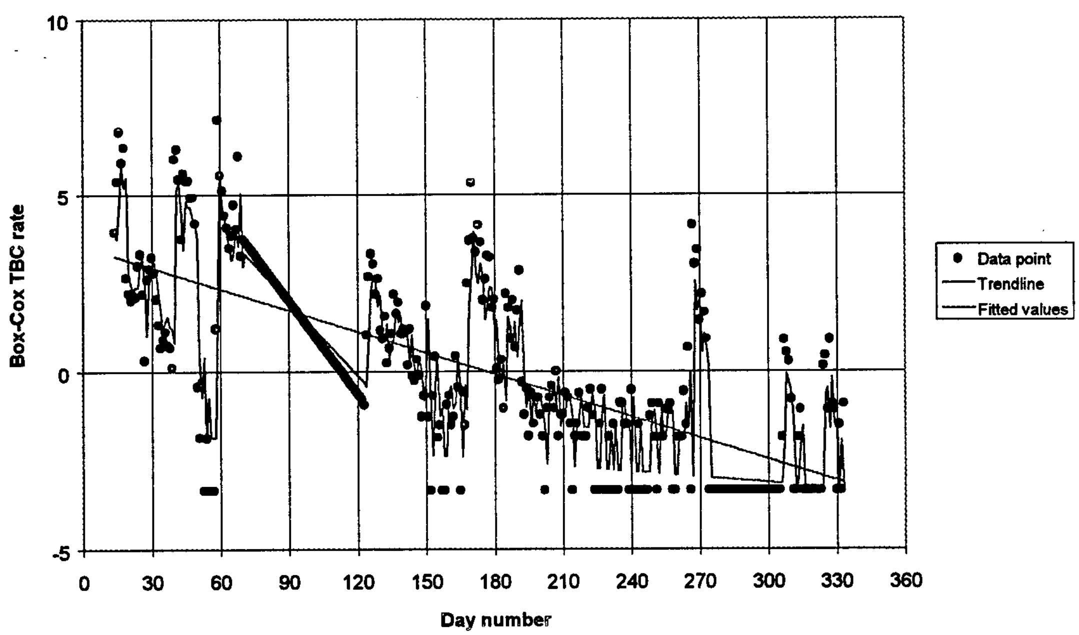

Figure E-80. Time Series Plot for the 29th Infantry Division, US 12th Army Group

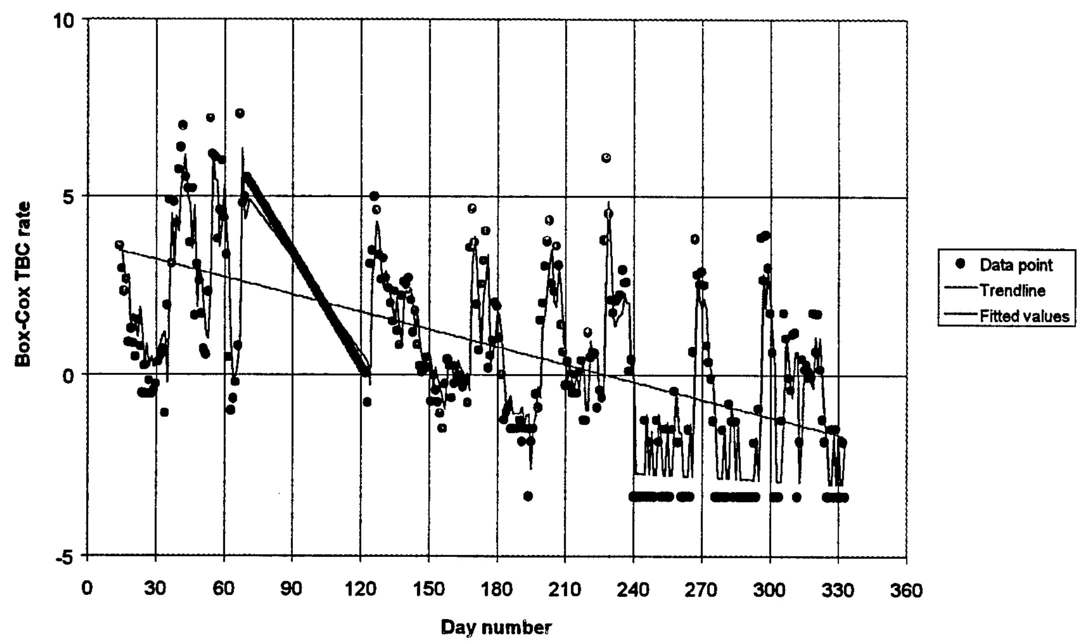

Figure E-81. Time Series Plot for the 30th Infantry Division, US 12th Army Group

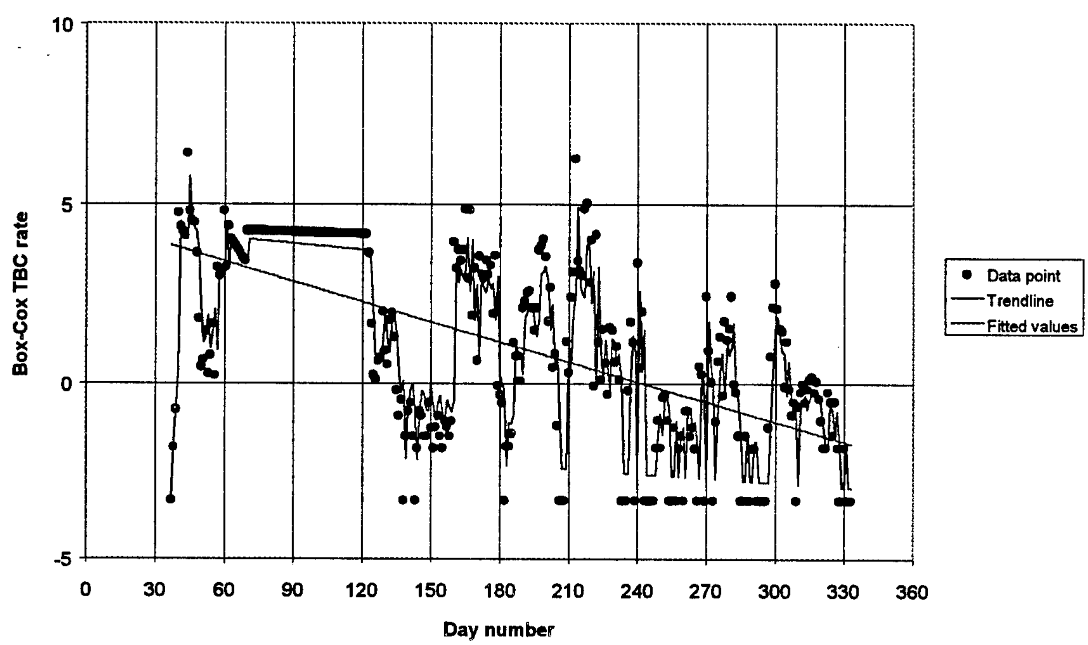

Figure E-82. Time Series Plot for the 35th Infantry Division, US 12th Army Group

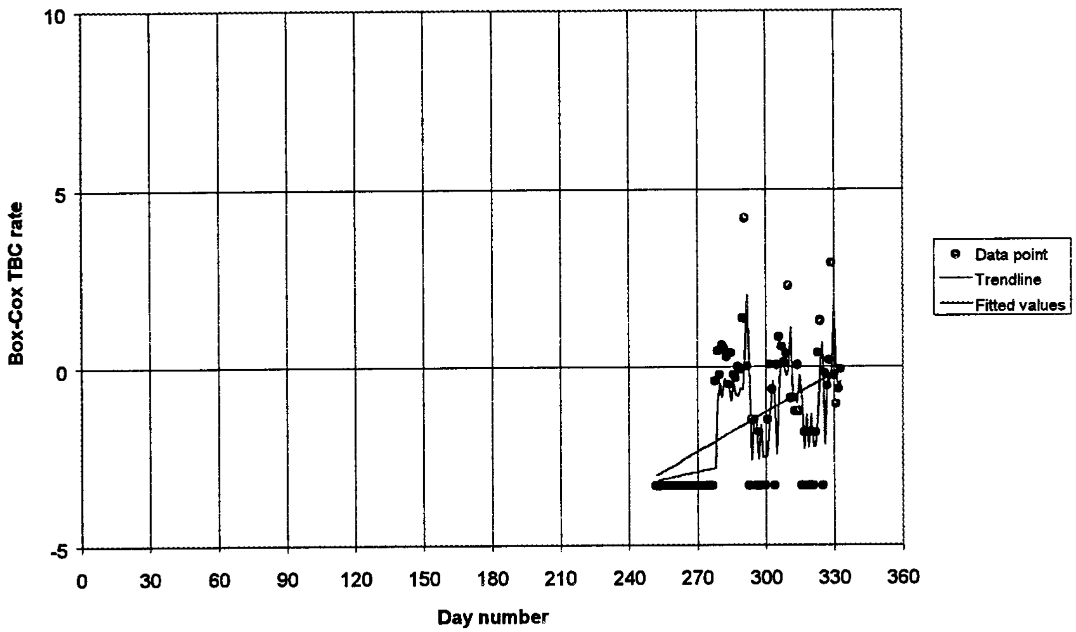

Figure E-83. Time Series Plot for the 65th Infantry Division, US 12th Army Group

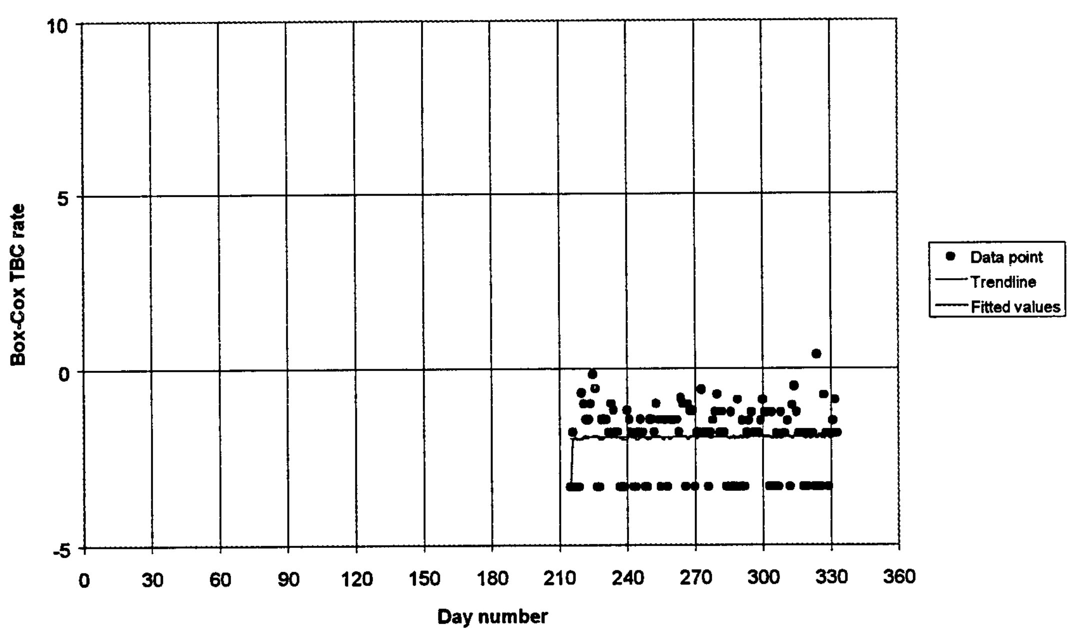

Figure E-84. Time Series Plot for the 66th Infantry Division, US 12th Army Group

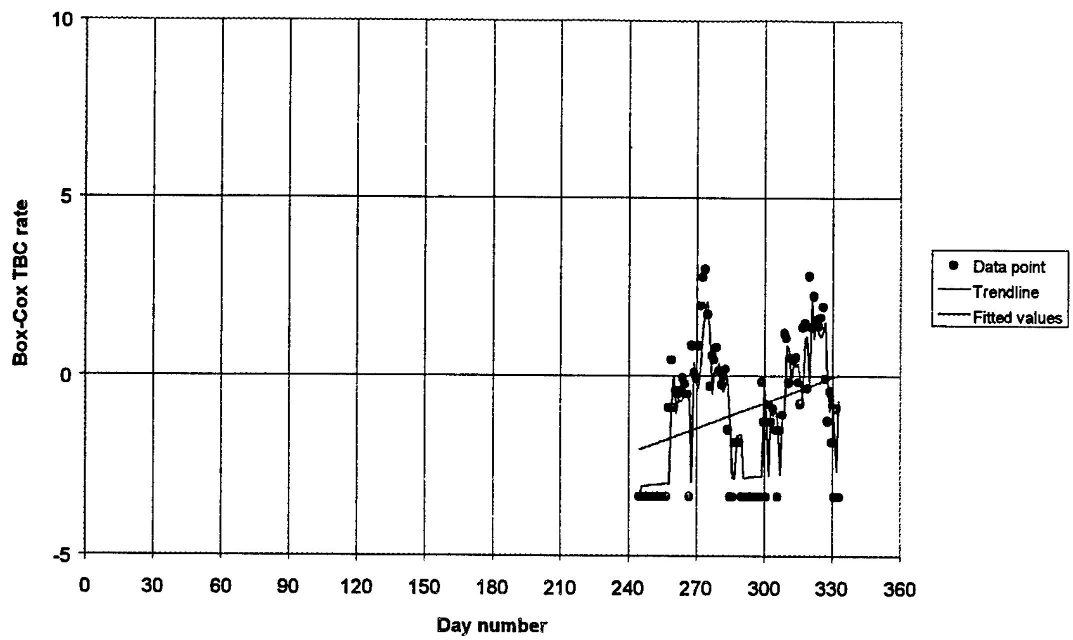

Figure E-85. Time Series Plot for the 69th Infantry Division, US 12th Army Group

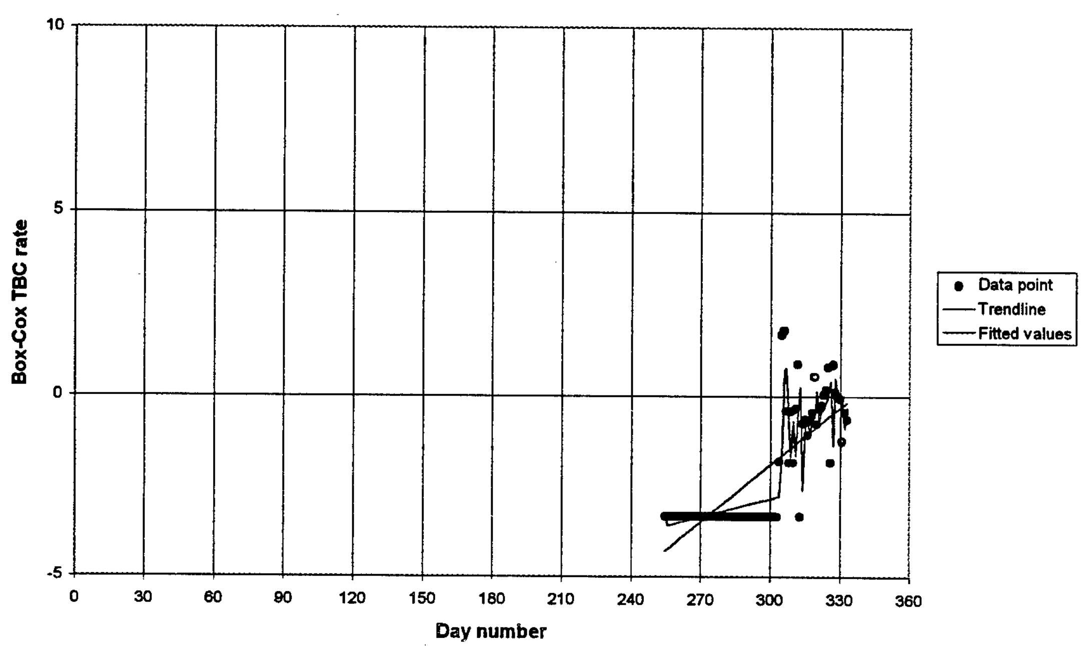

Figure E-86. Time Series Plot for the 71st Infantry Division, US 12th Army Group

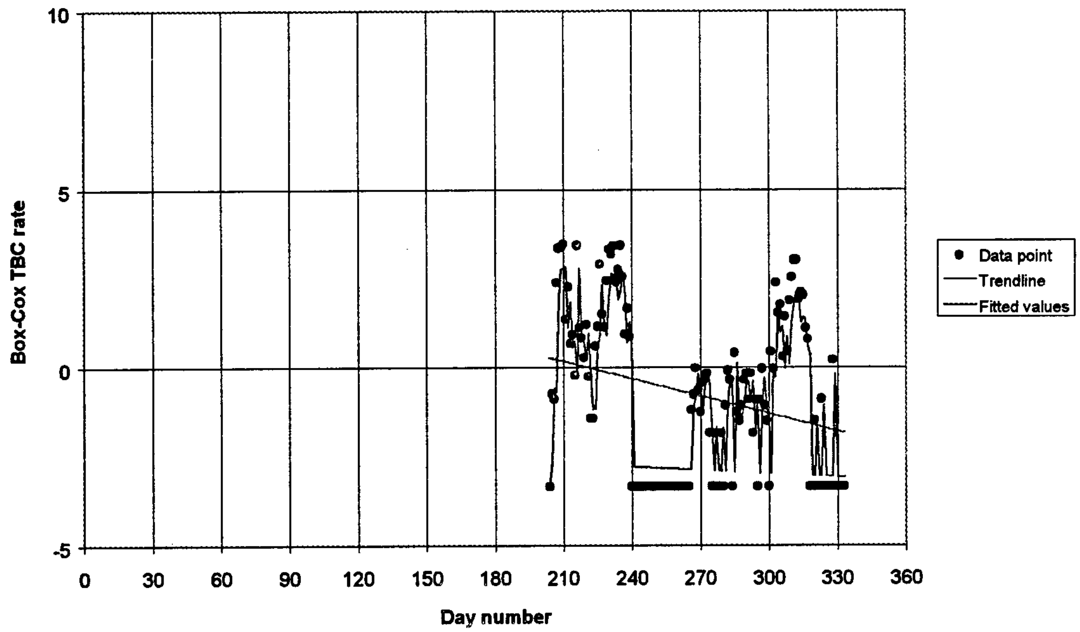

Figure E-87. Time Series Plot for the 75th Infantry Division, US 12th Army Group

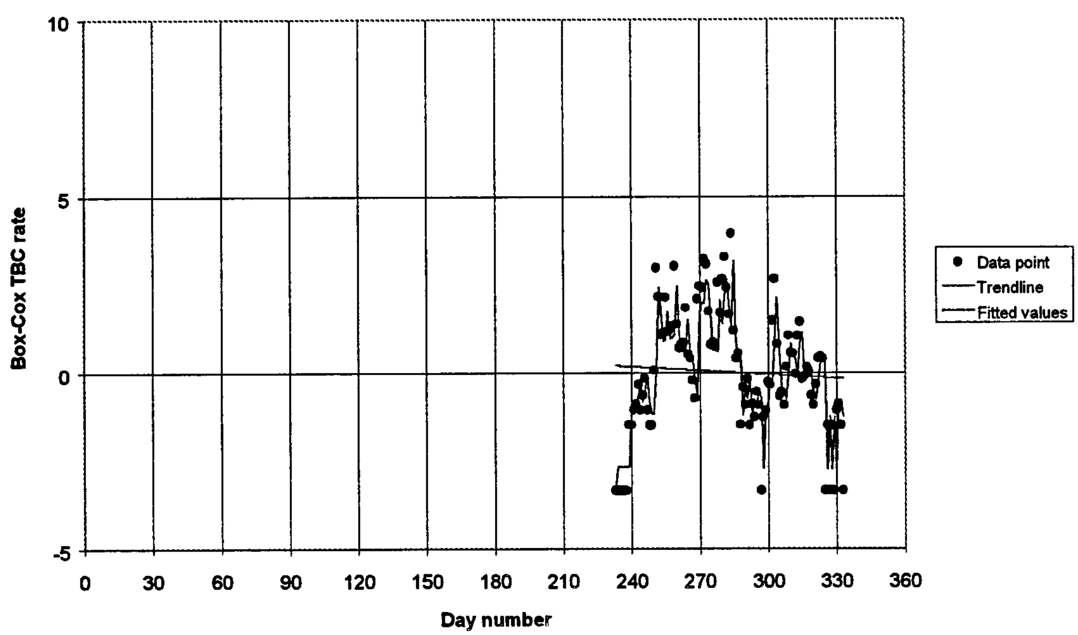

Figure E-88. Time Series Plot for the 76th Infantry Division, US 12th Army Group

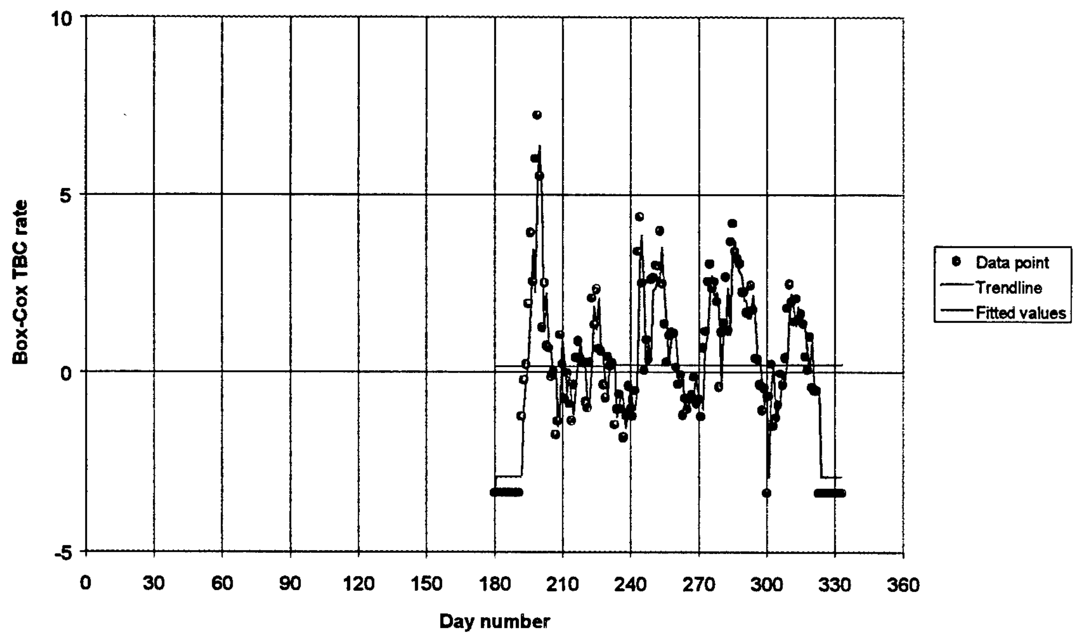

Figure E-89. Time Series Plot for the 78th Infantry Division, US 12th Army Group

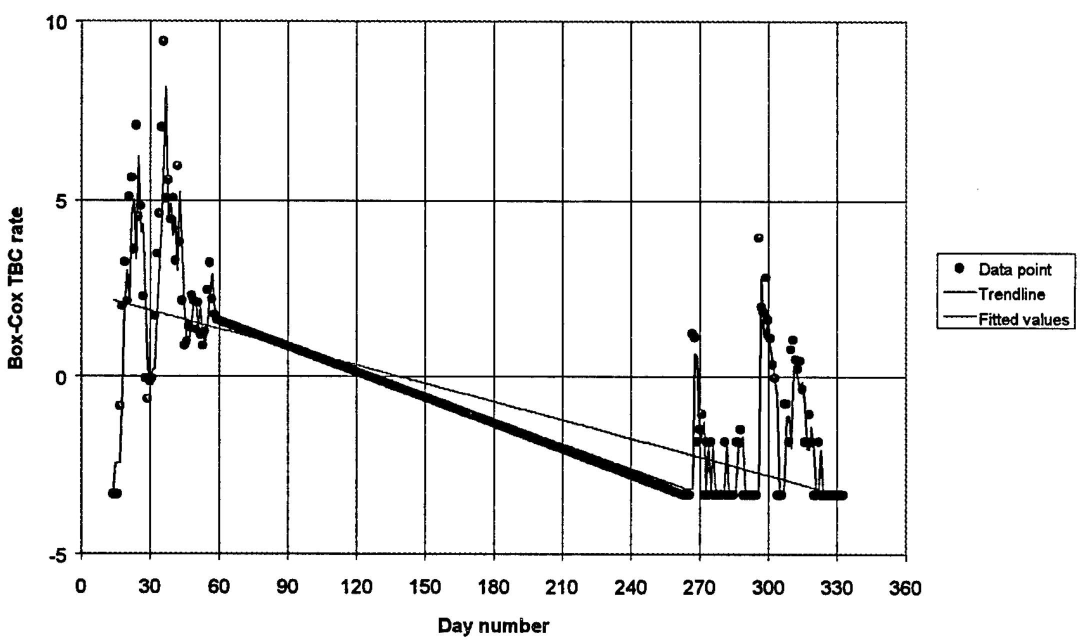

Figure E-90. Time Series Plot for the 79th Infantry Division, US 12th Army Group

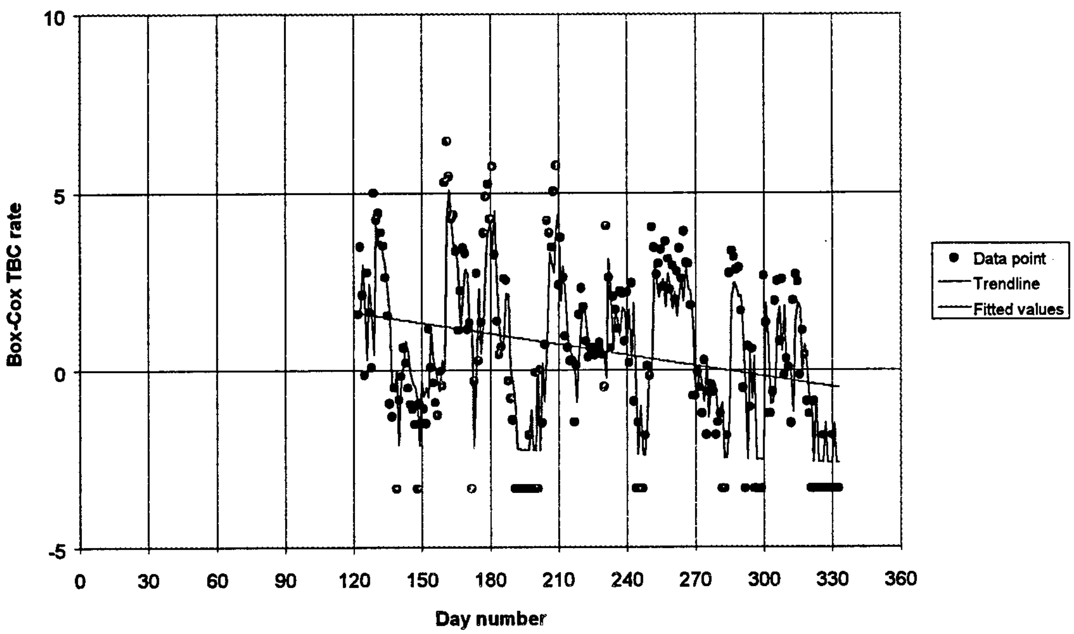

Figure E-91. Time Series Plot for the 80th Infantry Division, US 12th Army Group

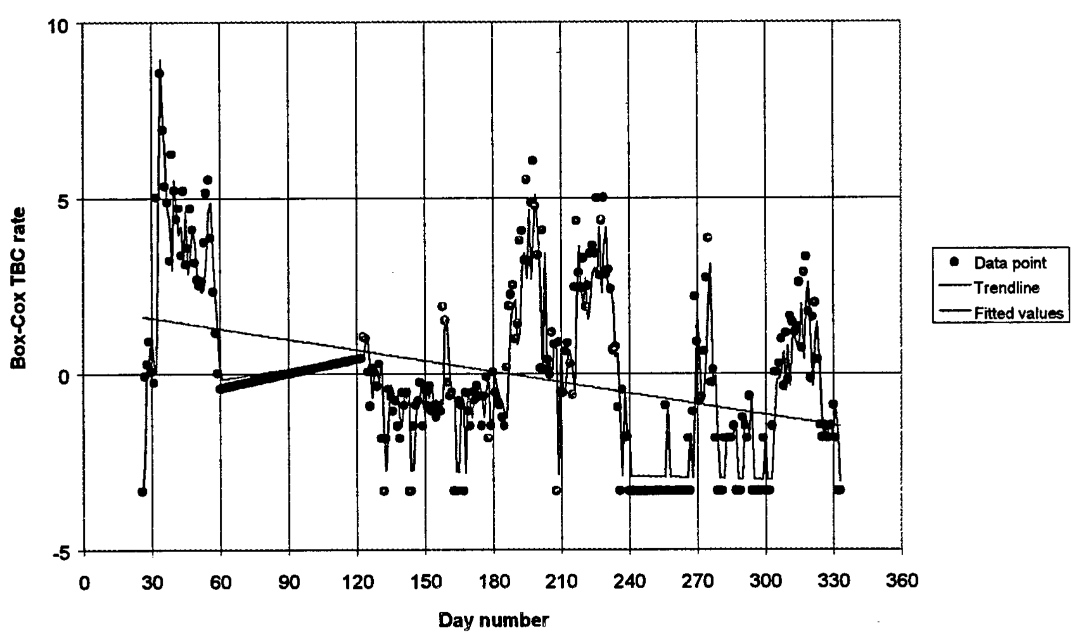

Figure E-92. Time Series Plot for the 83d Infantry Division, US 12th Army Group

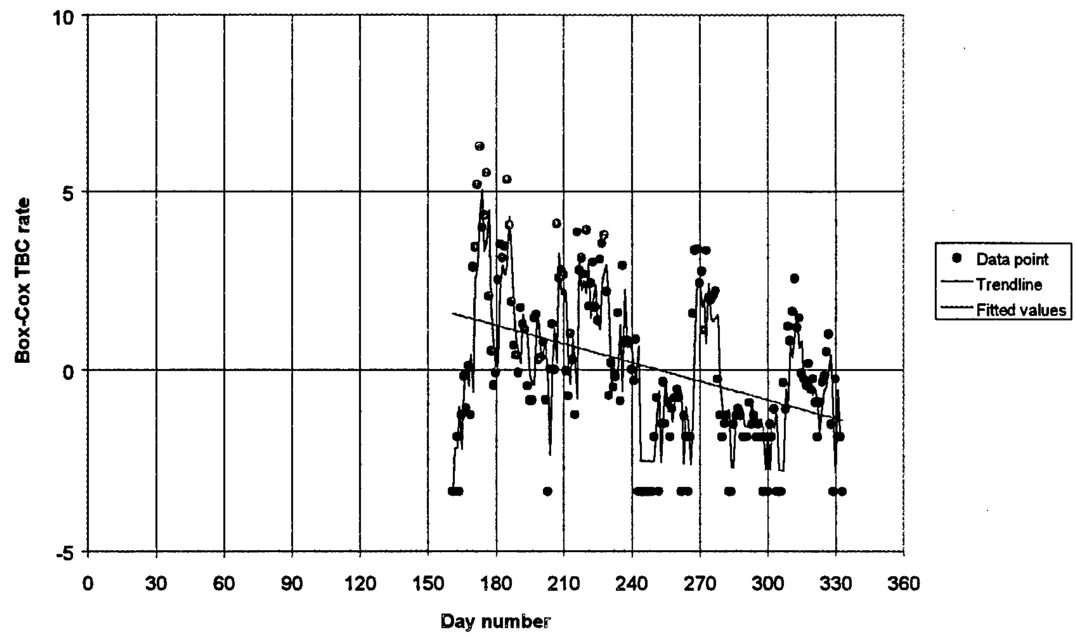

Figure E-93. Time Series Plot for the 84th Infantry Division, US 12th Army Group

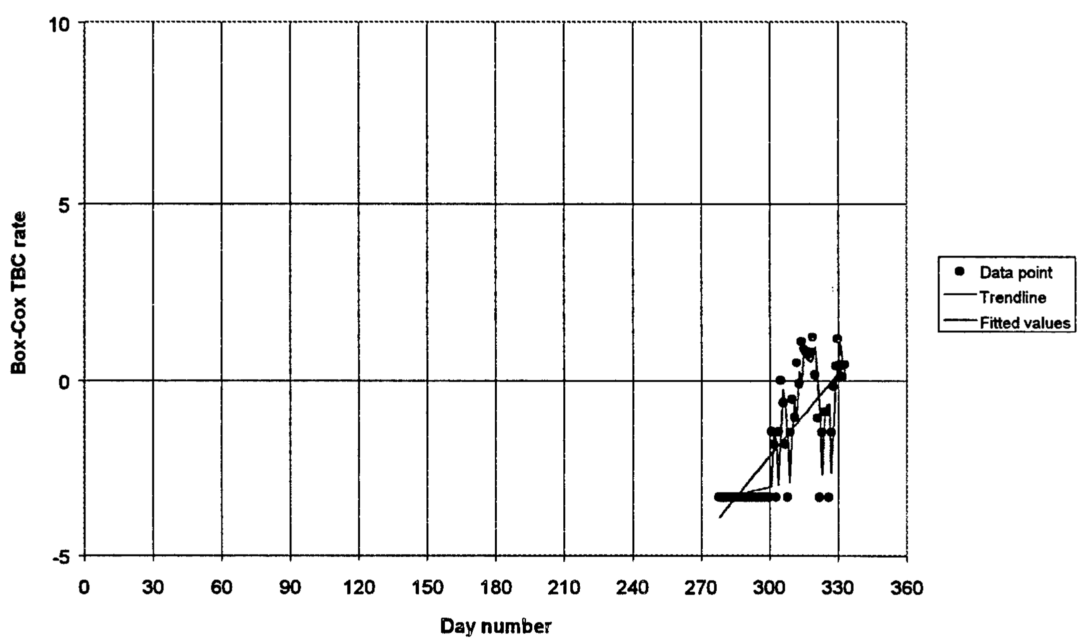

Figure E-94. Time Series Plot for the 86th Infantry Division, US 12th Army Group

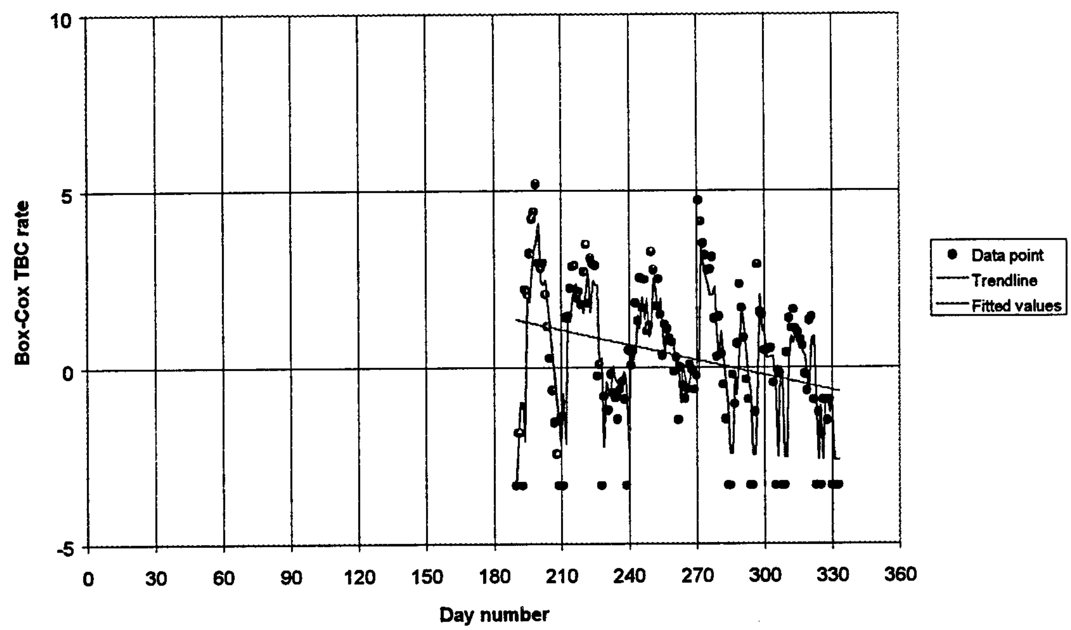

Figure E-95. Time Series Plot for the 87th Infantry Division, US 12th Army Group

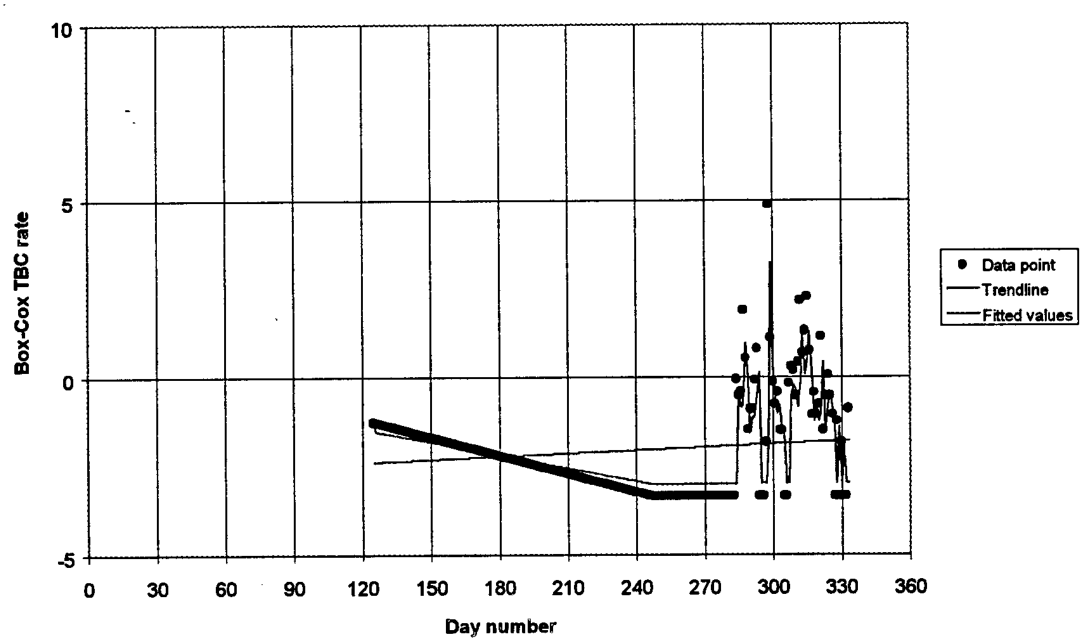

Figure E-96. Time Series Plot for the 89th Infantry Division, US 12th Army Group

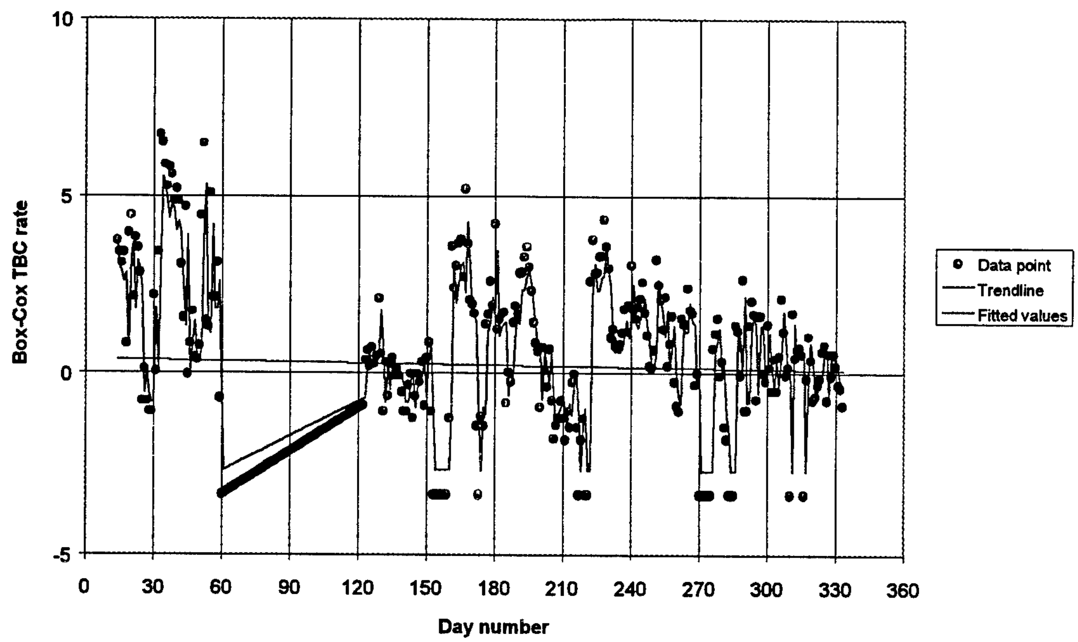

Figure E-97. Time Series Plot for the 90th Infantry Division, US 12th Army Group

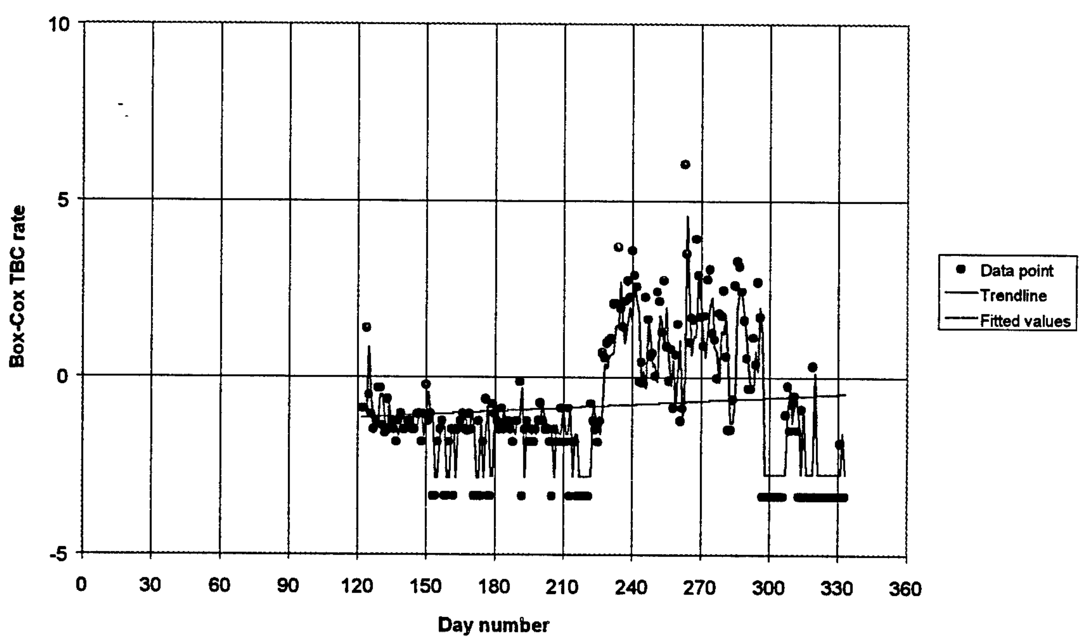

Figure E-98. Time Series Plot for the 94th Infantry Division, US 12th Army Group

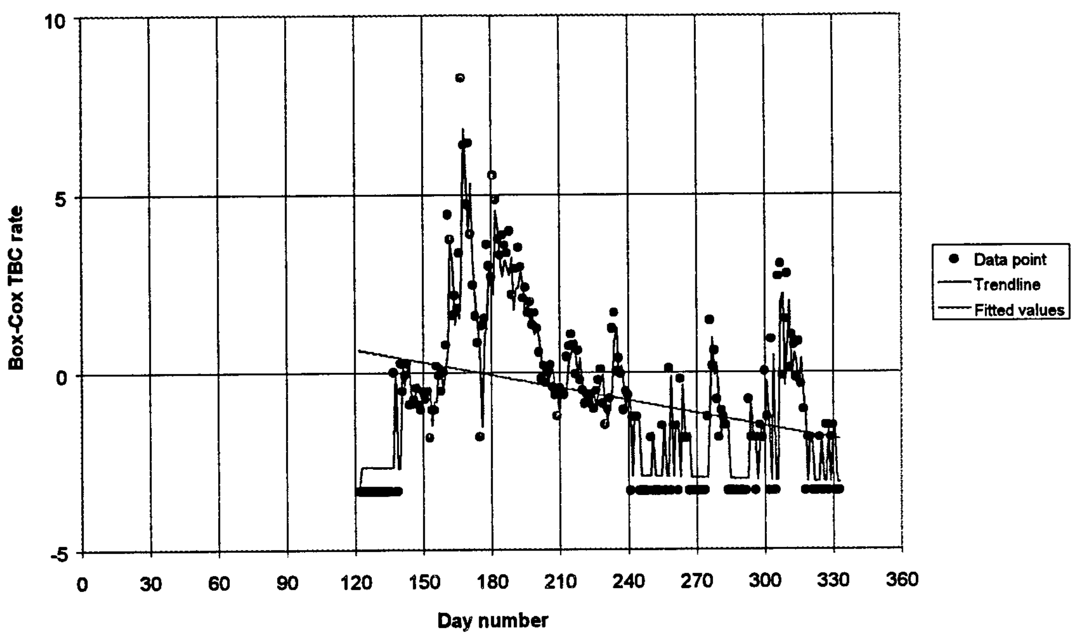

Figure E-99. Time Series Plot for the 95th Infantry Division, US 12th Army Group

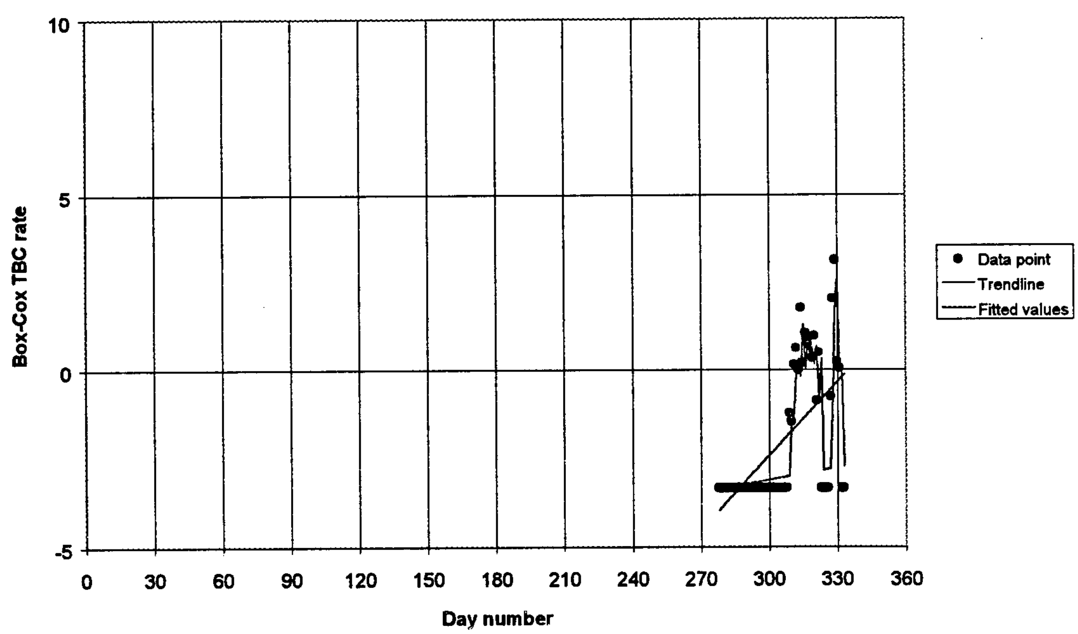

Figure E-100. Time Series Plot for the 97th Infantry Division, US 12th Army Group

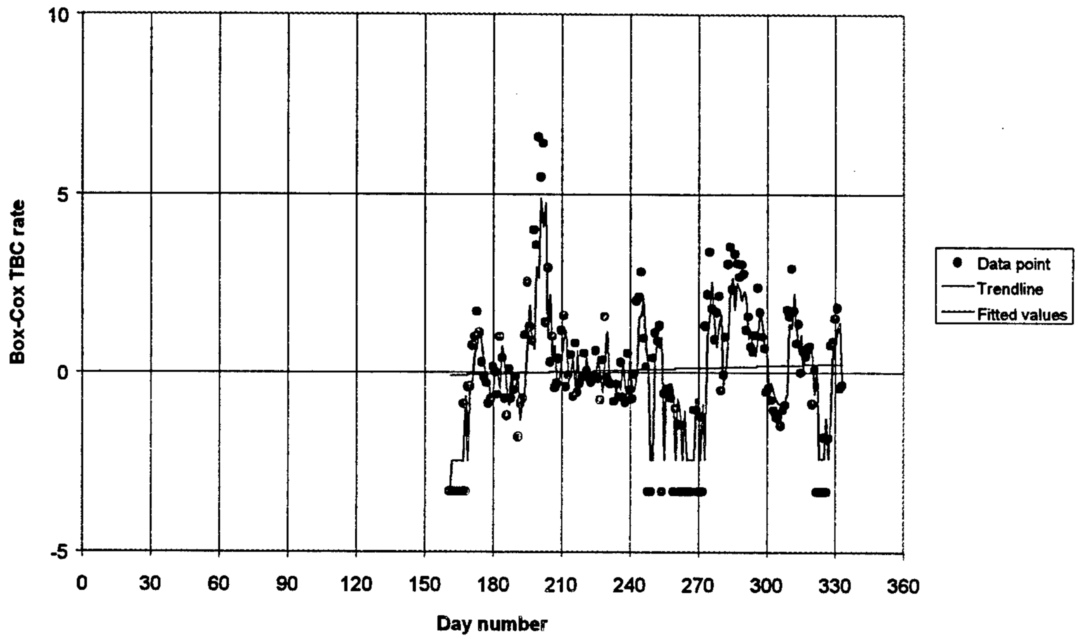

Figure E-101. Time Series Plot for the 99th Infantry Division, US 12th Army Group

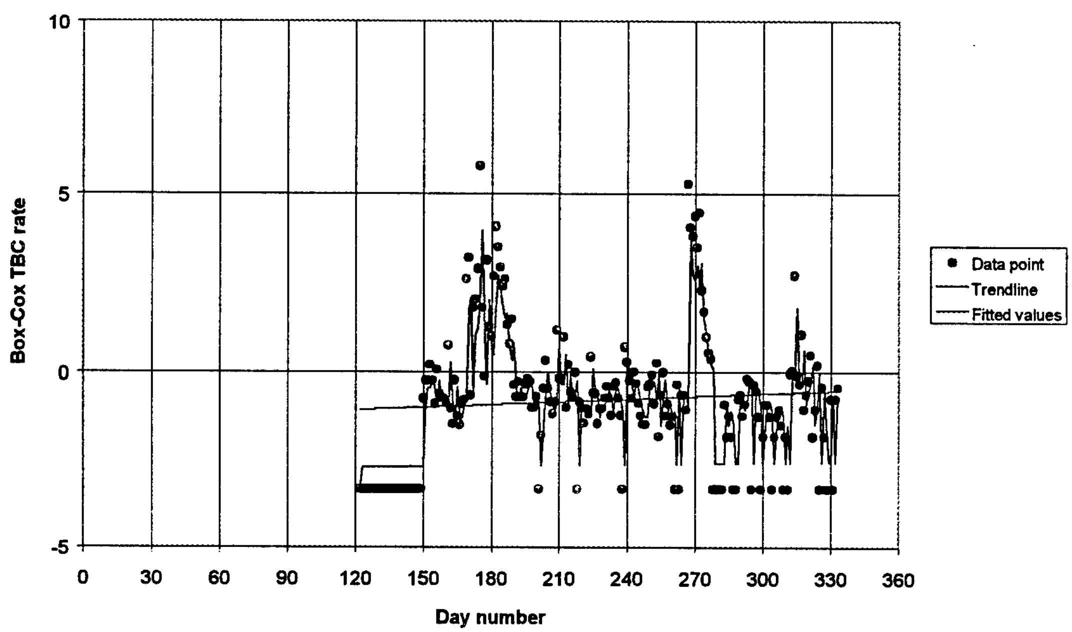

Figure E-102. Time Series Plot for the 102d Infantry Division, US 12th Army Group

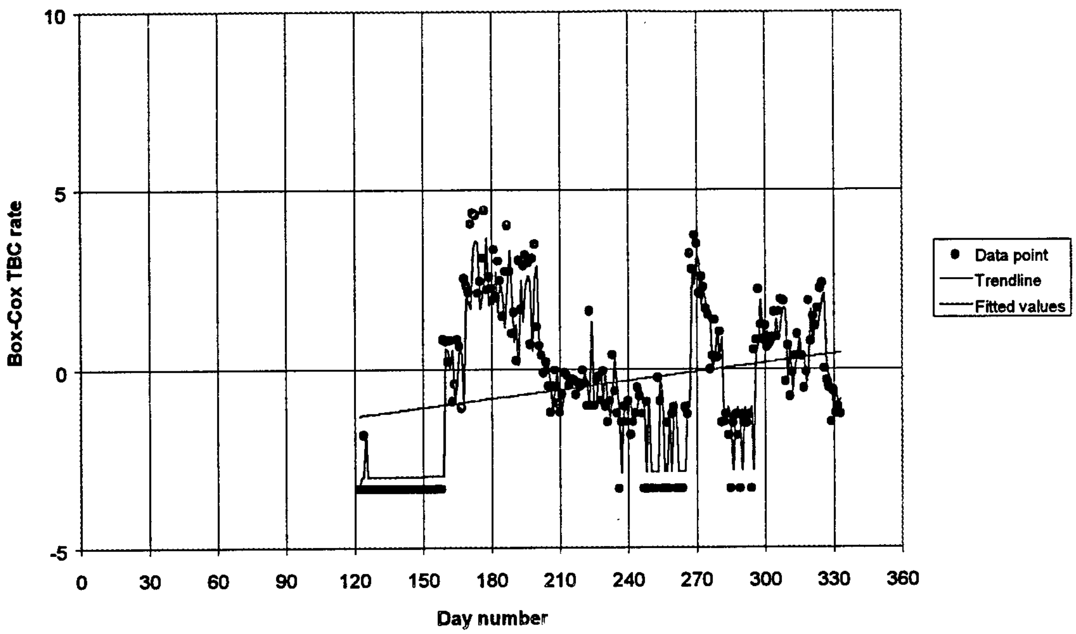

Figure E-103. Time Series Plot for the 104th Infantry Division, US 12th Army Group

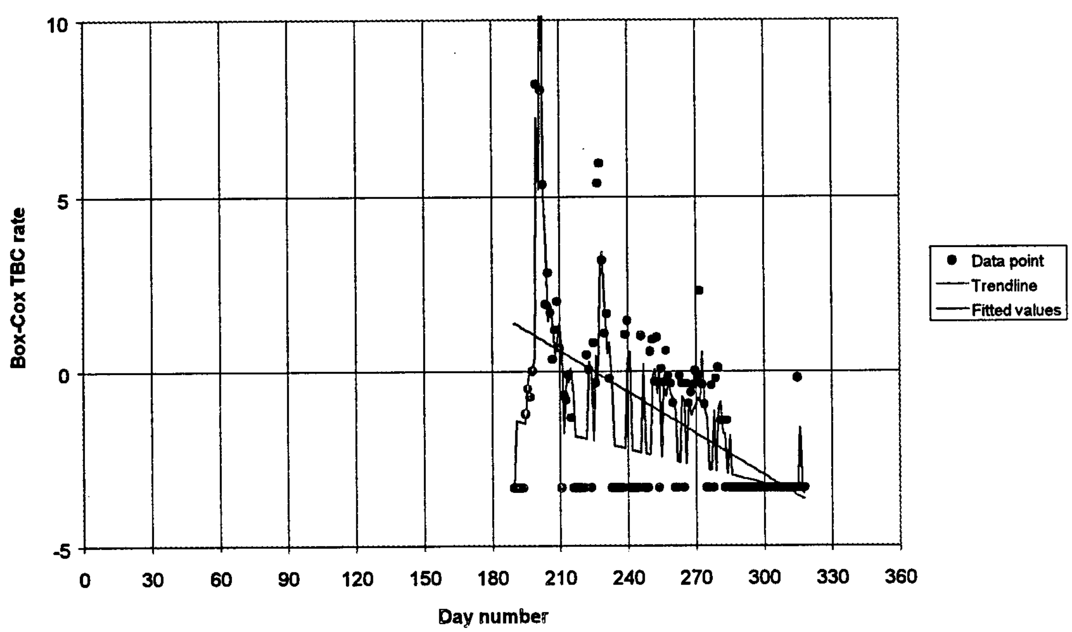

Figure E-104. Time Series Plot for the 106th Infantry Division, US 12th Army Group

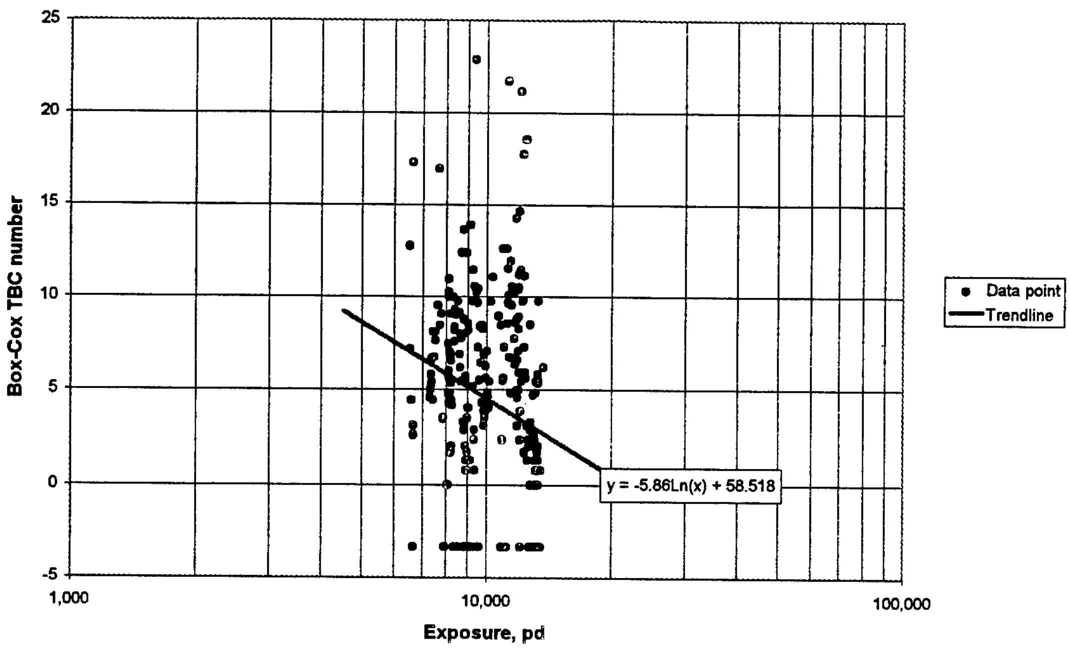

Figure E-105. Exposure Plot for the Composite Airborne Divisions, US 12th Army Group

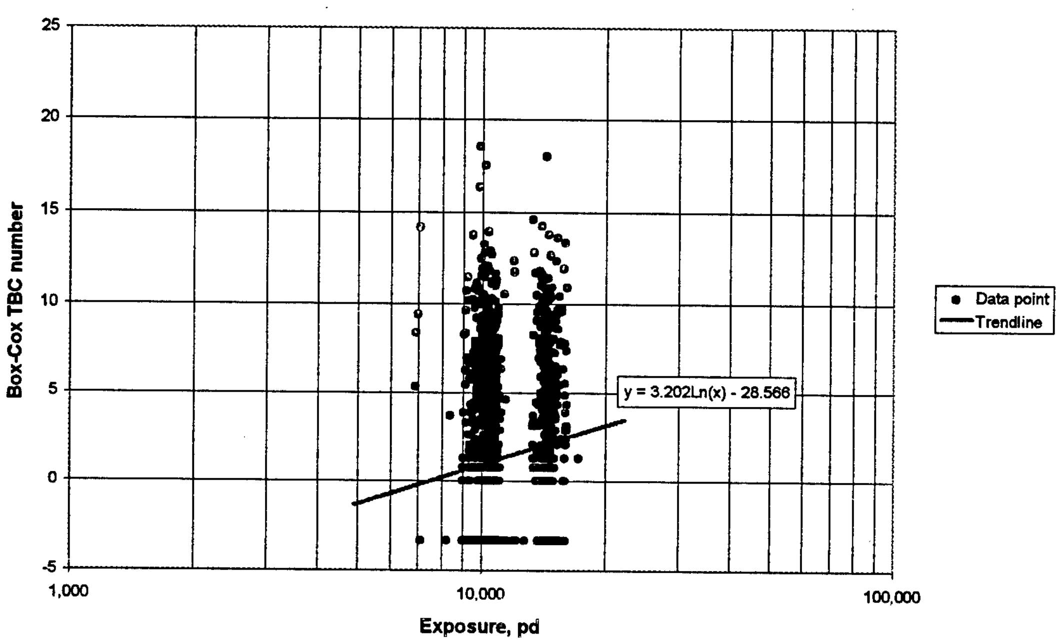

Figure E-106. Exposure Plot for the Composite Armor Divisions, US 12th Army Group

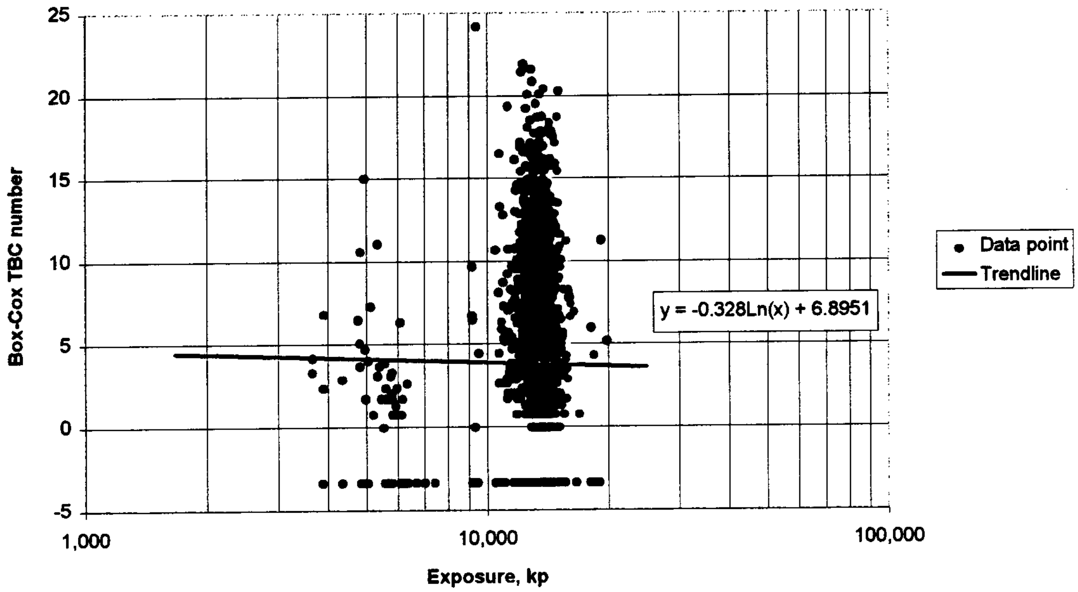

Figure E-107. Exposure Plot for the Composite Infantry Divisions, US 12th Army Group

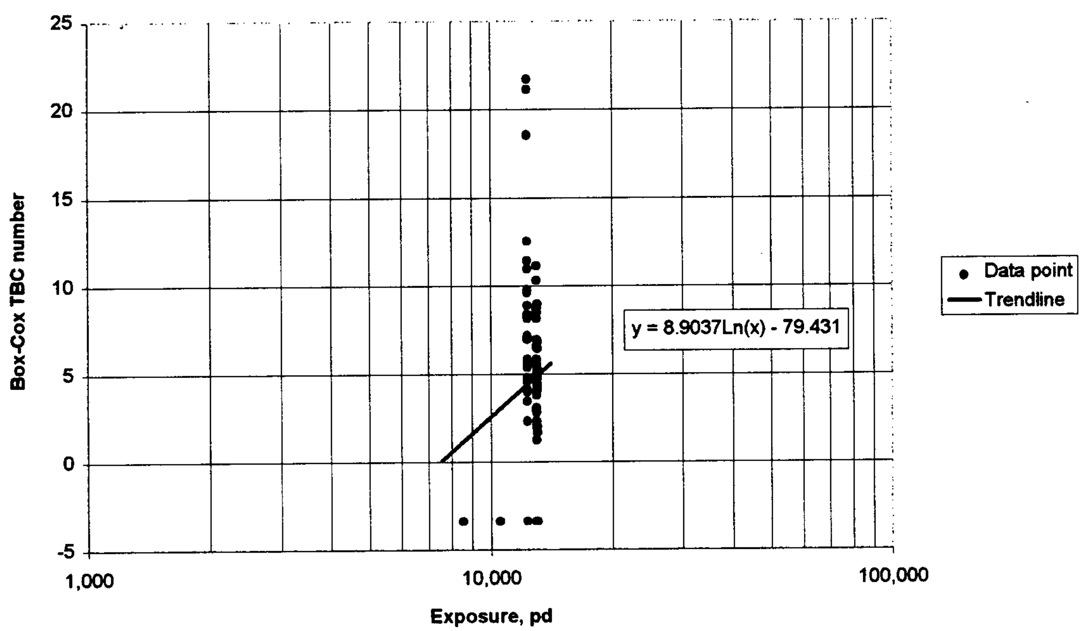

Figure E-108. Exposure Plot for the 17th Airborne Division, US 12th Army Group

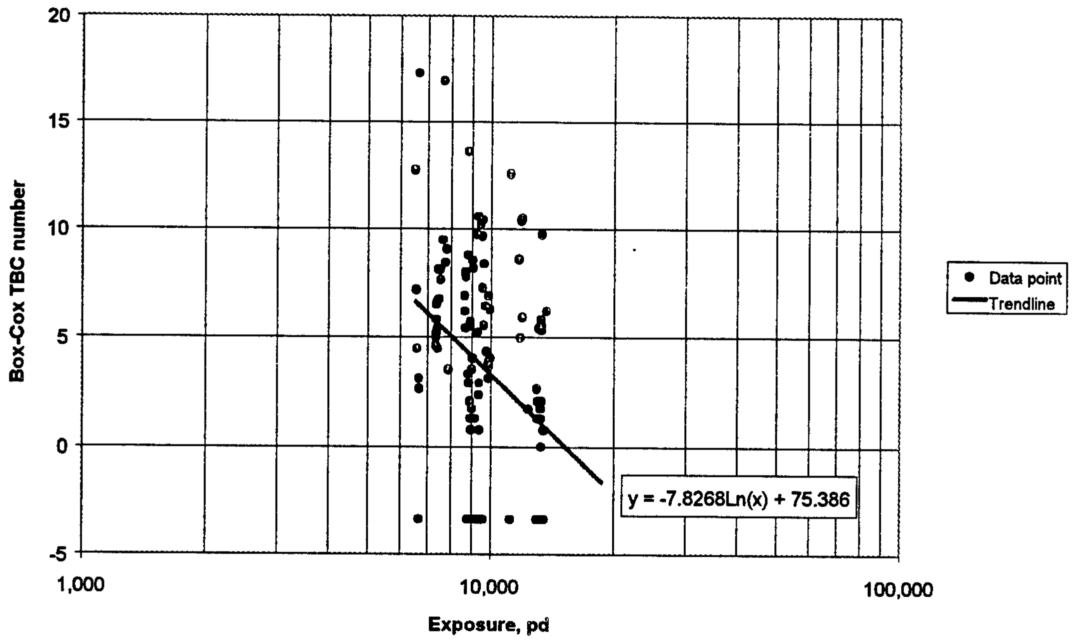

Figure E-109. Exposure Plot for the 82d Airborne Division, US 12th Army Group

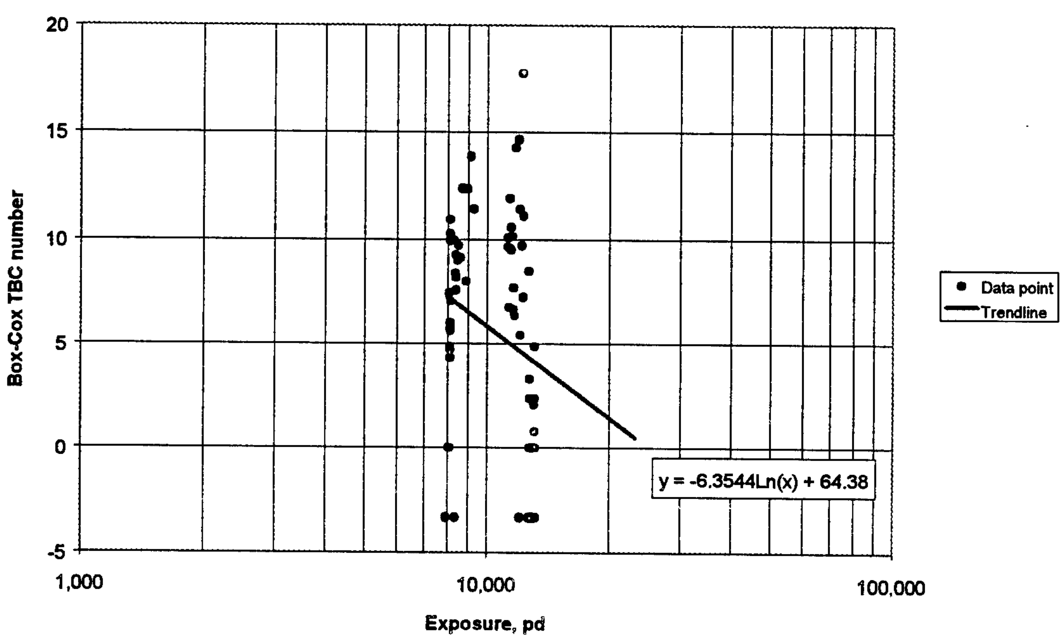

Figure E-110. Exposure Plot for the 101st Airborne Division, US 12th Army Group

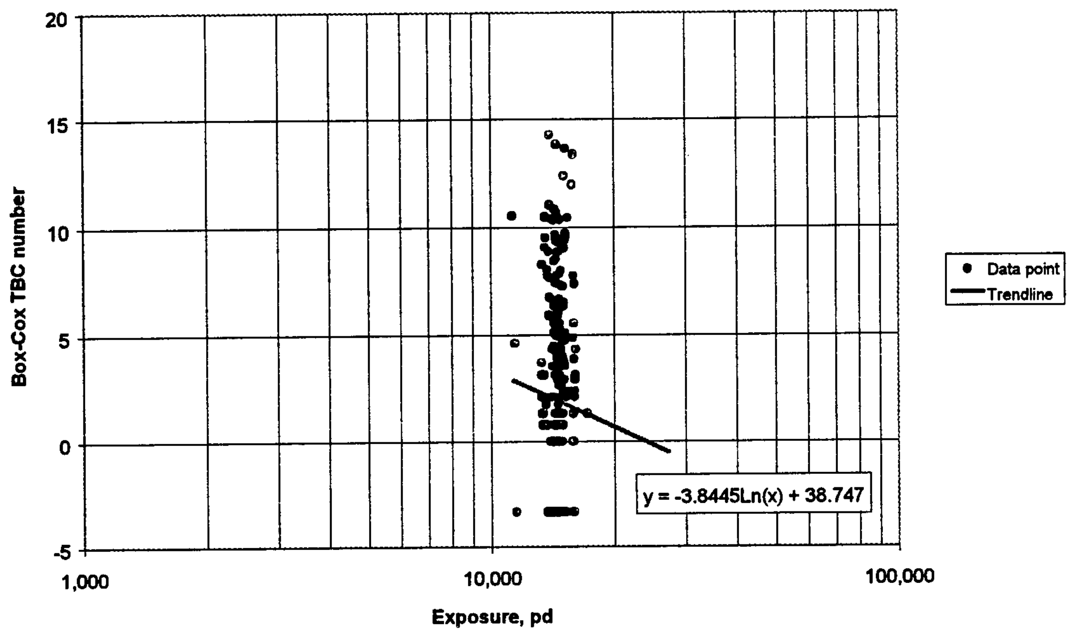

Figure E-111. Exposure Plot for the 2d Armor Division, US 12th Army Group

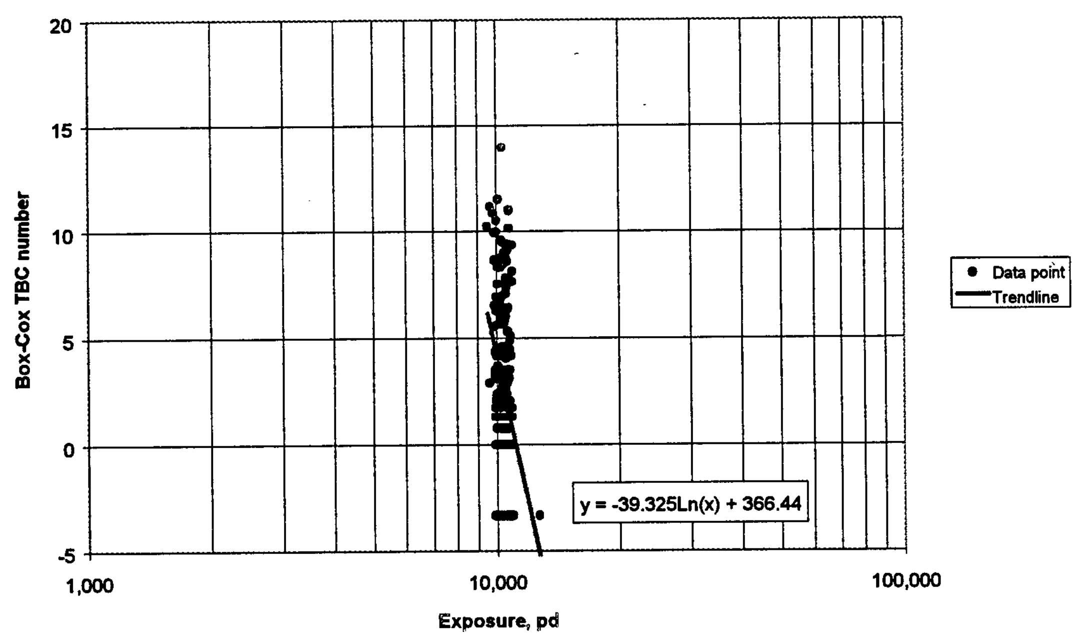

Figure E-112. Exposure Plot for the 4th Armor Division, US 12th Army Group

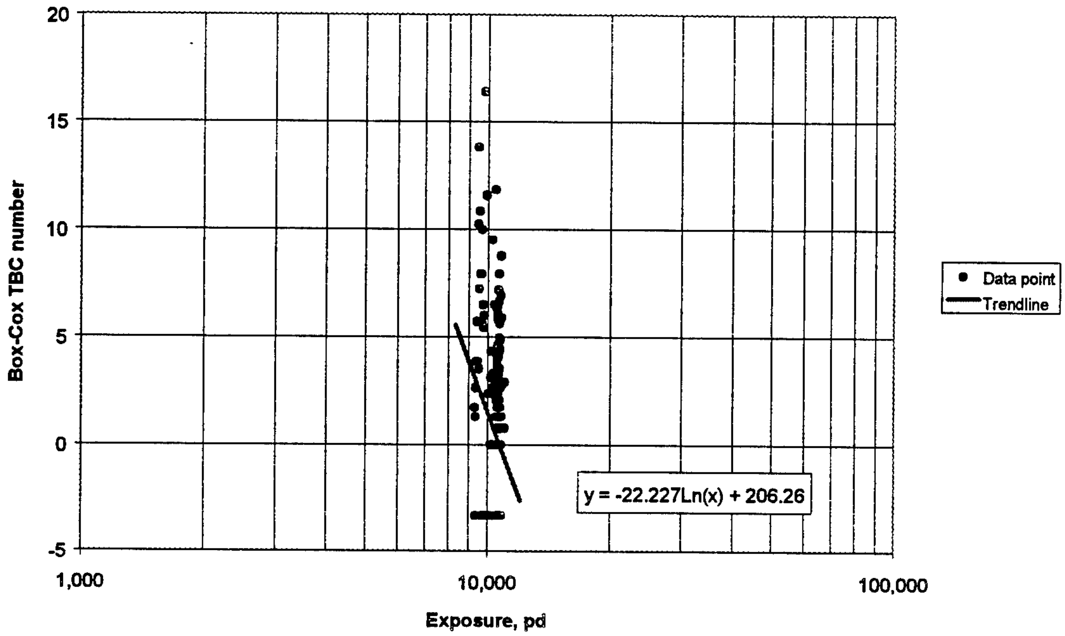

Figure E-113. Exposure Plot for the 5th Armor Division, US 12th Army Group

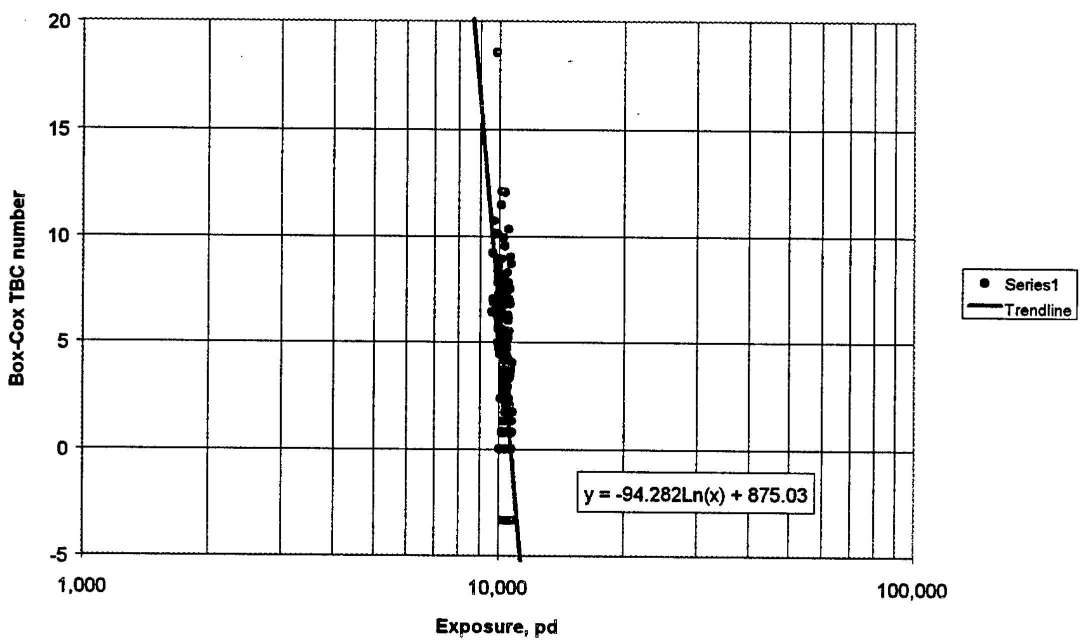

Figure E-114. Exposure Plot for the 6th Armor Division, US 12th Army Group

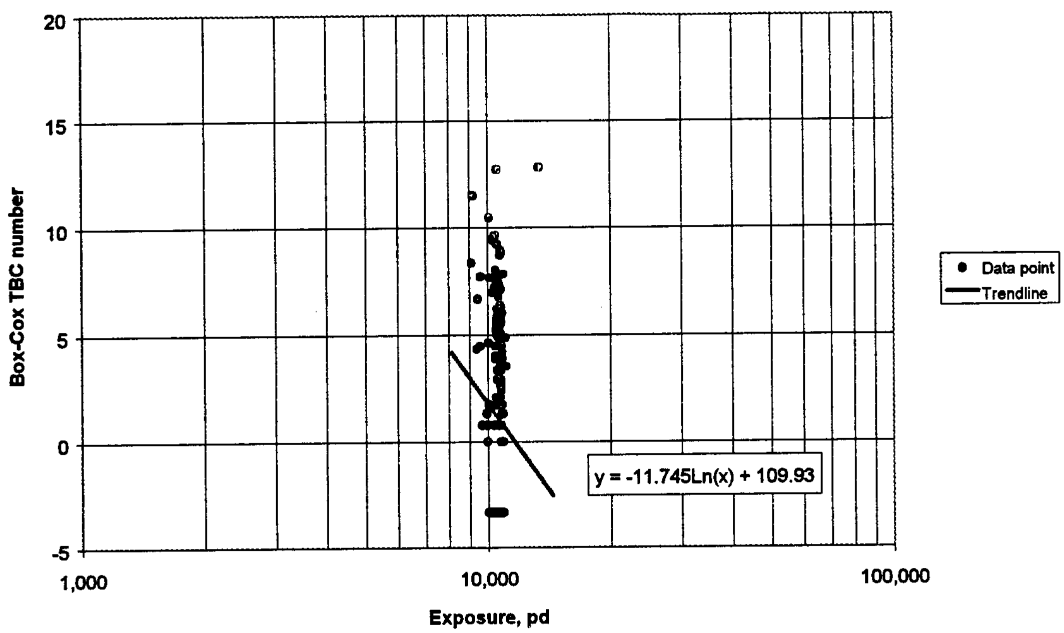

Figure E-115. Exposure Plot for the 7th Armor Division, US 12th Army Group

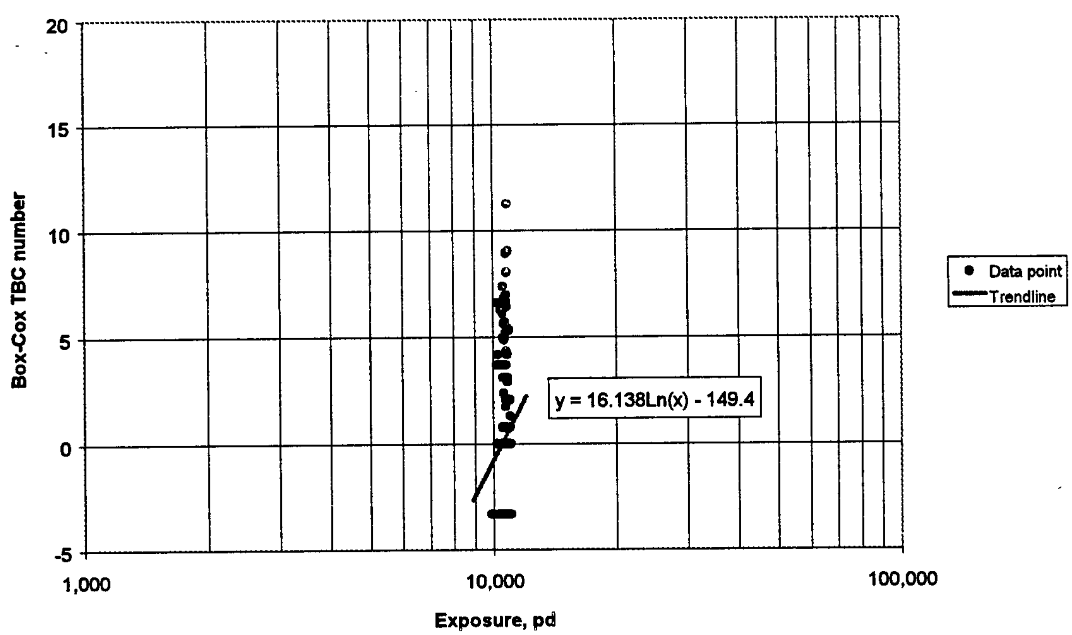

Figure E-116. Exposure Plot for the 8th Armor Division, US 12th Army Group

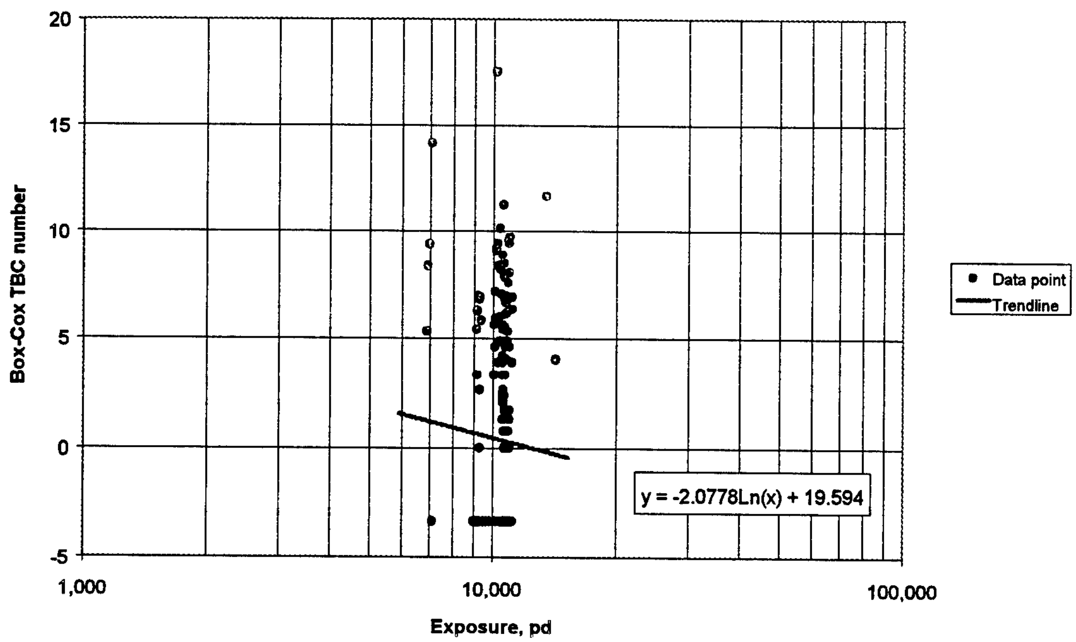

Figure E-117. Exposure Plot for the 9th Armor Division, US 12th Army Group

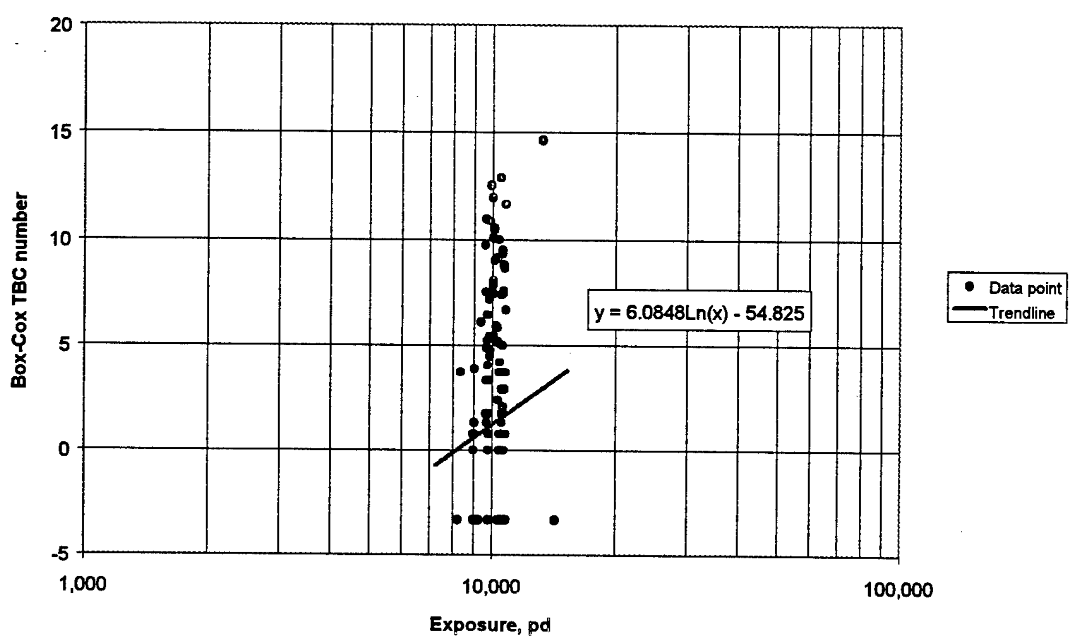

Figure E-118. Exposure Plot for the 10th Armor Division, US 12th Army Group

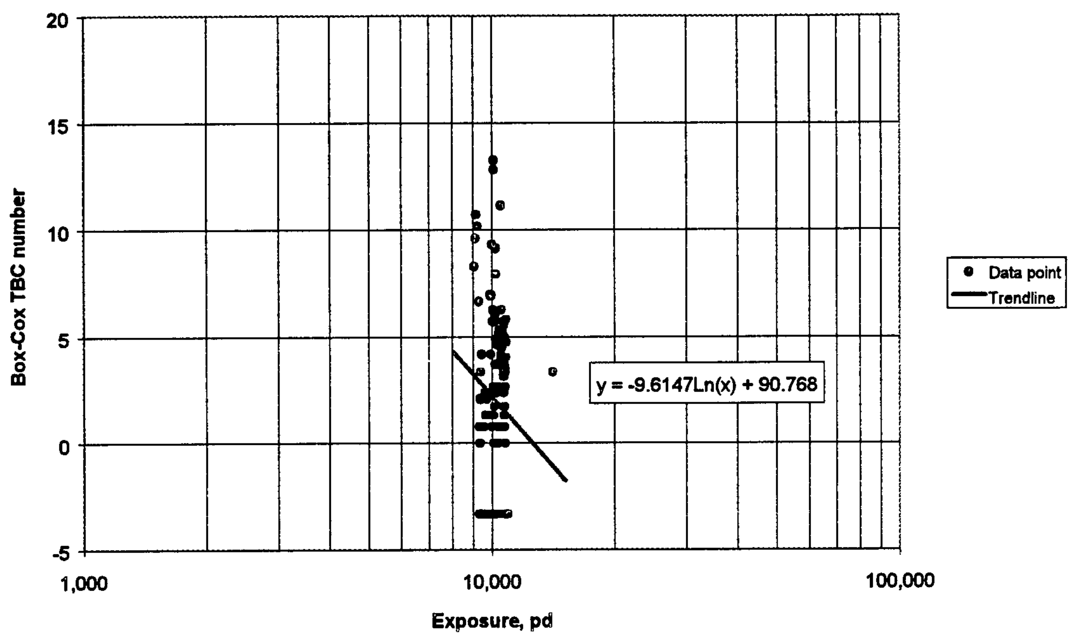

Figure E-119. Exposure Plot for the 11th Armor Division, US 12th Army Group

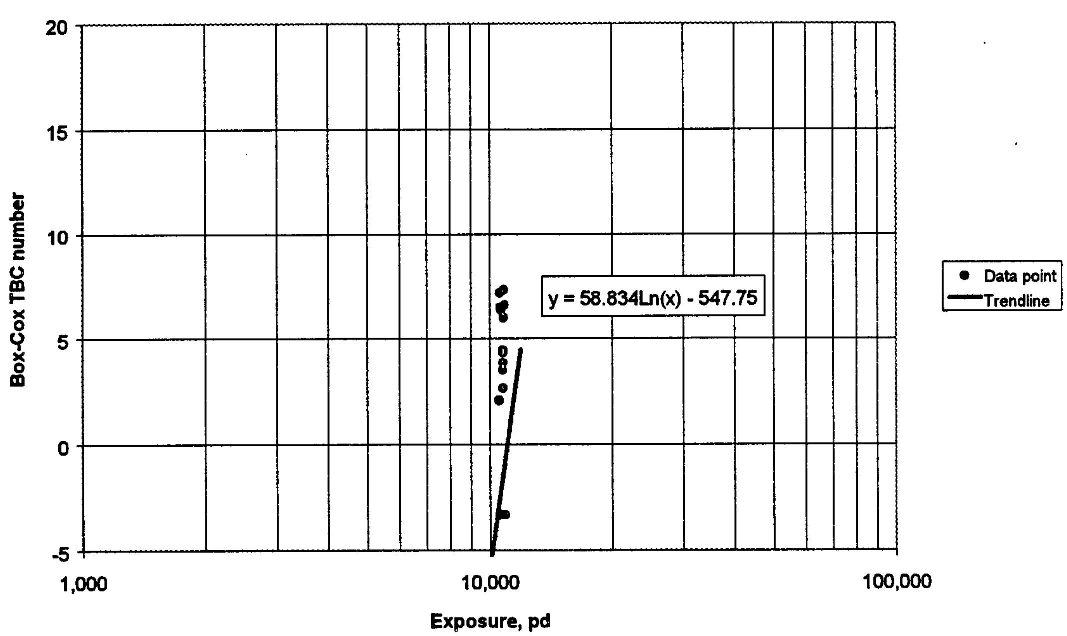

Figure E-120. Exposure Plot for the 13th Armor Division, US 12th Army Group

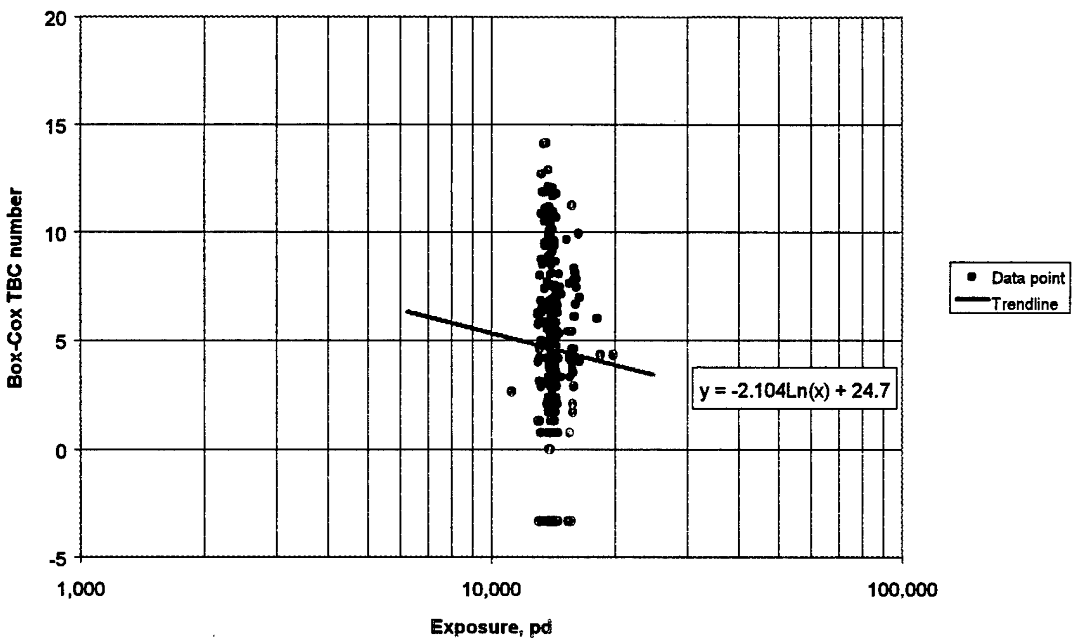

Figure E-121. Exposure Plot for the 1st Infantry Division, US 12th Army Group

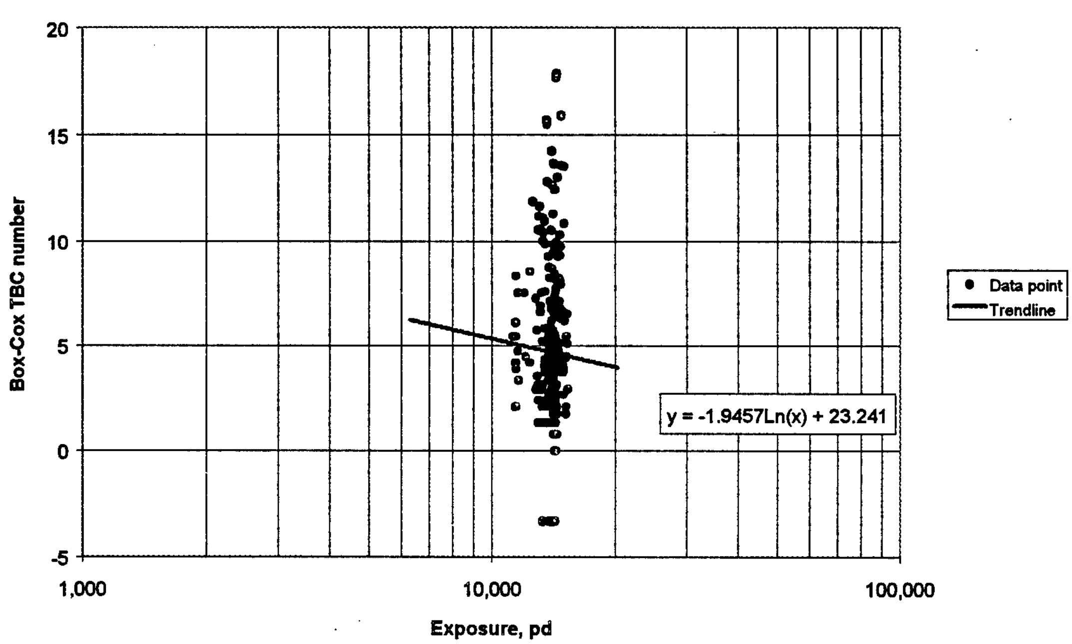

Figure E-122. Exposure Plot for the 2d Infantry Division, US 12th Army Group

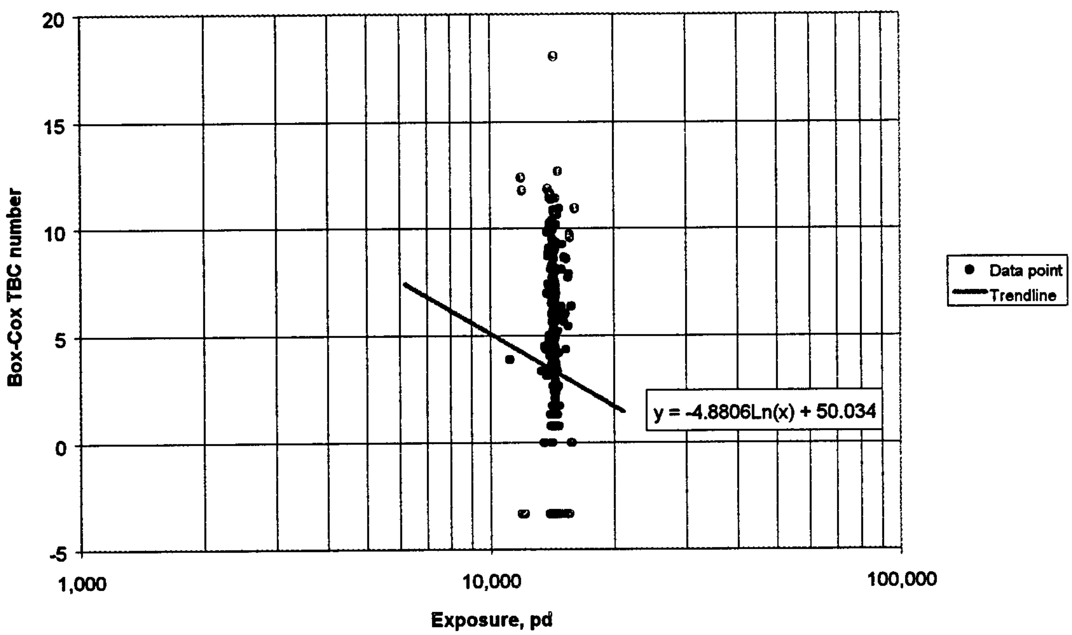

Figure E-123. Exposure Plot for the 3d Infantry Division, US 12th Army Group

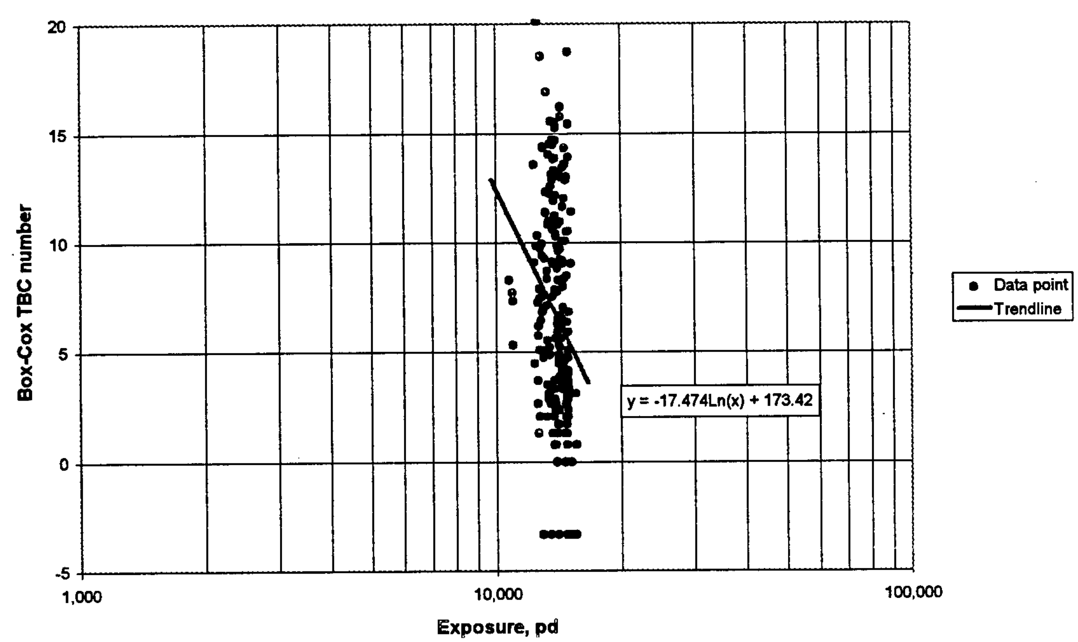

Figure E-124. Exposure Plot for the 4th Infantry Division, US 12th Army Group

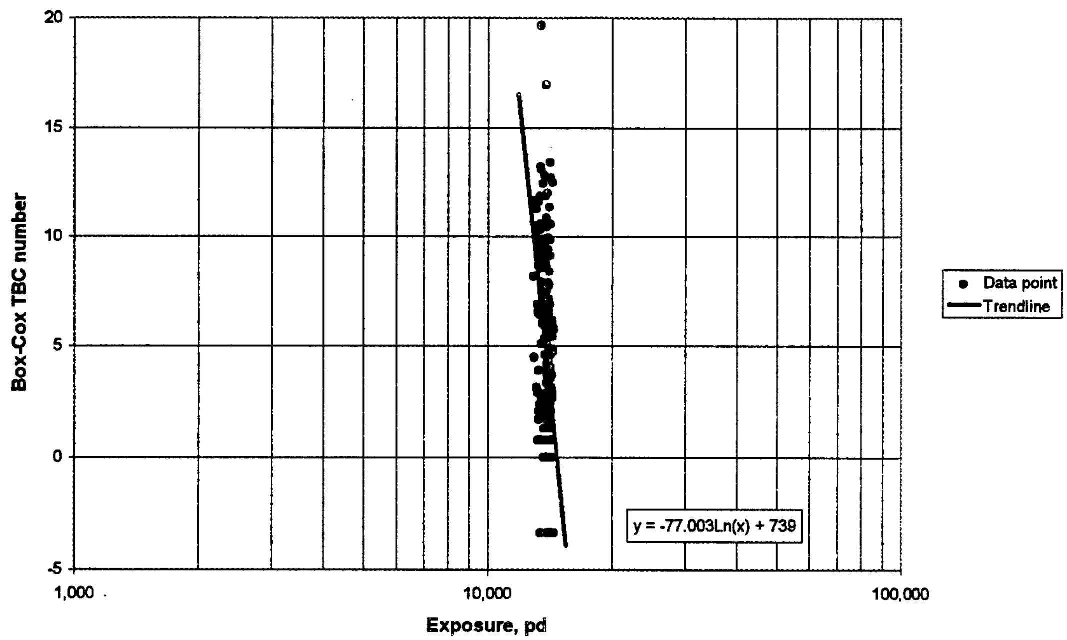

Figure E-125. Exposure Plot for the 5th Infantry Division, US 12th Army Group

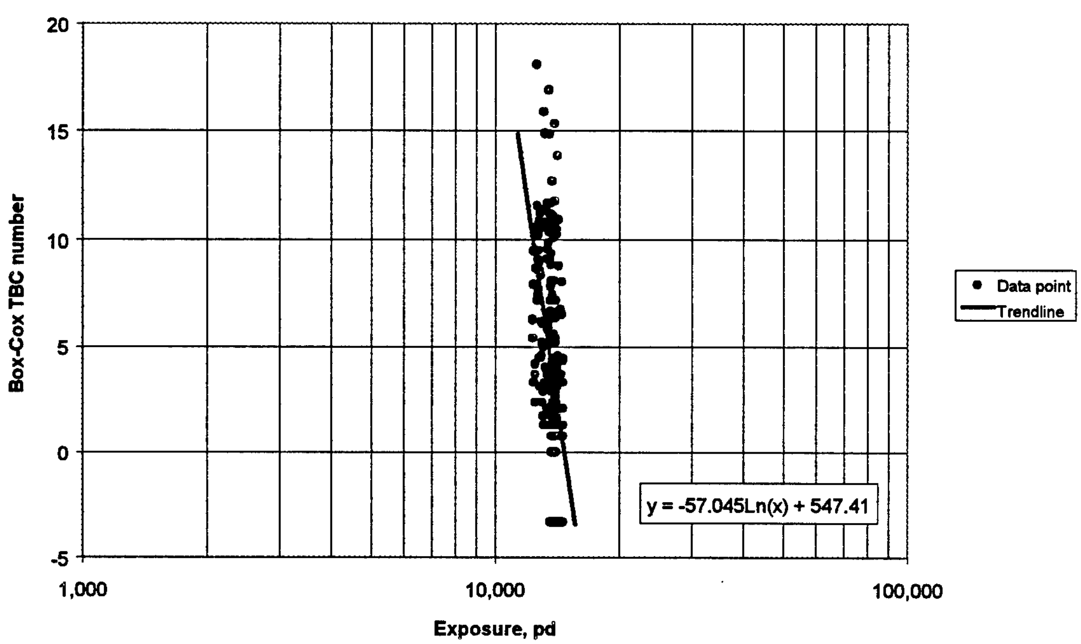

Figure E-126. Exposure Plot for the 8th Infantry Division, US 12th Army Group

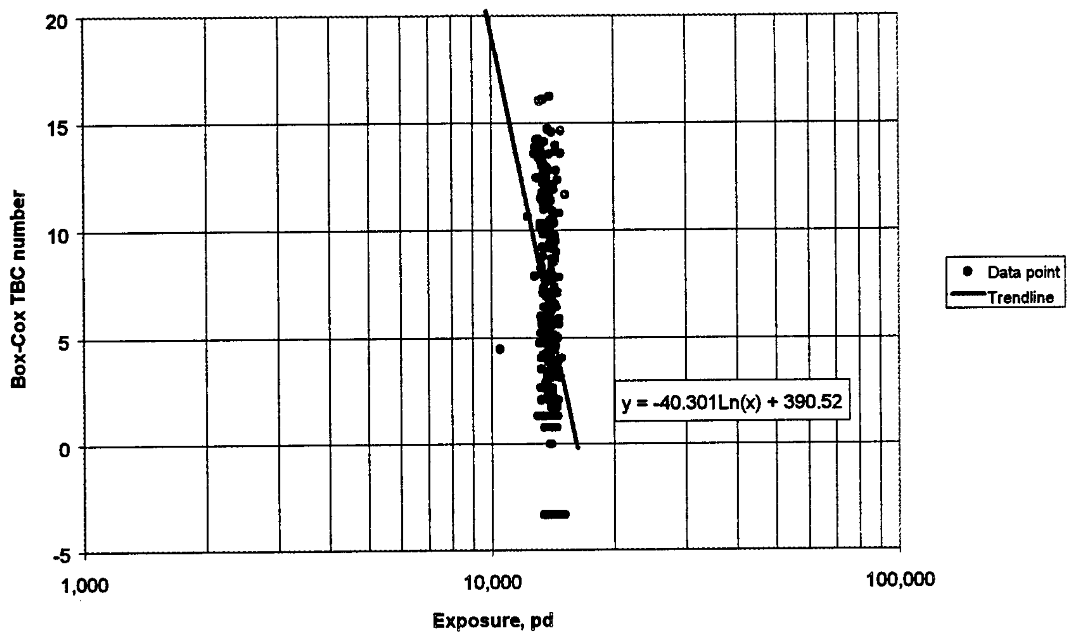

Figure E-127. Exposure Plot for the 9th Infantry Division, US 12th Army Group

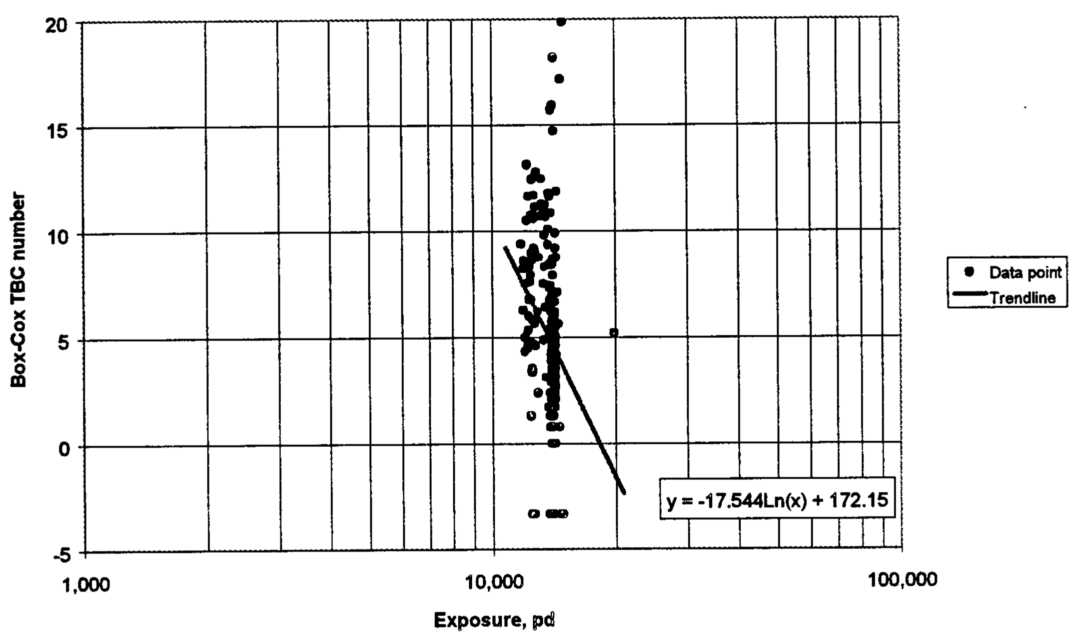

Figure E-128. Exposure Plot for the 26th Infantry Division, US 12th Army Group

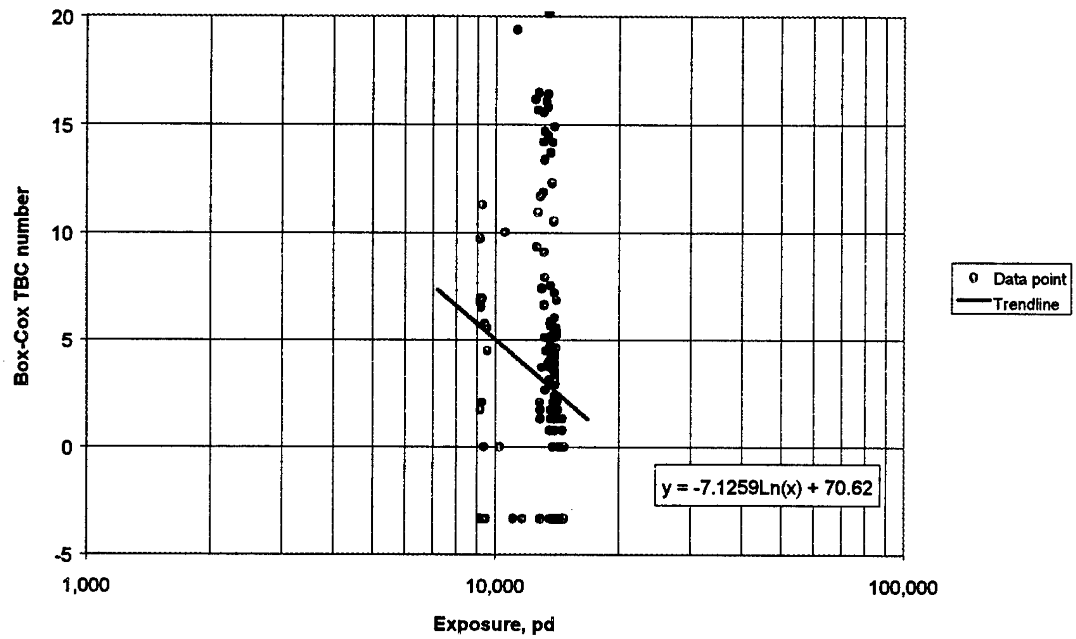

Figure E-129. Exposure Plot for the 28th Infantry Division, US 12th Army Group

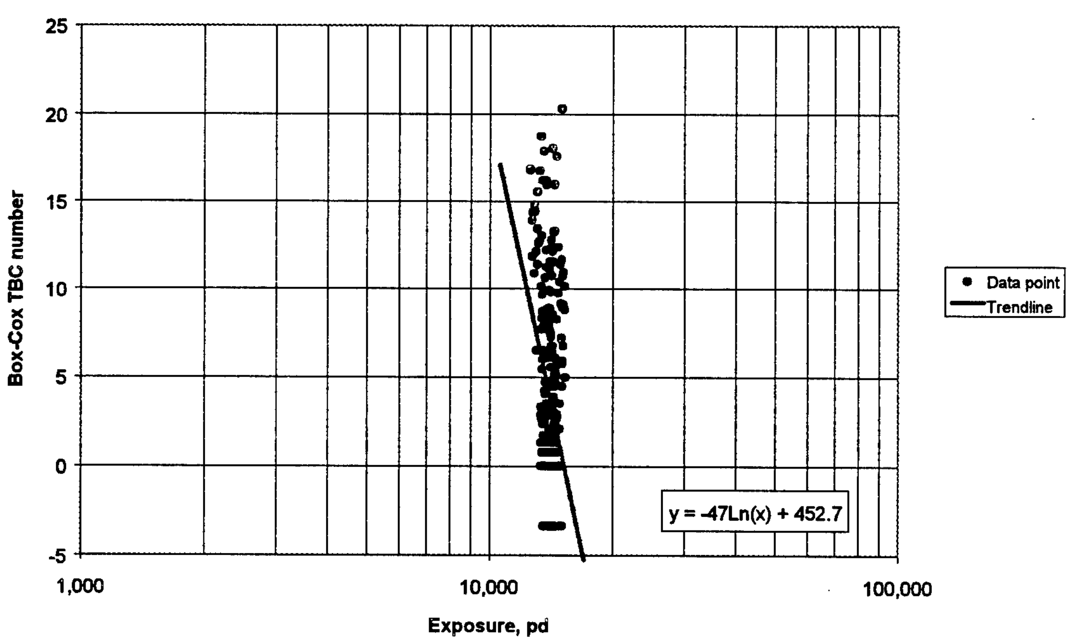

Figure E-130. Exposure Plot for the 29th Infantry Division, US 12th Army Group

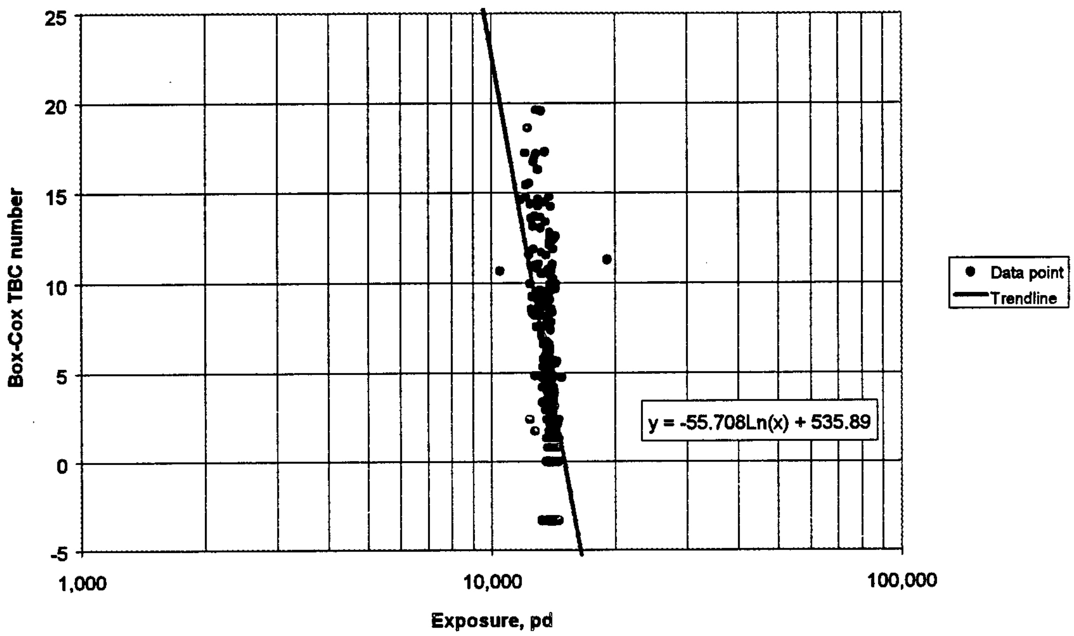

Figure E-131. Exposure Plot for the 30th Infantry Division, US 12th Army Group

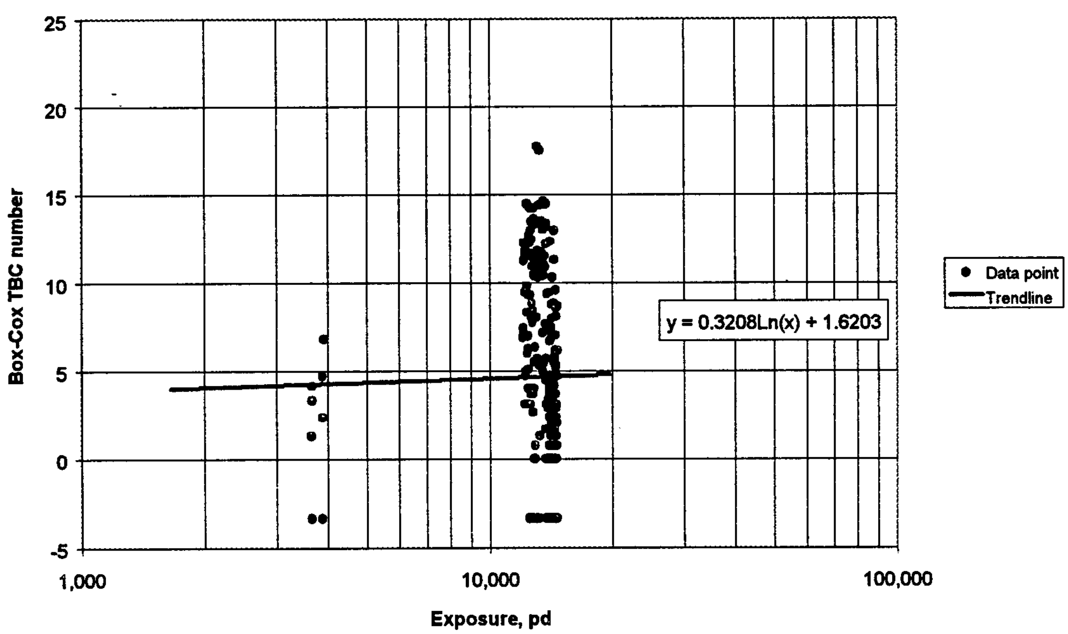

Figure E-132. Exposure Plot for the 35th Infantry Division, US 12th Army Group

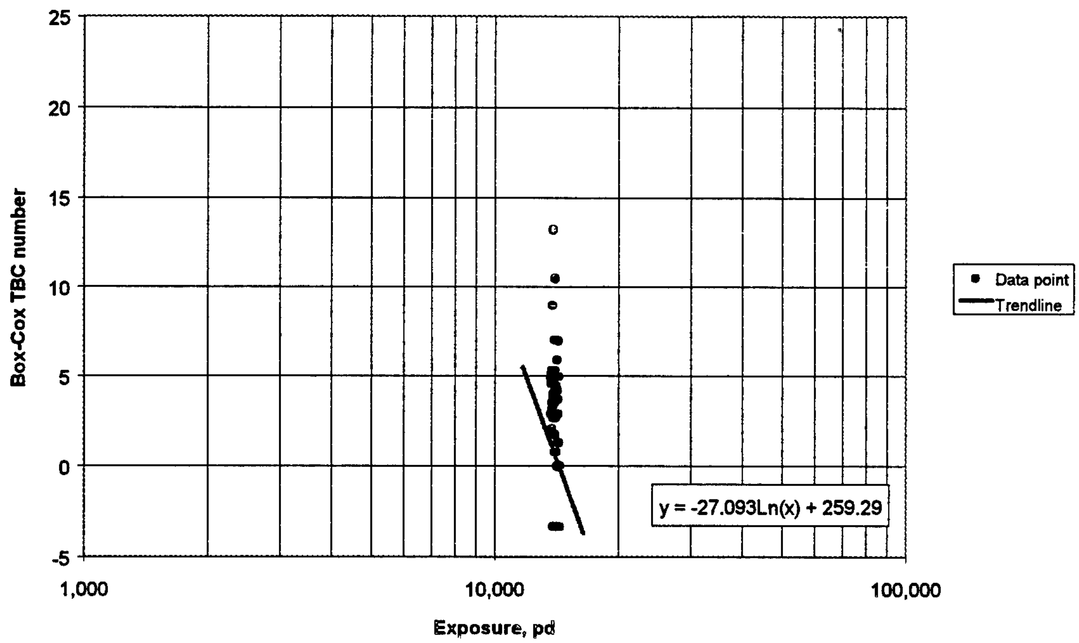

Figure E-133. Exposure Plot for the 65th Infantry Division, US 12th Army Group

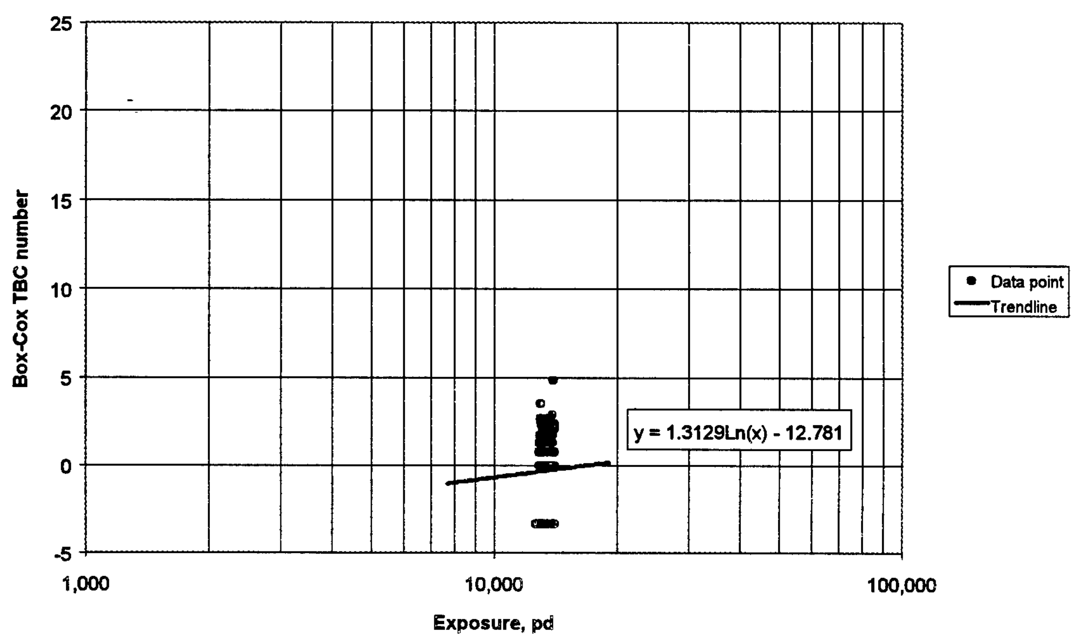

Figure E-134. Exposure Plot for the 66th Infantry Division, US 12th Army Group

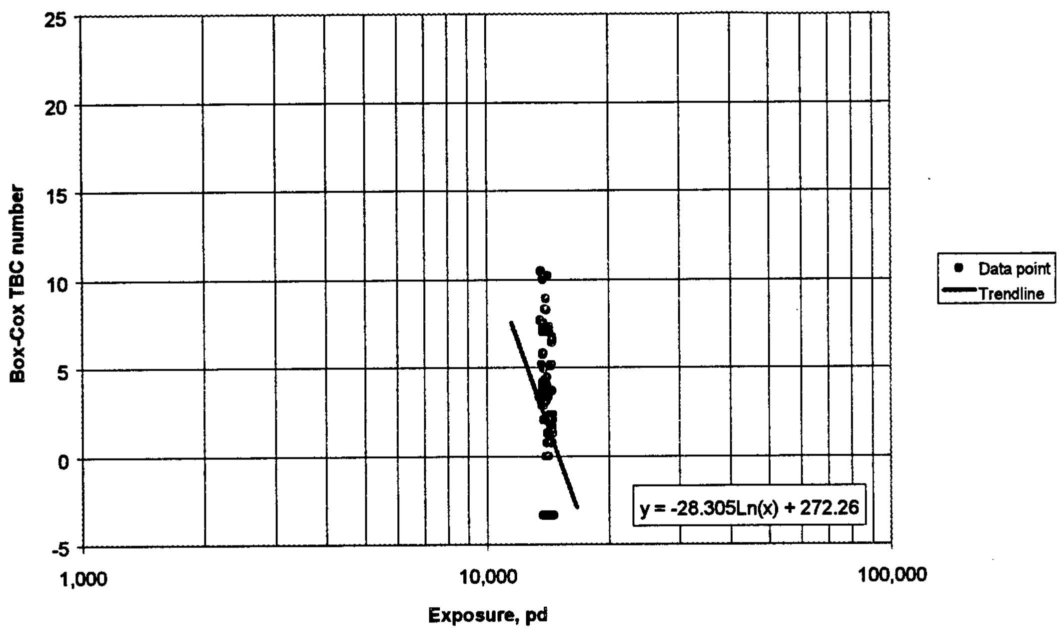

Figure E-135. Exposure Plot for the 69th Infantry Division, US 12th Army Group

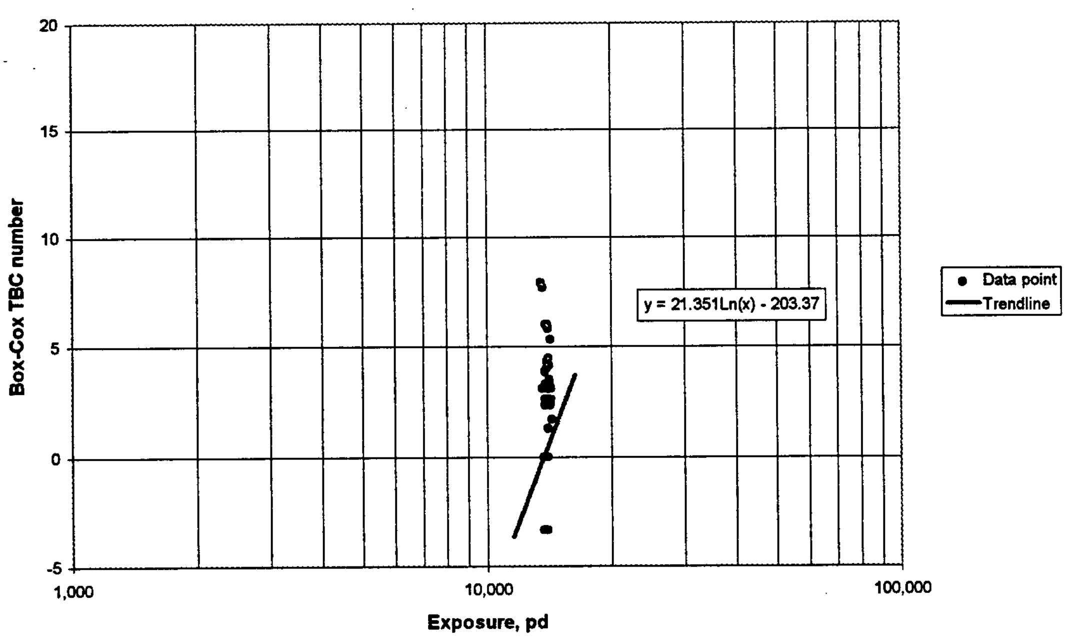

Figure E-136. Exposure Plot for the 71st Infantry Division, US 12th Army Group

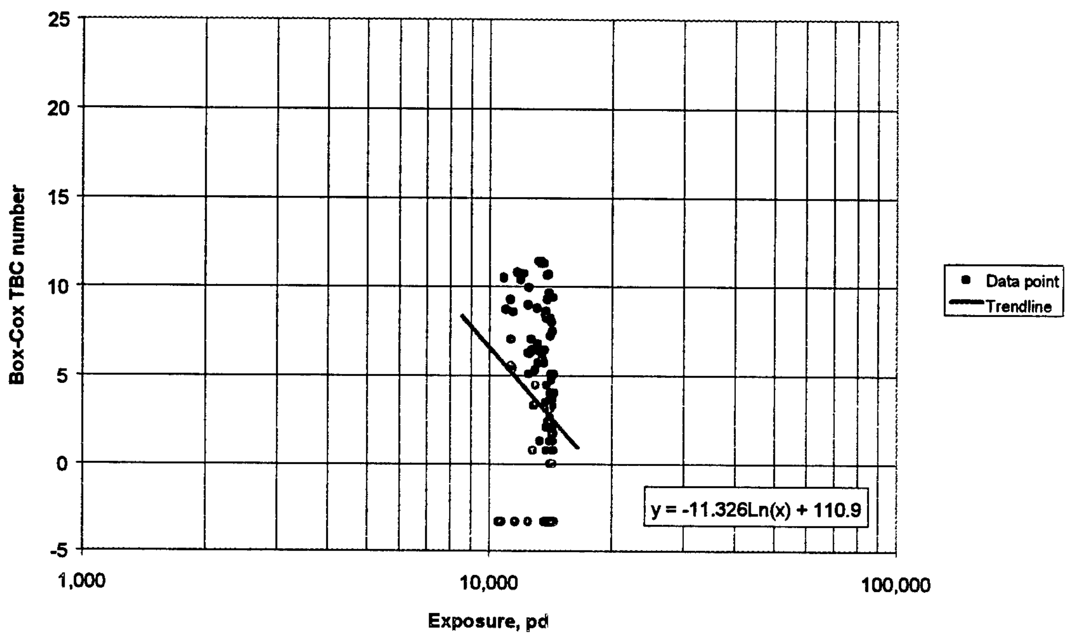

Figure E-137. Exposure Plot for the 75th Infantry Division, US 12th Army Group

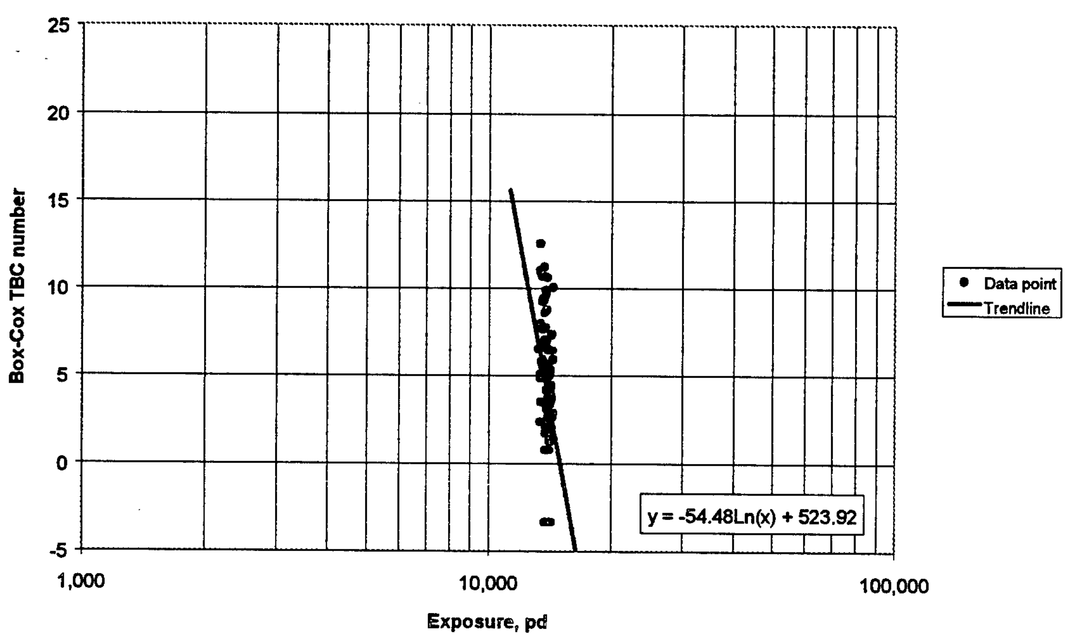

Figure E-138. Exposure Plot for the 76th Infantry Division, US 12th Army Group

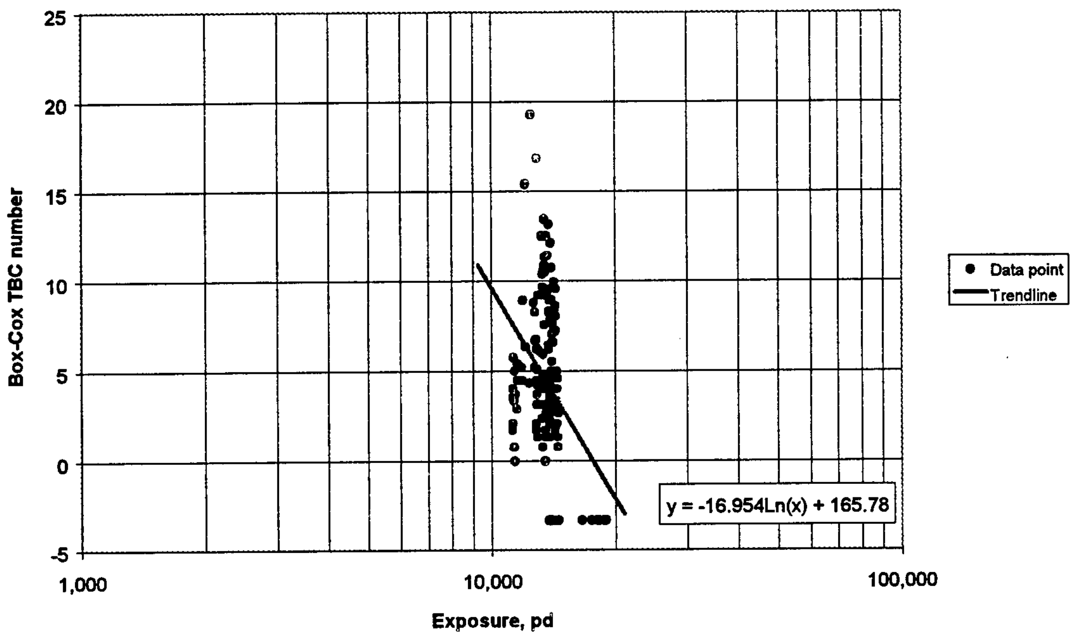

Figure E-139. Exposure Plot for the 78th Infantry Division, US 12th Army Group

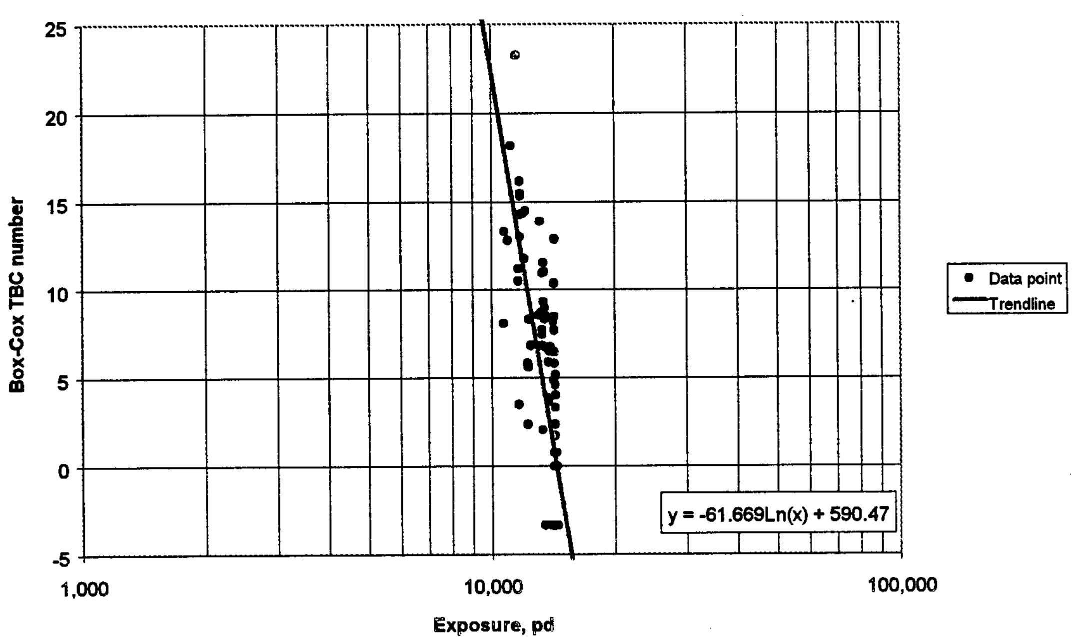

Figure E-140. Exposure Plot for the 79th Infantry Division, US 12th Army Group

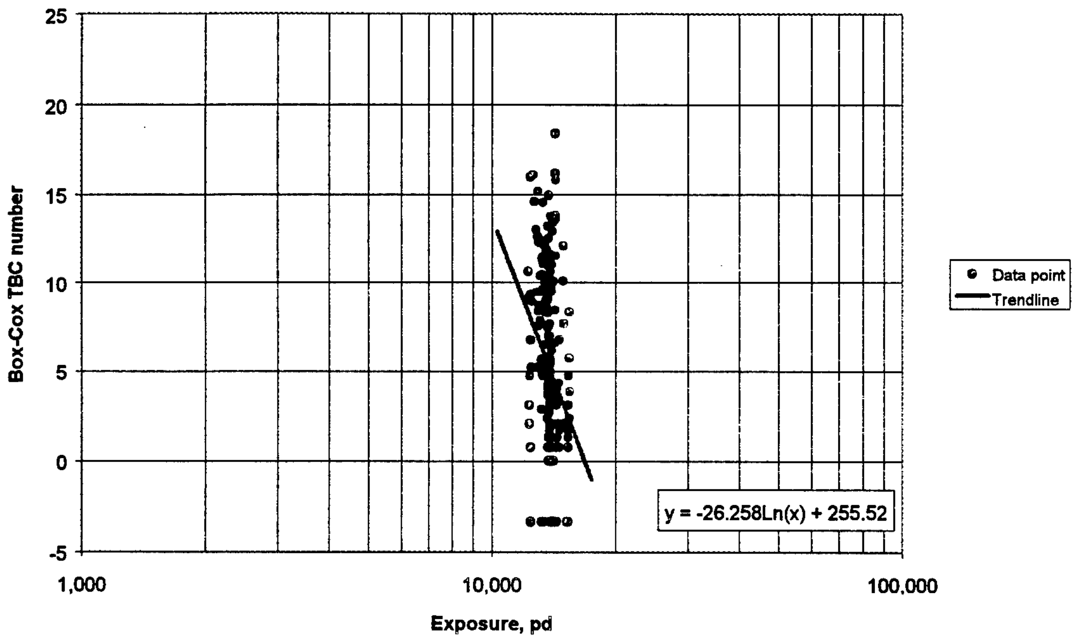

Figure E-141. Exposure Plot for the 80th Infantry Division, US 12th Army Group

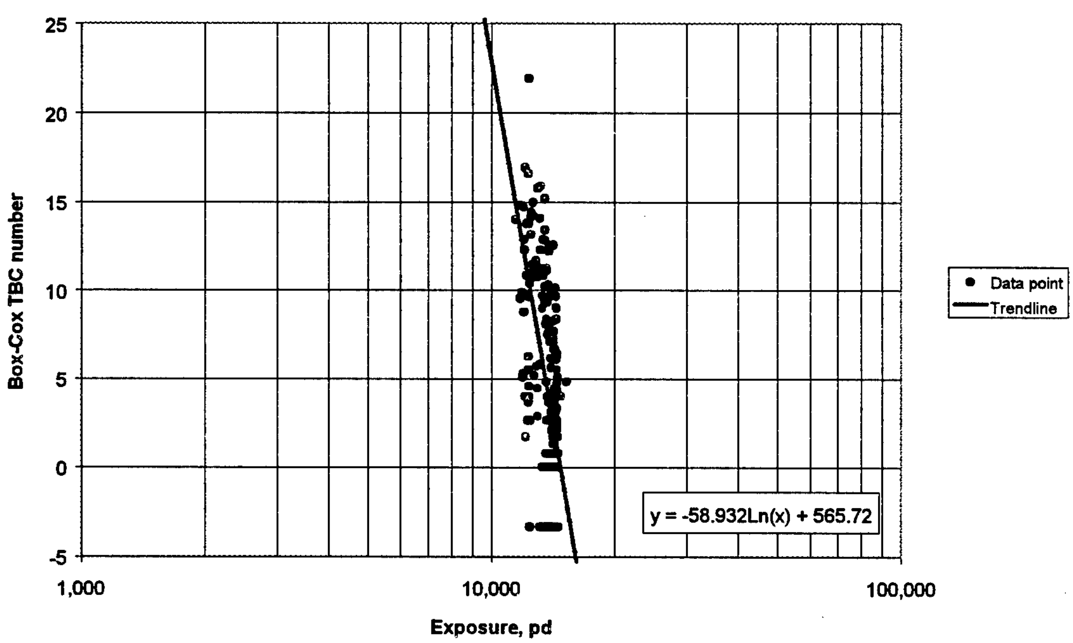

Figure E-142. Exposure Plot for the 83d Infantry Division, US 12th Army Group

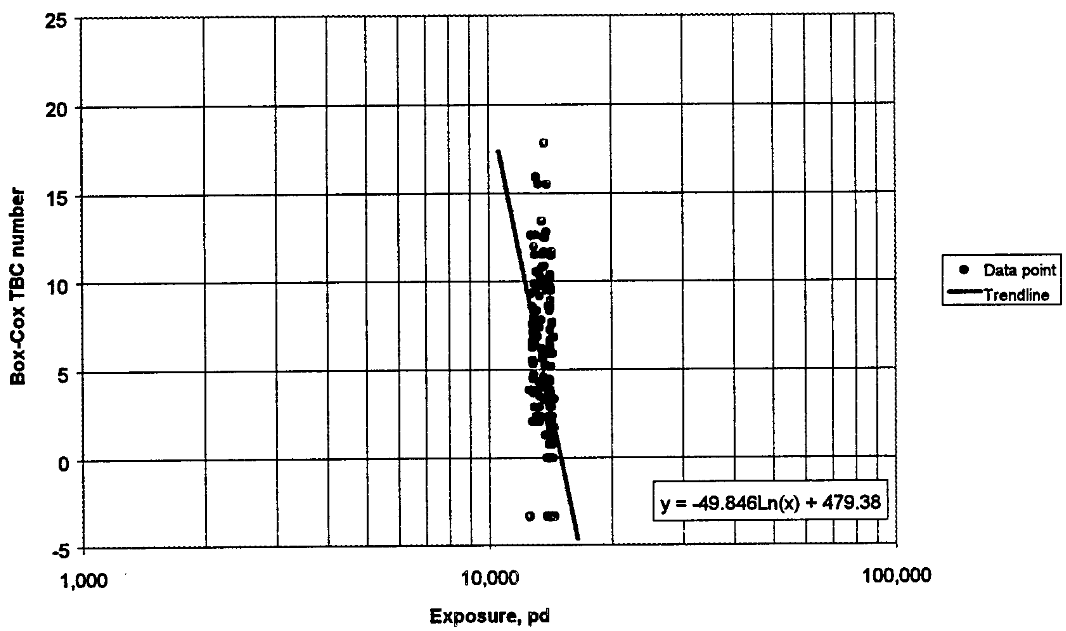

Figure E-143. Exposure Plot for the 84th Infantry Division, US 12th Army Group

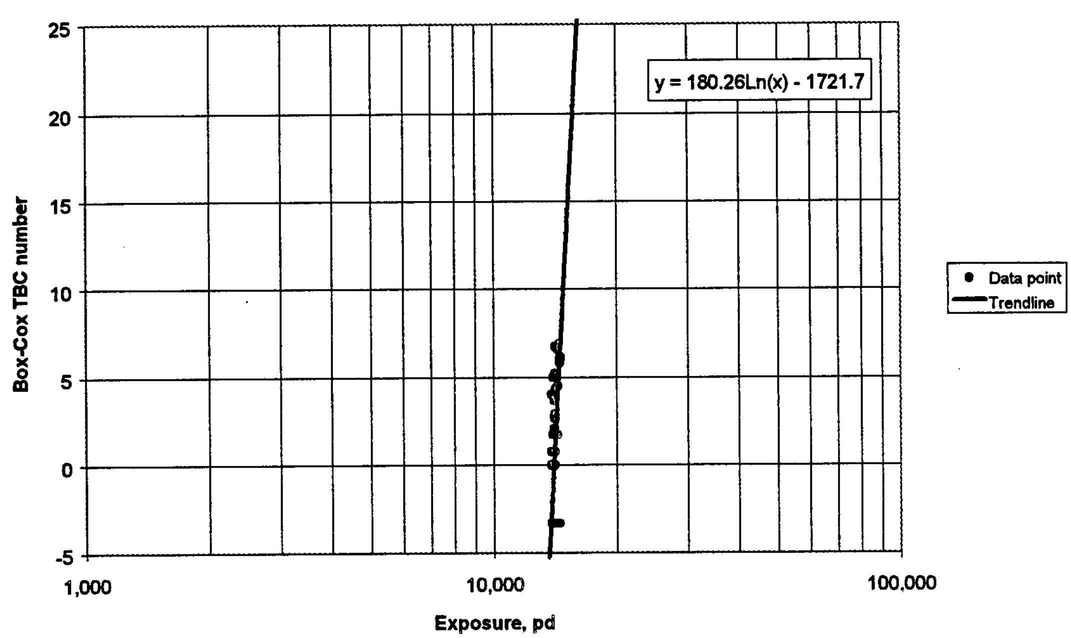

Figure E-144. Exposure Plot for the 86th Infantry Division, US 12th Army Group

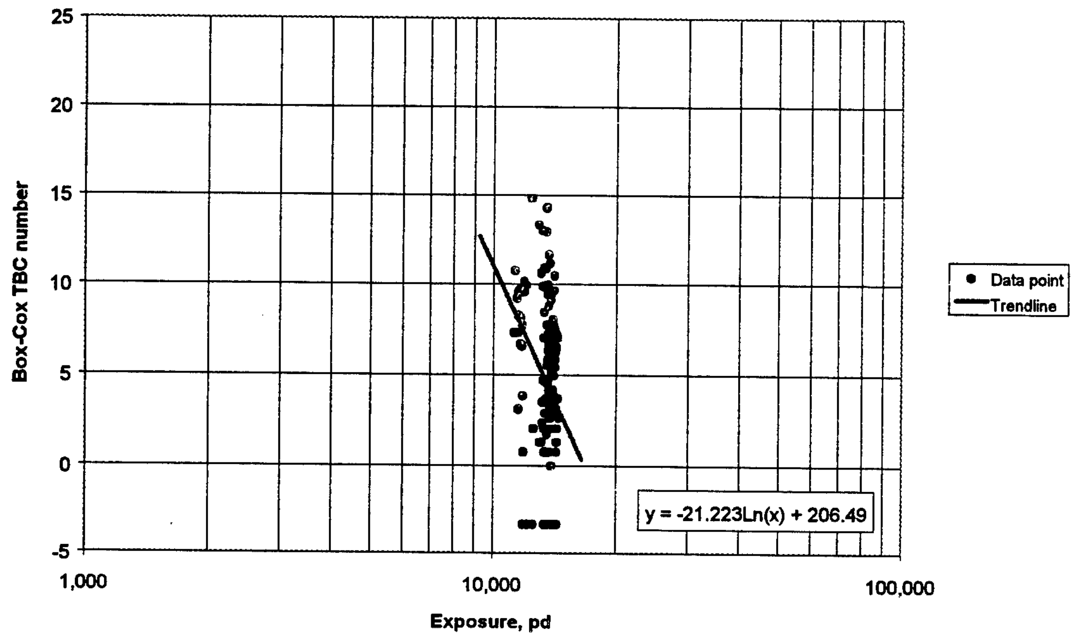

Figure E-145. Exposure Plot for the 87th Infantry Division, US 12th Army Group

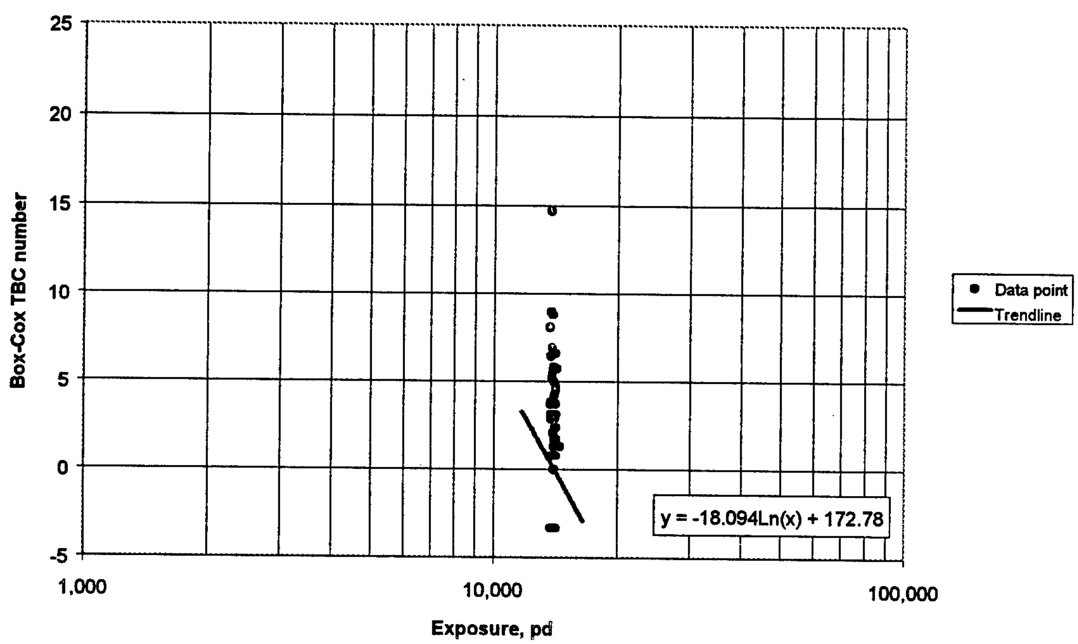

Figure E-146. Exposure Plot for the 89th Infantry Division, US 12th Army Group

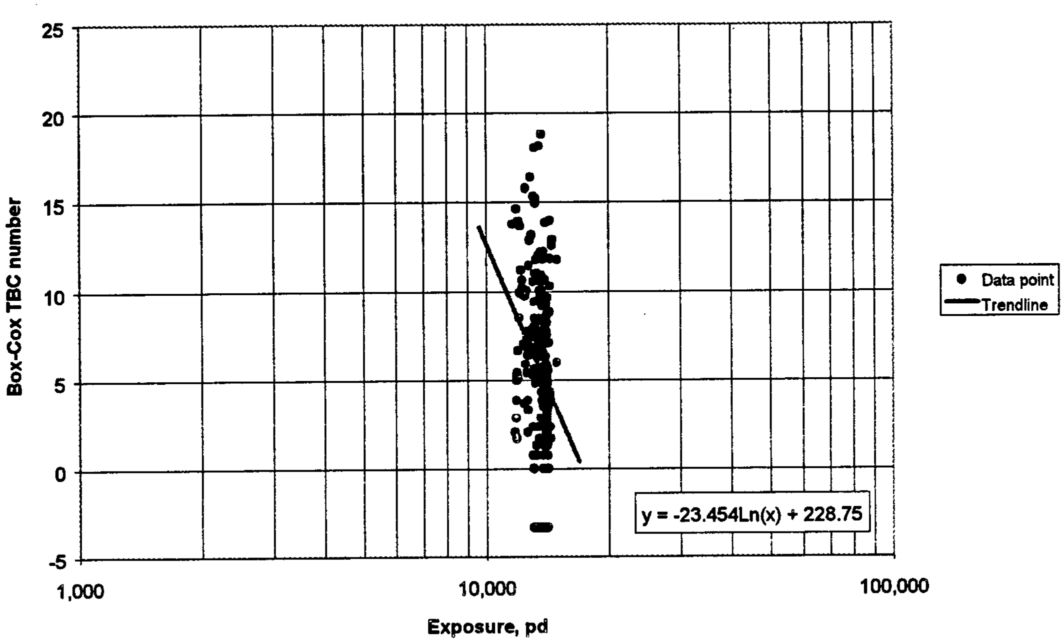

Figure E-147. Exposure Plot for the 90th Infantry Division, US 12th Army Group

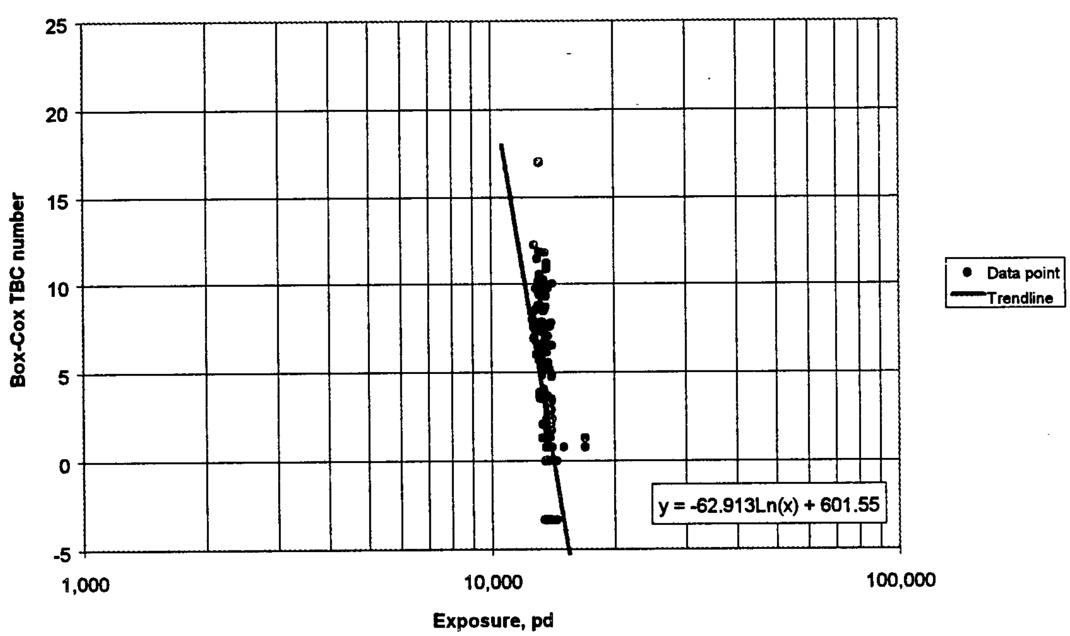

Figure E-148. Exposure Plot for the 94th Infantry Division, US 12th Army Group

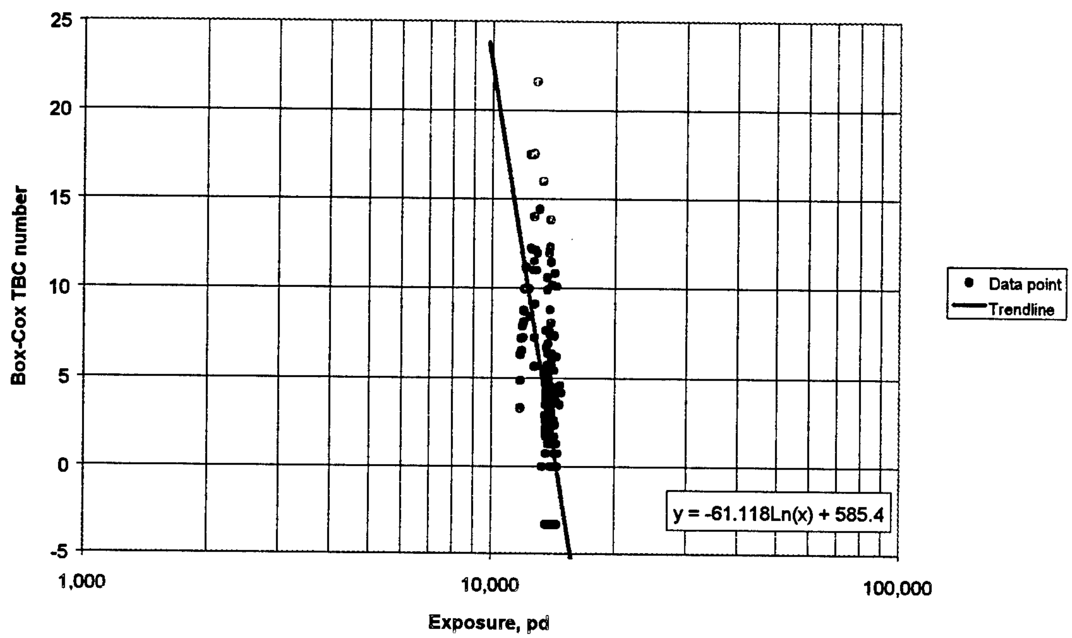

Figure E-149. Exposure Plot for the 95th Infantry Division, US 12th Army Group

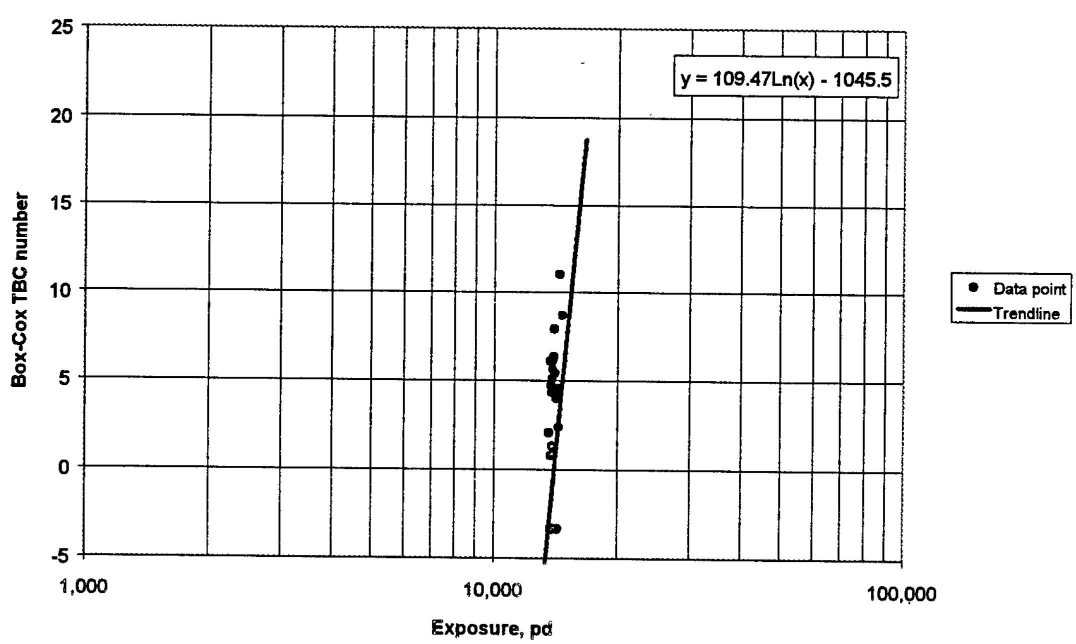

Figure E-150. Exposure Plot for the 97th Infantry Division, US 12th Army Group

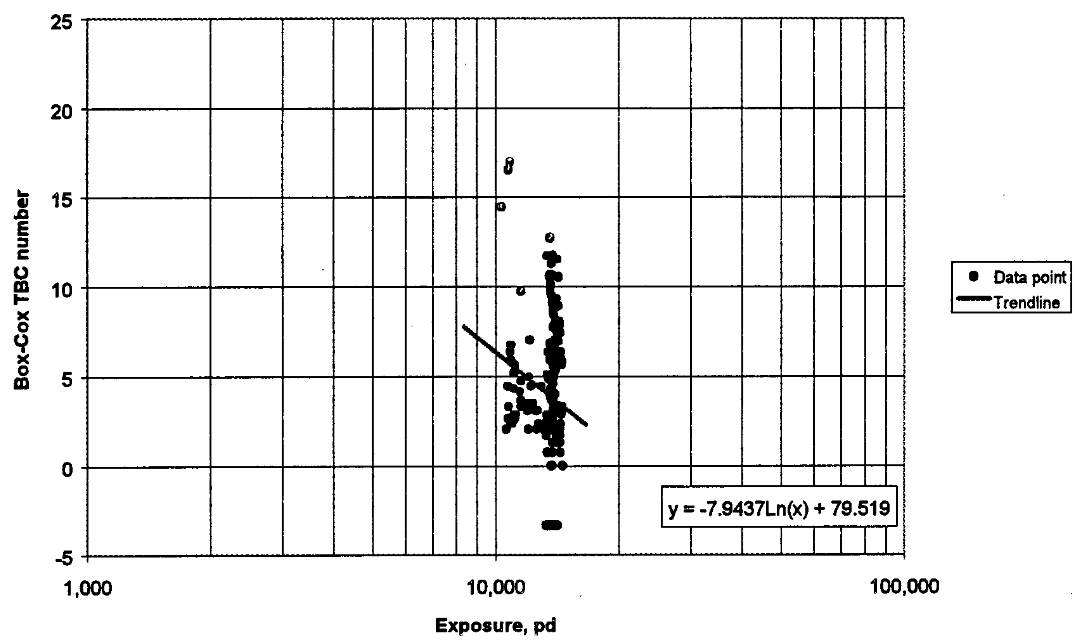

Figure E-151. Exposure Plot for the 99th Infantry Division, US 12th Army Group

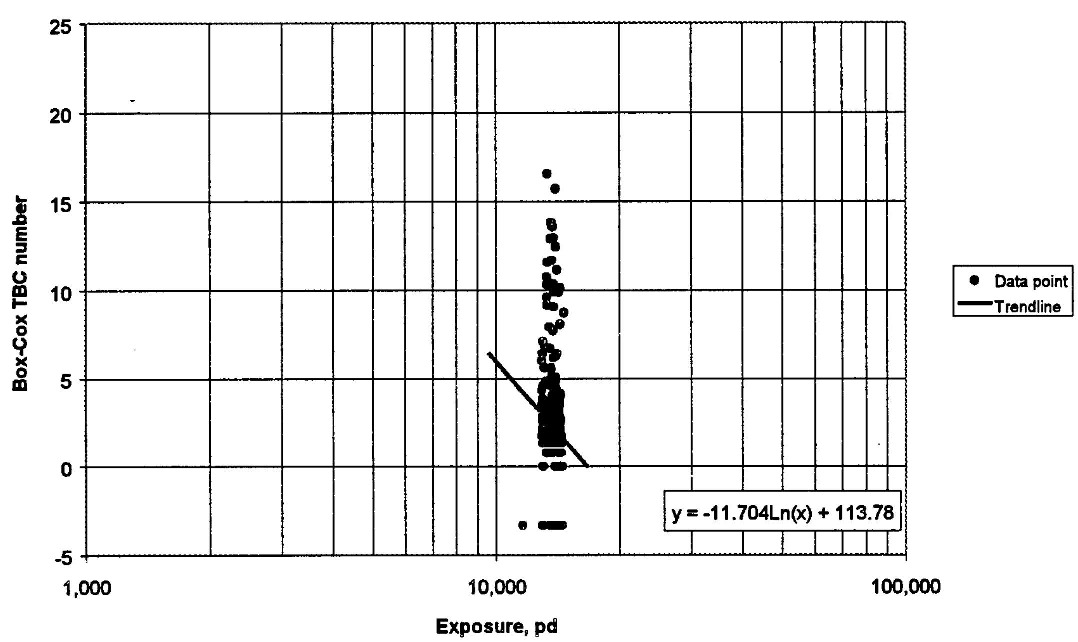

Figure E-152. Exposure Plot for the 102d Infantry Division, US 12th Army Group

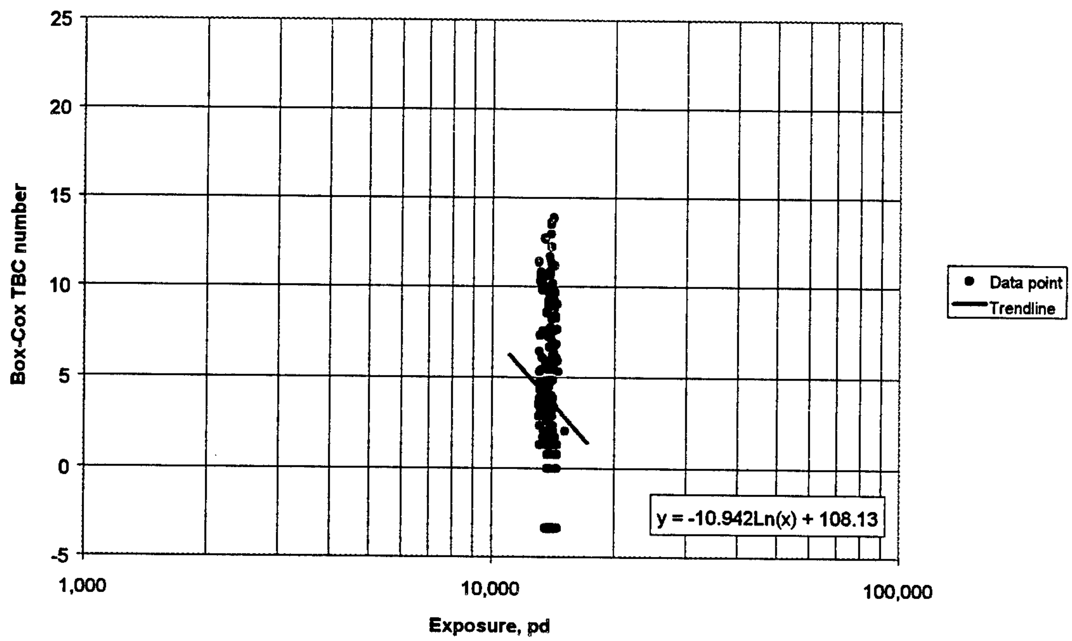

Figure E-153. Exposure Plot for the 104th Infantry Division, US 12th Army Group

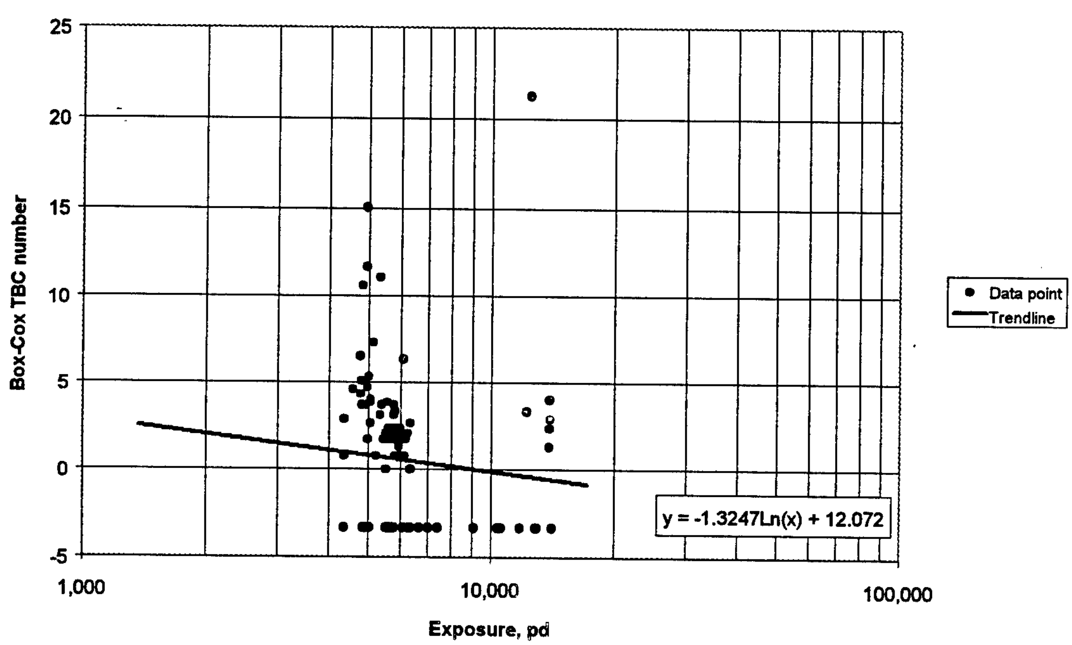

Figure E-154. Exposure Plot for the 106th Infantry Division, US 12th Army Group

APPENDIX F

TABLES FOR CHAPTER 6

F-1. INTRODUCTION. This appendix contains six tables providing [Compton-1983]'s data on the US 28th Infantry, 6th Armor, and 7th Armor Divisions. The format of these tables is described below.

F-2. DESCRIPTION OF THE TBC TABLES. Tables F-1 through F-3 give the TBC number for detailed elements of the division. Each of these tables has three columns on the left side identifying the primary (level 1), secondary (level 2), and tertiary (level 3) subunit of the division. These columns are followed, from left to right, by a number of columns headed by the date in mm/dd/yy format. A final column gives each row's total TBC number for the row. These tables also contain rows that subtotal the TBC number for major division components.

F-3. DESCRIPTION OF THE DETAILED TABLES. Tables F-4 through F-6 give the data extracted from Compton in essentially its original form. They are provided here because the versions currently available from the Defense Technical Information Center (DTIC) are practically illegible. Each of these tables contains 10 columns giving the information indicated below.

- Date.– The date.
- Subunit level 1.– The primary subunit of the division.
- Subunit level 2.– The secondary subunit of the division.
- Subunit level 3.– The tertiary subunit of the division.
- KIA.– The number of personnel in this unit listed as KIA on the indicated date.
- WIA.– The number of personnel in this unit listed as WIA on the indicated date.
- MIA.– The number of personnel in this unit listed as MIA on the indicated date.
- NB.– The number of personnel in this unit listed as a nonbattle casualty on the indicated date.
- Total.– The total number of personnel losses in this unit on the indicated date, including both nonbattle and battle losses.
- TBC.– The number of total battle casualties in this unit on the indicated date, including only the KIA, WIA, and MIA.

F-4. TABLES.

Table F-1. TBC Casualties in the US 28th Infantry Division, Compton Data (page 1 of 3)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	11/2/44	11/3/44	11/4/44	11/5/44	11/6/44	11/7/44	11/8/44	11/9/44	11/10/44	11/11/44	11/12/44	11/13/44	Total
109TH RCT	103 ENGR CBT BN	A CO	4	4	2	0	0	0	0	0	1	0	0	0	11
	103 MED BN	A CO	2	0	0	0	0	0	0	0	0	0	0	0	2
	107TH FA BN	A BTRY	3	4	1	0	0	1	0	1	0	0	0	0	10
		B BTRY	0	0	0	0	4	1	0	0	0	0	0	0	5
		C BTRY	1	0	0	0	0	0	0	0	0	0	2	1	4
		HHB	4	1	0	0	0	0	0	0	0	0	0	0	5
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
	107TH FA BN Total		8	5	1	0	4	2	0	1	0	0	2	1	24
	146 ENGR CBT BN	C CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC & SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
	146 ENGR CBT BN Total		0	0	0	0	0	0	0	0	0	0	0	0	0
	1ST BN	A CO	19	16	12	6	23	1	0	1	22	11	4	1	116
		B CO	29	18	10	2	21	1	0	1	4	17	4	2	109
		C CO	12	22	10	3	31	0	1	0	8	8	5	6	106
		D CO	8	8	7	6	2	0	0	0	1	1	4	1	38
		HHC	2	11	2	1	6	0	1	0	3	2	1	2	31
	1ST BN Total		70	75	41	18	83	2	2	2	38	39	18	12	400
	2ND BN	E CO	1	4	14	6	20	1	2	5	3	0	0	0	56
		F CO	0	8	1	4	23	4	1	16	1	1	3	4	66
		G CO	1	1	7	9	15	14	0	2	1	2	0	0	52
		H CO	1	3	1	1	14	1	1	2	0	0	0	1	25
		HHC	0	0	0	0	0	1	1	0	2	0	0	0	4
	2ND BN Total		3	16	23	20	72	21	5	25	7	3	3	5	203
	3D BN	HHC	1	1	0	0	0	0	1	0	0	0	0	1	4
		I CO	12	10	15	1	3	2	4	1	1	3	0	1	53
		K CO	18	3	1	9	0	0	16	0	1	13	0	1	62
		L CO	12	7	1	1	20	0	2	2	4	1	2	2	54
		M CO	6	5	1	4	3	0	0	2	4	0	0	1	26
	3D BN Total		49	26	18	15	26	2	23	5	10	17	2	6	199
	HQ, 109TH RCT	ANTITANK CO	1	4	4	0	0	0	2	0	0	4	2	0	17
		CANNON CO	0	0	0	0	1	0	0	0	0	0	0	0	1
		HHC	1	0	0	0	0	0	0	1	1	1	2	0	6
		MED DET	4	5	4	0	4	0	0	0	2	2	1	1	23
		SVC CO	0	1	0	0	0	0	0	0	0	0	0	0	1
	HQ, 109TH RCT Total		6	10	8	0	5	0	2	1	3	7	5	1	48
109TH RCT Total			142	136	93	53	190	27	32	34	59	66	30	25	887
110TH RCT	103 ENGR CBT BN	B CO	0	0	0	0	0	0	0	1	12	0	0	1	14
	103 MED BN	B CO	0	0	0	0	0	0	0	0	0	0	0	0	0
	109TH FA BN	A BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		B BTRY	0	0	0	0	0	0	0	0	1	0	0	0	1
		C BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHB	1	0	0	0	0	2	0	0	0	0	0	0	3
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0	0	0	0	1	1
	109TH FA BN Total		1	0	0	0	0	2	0	0	1	0	0	1	5
	1340 ENGR CBT BN	A CO	1	0	0	0	0	0	0	0	0	0	0	0	1
		B CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		C CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC & SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
	1340 ENGR CBT BN Total		1	0	0	0	0	0	0	0	0	0	0	0	1
	146 ENGR CBT BN	A CO	0	0	0	0	0	0	0	0	0	0	0	0	0
	1ST BN	A CO	0	0	10	11	6	2	2	10	1	21	28	13	104
		B CO	0	0	29	0	5	3	7	0	8	49	7	5	113
		C CO	0	0	22	15	10	6	1	3	14	2	7	15	95
		D CO	0	0	0	2	1	3	0	0	8	3	9	0	26
		HHC	0	0	0	1	2	1	1	0	3	3	1	1	13
	1ST BN Total		0	0	61	29	24	15	11	13	34	78	52	34	351
	2D BN	E CO	0	1	1	5	8	9	5	5	17	14	6	12	83
		F CO	17	27	7	2	0	0	3	0	34	38	9	1	138
		G CO	9	13	2	1	3	2	6	5	26	9	15	17	108
		H CO	1	0	0	0	0	0	0	0	2	0	1	3	7
		HHC	0	0	0	0	0	0	0	0	0	0	0	0	0
	2D BN Total		27	41	10	8	11	11	14	10	79	61	31	33	336
	3D BN	HHC	2	2	0	0	2	2	0	0	3	4	1	2	18
		I CO	5	19	8	7	2	1	0	36	28	15	12	7	140
		K CO	18	0	0	8	4	0	1	30	14	12	7	7	101
		L CO	21	9	2	2	9	1	0	35	31	4	7	6	127
		M CO	5	1	1	1	1	1	1	38	25	2	0	0	76
	3D BN Total		51	31	11	18	18	5	2	139	101	37	27	22	462
	707 TANK BN	B CO	0	1	0	0	0	0	0	0	0	0	0	0	1
	HQ, 110TH RCT	ANTITANK CO	0	0	0	0	0	0	0	0	3	1	2	2	8
		CANNON CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC	0	0	3	0	0	0	0	2	0	5	0	0	10
		MED DET	1	0	0	1	1	2	4	9	4	3	1	1	27
		SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
	HQ, 110TH RCT Total		1	0	3	1	1	2	4	11	7	9	3	3	45
110TH RCT Total			81	73	85	56	54	35	31	174	234	185	113	94	1215
112TH RCT	103 ENGR CBT BN	C CO	1	3	0	0	0	0	2	0	1	0	1	1	9
	103 MED DET	C CO	0	0	0	3	0	0	0	0	0	0	0	0	3
	1340 ENGR CBT BN	A CO	0	0	0	0	0	2	4	6	1	22	11	7	53

Table F-1. TBC Casualties in the US 28th Infantry Division, Compton Data (page 2 of 3)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	11/2/44	11/3/44	11/4/44	11/5/44	11/6/44	11/7/44	11/8/44	11/9/44	11/10/44	11/11/44	11/12/44	11/13/44	Total
		B CO	0	0	0	0	0	4	15	2	4	7	2	0	34
		C CO	0	0	0	0	0	15	12	20	0	0	0	0	47
		HHC & SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	1	5	1	0	0	1	0	8
	1340 ENGR CBT BN Total		0	0	0	0	0	22	36	29	5	29	14	7	142
	146 ENGR CBT BN	A CO	0	0	0	0	7	2	0	1	0	0	0	0	10
		C CO	0	0	0	0	4	17	0	0	0	0	0	0	21
		HHC & SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
	146 ENGR CBT BN Total		0	0	0	0	11	19	0	1	0	0	0	0	31
	1ST BN	A CO	1	5	8	10	2	0	79	3	1	6	1	1	117
		B CO	16	4	1	0	1	8	69	7	0	2	0	0	108
		C CO	1	1	8	2	0	3	14	34	14	1	3	1	82
		D CO	0	0	3	1	4	9	70	6	0	1	2	0	96
		HHC	0	4	0	6	3	2	32	2	2	1	2	0	54
	1ST BN Total		18	14	20	19	10	22	264	52	17	11	8	2	457
	20 ENGR CBT BN	A CO	0	4	10	2	9	0	5	7	0	0	0	0	37
		B CO	0	0	0	2	1	7	3	0	1	3	3	0	20
		C CO	0	0	0	0	21	0	1	9	3	0	0	0	34
		HHC & SVC CO	0	0	1	2	0	0	0	0	0	0	0	0	3
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
	20 ENGR CBT BN Total		0	4	11	6	31	7	9	16	4	3	3	0	94
	229 FA BN	A BTRY	0	0	0	3	0	1	1	0	0	0	0	0	5
		B BTRY	0	0	0	0	0	1	0	0	0	0	0	0	1
		C BTRY	0	0	0	0	0	2	0	5	0	0	0	0	7
		HHB	0	1	2	0	0	3	4	0	0	0	0	0	10
		MED DET	0	1	0	0	0	0	0	0	0	0	0	0	1
		SVC BTRY	0	0	0	1	0	0	0	0	0	0	0	0	1
	229 FA BN Total		0	2	2	4	0	7	5	5	0	0	0	0	25
	2D BN	E CO	13	0	11	3	15	6	1	0	2	3	5	4	63
		F CO	21	3	4	4	17	6	0	30	2	1	1	6	95
		G CO	22	12	4	5	19	4	0	20	3	4	0	11	104
		H CO	12	0	0	4	33	4	0	0	0	1	1	0	55
		HHC	4	1	1	3	5	1	7	0	1	0	2	0	25
	2D BN Total		72	16	20	19	89	21	8	50	8	9	9	21	342
	3D BN	HHC	0	5	4	3	6	1	38	3	0	0	1	0	61
		I CO	3	1	5	15	3	2	33	1	0	1	0	1	65
		K CO	0	10	4	0	1	0	95	16	2	0	0	0	128
		L CO	1	1	4	16	4	3	111	7	0	2	0	0	149
		M CO	0	3	7	7	5	26	15	3	0	8	1	1	76
	3D BN Total		4	20	24	41	19	32	292	30	2	11	2	2	479
	707 TANK BN	A CO	0	3	2	2	0	10	25	4	0	0	0	0	46
		B CO	0	0	0	0	5	5	0	0	0	1	0	0	11
		C CO	0	4	2	3	1	0	1	0	1	0	0	0	12
		D CO	0	0	0	0	0	0	0	0	0	1	0	0	1
	707 TANK BN Total		0	7	4	5	6	15	26	4	1	2	0	0	70
	86 CML BN	B CO	2	0	0	0	0	0	0	0	0	0	0	0	2
		D CO	0	2	0	0	0	0	0	0	1	0	0	0	3
	86 CML BN Total		2	2	0	0	0	0	0	0	1	0	0	0	5
	893 TD BN	B CO	0	0	0	2	1	5	0	0	1	0	0	0	9
		C CO	0	0	0	7	2	27	1	0	0	0	0	0	37
	893 TD BN Total		0	0	0	9	3	32	1	0	1	0	0	0	46
	HQ, 112 RCT	ANTITANK CO	2	0	3	0	1	0	0	0	0	0	0	1	7
		CANNON CO	3	2	0	2	2	0	0	0	0	0	0	0	9
		HHC	1	1	3	1	5	3	2	3	1	0	0	0	20
		MED DET	2	3	1	6	1	2	23	0	1	0	0	0	39
		SVC CO	0	0	0	0	0	0	0	1	0	0	0	0	1
	HQ, 112 RCT Total		8	6	7	9	9	5	25	4	2	0	0	1	76
112TH RCT Total			105	74	88	115	178	182	668	191	42	65	37	34	1779
12TH CT, 41ID	4 ENGR CBT BN	B CO, 1ST PLT	0	0	0	0	0	0	0	1	0	0	0	0	1
	42 FA BN	A BTRY	0	0	0	0	0	0	0	0	2	0	0	0	2
		B BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		C BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHB	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
	42 FA BN Total		0	0	0	0	0	0	0	0	2	0	0	0	2
	801 TD BN	A CO	0	0	0	0	0	0	0	0	1	0	0	0	1
12TH CT, 41ID Total			0	0	0	0	0	0	0	1	3	0	0	0	4
DIV HQ	103D ENGR CBT BN	HHC & SVC CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	1	1	0	0	0	0	0	1	0	0	0	3
	103D ENGR CBT BN Total		0	1	1	0	0	0	0	0	1	0	0	0	3
	28TH RCN TRP (MECZ)		0	0	0	0	0	0	0	0	0	0	0	0	0
	707 TANK BN	D CO	1	0	0	0	0	0	0	0	0	0	0	0	1
			0	0	0	0	0	0	0	0	0	0	0	0	0
	707 TANK BN Total		1	0	0	0	0	0	0	0	0	0	0	0	1
	CIC DET		0	0	0	0	0	0	0	0	0	0	0	0	0
	HHC		0	0	0	0	0	0	0	0	0	0	0	0	0
DIV HQ Total			1	1	1	0	0	0	0	0	1	0	0	0	4
DIV TRAINS	103 MED BN	D CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	0	0	0	0	0	0	0	0
	103 MED BN Total		0	0	0	0	0	0	0	0	0	0	0	0	0
	28 QM CO		0	0	0	1	0	0	0	0	0	0	0	0	1

Table F-1. TBC Casualties in the US 28th Infantry Division, Compton Data (page 3 of 3)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	11/2/44	11/3/44	11/4/44	11/5/44	11/6/44	11/7/44	11/8/44	11/9/44	11/10/44	11/11/44	11/12/44	11/13/44	Total
	728 ORD LT MAINT CO		0	0	0	0	0	0	0	0	0	0	0	0	0
	SUPPORT TROOPS	28 SIGNAL CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		DIVISION BAND	0	0	0	0	0	0	0	0	0	0	0	0	0
		HQ	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		MP PLATOON	0	0	0	0	0	0	0	0	0	0	0	0	0
	SUPPORT TROOPS Total		0	0	0	0	0	0	0	0	0	0	0	0	0
DIV TRAINS Total			0	0	0	1	0	0	0	0	0	0	0	0	1
DIVARTY	108 FA BN	A BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		B BTRY	0	0	0	0	0	0	0	2	0	0	0	0	2
		C BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHB	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
	108 FA BN Total		0	0	0	0	0	0	0	2	0	0	0	0	2
	707 TANK BN	A CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	0	1	0	1	0	0	0	2
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC CO	0	0	1	0	0	0	0	0	0	0	0	0	1
	707 TANK BN Total		0	0	1	0	0	0	1	0	1	0	0	0	3
	76 FA BN	A BTRY	0	0	2	0	0	0	0	0	0	0	0	0	2
		B BTRY	1	0	0	0	0	0	0	0	0	0	0	0	1
		C BTRY	2	0	0	0	0	0	0	0	0	0	0	1	3
		HHB	0	0	0	0	0	0	2	1	0	0	0	0	3
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
	76 FA BN Total		3	0	2	0	0	0	2	1	0	0	0	1	9
	86 CML MORT (MTZ) BN	A CO	1	0	2	0	0	0	0	0	1	0	0	0	4
		C CO	0	0	0	0	0	0	0	0	1	0	0	0	1
		HHD	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
	86 CML MORT (MTZ) BN Total		1	0	2	0	0	0	0	0	2	0	0	0	5
	87 CML MORT BN	D CO	2	0	0	0	0	0	0	0	0	0	0	0	2
	893 TD BN	B CO	0	1	0	0	0	0	0	0	0	0	0	0	1
		C CO	0	0	0	0	0	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0	0	0	0	0	0
		RCN CO	0	0	0	1	2	2	0	2	0	0	0	0	7
	893 TD BN Total		0	1	0	1	2	2	0	2	0	0	0	0	8
	987 FA BN	A BTRY	0	0	0	0	0	0	0	0	0	0	0	0	0
	HHC		0	0	0	0	0	0	0	0	0	0	0	0	0
	MED DET		0	0	0	0	0	0	0	0	0	0	0	0	0
DIVARTY Total			6	1	5	1	2	2	3	5	3	0	0	1	29
Grand Total			335	285	272	226	424	246	734	405	342	316	180	154	3919

Table F-2. TBC Casualties in the US 6th Armor Division, Compton Data (page 1 of 5)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/31/44	1/1/45	1/2/45	1/3/45	Total
CCA	128 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	1	0	0	1
		C BTRY	0	1	0	0	1
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	128 ARM FA BN Total		0	2	0	0	2
	15 TANK BN	A CO	0	0	4	2	6
		B CO	0	0	7	0	7
		C CO	0	0	4	0	4
		D CO	0	0	1	0	1
		HHC	0	0	0	0	0
		MED DET	0	0	1	0	1
		SVC CO	0	0	0	0	0
	15 TANK BN Total		0	0	17	2	19
	25 ARM ENGR BN	C CO	1	0	1	0	2
	44 ARM INF BN	A CO	9	4	0	0	13
		B CO	19	6	0	14	39
		C CO	16	12	0	0	28
		HHC	1	0	0	0	1
		MED DET	2	1	0	3	6
		SVC CO	2	0	0	0	2
	44 ARM INF BN Total		49	23	0	17	89
	603 TD BN	A CO	0	0	0	0	0
	69 TANK BN	A CO	0	2	0	0	2
		B CO	5	3	0	0	8
		C CO	0	0	0	0	0
		D CO	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	3	0	0	3
		SVC CO	0	0	0	0	0
	69 TANK BN Total		5	8	0	0	13
	777 AAA AW BN	A BTRY	0	0	0	1	1
	86 CAV RCN SQN	C TRP	0	0	1	0	1
	9 ARM INF BN	A CO	0	0	10	27	37
		B CO	0	0	22	22	44
		C CO	0	0	16	5	21
		HHC	0	0	0	0	0
		MED DET	0	0	1	0	1
		SVC CO	0	0	0	0	0
	9 ARM INF BN Total		0	0	49	54	103
	HHC		1	0	0	0	1
	MED DET		0	0	0	0	0
CCA Total			56	33	68	74	231
CCB	212 ARM FA BN	A BTRY	0	1	0	0	1
		B BTRY	0	0	0	0	0

Table F-2. TBC Casualties in the US 6th Armor Division, Compton Data (page 2 of 5)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/31/44	1/1/45	1/2/45	1/3/45	Total
		C BTRY	0	0	0	0	0
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	212 ARM FA BN Total		0	1	0	0	1
	25 ARM ENGR BN	A CO	0	0	0	0	0
	44 ARM INF BN	A CO	0	0	3	2	5
	50 ARM INF BN	A CO	0	11	12	7	30
		B CO	0	38	12	3	53
		C CO	0	6	17	10	33
		HHC	0	0	2	2	4
		MED DET	0	3	0	0	3
		SVC CO	0	0	0	0	0
	50 ARM INF BN Total		0	58	43	22	123
	603 TD BN	C CO	0	7	3	0	10
	68 TANK BN	A CO	0	1	1	0	2
		B CO	0	1	16	0	17
		C CO	0	0	6	0	6
		D CO	0	1	0	1	2
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC CO	0	0	0	0	0
	68 TANK BN Total		0	3	23	1	27
	69 TANK BN	A CO	0	0	2	0	2
		C CO	0	0	0	0	0
		D CO	0	0	0	3	3
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC CO	0	0	0	0	0
	69 TANK BN Total		0	0	2	3	5
	777 AAA AW BN	B BTRY	0	0	0	0	0
	86 CAV RCN SQN	A TRP	0	0	0	4	4
	HHC		0	0	1	0	1
CCB Total			0	69	75	32	176
CCR	15 TANK BN	A CO	0	0	0	0	0
		B CO	0	0	0	0	0
		C CO	0	0	0	0	0
		D CO	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC CO	0	0	0	0	0
	15 TANK BN Total		0	0	0	0	0
	25 ARM ENGR BN	B CO	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
	25 ARM ENGR BN Total		0	0	0	0	0

Table F-2. TBC Casualties in the US 6th Armor Division, Compton Data (page 3 of 5)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/31/44	1/1/45	1/2/45	1/3/45	Total
	603 TD BN	B CO	0	0	0	9	9
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
		RCN CO	0	0	0	0	0
	603 TD BN Total		0	0	0	9	9
	777 AAA AW BN	C BTRY	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
	777 AAA AW BN Total		0	0	0	0	0
	86 CAV RCN SQN	B TRP	0	0	0	0	0
		D TRB	0	0	0	0	0
		E TRP	0	0	0	0	0
		F CO	0	0	0	0	0
		HHT & SVC TRP	0	0	0	0	0
		MED DET	0	0	0	0	0
	86 CAV RCN SQN Total		0	0	0	0	0
	9 ARM INF BN	A CO	0	0	0	0	0
		B CO	0	0	0	0	0
		C CO	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC CO	0	0	0	0	0
	9 ARM INF BN Total		0	0	0	0	0
	HHC		0	0	0	0	0
CCR Total			0	0	0	9	9
DIV HQS (FWD)	86 CAV RCN SQN	A TRP	0	0	0	0	0
		B TRP	0	0	0	0	0
		C TRP	0	0	0	0	0
		D TRP	0	0	0	0	0
		E TRP	0	0	0	0	0
		F CO	0	0	0	0	0
		HHT & SVC TRP	0	0	0	0	0
		MED DET	0	0	0	0	0
	86 CAV RCN SQN Total		0	0	0	0	0
	HHC		0	0	0	0	0
DIV HQS (FWD) Total			0	0	0	0	0
DIV TRAINS	128 ORD MAINT BN	A CO	0	0	0	0	0
		B CO	0	0	0	0	0
		C CO	0	0	0	0	0
		HHC	0	0	0	0	0
		MED DET	0	0	0	0	0
	128 ORD MAINT BN Total		0	0	0	0	0
	76 ARM MED BN	A CO	0	0	0	0	0
		B CO	0	0	0	0	0
		C CO	0	0	0	0	0
		HHC	1	0	0	0	1

Table F-2. TBC Casualties in the US 6th Armor Division, Compton Data (page 4 of 5)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/31/44	1/1/45	1/2/45	1/3/45	Total
	76 ARM MED BN Total		1	0	0	0	1
	HHC		0	0	0	0	0
	SPT TROOPS	146 ARM SIG CO	0	0	0	0	0
		DIVISION BAND	0	0	0	0	0
		MP PLATOON	0	0	0	0	0
	SPT TROOPS Total		0	0	0	0	0
DIV TRAINS Total			1	0	0	0	1
DIVARTY	128 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	0	0	0
		C BTRY	0	0	0	0	0
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	128 ARM FA BN Total		0	0	0	0	0
	177 FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	1	0	1
		C BTRY	0	0	0	0	0
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	177 FA BN Total		0	0	1	0	1
	193 FA GROUP	HHB	0	0	0	0	0
	212 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	1	0	1
		C BTRY	0	0	0	1	1
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	2	1	3
	212 ARM FA BN Total		0	0	3	2	5
	231 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	0	0	0
		C BTRY	0	0	0	1	1
		HHB	0	0	0	0	0
		MED DET	0	0	2	1	3
		SVC BTRY	0	0	1	0	1
	231 ARM FA BN Total		0	0	3	2	5
	253 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	0	2	2
		C BTRY	0	0	0	0	0
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	253 ARM FA BN Total		0	0	0	2	2
	696 ARM FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	0	0	0
		C BTRY	0	0	0	0	0

Table F-2. TBC Casualties in the US 6th Armor Division, Compton Data (page 5 of 5)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/31/44	1/1/45	1/2/45	1/3/45	Total
		HHB	0	0	0	0	0
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	696 ARM FA BN Total		0	0	0	0	0
	776 FA BN	A BTRY	0	0	0	0	0
		B BTRY	0	0	0	0	0
		C BTRY	0	0	0	0	0
		HHB	0	0	0	2	2
		MED DET	0	0	0	0	0
		SVC BTRY	0	0	0	0	0
	776 FA BN Total		0	0	0	2	2
	777 AAA AW BN	D BTRY	0	0	0	2	2
	HHB		0	0	0	0	0
	MED DET		0	0	0	0	0
DIVARTY Total			0	0	7	10	17
Grand Total			57	102	150	125	434

Table F-3. TBC Casualties in the US 7th Armor Division, Compton Data (page 1 of 4)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/17/44	12/18/44	12/19/44	12/20/44	12/21/44	12/22/44	12/23/44	Total
CCA	33 ENGR CBT BN	A CO	0	0	0	0	1	9	0	10
	40 TANK BN	A CO	0	0	0	1	0	3	7	11
		B CO	0	0	0	0	4	0	0	4
		C CO	0	1	1	0	0	0	1	3
		D CO	0	0	0	0	0	0	4	4
		HHC	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
		SVC CO	0	0	0	0	2	0	0	2
	40 TANK BN Total		0	1	1	1	6	3	12	24
	48 ARM INF BN	A CO	0	6	12	4	4	7	3	36
		B CO	1	0	0	1	3	8	0	13
		C CO	0	7	0	0	0	19	19	45
		HHC	0	0	0	1	4	1	0	6
		MED DET	0	0	0	0	3	4	2	9
		SVC CO	0	0	0	1	0	0	3	4
	48 ARM INF BN Total		1	13	12	7	14	39	27	113
	87 CAV RCN SQN	D TRP	0	0	0	0	0	0	0	0
	HHC		0	0	0	0	7	0	0	7
	MED DET		0	0	0	0	0	0	0	0
CCA Total			1	14	13	8	28	51	39	154
CCB	168 ENGR CBT BN	A CO	0	2	0	4	66	0	0	72
		B CO	0	0	0	0	69	0	0	69
		C CO	9	2	1	3	72	0	1	88
		HHC	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	4	1	3	8
	168 ENGR CBT BN Total		9	4	1	7	211	1	4	237
	17 TANK BN	A CO	0	0	1	0	1	1	0	3
		B CO	0	0	0	1	0	0	0	1
		C CO	0	0	1	0	0	0	6	7
		D CO	0	0	3	0	0	0	5	8
		HHC	0	0	6	0	0	0	1	7
		MED DET	0	0	0	1	2	0	0	3
		SVC CO	0	0	0	0	0	0	0	0
	17 TANK BN Total		0	0	11	2	3	1	12	29
	23 ARM INF BN	A CO	0	0	4	0	23	99	10	136
		B CO	0	0	1	0	1	66	1	69
		C CO	0	2	0	0	9	2	3	16
		HHC	0	0	3	0	5	23	0	31
		MED DET	0	0	0	0	1	1	1	3
		SVC CO	0	0	0	0	0	0	0	0
	23 ARM INF BN Total		0	2	8	0	39	191	15	255
	275 AFA BN	A BTRY	0	0	0	0	0	0	0	0
		B BTRY	0	0	0	0	3	0	0	3
		C BTRY	0	0	0	0	1	1	0	2
		HHB	0	0	0	0	6	1	0	7
		MED DET	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0
	275 AFA BN Total		0	0	0	0	10	2	0	12
	31 TANK BN	A CO	0	0	0	0	1	3	9	13
		B CO	0	0	0	1	2	2	0	5
		B CO, 33 ENGR CBT BN	0	0	0	0	0	0	0	0
		C CO	0	0	0	0	0	1	2	3
		D CO	0	0	0	0	0	3	2	5
		HHC	0	0	0	0	0	1	0	1
		MED DET	0	0	0	0	0	0	0	0
		SVC CO	10	0	0	0	1	0	0	11
	31 TANK BN Total		10	0	0	1	4	10	13	38
	33 ENGR CBT BN	B CO	0	0	0	1	2	2	8	13
	38 ARM INF BN	A CO	0	0	4	0	88	9	0	101
		B CO	0	16	9	0	11	3	71	110
		C CO	0	0	0	0	0	0	6	6
		HHC	0	2	0	1	3	61	0	67
		MED DET	0	0	0	0	4	2	4	10
		SVC CO	0	0	0	0	0	0	0	0
	38 ARM INF BN Total		0	18	13	1	106	75	81	294

Table F-3. TBC Casualties in the US 7th Armor Division, Compton Data (page 2 of 4)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/17/44	12/18/44	12/19/44	12/20/44	12/21/44	12/22/44	12/23/44	Total
	434 ARM FA BN	A BTRY	0	0	0	0	2	1	0	3
		B BTRY	0	0	0	0	1	0	0	1
		C BTRY	0	0	0	1	0	0	0	1
		HHB	0	0	0	0	0	1	0	1
		MED DET	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	1	0	1
	434 ARM FA BN Total		0	0	0	1	3	3	0	7
	814 TD BN	A CO	0	0	3	1	1	8	1	14
	87 CAV RCN SQN	A TRP	0	1	2	3	5	6	1	18
		B TRP	1	9	0	4	4	73	0	91
		C TRP	0	3	2	4	4	1	0	14
		D TRP	0	0	0	0	0	3	0	3
		E TRP	0	0	0	0	1	9	25	35
		F CO	0	0	0	0	1	9	1	11
		HH&SVC TRP	0	0	0	4	7	0	0	11
		MED DET	0	0	0	0	0	0	0	0
	87 CAV RCN SQN Total		1	13	4	15	22	101	27	183
	HHC		0	0	0	1	0	0	0	1
	MED DET		0	0	0	0	0	0	0	0
CCB Total			20	37	40	30	401	394	161	1083
CCB (9AD)	14 TANK BN	A CO	0	0	0	0	0	1	3	4
		B CO	0	0	0	0	0	3	3	6
		C CO	0	0	0	0	0	0	0	0
		D CO	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	2	1	3
		MED DET	0	0	0	0	0	0	2	2
		SVC CO	0	0	0	0	0	0	0	0
	14 TANK BN Total		0	0	0	0	0	6	9	15
	27 ARM INF BN	A CO	0	0	0	0	0	11	15	26
		B CO	0	0	0	0	0	16	0	16
		C CO	0	0	0	0	0	9	3	12
		HHC	0	0	0	0	0	7	23	30
		MED DET	0	0	0	0	0	12	2	14
		SVC CO	0	0	0	0	0	1	0	1
	27 ARM INF BN Total		0	0	0	0	0	56	43	99
	811 TD BN	A CO	0	0	0	0	0	2	0	2
		B CO	0	0	0	0	0	0	0	0
		C CO	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	1	0	1
		MED DET	0	0	0	0	0	0	0	0
		RCN CO	0	0	0	0	0	3	1	4
	811 TD BN Total		0	0	0	0	0	6	1	7
	HHC		0	0	0	0	0	2	0	2
CCB (9AD) Total			0	0	0	0	0	70	53	123
CCR	17 TANK BN	A CO	0	1	0	0	0	0	0	1
		B CO	0	0	0	0	0	0	0	0
		C CO	0	2	0	0	0	0	0	2
		D CO	0	0	0	0	0	0	0	0
		HHC	10	1	0	0	0	0	0	11
		MED DET	0	0	0	0	0	0	0	0
		SVC CO	5	0	0	0	0	0	0	5
	17 TANK BN Total		15	4	0	0	0	0	0	19
	33 ENGR CBT BN	B CO	0	0	0	0	0	0	0	0
		C CO	0	0	0	1	0	0	1	2
	33 ENGR CBT BN Total		0	0	0	1	0	0	1	2
	38 ARM INF BN	C CO	0	0	0	0	0	0	0	0
	814 TD BN	B CO	0	0	0	0	0	3	1	4
	HHC		0	0	0	0	1	0	0	1
CCR Total			15	4	0	1	1	3	2	26
DIV TRAINS	129 ORD MAINT BN	A CO	0	0	0	0	0	0	0	0
		B CO	0	0	0	0	0	0	0	0
		C CO	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
	129 ORD MAINT BN Total		0	0	0	0	0	0	0	0

Table F-3. TBC Casualties in the US 7th Armor Division, Compton Data (page 3 of 4)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/17/44	12/18/44	12/19/44	12/20/44	12/21/44	12/22/44	12/23/44	Total
	203 AAA AW BN	B BTRY	0	0	5	3	0	0	0	8
	446 QM TRK CO		0	0	0	0	0	0	0	0
	77 ARM MED BN	A CO	0	0	0	0	0	2	0	2
		B CO	0	0	0	2	0	0	0	2
		C CO	0	0	0	0	0	0	0	0
		HHC	0	0	0	0	0	0	0	0
	77 ARM MED BN Total		0	0	0	2	0	2	0	4
	HHC		0	0	0	0	1	2	0	3
	SPT TROOPS	147 ARM SIGNAL CO	0	0	0	0	0	0	0	0
		DIVISION BAND	0	0	0	0	0	0	0	0
		MP PLATOON	0	0	0	4	0	0	0	4
	SPT TROOPS Total		0	0	0	4	0	0	0	4
DIV TRAINS Total			0	0	5	9	1	4	0	19
DIV TROOPS	18 CAV RCN SQN	A TRP	0	0	0	2	0	0	0	2
		B TRP	0	3	0	0	3	0	0	6
		C TRP	0	24	0	1	1	0	12	38
		E TRP	0	6	0	0	0	0	4	10
		F CO	0	10	0	0	0	1	1	12
		HHT	0	0	0	0	0	1	0	1
		MED DET	0	0	0	0	0	0	0	0
	18 CAV RCN SQN Total		0	43	0	3	4	2	17	69
	203 AAA AW BN	D BTRY	0	5	0	4	0	3	14	26
		HHB	0	0	0	0	0	0	0	0
		MED DET	0	1	0	0	0	0	0	1
	203 AAA AW BN Total		0	6	0	4	0	3	14	27
	32 CAV RCN SQN	A TRP	0	0	1	0	0	1	0	2
		B TRP	0	0	0	0	0	0	3	3
		C TRP	0	2	1	5	0	2	2	12
		E TRP	0	0	0	0	0	0	6	6
		F CO	0	0	0	0	0	1	1	2
		HHT	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
	32 CAV RCN SQN Total		0	2	2	5	0	4	12	25
	33 ENGR CBT BN	HHC	0	0	0	1	0	0	0	1
		MED DET	0	0	0	0	0	0	0	0
	33 ENGR CBT BN Total		0	0	0	1	0	0	0	1
	814 TD BN	C CO	0	4	0	1	0	0	16	21
		HHC	0	3	0	0	0	1	2	6
		MED DET	0	0	0	0	0	0	0	0
		RCN CO	0	0	0	1	0	0	16	17
	814 TD BN Total		0	7	0	2	0	1	34	44
	87 CAV RCN SQN	D TRP	0	0	0	1	8	0	0	9
	HHC		0	1	0	2	0	0	0	3
	MED DET		0	0	0	0	0	0	0	0
DIV TROOPS Total			0	59	2	18	12	10	77	178
DIVARTY	203 AAA AW BN	A BTRY	0	1	0	0	0	0	0	1
		C BRTY	0	0	0	0	0	0	0	0
		C BTRY	0	0	0	0	0	0	0	0
	203 AAA AW BN Total		0	1	0	0	0	0	0	1
	275 AFA BN	A BTRY	0	3	0	0	0	0	0	3
		B BTRY	0	2	0	0	0	0	0	2
		C BTRY	0	1	0	0	0	0	0	1
		HHB	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0
	275 AFA BN Total		0	6	0	0	0	0	0	6
	434 ARM FA BN	A BTRY	0	0	0	0	0	0	0	0
		B BTRY	0	0	0	0	0	0	0	0
		C BTRY	0	0	0	0	0	0	0	0
		HHB	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	0	0	0	0	0
	434 ARM FA BN Total		0	0	0	0	0	0	0	0
	440 ARM FA BN	A BTRY	0	0	0	0	0	0	0	0
		B BTRY	0	0	0	0	0	0	8	8

Table F-3. TBC Casualties in the US 7th Armor Division, Compton Data (page 4 of 4)

Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	12/17/44	12/18/44	12/19/44	12/20/44	12/21/44	12/22/44	12/23/44	Total
		C BTRY	0	0	0	0	0	0	0	0
		HHB	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	0	0
		SVC BTRY	0	0	0	2	0	0	0	2
	440 ARM FA BN Total		0	0	0	2	0	0	8	10
	489 ARM FA BN	A BTRY	0	0	0	0	0	0	0	0
		B BTRY	0	0	1	0	0	0	0	1
		C BTRY	0	0	0	0	0	0	0	0
		HHB	0	0	0	0	0	0	0	0
		MED DET	0	0	0	0	0	0	1	1
		SVC BTRY	0	0	0	0	0	0	0	0
	489 ARM FA BN Total		0	0	1	0	0	0	1	2
	HHB		0	0	0	0	0	0	0	0
	MED DET		0	0	0	0	0	0	0	0
DIVARTY Total			0	7	1	2	0	0	9	19
Grand Total			36	121	61	68	443	532	341	1602

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 1 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
02-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
02-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
02-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
02-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
02-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	1	1	0
02-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	1	–	–	1	1
02-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	1	–	–	1	1
02-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
02-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
02-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	1	–	–	1	1
02-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	3	1	3	7	4
02-Nov-44	109TH RCT	1ST BN	HHC	–	2	–	1	3	2
02-Nov-44	109TH RCT	1ST BN	A CO	1	18	–	6	25	19
02-Nov-44	109TH RCT	1ST BN	B CO	–	29	–	1	30	29
02-Nov-44	109TH RCT	1ST BN	C CO	–	12	–	–	12	12
02-Nov-44	109TH RCT	1ST BN	D CO	–	7	1	1	9	8
02-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
02-Nov-44	109TH RCT	2ND BN	E CO	–	1	–	1	2	1
02-Nov-44	109TH RCT	2ND BN	F CO	–	–	–	–	0	0
02-Nov-44	109TH RCT	2ND BN	G CO	–	1	–	–	1	1
02-Nov-44	109TH RCT	2ND BN	H CO	–	1	–	–	1	1
02-Nov-44	109TH RCT	3D BN	HHC	1	–	–	–	1	1
02-Nov-44	109TH RCT	3D BN	I CO	–	12	–	5	17	12
02-Nov-44	109TH RCT	3D BN	K CO	1	17	–	4	22	18
02-Nov-44	109TH RCT	3D BN	L CO	2	9	1	3	15	12
02-Nov-44	109TH RCT	3D BN	M CO	–	6	–	1	7	6
02-Nov-44	109TH RCT	107TH FA BN	HHB	–	4	–	–	4	4
02-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
02-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	2	1	–	3	3
02-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
02-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	1	–	1	2	1
02-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
02-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	4	–	–	4	4
02-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	2	–	2	2
02-Nov-44	109TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
02-Nov-44	109TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
02-Nov-44	109TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
02-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
02-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	1	–	2	3	1
02-Nov-44	110TH RCT	1ST BN	HHC	–	–	–	–	0	0
02-Nov-44	110TH RCT	1ST BN	A CO	–	–	–	2	2	0
02-Nov-44	110TH RCT	1ST BN	B CO	–	–	–	1	1	0
02-Nov-44	110TH RCT	1ST BN	C CO	–	–	–	1	1	0
02-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	2D BN	HHC	–	–	–	1	1	0
02-Nov-44	110TH RCT	2D BN	E CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	2D BN	F CO	–	12	5	2	19	17
02-Nov-44	110TH RCT	2D BN	G CO	–	9	–	1	10	9
02-Nov-44	110TH RCT	2D BN	H CO	–	1	–	–	1	1

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 2 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
02-Nov-44	110TH RCT	3D BN	HHC	2	–	–	–	2	2
02-Nov-44	110TH RCT	3D BN	I CO	–	3	2	–	5	5
02-Nov-44	110TH RCT	3D BN	K CO	–	17	1	7	25	18
02-Nov-44	110TH RCT	3D BN	L CO	–	12	9	5	26	21
02-Nov-44	110TH RCT	3D BN	M CO	–	5	–	2	7	5
02-Nov-44	110TH RCT	109TH FA BN	HHB	–	1	–	–	1	1
02-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	1	1	0
02-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
02-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
02-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	1	1	0
02-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
02-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
02-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
02-Nov-44	110TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	1340 ENGR CBT BN	A CO	–	1	–	1	2	1
02-Nov-44	110TH RCT	1340 ENGR CBT BN	B CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0
02-Nov-44	110TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
02-Nov-44	110TH RCT	A CO, 146 ENGR CBT BN	–	–	–	–	–	0	0
02-Nov-44	110TH RCT	B CO, 707 TANK BN	–	–	–	–	–	0	0
02-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	1	–	–	1	1
02-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
02-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	2	1	–	3	3
02-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	1	1	–	2	2
02-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	2	–	2	4	2
02-Nov-44	112TH RCT	1ST BN	HHC	–	–	–	–	0	0
02-Nov-44	112TH RCT	1ST BN	A CO	–	1	–	3	4	1
02-Nov-44	112TH RCT	1ST BN	B CO	–	12	4	6	22	16
02-Nov-44	112TH RCT	1ST BN	C CO	–	1	–	6	7	1
02-Nov-44	112TH RCT	1ST BN	D CO	–	–	–	2	2	0
02-Nov-44	112TH RCT	2D BN	HHC	–	2	2	–	4	4
02-Nov-44	112TH RCT	2D BN	E CO	–	10	3	9	22	13
02-Nov-44	112TH RCT	2D BN	F CO	1	16	4	6	27	21
02-Nov-44	112TH RCT	2D BN	G CO	1	15	6	2	24	22
02-Nov-44	112TH RCT	2D BN	H CO	–	10	2	–	12	12
02-Nov-44	112TH RCT	3D BN	HHC	–	–	–	–	0	0
02-Nov-44	112TH RCT	3D BN	I CO	1	2	–	–	3	3
02-Nov-44	112TH RCT	3D BN	K CO	–	–	–	1	1	0
02-Nov-44	112TH RCT	3D BN	L CO	–	1	–	–	1	1
02-Nov-44	112TH RCT	3D BN	M CO	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
02-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
02-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	1	–	–	1	2	1
02-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
02-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	2	–	–	2	2
02-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	–	0	0
02-Nov-44	112TH RCT	C CO 707 TANK BN	–	–	–	–	–	0	0
02-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 3 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
02-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	–	0	0
02-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	–	–	–	0	0
02-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
02-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
02-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
02-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
02-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
02-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
02-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	1	1	0
02-Nov-44	DIVARTY	76 FA BN	B BTRY	–	1	–	–	1	1
02-Nov-44	DIVARTY	76 FA BN	C BTRY	–	2	–	–	2	2
02-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
02-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
02-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
02-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
02-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	1	1	0
02-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
02-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
02-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
02-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	1	–	–	–	1	1
02-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	1	1	0
02-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
02-Nov-44	DIVARTY	87 CML MORT BN (-)	D CO	–	2	–	–	2	2
02-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
02-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
02-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
02-Nov-44	DIVARTY	893 TD BN (-)	B CO	–	–	–	–	0	0
02-Nov-44	DIVARTY	893 TD BN (-)	C CO	–	–	–	–	0	0
02-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
02-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
02-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
02-Nov-44	DIVARTY	707 TANK BN (-)	A CO	–	–	–	–	0	0
02-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
02-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	12	277	46	97	432	335
03-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
03-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
03-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
03-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	1	–	–	–	1	1
03-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	3	3	0
03-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	–	–	1	1	0
03-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	–	0	0
03-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	1	–	1	2	1
03-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 4 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	2	2	–	–	4	4
03-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	2	3	–	3	8	5
03-Nov-44	109TH RCT	1ST BN	HHC	–	1	10	2	13	11
03-Nov-44	109TH RCT	1ST BN	A CO	–	16	–	3	19	16
03-Nov-44	109TH RCT	1ST BN	B CO	–	18	–	2	20	18
03-Nov-44	109TH RCT	1ST BN	C CO	–	21	1	1	23	22
03-Nov-44	109TH RCT	1ST BN	D CO	–	5	3	–	8	8
03-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
03-Nov-44	109TH RCT	2ND BN	E CO	1	3	–	–	4	4
03-Nov-44	109TH RCT	2ND BN	F CO	3	5	–	4	12	8
03-Nov-44	109TH RCT	2ND BN	G CO	–	1	–	1	2	1
03-Nov-44	109TH RCT	2ND BN	H CO	–	3	–	–	3	3
03-Nov-44	109TH RCT	3D BN	HHC	1	–	–	1	2	1
03-Nov-44	109TH RCT	3D BN	I CO	1	9	–	6	16	10
03-Nov-44	109TH RCT	3D BN	K CO	–	3	–	9	12	3
03-Nov-44	109TH RCT	3D BN	L CO	1	6	–	2	9	7
03-Nov-44	109TH RCT	3D BN	M CO	–	5	–	1	6	5
03-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	1	–	1	1
03-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
03-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	4	–	–	4	4
03-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
03-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
03-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
03-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	1	3	–	–	4	4
03-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
03-Nov-44	109TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
03-Nov-44	109TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
03-Nov-44	109TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
03-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
03-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	–	–	2	2	0
03-Nov-44	110TH RCT	1ST BN	HHC	–	–	–	–	0	0
03-Nov-44	110TH RCT	1ST BN	A CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	1ST BN	B CO	–	–	–	1	1	0
03-Nov-44	110TH RCT	1ST BN	C CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	2	2	0
03-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
03-Nov-44	110TH RCT	2D BN	E CO	–	1	–	–	1	1
03-Nov-44	110TH RCT	2D BN	F CO	–	27	–	4	31	27
03-Nov-44	110TH RCT	2D BN	G CO	–	13	–	5	18	13
03-Nov-44	110TH RCT	2D BN	H CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	3D BN	HHC	–	2	–	–	2	2
03-Nov-44	110TH RCT	3D BN	I CO	–	19	–	–	19	19
03-Nov-44	110TH RCT	3D BN	K CO	–	–	–	5	5	0
03-Nov-44	110TH RCT	3D BN	L CO	1	8	–	1	10	9
03-Nov-44	110TH RCT	3D BN	M CO	–	1	–	–	1	1
03-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	1	1	0
03-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
03-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
03-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 5 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
03-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
03-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
03-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
03-Nov-44	110TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
03-Nov-44	110TH RCT	1340 ENGR CBT BN	A CO	–	–	–	–	0	0
03-Nov-44	110TH RCT	1340 ENGR CBT BN	B CO	–	–	–	2	2	0
03-Nov-44	110TH RCT	1340 ENGR CBT BN	C CO	–	–	–	2	2	0
03-Nov-44	110TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
03-Nov-44	110TH RCT	A CO, 146 ENGR CBT BN	–	–	–	–	–	0	0
03-Nov-44	110TH RCT	B CO, 707 TANK BN	–	–	1	–	–	1	1
03-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	1	–	–	1	1
03-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	1	1	0
03-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	1	1	–	–	2	2
03-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
03-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	2	1	1	4	3
03-Nov-44	112TH RCT	1ST BN	HHC	1	3	–	–	4	4
03-Nov-44	112TH RCT	1ST BN	A CO	–	5	–	1	6	5
03-Nov-44	112TH RCT	1ST BN	B CO	1	3	–	4	8	4
03-Nov-44	112TH RCT	1ST BN	C CO	–	–	1	2	3	1
03-Nov-44	112TH RCT	1ST BN	D CO	–	–	–	1	1	0
03-Nov-44	112TH RCT	2D BN	HHC	–	1	–	–	1	1
03-Nov-44	112TH RCT	2D BN	E CO	–	–	–	–	0	0
03-Nov-44	112TH RCT	2D BN	F CO	–	3	–	1	4	3
03-Nov-44	112TH RCT	2D BN	G CO	–	8	4	–	12	12
03-Nov-44	112TH RCT	2D BN	H CO	–	–	–	–	0	0
03-Nov-44	112TH RCT	3D BN	HHC	–	4	1	–	5	5
03-Nov-44	112TH RCT	3D BN	I CO	–	–	1	3	4	1
03-Nov-44	112TH RCT	3D BN	K CO	–	3	7	1	11	10
03-Nov-44	112TH RCT	3D BN	L CO	–	1	–	–	1	1
03-Nov-44	112TH RCT	3D BN	M CO	–	3	–	–	3	3
03-Nov-44	112TH RCT	229 FA BN	HHB	1	–	–	–	1	1
03-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
03-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
03-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
03-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
03-Nov-44	112TH RCT	229 FA BN	MED DET	–	1	–	–	1	1
03-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	1	2	–	–	3	3
03-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
03-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
03-Nov-44	112TH RCT	D CO, 86 CML BN	–	2	–	–	2	4	2
03-Nov-44	112TH RCT	A CO 707 TANK BN	–	–	3	–	3	6	3
03-Nov-44	112TH RCT	C CO 707 TANK BN	–	–	3	1	–	4	4
03-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
03-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	2	2	–	–	4	4
03-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	–	–	1	1	0
03-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
03-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
03-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
03-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
03-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
03-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 6 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
03-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
03-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
03-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
03-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
03-Nov-44	DIVARTY	87 CML MORT BN (-)	D CO	–	–	–	1	1	0
03-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
03-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
03-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
03-Nov-44	DIVARTY	893 TD BN (-)	B CO	–	1	–	–	1	1
03-Nov-44	DIVARTY	893 TD BN (-)	C CO	–	–	–	–	0	0
03-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
03-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	3	3	0
03-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	2	2	0
03-Nov-44	DIVARTY	707 TANK BN (-)	A CO	–	–	–	–	0	0
03-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
03-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	23	231	31	93	378	285
04-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
04-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
04-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
04-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	1	–	–	1	1
04-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
04-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	–	–	–	0	0
04-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	–	0	0
04-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
04-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
04-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	4	–	–	4	4
04-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	1	3	–	1	5	4
04-Nov-44	109TH RCT	1ST BN	HHC	–	1	1	1	3	2
04-Nov-44	109TH RCT	1ST BN	A CO	–	12	–	1	13	12
04-Nov-44	109TH RCT	1ST BN	B CO	1	9	–	1	11	10
04-Nov-44	109TH RCT	1ST BN	C CO	–	10	–	1	11	10
04-Nov-44	109TH RCT	1ST BN	D CO	1	6	–	–	7	7
04-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 7 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
04-Nov-44	109TH RCT	2ND BN	E CO	–	12	2	1	15	14
04-Nov-44	109TH RCT	2ND BN	F CO	–	1	–	–	1	1
04-Nov-44	109TH RCT	2ND BN	G CO	1	6	–	2	9	7
04-Nov-44	109TH RCT	2ND BN	H CO	–	1	–	3	4	1
04-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
04-Nov-44	109TH RCT	3D BN	I CO	–	4	11	2	17	15
04-Nov-44	109TH RCT	3D BN	K CO	1	–	–	1	2	1
04-Nov-44	109TH RCT	3D BN	L CO	–	1	–	–	1	1
04-Nov-44	109TH RCT	3D BN	M CO	–	1	–	–	1	1
04-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
04-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
04-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	1	–	1	1
04-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	1	1	0
04-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
04-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
04-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	2	–	–	2	2
04-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
04-Nov-44	109TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
04-Nov-44	109TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
04-Nov-44	109TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
04-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	3	–	–	3	3
04-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	–	–	–	0	0
04-Nov-44	110TH RCT	1ST BN	HHC	–	–	–	–	0	0
04-Nov-44	110TH RCT	1ST BN	A CO	1	9	–	3	13	10
04-Nov-44	110TH RCT	1ST BN	B CO	–	29	–	6	35	29
04-Nov-44	110TH RCT	1ST BN	C CO	–	22	–	2	24	22
04-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
04-Nov-44	110TH RCT	2D BN	E CO	–	1	–	1	2	1
04-Nov-44	110TH RCT	2D BN	F CO	2	5	–	–	7	7
04-Nov-44	110TH RCT	2D BN	G CO	–	2	–	–	2	2
04-Nov-44	110TH RCT	2D BN	H CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	3D BN	HHC	–	–	–	1	1	0
04-Nov-44	110TH RCT	3D BN	I CO	1	7	–	3	11	8
04-Nov-44	110TH RCT	3D BN	K CO	–	–	–	1	1	0
04-Nov-44	110TH RCT	3D BN	L CO	–	2	–	2	4	2
04-Nov-44	110TH RCT	3D BN	M CO	–	1	–	1	2	1
04-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	1	1	0
04-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	1	1	0
04-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
04-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	1	1	0
04-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
04-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
04-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	2	2	0
04-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
04-Nov-44	110TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	1340 ENGR CBT BN	A CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	1340 ENGR CBT BN	B CO	–	–	–	–	0	0
04-Nov-44	110TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 8 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
04-Nov-44	110TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
04-Nov-44	110TH RCT	A CO, 146 ENGR CBT BN	–	–	–	–	–	0	0
04-Nov-44	110TH RCT	B CO, 707 TANK BN	–	–	–	–	–	0	0
04-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	2	1	–	3	3
04-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
04-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
04-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	1	2	–	3	3
04-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	–	1	4	5	1
04-Nov-44	112TH RCT	1ST BN	HHC	–	–	–	–	0	0
04-Nov-44	112TH RCT	1ST BN	A CO	–	3	5	1	9	8
04-Nov-44	112TH RCT	1ST BN	B CO	1	–	–	1	2	1
04-Nov-44	112TH RCT	1ST BN	C CO	1	6	1	4	12	8
04-Nov-44	112TH RCT	1ST BN	D CO	–	3	–	1	4	3
04-Nov-44	112TH RCT	2D BN	HHC	1	–	–	3	4	1
04-Nov-44	112TH RCT	2D BN	E CO	–	4	7	–	11	11
04-Nov-44	112TH RCT	2D BN	F CO	–	–	4	1	5	4
04-Nov-44	112TH RCT	2D BN	G CO	–	2	2	1	5	4
04-Nov-44	112TH RCT	2D BN	H CO	–	–	–	–	0	0
04-Nov-44	112TH RCT	3D BN	HHC	–	4	–	2	6	4
04-Nov-44	112TH RCT	3D BN	I CO	–	5	–	2	7	5
04-Nov-44	112TH RCT	3D BN	K CO	–	4	–	1	5	4
04-Nov-44	112TH RCT	3D BN	L CO	–	4	–	–	4	4
04-Nov-44	112TH RCT	3D BN	M CO	–	5	2	2	9	7
04-Nov-44	112TH RCT	229 FA BN	HHB	1	1	–	–	2	2
04-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
04-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
04-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	1	1	0
04-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
04-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
04-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
04-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
04-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
04-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	–	0	0
04-Nov-44	112TH RCT	A CO 707 TANK BN	–	–	2	–	–	2	2
04-Nov-44	112TH RCT	C CO 707 TANK BN	–	–	2	–	–	2	2
04-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	1	–	–	1	1
04-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	10	–	–	10	10
04-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	–	–	1	1	0
04-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
04-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
04-Nov-44	DIVARTY	HHC	–	–	–	–	1	1	0
04-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
04-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
04-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	76 FA BN	A BTRY	–	2	–	–	2	2
04-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
04-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
04-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 9 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
04-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
04-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
04-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	2	–	–	2	2
04-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
04-Nov-44	DIVARTY	87 CML MORT BN (-)	D CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
04-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
04-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	893 TD BN (-)	B CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	893 TD BN (-)	C CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
04-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
04-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	1	–	–	1	1
04-Nov-44	DIVARTY	707 TANK BN (-)	A CO	–	–	–	–	0	0
04-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	1	1	0
04-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
04-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	1	1	0
			TOTAL	13	219	40	69	341	272
05-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
05-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
05-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
05-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
05-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	2	2	0
05-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	–	–	–	0	0
05-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	–	0	0
05-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
05-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
05-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	1	1	0
05-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	–	–	–	0	0
05-Nov-44	109TH RCT	1ST BN	HHC	–	–	1	–	1	1
05-Nov-44	109TH RCT	1ST BN	A CO	–	2	4	1	7	6
05-Nov-44	109TH RCT	1ST BN	B CO	–	2	–	1	3	2
05-Nov-44	109TH RCT	1ST BN	C CO	–	2	1	2	5	3
05-Nov-44	109TH RCT	1ST BN	D CO	–	2	4	1	7	6
05-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
05-Nov-44	109TH RCT	2ND BN	E CO	–	1	5	1	7	6
05-Nov-44	109TH RCT	2ND BN	F CO	–	4	–	2	6	4
05-Nov-44	109TH RCT	2ND BN	G CO	–	7	2	1	10	9
05-Nov-44	109TH RCT	2ND BN	H CO	–	1	–	1	2	1
05-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
05-Nov-44	109TH RCT	3D BN	I CO	–	1	–	1	2	1
05-Nov-44	109TH RCT	3D BN	K CO	–	9	–	–	9	9
05-Nov-44	109TH RCT	3D BN	L CO	–	1	–	1	2	1

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 10 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
05-Nov-44	109TH RCT	3D BN	M CO	1	3	–	–	4	4
05-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	1	1	0
05-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
05-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	–	0	0
05-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
05-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
05-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
05-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
05-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
05-Nov-44	109TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	2	2	0
05-Nov-44	109TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
05-Nov-44	109TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
05-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
05-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	–	1	–	1	1
05-Nov-44	110TH RCT	1ST BN	HHC	1	–	–	1	2	1
05-Nov-44	110TH RCT	1ST BN	A CO	3	8	–	2	13	11
05-Nov-44	110TH RCT	1ST BN	B CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	1ST BN	C CO	3	12	–	–	15	15
05-Nov-44	110TH RCT	1ST BN	D CO	–	2	–	–	2	2
05-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
05-Nov-44	110TH RCT	2D BN	E CO	–	5	–	11	16	5
05-Nov-44	110TH RCT	2D BN	F CO	–	2	–	–	2	2
05-Nov-44	110TH RCT	2D BN	G CO	–	1	–	–	1	1
05-Nov-44	110TH RCT	2D BN	H CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	3D BN	HHC	–	–	–	–	0	0
05-Nov-44	110TH RCT	3D BN	I CO	3	4	–	1	8	7
05-Nov-44	110TH RCT	3D BN	K CO	3	–	5	–	8	8
05-Nov-44	110TH RCT	3D BN	L CO	–	1	1	–	2	2
05-Nov-44	110TH RCT	3D BN	M CO	1	–	–	–	1	1
05-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
05-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
05-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
05-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
05-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
05-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
05-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
05-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
05-Nov-44	110TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	1340 ENGR CBT BN	A CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	1340 ENGR CBT BN	B CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0
05-Nov-44	110TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
05-Nov-44	110TH RCT	A CO, 146 ENGR CBT BN	–	–	–	–	–	0	0
05-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	1	–	2	3	1
05-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
05-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	2	–	–	2	2
05-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
05-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	3	3	1	7	6
05-Nov-44	112TH RCT	1ST BN	HHC	–	–	6	–	6	6

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 11 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
05-Nov-44	112TH RCT	1ST BN	A CO	–	10	–	1	11	10
05-Nov-44	112TH RCT	1ST BN	B CO	–	–	–	4	4	0
05-Nov-44	112TH RCT	1ST BN	C CO	–	2	–	3	5	2
05-Nov-44	112TH RCT	1ST BN	D CO	1	–	–	1	2	1
05-Nov-44	112TH RCT	2D BN	HHC	2	1	–	4	7	3
05-Nov-44	112TH RCT	2D BN	E CO	–	3	–	3	6	3
05-Nov-44	112TH RCT	2D BN	F CO	–	4	–	1	5	4
05-Nov-44	112TH RCT	2D BN	G CO	–	3	2	2	7	5
05-Nov-44	112TH RCT	2D BN	H CO	1	3	–	4	8	4
05-Nov-44	112TH RCT	3D BN	HHC	–	3	–	2	5	3
05-Nov-44	112TH RCT	3D BN	I CO	1	14	–	8	23	15
05-Nov-44	112TH RCT	3D BN	K CO	–	–	–	1	1	0
05-Nov-44	112TH RCT	3D BN	L CO	–	16	–	4	20	16
05-Nov-44	112TH RCT	3D BN	M CO	–	6	1	1	8	7
05-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
05-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	1	–	–	1	1
05-Nov-44	112TH RCT	229 FA BN	A BTRY	–	3	–	–	3	3
05-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
05-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
05-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
05-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
05-Nov-44	112TH RCT	C CO, 103 MED DET	–	2	1	–	–	3	3
05-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
05-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	–	0	0
05-Nov-44	112TH RCT	B CO, 893 TD BN (-)	–	–	2	–	–	2	2
05-Nov-44	112TH RCT	C CO ,893 TD BN (-)	–	2	4	1	–	7	7
05-Nov-44	112TH RCT	A CO, 707 TANK BN	–	1	1	–	–	2	2
05-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	–	–	–	0	0
05-Nov-44	112TH RCT	C CO, 707 TANK BN	–	1	2	–	–	3	3
05-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	2	–	–	–	2	2
05-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	2	–	–	2	2
05-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	2	–	–	2	2
05-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
05-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
05-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
05-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
05-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
05-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	1	1	0
05-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
05-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
05-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	1	1	0
05-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
05-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 12 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
05-Nov-44	DIVARTY	87 CML MORT BN (-)	D CO	–	–	–	–	0	0
05-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
05-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
05-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	1	–	–	1	1
05-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
05-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
05-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
05-Nov-44	DIVARTY	707 TANK BN (-)	A CO	–	–	–	–	0	0
05-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
05-Nov-44	DIV TRAINS	28 QM CO	–	–	–	1	5	6	1
			TOTAL	28	160	38	83	309	226
06-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
06-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
06-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
06-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
06-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	1	1	0
06-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	–	–	–	0	0
06-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	1	1	0
06-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	1	1	0
06-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	1	–	–	1	1
06-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	2	2	0
06-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	1	3	–	3	7	4
06-Nov-44	109TH RCT	1ST BN	HHC	–	3	3	–	6	6
06-Nov-44	109TH RCT	1ST BN	A CO	2	7	14	5	28	23
06-Nov-44	109TH RCT	1ST BN	B CO	1	9	11	–	21	21
06-Nov-44	109TH RCT	1ST BN	C CO	1	16	14	–	31	31
06-Nov-44	109TH RCT	1ST BN	D CO	–	1	1	2	4	2
06-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
06-Nov-44	109TH RCT	2ND BN	E CO	–	2	18	13	33	20
06-Nov-44	109TH RCT	2ND BN	F CO	–	23	–	11	34	23
06-Nov-44	109TH RCT	2ND BN	G CO	2	13	–	3	18	15
06-Nov-44	109TH RCT	2ND BN	H CO	2	12	–	3	17	14
06-Nov-44	109TH RCT	3D BN	HHC	–	–	–	1	1	0
06-Nov-44	109TH RCT	3D BN	I CO	1	1	1	3	6	3
06-Nov-44	109TH RCT	3D BN	K CO	–	–	–	4	4	0
06-Nov-44	109TH RCT	3D BN	L CO	2	16	2	–	20	20
06-Nov-44	109TH RCT	3D BN	M CO	–	3	–	2	5	3
06-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	1	1	0
06-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
06-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	3	3	0
06-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	4	–	–	4	4
06-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
06-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
06-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 13 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
06-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
06-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
06-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
06-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
06-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
06-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	–	1	–	1	1
06-Nov-44	110TH RCT	1ST BN	HHC	–	1	1	–	2	2
06-Nov-44	110TH RCT	1ST BN	A CO	1	5	–	2	8	6
06-Nov-44	110TH RCT	1ST BN	B CO	–	5	–	–	5	5
06-Nov-44	110TH RCT	1ST BN	C CO	–	10	–	4	14	10
06-Nov-44	110TH RCT	1ST BN	D CO	–	1	–	1	2	1
06-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
06-Nov-44	110TH RCT	2D BN	E CO	–	8	–	1	9	8
06-Nov-44	110TH RCT	2D BN	F CO	–	–	–	2	2	0
06-Nov-44	110TH RCT	2D BN	G CO	–	3	–	2	5	3
06-Nov-44	110TH RCT	2D BN	H CO	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
06-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
06-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
06-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
06-Nov-44	110TH RCT	A CO, 1340 ENGR CBT BN	–	–	–	–	–	0	0
06-Nov-44	110TH RCT	A CO, 146 ENGR CBT BN	–	–	–	–	–	0	0
06-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	2	3	–	5	5
06-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
06-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	2	1	3	2
06-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	1	–	–	1	1
06-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	1	–	2	3	1
06-Nov-44	112TH RCT	1ST BN	HHC	–	3	–	1	4	3
06-Nov-44	112TH RCT	1ST BN	A CO	–	2	–	2	4	2
06-Nov-44	112TH RCT	1ST BN	B CO	–	1	–	4	5	1
06-Nov-44	112TH RCT	1ST BN	C CO	–	–	–	–	0	0
06-Nov-44	112TH RCT	1ST BN	D CO	–	4	–	3	7	4
06-Nov-44	112TH RCT	2D BN	HHC	–	5	–	4	9	5
06-Nov-44	112TH RCT	2D BN	E CO	–	15	–	24	39	15
06-Nov-44	112TH RCT	2D BN	F CO	1	16	–	14	31	17
06-Nov-44	112TH RCT	2D BN	G CO	–	19	–	17	36	19
06-Nov-44	112TH RCT	2D BN	H CO	–	14	19	18	51	33
06-Nov-44	112TH RCT	3D BN	HHC	1	5	–	1	7	6
06-Nov-44	112TH RCT	3D BN	I CO	–	3	–	5	8	3
06-Nov-44	112TH RCT	3D BN	K CO	–	1	–	–	1	1
06-Nov-44	112TH RCT	3D BN	L CO	–	4	–	1	5	4
06-Nov-44	112TH RCT	3D BN	M CO	1	4	–	1	6	5
06-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
06-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
06-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
06-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
06-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
06-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 14 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
06-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
06-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
06-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
06-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	–	0	0
06-Nov-44	112TH RCT	B CO, 707 TANK BN	–	1	4	–	–	5	5
06-Nov-44	112TH RCT	C CO, 707 TANK BN	–	1	–	–	–	1	1
06-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
06-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	–	–	–	1	1	0
06-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0
06-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
06-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
06-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	3	6	–	9	9
06-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	1	–	–	–	1	1
06-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	1	2	18	–	21	21
06-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
06-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
06-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	2	5	–	1	8	7
06-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	4	–	1	5	4
06-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
06-Nov-44	TASK FORCE "R"	3D BN, 110TH INF	HHC	–	1	1	–	2	2
06-Nov-44	TASK FORCE "R"	3D BN, 110TH INF	I CO	–	2	–	–	2	2
06-Nov-44	TASK FORCE "R"	3D BN, 110TH INF	K CO	–	4	–	1	5	4
06-Nov-44	TASK FORCE "R"	3D BN, 110TH INF	L CO	–	9	–	1	10	9
06-Nov-44	TASK FORCE "R"	3D BN, 110TH INF	M CO	–	1	–	–	1	1
06-Nov-44	TASK FORCE "R"	A CO, 707 TANK BN	–	–	–	–	–	0	0
06-Nov-44	TASK FORCE "R"	B CO, 893 TD BN (-)	–	–	1	–	1	2	1
06-Nov-44	TASK FORCE "R"	C CO, 893 TD BN (-)	–	–	1	1	–	2	2
06-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
06-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
06-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
06-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
06-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
06-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
06-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
06-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
06-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	1	1	–	1	3	2
06-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
06-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
06-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
06-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 15 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
06-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
06-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	23	285	116	178	602	424
07-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
07-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
07-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
07-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
07-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	1	1	0
07-Nov-44	DIV HQ	D CO, 707 TANK BN	–	–	–	–	–	0	0
07-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	–	0	0
07-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	–	–	–	0	0
07-Nov-44	109TH RCT	1ST BN	HHC	–	–	–	–	0	0
07-Nov-44	109TH RCT	1ST BN	A CO	–	1	–	1	2	1
07-Nov-44	109TH RCT	1ST BN	B CO	–	1	–	1	2	1
07-Nov-44	109TH RCT	1ST BN	C CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	1ST BN	D CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	2ND BN	HHC	–	1	–	–	1	1
07-Nov-44	109TH RCT	2ND BN	E CO	–	1	–	–	1	1
07-Nov-44	109TH RCT	2ND BN	F CO	–	4	–	6	10	4
07-Nov-44	109TH RCT	2ND BN	G CO	–	14	–	2	16	14
07-Nov-44	109TH RCT	2ND BN	H CO	1	–	–	–	1	1
07-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
07-Nov-44	109TH RCT	3D BN	I CO	–	2	–	1	3	2
07-Nov-44	109TH RCT	3D BN	K CO	–	–	–	–	0	0
07-Nov-44	109TH RCT	3D BN	L CO	–	–	–	1	1	0
07-Nov-44	109TH RCT	3D BN	M CO	–	–	–	1	1	0
07-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
07-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
07-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	1	–	–	1	1
07-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	1	–	–	1	1
07-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
07-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
07-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
07-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	1	1	0
07-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
07-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
07-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	1	1	0
07-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	2	–	1	3	2
07-Nov-44	110TH RCT	1ST BN	HHC	–	1	–	–	1	1
07-Nov-44	110TH RCT	1ST BN	A CO	–	2	–	3	5	2
07-Nov-44	110TH RCT	1ST BN	B CO	–	3	–	4	7	3

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 16 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
07-Nov-44	110TH RCT	1ST BN	C CO	–	6	–	6	12	6
07-Nov-44	110TH RCT	1ST BN	D CO	–	3	–	1	4	3
07-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
07-Nov-44	110TH RCT	2D BN	E CO	–	9	–	4	13	9
07-Nov-44	110TH RCT	2D BN	F CO	–	–	–	1	1	0
07-Nov-44	110TH RCT	2D BN	G CO	–	1	1	2	4	2
07-Nov-44	110TH RCT	2D BN	H CO	–	–	–	1	1	0
07-Nov-44	110TH RCT	109TH FA BN	HHB	–	2	–	2	4	2
07-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	1	1	0
07-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	1	1	0
07-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	1	1	0
07-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
07-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
07-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
07-Nov-44	112TH RCT	HQ, 112 RCT	HHC	2	1	–	–	3	3
07-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	1	1	2	4	2
07-Nov-44	112TH RCT	1ST BN	HHC	–	2	–	–	2	2
07-Nov-44	112TH RCT	1ST BN	A CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	1ST BN	B CO	–	8	–	4	12	8
07-Nov-44	112TH RCT	1ST BN	C CO	–	3	–	–	3	3
07-Nov-44	112TH RCT	1ST BN	D CO	1	8	–	4	13	9
07-Nov-44	112TH RCT	2D BN	HHC	–	1	–	–	1	1
07-Nov-44	112TH RCT	2D BN	E CO	–	5	1	3	9	6
07-Nov-44	112TH RCT	2D BN	F CO	–	5	1	1	7	6
07-Nov-44	112TH RCT	2D BN	G CO	–	4	–	3	7	4
07-Nov-44	112TH RCT	2D BN	H CO	–	2	2	2	6	4
07-Nov-44	112TH RCT	3D BN	HHC	–	1	–	–	1	1
07-Nov-44	112TH RCT	3D BN	I CO	1	1	–	3	5	2
07-Nov-44	112TH RCT	3D BN	K CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	3D BN	L CO	–	3	–	–	3	3
07-Nov-44	112TH RCT	3D BN	M CO	–	2	24	–	26	26
07-Nov-44	112TH RCT	229 FA BN	HHB	–	2	1	–	3	3
07-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
07-Nov-44	112TH RCT	229 FA BN	A BTRY	–	1	–	–	1	1
07-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	1	–	1	1
07-Nov-44	112TH RCT	229 FA BN	C BTRY	–	1	1	–	2	2
07-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	–	–	2	2	0
07-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
07-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
07-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	1	1	0
07-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	1	1	–	5	7	2
07-Nov-44	112TH RCT	B CO, 707 TANK BN	–	1	4	–	–	5	5
07-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	–	–	2	2	0
07-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
07-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	1	3	–	–	4	4
07-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	2	13	–	4	19	15
07-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	1	–	–	1	1

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 17 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
07-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	2	2	0
07-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	–	7	–	7	7
07-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
07-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
07-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	1	1	–	2	2
07-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	5	11	1	–	17	17
07-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
07-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	2	–	–	2	2
07-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	–	1	1	2	1
07-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	–	–	1	1	0
07-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	1	–	–	1	1
07-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	1	–	–	1	1
07-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	1	9	–	10	10
07-Nov-44	112TH RCT	B CO, 893 TD BN (-)	–	1	4	–	1	6	5
07-Nov-44	112TH RCT	C CO, 893 TD BN (-)	–	4	1	22	–	27	27
07-Nov-44	DIVARTY	HHC	–	–	–	–	1	1	0
07-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
07-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
07-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
07-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
07-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
07-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
07-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	2	–	–	2	2
07-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
07-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
07-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
07-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	42 FA BN	HHB	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	42 FA BN	SVC BTRY	–	–	–	1	1	0
07-Nov-44	12TH CT, 41ID	42 FA BN	A BTRY	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	42 FA BN	B BTRY	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	42 FA BN	C BTRY	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	42 FA BN	MED DET	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	4 ENG CBT BN	B CO, 1ST PLT	–	–	–	–	0	0
07-Nov-44	12TH CT, 41ID	801 TD BN	A CO	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 18 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
07-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	1	1	0
07-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
07-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	1	1	0
			TOTAL	20	152	74	90	336	246
08-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
08-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
08-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
08-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
08-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
08-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	1	1	0
08-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	1	1	0
08-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
08-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	2	–	–	2	2
08-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	–	–	1	1	0
08-Nov-44	109TH RCT	1ST BN	HHC	1	–	–	1	2	1
08-Nov-44	109TH RCT	1ST BN	A CO	–	–	–	1	1	0
08-Nov-44	109TH RCT	1ST BN	B CO	–	–	–	1	1	0
08-Nov-44	109TH RCT	1ST BN	C CO	–	1	–	2	3	1
08-Nov-44	109TH RCT	1ST BN	D CO	–	–	–	2	2	0
08-Nov-44	109TH RCT	2ND BN	HHC	1	–	–	–	1	1
08-Nov-44	109TH RCT	2ND BN	E CO	–	2	–	–	2	2
08-Nov-44	109TH RCT	2ND BN	F CO	–	1	–	–	1	1
08-Nov-44	109TH RCT	2ND BN	G CO	–	–	–	5	5	0
08-Nov-44	109TH RCT	2ND BN	H CO	–	1	–	3	4	1
08-Nov-44	109TH RCT	3D BN	HHC	–	1	–	–	1	1
08-Nov-44	109TH RCT	3D BN	I CO	–	1	3	–	4	4
08-Nov-44	109TH RCT	3D BN	K CO	2	12	2	–	16	16
08-Nov-44	109TH RCT	3D BN	L CO	–	2	–	–	2	2
08-Nov-44	109TH RCT	3D BN	M CO	–	–	–	–	0	0
08-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
08-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	1	1	0
08-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
08-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
08-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	2	2	0
08-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
08-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
08-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
08-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	1	3	–	–	4	4
08-Nov-44	110TH RCT	1ST BN	HHC	–	1	–	–	1	1
08-Nov-44	110TH RCT	1ST BN	A CO	–	2	–	2	4	2
08-Nov-44	110TH RCT	1ST BN	B CO	–	2	5	1	8	7
08-Nov-44	110TH RCT	1ST BN	C CO	–	1	–	4	5	1
08-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	–	0	0
08-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 19 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
08-Nov-44	110TH RCT	2D BN	E CO	–	5	–	3	8	5
08-Nov-44	110TH RCT	2D BN	F CO	–	3	–	–	3	3
08-Nov-44	110TH RCT	2D BN	G CO	–	6	–	1	7	6
08-Nov-44	110TH RCT	2D BN	H CO	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
08-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	2	2	0
08-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	1	1	2	4	2
08-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	2	21	2	25	23
08-Nov-44	112TH RCT	1ST BN	HHC	–	1	31	–	32	32
08-Nov-44	112TH RCT	1ST BN	A CO	–	3	76	–	79	79
08-Nov-44	112TH RCT	1ST BN	B CO	–	1	68	1	70	69
08-Nov-44	112TH RCT	1ST BN	C CO	–	–	14	–	14	14
08-Nov-44	112TH RCT	1ST BN	D CO	–	–	70	–	70	70
08-Nov-44	112TH RCT	2D BN	HHC	1	–	6	–	7	7
08-Nov-44	112TH RCT	2D BN	E CO	–	–	1	3	4	1
08-Nov-44	112TH RCT	2D BN	F CO	–	–	–	1	1	0
08-Nov-44	112TH RCT	2D BN	G CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	2D BN	H CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	3D BN	HHC	–	–	38	–	38	38
08-Nov-44	112TH RCT	3D BN	I CO	–	–	33	–	33	33
08-Nov-44	112TH RCT	3D BN	K CO	–	5	90	–	95	95
08-Nov-44	112TH RCT	3D BN	L CO	–	1	110	–	111	111
08-Nov-44	112TH RCT	3D BN	M CO	–	1	14	–	15	15
08-Nov-44	112TH RCT	229 FA BN	HHB	–	3	1	–	4	4
08-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	1	–	1	1
08-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	2	–	7	9	2
08-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	1	1	0
08-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	1	1	0
08-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	2	2	0
08-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	1	3	–	–	4	4
08-Nov-44	112TH RCT	A CO, 707 TANK BN	–	1	1	23	1	26	25
08-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	–	–	–	0	0
08-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	1	–	–	1	1
08-Nov-44	112TH RCT	D CO, 707 TANK BN	–	–	–	–	–	0	0
08-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	–	–	–	0	0
08-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	1	–	1	1
08-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	5	10	–	1	16	15
08-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	12	–	4	16	12

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 20 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
08-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	3	2	–	1	6	5
08-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
08-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	1	4	–	–	5	5
08-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	1	2	–	–	3	3
08-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	1	–	1	2	1
08-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	1	1	0
08-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
08-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	–	–	–	0	0
08-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	1	–	–	1	1
08-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	–	–	–	0	0
08-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	1	–	–	1	1
08-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
08-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
08-Nov-44	DIVARTY	76 FA BN	HHB	1	1	–	–	2	2
08-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
08-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	1	1	0
08-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
08-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
08-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
08-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
08-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
08-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
08-Nov-44	DIVARTY	707 TANK BN (-)	HHC	1	–	–	2	3	1
08-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
08-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	HHB	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	SVC BTRY	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	A BTRY	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	B BTRY	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	C BTRY	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	42 FA BN	MED DET	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	4 ENG CBT BN	B CO, 1ST PLT	–	–	–	–	0	0
08-Nov-44	12TH CT, 41ID	801 TD BN	A CO	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 21 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
08-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
08-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	4	4	0
			TOTAL	20	105	609	71	805	734
09-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
09-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
09-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
09-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
09-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
09-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	1	–	–	1	1
09-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	2	2	0
09-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
09-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	1	1	0
09-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	–	–	3	3	0
09-Nov-44	109TH RCT	1ST BN	HHC	–	–	–	–	0	0
09-Nov-44	109TH RCT	1ST BN	A CO	–	1	–	2	3	1
09-Nov-44	109TH RCT	1ST BN	B CO	–	1	–	2	3	1
09-Nov-44	109TH RCT	1ST BN	C CO	–	–	–	1	1	0
09-Nov-44	109TH RCT	1ST BN	D CO	–	–	–	1	1	0
09-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
09-Nov-44	109TH RCT	2ND BN	E CO	–	1	4	1	6	5
09-Nov-44	109TH RCT	2ND BN	F CO	–	9	7	3	19	16
09-Nov-44	109TH RCT	2ND BN	G CO	–	2	–	3	5	2
09-Nov-44	109TH RCT	2ND BN	H CO	–	2	–	–	2	2
09-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
09-Nov-44	109TH RCT	3D BN	I CO	–	1	–	–	1	1
09-Nov-44	109TH RCT	3D BN	K CO	–	–	–	–	0	0
09-Nov-44	109TH RCT	3D BN	L CO	–	2	–	7	9	2
09-Nov-44	109TH RCT	3D BN	M CO	–	2	–	–	2	2
09-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	1	1	0
09-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
09-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	1	–	1	1
09-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
09-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
09-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
09-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
09-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
09-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	2	–	1	3	2
09-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
09-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
09-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	–	–	–	0	0
09-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	9	–	1	10	9
09-Nov-44	110TH RCT	1ST BN	HHC	–	–	–	–	0	0
09-Nov-44	110TH RCT	1ST BN	A CO	–	10	–	3	13	10
09-Nov-44	110TH RCT	1ST BN	B CO	–	–	–	1	1	0
09-Nov-44	110TH RCT	1ST BN	C CO	–	3	–	2	5	3
09-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	–	0	0
09-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
09-Nov-44	110TH RCT	2D BN	E CO	–	5	–	5	10	5
09-Nov-44	110TH RCT	2D BN	F CO	–	–	–	3	3	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 22 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
09-Nov-44	110TH RCT	2D BN	G CO	--	5	--	2	7	5
09-Nov-44	110TH RCT	2D BN	H CO	--	--	--	--	0	0
09-Nov-44	110TH RCT	109TH FA BN	HHB	--	--	--	--	0	0
09-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	--	--	--	--	0	0
09-Nov-44	110TH RCT	109TH FA BN	A BTRY	--	--	--	--	0	0
09-Nov-44	110TH RCT	109TH FA BN	B BTRY	--	--	--	--	0	0
09-Nov-44	110TH RCT	109TH FA BN	C BTRY	--	--	--	1	1	0
09-Nov-44	110TH RCT	109TH FA BN	MED DET	--	--	--	--	0	0
09-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	--	--	1	--	1	2	1
09-Nov-44	110TH RCT	B CO, 103 MED BN	--	--	--	--	--	0	0
09-Nov-44	112TH RCT	HQ, 112 RCT	HHC	--	3	--	--	3	3
09-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	--	1	--	--	1	1
09-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	--	--	--	--	0	0
09-Nov-44	112TH RCT	1ST BN	HHC	--	2	--	--	2	2
09-Nov-44	112TH RCT	1ST BN	A CO	--	3	--	--	3	3
09-Nov-44	112TH RCT	1ST BN	B CO	--	7	--	3	10	7
09-Nov-44	112TH RCT	1ST BN	C CO	1	33	--	2	36	34
09-Nov-44	112TH RCT	1ST BN	D CO	--	6	--	--	6	6
09-Nov-44	112TH RCT	2D BN	HHC	--	--	--	--	0	0
09-Nov-44	112TH RCT	2D BN	E CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	2D BN	F CO	--	2	28	2	32	30
09-Nov-44	112TH RCT	2D BN	G CO	2	--	18	--	20	20
09-Nov-44	112TH RCT	2D BN	H CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	3D BN	HHC	--	3	--	--	3	3
09-Nov-44	112TH RCT	3D BN	I CO	--	1	--	--	1	1
09-Nov-44	112TH RCT	3D BN	K CO	--	16	--	2	18	16
09-Nov-44	112TH RCT	3D BN	L CO	--	7	--	2	9	7
09-Nov-44	112TH RCT	3D BN	M CO	--	3	--	--	3	3
09-Nov-44	112TH RCT	229 FA BN	HHB	--	--	--	--	0	0
09-Nov-44	112TH RCT	229 FA BN	SVC BTRY	--	--	--	--	0	0
09-Nov-44	112TH RCT	229 FA BN	A BTRY	--	--	--	--	0	0
09-Nov-44	112TH RCT	229 FA BN	B BTRY	--	--	--	--	0	0
09-Nov-44	112TH RCT	229 FA BN	C BTRY	--	1	4	--	5	5
09-Nov-44	112TH RCT	229 FA BN	MED DET	--	--	--	1	1	0
09-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	--	--	--	--	4	4	0
09-Nov-44	112TH RCT	C CO, 103 MED DET	--	--	--	--	--	0	0
09-Nov-44	112TH RCT	B CO, 86 CML BN	--	--	--	--	--	0	0
09-Nov-44	112TH RCT	D CO, 86 CML BN	--	--	--	--	--	0	0
09-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	--	--	6	--	--	6	6
09-Nov-44	112TH RCT	B CO, 707 TANK BN	--	--	--	--	2	2	0
09-Nov-44	112TH RCT	C CO, 707 TANK BN	--	--	--	--	2	2	0
09-Nov-44	112TH RCT	D CO, 707 TANK BN	--	--	--	--	--	0	0
09-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	--	2	--	--	2	2
09-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	--	8	12	2	22	20
09-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	--	--	1	--	1	1
09-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	--	--	--	--	0	0
09-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	1	6	--	--	7	7
09-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	--	--	--	1	1	0
09-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	--	9	--	3	12	9

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 23 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
09-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
09-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	1	1	0
09-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	1	–	1	2	1
09-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	3	3	0
09-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
09-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	–	–	–	0	0
09-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	25	11	1	37	36
09-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	30	–	1	31	30
09-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	19	16	2	37	35
09-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	1	24	13	–	38	38
09-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	3	1	3	7	4
09-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	–	–	1	1	0
09-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	–	–	0	0
09-Nov-44	DIVARTY	HHC	–	–	–	–	1	1	0
09-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
09-Nov-44	DIVARTY	76 FA BN	HHB	–	1	–	–	1	1
09-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
09-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
09-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	108 FA BN	B BTRY	–	2	–	–	2	2
09-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
09-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
09-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
09-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	1	1	0
09-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
09-Nov-44	DIVARTY	987 FA BN (-)	A BTRY	–	–	–	–	0	0
09-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
09-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	2	–	–	2	2
09-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
09-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	2	2	0
09-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
09-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	42 FA BN	HHB	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	42 FA BN	SVC BTRY	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	42 FA BN	A BTRY	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	42 FA BN	B BTRY	–	–	–	2	2	0
09-Nov-44	12TH CT, 41ID	42 FA BN	C BTRY	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	42 FA BN	MED DET	–	–	–	–	0	0
09-Nov-44	12TH CT, 41ID	4 ENG CBT BN	B CO, 1ST PLT	1	–	–	–	1	1
09-Nov-44	12TH CT, 41ID	801 TD BN	A CO	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 24 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
09-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
09-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	6	283	116	92	497	405
10-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
10-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
10-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
10-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	1	–	1	1
10-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
10-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	1	–	–	1	1
10-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
10-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
10-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	–	0	0
10-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	2	–	–	2	2
10-Nov-44	109TH RCT	1ST BN	HHC	1	2	–	–	3	3
10-Nov-44	109TH RCT	1ST BN	A CO	–	9	13	–	22	22
10-Nov-44	109TH RCT	1ST BN	B CO	1	3	–	3	7	4
10-Nov-44	109TH RCT	1ST BN	C CO	–	5	3	4	12	8
10-Nov-44	109TH RCT	1ST BN	D CO	–	1	–	2	3	1
10-Nov-44	109TH RCT	2ND BN	HHC	–	2	–	3	5	2
10-Nov-44	109TH RCT	2ND BN	E CO	–	3	–	2	5	3
10-Nov-44	109TH RCT	2ND BN	F CO	–	1	–	–	1	1
10-Nov-44	109TH RCT	2ND BN	G CO	1	–	–	2	3	1
10-Nov-44	109TH RCT	2ND BN	H CO	–	–	–	1	1	0
10-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
10-Nov-44	109TH RCT	3D BN	I CO	–	1	–	–	1	1
10-Nov-44	109TH RCT	3D BN	K CO	–	1	–	–	1	1
10-Nov-44	109TH RCT	3D BN	L CO	–	4	–	4	8	4
10-Nov-44	109TH RCT	3D BN	M CO	1	3	–	1	5	4
10-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
10-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
10-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	–	0	0
10-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
10-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
10-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	1	–	1	2	1
10-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
10-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
10-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
10-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
10-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	2	1	1	4	3
10-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	4	–	7	11	4
10-Nov-44	110TH RCT	1ST BN	HHC	–	3	–	–	3	3
10-Nov-44	110TH RCT	1ST BN	A CO	–	1	–	–	1	1
10-Nov-44	110TH RCT	1ST BN	B CO	–	8	–	–	8	8
10-Nov-44	110TH RCT	1ST BN	C CO	–	14	–	1	15	14
10-Nov-44	110TH RCT	1ST BN	D CO	–	8	–	–	8	8
10-Nov-44	110TH RCT	2D BN	HHC	–	–	–	1	1	0
10-Nov-44	110TH RCT	2D BN	E CO	–	17	–	1	18	17
10-Nov-44	110TH RCT	2D BN	F CO	–	34	–	2	36	34
10-Nov-44	110TH RCT	2D BN	G CO	1	23	2	2	28	26
10-Nov-44	110TH RCT	2D BN	H CO	–	2	–	–	2	2

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 25 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
10-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
10-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	1	1	0
10-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
10-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	1	–	–	1	1
10-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
10-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	12	1	13	12
10-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
10-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	1	–	–	1	1
10-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	1	–	1	2	1
10-Nov-44	112TH RCT	1ST BN	HHC	–	2	–	–	2	2
10-Nov-44	112TH RCT	1ST BN	A CO	–	1	–	–	1	1
10-Nov-44	112TH RCT	1ST BN	B CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	1ST BN	C CO	–	14	–	2	16	14
10-Nov-44	112TH RCT	1ST BN	D CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	2D BN	HHC	–	1	–	8	9	1
10-Nov-44	112TH RCT	2D BN	E CO	–	2	–	1	3	2
10-Nov-44	112TH RCT	2D BN	F CO	–	2	–	9	11	2
10-Nov-44	112TH RCT	2D BN	G CO	–	3	–	2	5	3
10-Nov-44	112TH RCT	2D BN	H CO	–	–	–	1	1	0
10-Nov-44	112TH RCT	3D BN	HHC	–	–	–	–	0	0
10-Nov-44	112TH RCT	3D BN	I CO	–	–	–	1	1	0
10-Nov-44	112TH RCT	3D BN	K CO	–	2	–	–	2	2
10-Nov-44	112TH RCT	3D BN	L CO	–	–	–	1	1	0
10-Nov-44	112TH RCT	3D BN	M CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
10-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	1	–	2	3	1
10-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
10-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	1	1	0
10-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	1	–	–	1	1
10-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	–	1	–	2	3	1
10-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	–	–	1	1	0
10-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	1	–	–	1	1
10-Nov-44	112TH RCT	D CO, 707 TANK BN	–	–	–	–	1	1	0
10-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
10-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	–	4	–	–	4	4
10-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
10-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	1	–	–	1	1
10-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	3	–	1	4	3
10-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
10-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 26 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
10-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
10-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
10-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	3	–	–	3	3
10-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	27	1	2	30	28
10-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	14	–	2	16	14
10-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	31	–	2	33	31
10-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	25	–	6	31	25
10-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	–	–	–	0	0
10-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	1	–	2	3	1
10-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	–	–	0	0
10-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
10-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
10-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	1	1	0
10-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
10-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
10-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	1	–	–	1	1
10-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	1	–	1	2	1
10-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
10-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
10-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
10-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
10-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	1	–	–	1	1
10-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
10-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
10-Nov-44	12TH CT, 41ID	42 FA BN	HHB	–	–	–	–	0	0
10-Nov-44	12TH CT, 41ID	42 FA BN	SVC BTRY	–	–	–	–	0	0
10-Nov-44	12TH CT, 41ID	42 FA BN	A BTRY	1	1	–	–	2	2
10-Nov-44	12TH CT, 41ID	42 FA BN	B BTRY	–	–	–	–	0	0
10-Nov-44	12TH CT, 41ID	42 FA BN	C BTRY	–	–	–	1	1	0
10-Nov-44	12TH CT, 41ID	42 FA BN	MED DET	–	–	–	–	0	0
10-Nov-44	12TH CT, 41ID	4 ENG CBT BN	B CO, 1ST PLT	–	–	–	2	2	0
10-Nov-44	12TH CT, 41ID	801 TD BN	A CO	–	1	–	–	1	1
10-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
10-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 27 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
			TOTAL	6	303	33	94	436	342
11-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
11-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
11-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
11-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
11-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	1	1	0
11-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	1	–	–	1	1
11-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
11-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
11-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	2	2	–	2	6	4
11-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	1	1	2	4	2
11-Nov-44	109TH RCT	1ST BN	HHC	–	2	–	–	2	2
11-Nov-44	109TH RCT	1ST BN	A CO	1	10	–	2	13	11
11-Nov-44	109TH RCT	1ST BN	B CO	–	13	4	11	28	17
11-Nov-44	109TH RCT	1ST BN	C CO	–	8	–	7	15	8
11-Nov-44	109TH RCT	1ST BN	D CO	–	1	–	1	2	1
11-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	1	1	0
11-Nov-44	109TH RCT	2ND BN	E CO	–	–	–	–	0	0
11-Nov-44	109TH RCT	2ND BN	F CO	–	1	–	2	3	1
11-Nov-44	109TH RCT	2ND BN	G CO	–	2	–	2	4	2
11-Nov-44	109TH RCT	2ND BN	H CO	–	–	–	–	0	0
11-Nov-44	109TH RCT	3D BN	HHC	–	–	–	2	2	0
11-Nov-44	109TH RCT	3D BN	I CO	–	3	–	5	8	3
11-Nov-44	109TH RCT	3D BN	K CO	–	9	4	1	14	13
11-Nov-44	109TH RCT	3D BN	L CO	–	1	–	4	5	1
11-Nov-44	109TH RCT	3D BN	M CO	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	–	–	–	0	0
11-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	2	2	0
11-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
11-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
11-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	5	–	–	5	5
11-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
11-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
11-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	1	–	1	2	1
11-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	3	–	5	8	3
11-Nov-44	110TH RCT	1ST BN	HHC	–	3	–	–	3	3
11-Nov-44	110TH RCT	1ST BN	A CO	–	21	–	4	25	21
11-Nov-44	110TH RCT	1ST BN	B CO	–	48	1	3	52	49
11-Nov-44	110TH RCT	1ST BN	C CO	–	2	–	4	6	2
11-Nov-44	110TH RCT	1ST BN	D CO	–	3	–	1	4	3
11-Nov-44	110TH RCT	2D BN	HHC	–	–	–	–	0	0
11-Nov-44	110TH RCT	2D BN	E CO	–	14	–	4	18	14
11-Nov-44	110TH RCT	2D BN	F CO	–	11	27	5	43	38
11-Nov-44	110TH RCT	2D BN	G CO	–	9	–	5	14	9
11-Nov-44	110TH RCT	2D BN	H CO	–	–	–	1	1	0
11-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
11-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	1	1	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 28 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
11-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
11-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
11-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
11-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	–	–	1	1	0
11-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	–	–	1	1	0
11-Nov-44	112TH RCT	1ST BN	HHC	–	1	–	–	1	1
11-Nov-44	112TH RCT	1ST BN	A CO	–	6	–	3	9	6
11-Nov-44	112TH RCT	1ST BN	B CO	–	2	–	2	4	2
11-Nov-44	112TH RCT	1ST BN	C CO	–	1	–	–	1	1
11-Nov-44	112TH RCT	1ST BN	D CO	–	1	–	–	1	1
11-Nov-44	112TH RCT	2D BN	HHC	–	–	–	1	1	0
11-Nov-44	112TH RCT	2D BN	E CO	–	2	1	3	6	3
11-Nov-44	112TH RCT	2D BN	F CO	–	1	–	1	2	1
11-Nov-44	112TH RCT	2D BN	G CO	1	3	–	3	7	4
11-Nov-44	112TH RCT	2D BN	H CO	–	1	–	–	1	1
11-Nov-44	112TH RCT	3D BN	HHC	–	–	–	–	0	0
11-Nov-44	112TH RCT	3D BN	I CO	–	1	–	–	1	1
11-Nov-44	112TH RCT	3D BN	K CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	3D BN	L CO	–	2	–	1	3	2
11-Nov-44	112TH RCT	3D BN	M CO	–	–	8	1	9	8
11-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
11-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
11-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
11-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
11-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	–	22	–	–	22	22
11-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	1	–	–	1	1
11-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	D CO, 707 TANK BN	–	–	1	–	–	1	1
11-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	–	7	–	31	38	7
11-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	–	–	13	13	0
11-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
11-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	2	2	0
11-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	2	2	0
11-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	3	–	3	6	3
11-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	2	2	0
11-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
11-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	–	–	–	0	0
11-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	1	1	0
11-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 29 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
11-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	3	1	–	4	4
11-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	15	–	1	16	15
11-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	12	–	–	12	12
11-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	4	–	–	4	4
11-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	2	–	1	3	2
11-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	–	–	–	0	0
11-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	–	–	0	0
11-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
11-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
11-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
11-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	1	1	0
11-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
11-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
11-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
11-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
11-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
11-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
11-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
11-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
11-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
11-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	2	2	0
11-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
11-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	HHB	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	SVC BTRY	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	A BTRY	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	B BTRY	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	C BTRY	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	42 FA BN	MED DET	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	4 ENG CBT BN	B CO, 1ST PLT	–	–	–	–	0	0
11-Nov-44	12TH CT, 41ID	801 TD BN	A CO	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
11-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	4	265	47	155	471	316
12-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
12-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 30 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
12-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
12-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
12-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
12-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	1	1	–	2	2
12-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	2	–	–	2	2
12-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	1	–	2	3	1
12-Nov-44	109TH RCT	1ST BN	HHC	–	1	–	2	3	1
12-Nov-44	109TH RCT	1ST BN	A CO	–	4	–	8	12	4
12-Nov-44	109TH RCT	1ST BN	B CO	–	4	–	6	10	4
12-Nov-44	109TH RCT	1ST BN	C CO	–	5	–	2	7	5
12-Nov-44	109TH RCT	1ST BN	D CO	–	4	–	3	7	4
12-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
12-Nov-44	109TH RCT	2ND BN	E CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	2ND BN	F CO	2	–	1	–	3	3
12-Nov-44	109TH RCT	2ND BN	G CO	–	–	–	1	1	0
12-Nov-44	109TH RCT	2ND BN	H CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	3D BN	HHC	–	–	–	–	0	0
12-Nov-44	109TH RCT	3D BN	I CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	3D BN	K CO	–	–	–	–	0	0
12-Nov-44	109TH RCT	3D BN	L CO	–	2	–	–	2	2
12-Nov-44	109TH RCT	3D BN	M CO	–	–	–	1	1	0
12-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
12-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
12-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	–	0	0
12-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
12-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	2	–	–	2	2
12-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
12-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	–	0	0
12-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	1	1	0
12-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
12-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
12-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
12-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	2	–	1	3	2
12-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	1	–	2	3	1
12-Nov-44	110TH RCT	1ST BN	HHC	–	–	1	1	2	1
12-Nov-44	110TH RCT	1ST BN	A CO	–	28	–	–	28	28
12-Nov-44	110TH RCT	1ST BN	B CO	–	7	–	–	7	7
12-Nov-44	110TH RCT	1ST BN	C CO	–	7	–	1	8	7
12-Nov-44	110TH RCT	1ST BN	D CO	–	9	–	2	11	9
12-Nov-44	110TH RCT	2D BN	HHC	–	–	–	1	1	0
12-Nov-44	110TH RCT	2D BN	E CO	–	6	–	3	9	6
12-Nov-44	110TH RCT	2D BN	F CO	–	9	–	6	15	9
12-Nov-44	110TH RCT	2D BN	G CO	–	15	–	2	17	15
12-Nov-44	110TH RCT	2D BN	H CO	–	1	–	–	1	1
12-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
12-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	–	–	–	0	0
12-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
12-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
12-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
12-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 31 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
12-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
12-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	–	–	2	2	0
12-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	–	–	1	1	0
12-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	–	–	–	0	0
12-Nov-44	112TH RCT	1ST BN	HHC	–	2	–	1	3	2
12-Nov-44	112TH RCT	1ST BN	A CO	–	1	–	1	2	1
12-Nov-44	112TH RCT	1ST BN	B CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	1ST BN	C CO	–	3	–	1	4	3
12-Nov-44	112TH RCT	1ST BN	D CO	–	2	–	–	2	2
12-Nov-44	112TH RCT	2D BN	HHC	–	2	–	1	3	2
12-Nov-44	112TH RCT	2D BN	E CO	–	5	–	1	6	5
12-Nov-44	112TH RCT	2D BN	F CO	–	1	–	4	5	1
12-Nov-44	112TH RCT	2D BN	G CO	–	–	–	3	3	0
12-Nov-44	112TH RCT	2D BN	H CO	–	1	–	–	1	1
12-Nov-44	112TH RCT	3D BN	HHC	–	1	–	–	1	1
12-Nov-44	112TH RCT	3D BN	I CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	3D BN	K CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	3D BN	L CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	3D BN	M CO	–	1	–	–	1	1
12-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
12-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
12-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
12-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
12-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
12-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
12-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	1	–	–	1	1
12-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	1	1	0
12-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	–	11	–	–	11	11
12-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	–	–	1	1	0
12-Nov-44	112TH RCT	D CO, 707 TANK BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	–	1	1	2	4	2
12-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	–	–	7	7	0
12-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	–	1	–	1	1
12-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
12-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	2	2	0
12-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	3	–	1	4	3
12-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
12-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	1	1	0
12-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
12-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	1	–	–	1	1
12-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	1	11	–	1	13	12
12-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	1	6	–	3	10	7

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 32 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
12-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	6	1	1	8	7
12-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	–	–	–	0	0
12-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	–	–	–	0	0
12-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	–	1	1	0
12-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
12-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	C BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
12-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
12-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
12-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	2	2	0
12-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
12-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
12-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
12-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	–	0	0
12-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
12-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	1	1	0
12-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
12-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
12-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0
			TOTAL	4	170	6	86	266	180
13-Nov-44	DIV HQ	HHC	–	–	–	–	–	0	0
13-Nov-44	DIV HQ	CIC DET	–	–	–	–	–	0	0
13-Nov-44	DIV HQ	103D ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
13-Nov-44	DIV HQ	103D ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
13-Nov-44	DIV HQ	28TH RCN TRP (MECZ)	–	–	–	–	–	0	0
13-Nov-44	109TH RCT	HQ, 109TH RCT	HHC	–	–	–	–	0	0
13-Nov-44	109TH RCT	HQ, 109TH RCT	SVC CO	–	–	–	–	0	0
13-Nov-44	109TH RCT	HQ, 109TH RCT	CANNON CO	–	–	–	–	0	0
13-Nov-44	109TH RCT	HQ, 109TH RCT	ANTITANK CO	–	–	–	–	0	0
13-Nov-44	109TH RCT	HQ, 109TH RCT	MED DET	–	1	–	2	3	1
13-Nov-44	109TH RCT	1ST BN	HHC	–	1	1	1	3	2
13-Nov-44	109TH RCT	1ST BN	A CO	–	1	–	3	4	1
13-Nov-44	109TH RCT	1ST BN	B CO	–	2	–	–	2	2

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 33 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
13-Nov-44	109TH RCT	1ST BN	C CO	–	6	–	9	15	6
13-Nov-44	109TH RCT	1ST BN	D CO	–	1	–	–	1	1
13-Nov-44	109TH RCT	2ND BN	HHC	–	–	–	–	0	0
13-Nov-44	109TH RCT	2ND BN	E CO	–	–	–	–	0	0
13-Nov-44	109TH RCT	2ND BN	F CO	1	3	–	–	4	4
13-Nov-44	109TH RCT	2ND BN	G CO	–	–	–	1	1	0
13-Nov-44	109TH RCT	2ND BN	H CO	–	1	–	1	2	1
13-Nov-44	109TH RCT	3D BN	HHC	–	1	–	–	1	1
13-Nov-44	109TH RCT	3D BN	I CO	–	1	–	–	1	1
13-Nov-44	109TH RCT	3D BN	K CO	–	1	–	2	3	1
13-Nov-44	109TH RCT	3D BN	L CO	–	2	–	–	2	2
13-Nov-44	109TH RCT	3D BN	M CO	–	1	–	–	1	1
13-Nov-44	109TH RCT	107TH FA BN	HHB	–	–	–	–	0	0
13-Nov-44	109TH RCT	107TH FA BN	SVC BTRY	–	–	–	–	0	0
13-Nov-44	109TH RCT	107TH FA BN	A BTRY	–	–	–	–	0	0
13-Nov-44	109TH RCT	107TH FA BN	B BTRY	–	–	–	–	0	0
13-Nov-44	109TH RCT	107TH FA BN	C BTRY	–	1	–	–	1	1
13-Nov-44	109TH RCT	107TH FA BN	MED DET	–	–	–	–	0	0
13-Nov-44	109TH RCT	A CO, 103 ENGR CBT BN	–	–	–	–	1	1	0
13-Nov-44	109TH RCT	A CO, 103 MED BN	–	–	–	–	–	0	0
13-Nov-44	110TH RCT	HQ, 110TH RCT	HHC	–	–	–	–	0	0
13-Nov-44	110TH RCT	HQ, 110TH RCT	SVC CO	–	–	–	–	0	0
13-Nov-44	110TH RCT	HQ, 110TH RCT	CANNON CO	–	–	–	–	0	0
13-Nov-44	110TH RCT	HQ, 110TH RCT	ANTITANK CO	–	2	–	–	2	2
13-Nov-44	110TH RCT	HQ, 110TH RCT	MED DET	–	1	–	–	1	1
13-Nov-44	110TH RCT	1ST BN	HHC	–	–	1	3	4	1
13-Nov-44	110TH RCT	1ST BN	A CO	–	13	–	17	30	13
13-Nov-44	110TH RCT	1ST BN	B CO	–	5	–	–	5	5
13-Nov-44	110TH RCT	1ST BN	C CO	–	15	–	5	20	15
13-Nov-44	110TH RCT	1ST BN	D CO	–	–	–	–	0	0
13-Nov-44	110TH RCT	2D BN	HHC	–	–	–	1	1	0
13-Nov-44	110TH RCT	2D BN	E CO	–	12	–	2	14	12
13-Nov-44	110TH RCT	2D BN	F CO	–	1	–	–	1	1
13-Nov-44	110TH RCT	2D BN	G CO	–	17	–	1	18	17
13-Nov-44	110TH RCT	2D BN	H CO	–	3	–	–	3	3
13-Nov-44	110TH RCT	109TH FA BN	HHB	–	–	–	–	0	0
13-Nov-44	110TH RCT	109TH FA BN	SVC BTRY	–	1	–	1	2	1
13-Nov-44	110TH RCT	109TH FA BN	A BTRY	–	–	–	–	0	0
13-Nov-44	110TH RCT	109TH FA BN	B BTRY	–	–	–	–	0	0
13-Nov-44	110TH RCT	109TH FA BN	C BTRY	–	–	–	–	0	0
13-Nov-44	110TH RCT	109TH FA BN	MED DET	–	–	–	–	0	0
13-Nov-44	110TH RCT	B CO, 103 ENGR CBT BN	–	–	1	–	1	2	1
13-Nov-44	110TH RCT	B CO, 103 MED BN	–	–	–	–	–	0	0
13-Nov-44	112TH RCT	HQ, 112 RCT	HHC	–	–	–	–	0	0
13-Nov-44	112TH RCT	HQ, 112 RCT	SVC CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	HQ, 112 RCT	CANNON CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	HQ, 112 RCT	ANTITANK CO	–	1	–	1	2	1
13-Nov-44	112TH RCT	HQ, 112 RCT	MED DET	–	–	–	–	0	0
13-Nov-44	112TH RCT	1ST BN	HHC	–	–	–	1	1	0
13-Nov-44	112TH RCT	1ST BN	A CO	–	1	–	2	3	1
13-Nov-44	112TH RCT	1ST BN	B CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	1ST BN	C CO	–	1	–	–	1	1

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 34 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
13-Nov-44	112TH RCT	1ST BN	D CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	2D BN	HHC	–	–	–	4	4	0
13-Nov-44	112TH RCT	2D BN	E CO	–	4	–	2	6	4
13-Nov-44	112TH RCT	2D BN	F CO	1	5	–	1	7	6
13-Nov-44	112TH RCT	2D BN	G CO	–	11	–	1	12	11
13-Nov-44	112TH RCT	2D BN	H CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	3D BN	HHC	–	–	–	–	0	0
13-Nov-44	112TH RCT	3D BN	I CO	–	1	–	2	3	1
13-Nov-44	112TH RCT	3D BN	K CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	3D BN	L CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	3D BN	M CO	–	1	–	1	2	1
13-Nov-44	112TH RCT	229 FA BN	HHB	–	–	–	–	0	0
13-Nov-44	112TH RCT	229 FA BN	SVC BTRY	–	–	–	–	0	0
13-Nov-44	112TH RCT	229 FA BN	A BTRY	–	–	–	–	0	0
13-Nov-44	112TH RCT	229 FA BN	B BTRY	–	–	–	–	0	0
13-Nov-44	112TH RCT	229 FA BN	C BTRY	–	–	–	–	0	0
13-Nov-44	112TH RCT	229 FA BN	MED DET	–	–	–	–	0	0
13-Nov-44	112TH RCT	C CO, 103 ENGR CBT BN	–	–	1	–	1	2	1
13-Nov-44	112TH RCT	C CO, 103 MED DET	–	–	–	–	–	0	0
13-Nov-44	112TH RCT	B CO, 86 CML BN	–	–	–	–	1	1	0
13-Nov-44	112TH RCT	D CO, 86 CML BN	–	–	–	–	1	1	0
13-Nov-44	112TH RCT	A CO, 1340 ENG CBT BN	–	–	7	–	–	7	7
13-Nov-44	112TH RCT	B CO, 707 TANK BN	–	–	–	–	2	2	0
13-Nov-44	112TH RCT	C CO, 707 TANK BN	–	–	–	–	2	2	0
13-Nov-44	112TH RCT	D CO, 707 TANK BN	–	–	–	–	–	0	0
13-Nov-44	112TH RCT	1340 ENGR CBT BN	HHC & SVC CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	1340 ENGR CBT BN	B CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	1340 ENGR CBT BN	C CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	1340 ENGR CBT BN	MED DET	–	–	–	–	0	0
13-Nov-44	112TH RCT	20 ENGR CBT BN	HHC & SVC CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	20 ENGR CBT BN	A CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	20 ENGR CBT BN	B CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	20 ENGR CBT BN	C CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	20 ENGR CBT BN	MED DET	–	–	–	–	0	0
13-Nov-44	112TH RCT	146 ENGR CBT BN (-)	HHC & SVC CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	146 ENGR CBT BN (-)	A CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	146 ENGR CBT BN (-)	C CO	–	–	–	–	0	0
13-Nov-44	112TH RCT	146 ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
13-Nov-44	112TH RCT	3D BN, 110TH INF	HHC	–	2	–	–	2	2
13-Nov-44	112TH RCT	3D BN, 110TH INF	I CO	–	7	–	–	7	7
13-Nov-44	112TH RCT	3D BN, 110TH INF	K CO	–	7	–	5	12	7
13-Nov-44	112TH RCT	3D BN, 110TH INF	L CO	–	6	–	2	8	6
13-Nov-44	112TH RCT	3D BN, 110TH INF	M CO	–	–	–	1	1	0
13-Nov-44	112TH RCT	A CO, 707 TANK BN	–	–	–	–	–	0	0
13-Nov-44	112TH RCT	B CO, 893 TD BN	–	–	–	–	–	0	0
13-Nov-44	112TH RCT	C CO, 893 TD BN	–	–	–	–	–	0	0
13-Nov-44	DIVARTY	HHC	–	–	–	–	–	0	0
13-Nov-44	DIVARTY	MED DET	–	–	–	–	–	0	0
13-Nov-44	DIVARTY	76 FA BN	HHB	–	–	–	–	0	0
13-Nov-44	DIVARTY	76 FA BN	SVC BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	76 FA BN	A BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	76 FA BN	B BTRY	–	–	–	–	0	0

Table F-4. Losses in the US 28th Infantry Division, Compton Data (page 35 of 35)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
13-Nov-44	DIVARTY	76 FA BN	C BTRY	–	1	–	–	1	1
13-Nov-44	DIVARTY	76 FA BN	MED DET	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	HHB	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	SVC BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	A BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	B BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	C BTRY	–	–	–	–	0	0
13-Nov-44	DIVARTY	108 FA BN	MED DET	–	–	–	–	0	0
13-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	HHD	–	–	–	–	0	0
13-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	A CO	–	–	–	–	0	0
13-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	C CO	–	–	–	–	0	0
13-Nov-44	DIVARTY	86 CML MORT (MTZ) BN (-)	MED DET	–	–	–	–	0	0
13-Nov-44	DIVARTY	893 TD BN (-)	HHC	–	–	–	–	0	0
13-Nov-44	DIVARTY	893 TD BN (-)	RCN CO	–	–	–	1	1	0
13-Nov-44	DIVARTY	893 TD BN (-)	MED DET	–	–	–	–	0	0
13-Nov-44	DIVARTY	707 TANK BN (-)	HHC	–	–	–	–	0	0
13-Nov-44	DIVARTY	707 TANK BN (-)	SVC CO	–	–	–	–	0	0
13-Nov-44	DIVARTY	707 TANK BN (-)	MED DET	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	728 ORD LT MAINT CO	–	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	103 MED BN (-)	HHC	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	103 MED BN (-)	D CO	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	SUPPORT TROOPS	HQ, SP TROOPS	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	SUPPORT TROOPS	MP PLATOON	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	SUPPORT TROOPS	DIVISION BAND	–	–	–	1	1	0
13-Nov-44	DIV TRAINS	SUPPORT TROOPS	28 SIGNAL CO	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	SUPPORT TROOPS	MED DET, SP TROOPS	–	–	–	–	0	0
13-Nov-44	DIV TRAINS	28 QM CO	–	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 1 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
31-Dec-44	CCA	HHC	–	–	1	–	–	1	1
31-Dec-44	CCA	MED DET	–	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	HHC	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	SVC CO	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	A CO	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	B CO	–	5	–	–	5	5
31-Dec-44	CCA	69 TANK BN	C CO	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	D CO	–	–	–	–	0	0
31-Dec-44	CCA	69 TANK BN	MED DET	–	–	–	1	1	0
31-Dec-44	CCA	44 ARM INF BN	HHC	1	–	–	–	1	1
31-Dec-44	CCA	44 ARM INF BN	SVC CO	1	1	–	1	3	2
31-Dec-44	CCA	44 ARM INF BN	A CO	–	9	–	4	13	9
31-Dec-44	CCA	44 ARM INF BN	B CO	2	17	–	5	24	19
31-Dec-44	CCA	44 ARM INF BN	C CO	2	13	1	3	19	16
31-Dec-44	CCA	44 ARM INF BN	MED DET	1	1	–	–	2	2
31-Dec-44	CCA	128 ARM FA BN	HHB	–	–	–	1	1	0
31-Dec-44	CCA	128 ARM FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	CCA	128 ARM FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	CCA	128 ARM FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	CCA	128 ARM FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	CCA	128 ARM FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCA	C CO, 25 ARM ENGR CBT BN	–	–	1	–	–	1	1
31-Dec-44	CCA	A CO, 603 TD BN	–	–	–	–	1	1	0
31-Dec-44	CCA	A BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
31-Dec-44	CCB	HHC	–	–	–	–	1	1	0
31-Dec-44	CCB	68 TANK BN	HHC	–	–	–	–	0	0
31-Dec-44	CCB	68 TANK BN	SVC CO	–	–	–	–	0	0
31-Dec-44	CCB	68 TANK BN	A CO	–	–	–	–	0	0
31-Dec-44	CCB	68 TANK BN	B CO	–	–	–	1	1	0
31-Dec-44	CCB	68 TANK BN	C CO	–	–	–	–	0	0
31-Dec-44	CCB	68 TANK BN	D CO	–	–	–	–	0	0
31-Dec-44	CCB	68 TANK BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCB	50 ARMD INF BN	HHC	–	–	–	–	0	0
31-Dec-44	CCB	50 ARMD INF BN	SVC CO	–	–	–	–	0	0
31-Dec-44	CCB	50 ARMD INF BN	A CO	–	–	–	1	1	0
31-Dec-44	CCB	50 ARMD INF BN	B CO	–	–	–	–	0	0
31-Dec-44	CCB	50 ARMD INF BN	C CO	–	–	–	4	4	0
31-Dec-44	CCB	50 ARMD INF BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	HHB	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	CCB	212 ARM FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCB	A CO, 25 ARM ENGR BN	–	–	–	–	–	0	0
31-Dec-44	CCB	C CO, 603 TD BN	–	–	–	–	3	3	0
31-Dec-44	CCB	B BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
31-Dec-44	CCR	HQ	–	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	HHC	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 2 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
31-Dec-44	CCR	15 TANK BN	SVC CO	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	A CO	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	B CO	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	C CO	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	D CO	–	–	–	–	0	0
31-Dec-44	CCR	15 TANK BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCR	9 ARM INF BN	HHC	–	–	–	1	1	0
31-Dec-44	CCR	9 ARM INF BN	SVC CO	–	–	–	1	1	0
31-Dec-44	CCR	9 ARM INF BN	A CO	–	–	–	2	2	0
31-Dec-44	CCR	9 ARM INF BN	B CO	–	–	–	4	4	0
31-Dec-44	CCR	9 ARM INF BN	C CO	–	–	–	–	0	0
31-Dec-44	CCR	9 ARM INF BN	MED DET	–	–	–	–	0	0
31-Dec-44	CCR	25 ARM ENGR CBT BN (-)	HHC	–	–	–	1	1	0
31-Dec-44	CCR	25 ARM ENGR CBT BN (-)	B CO	–	–	–	–	0	0
31-Dec-44	CCR	25 ARM ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
31-Dec-44	CCR	603 TD BN (-)	HHC	–	–	–	–	0	0
31-Dec-44	CCR	603 TD BN (-)	RCN CO	–	–	–	–	0	0
31-Dec-44	CCR	603 TD BN (-)	B CO	–	–	–	–	0	0
31-Dec-44	CCR	603 TD BN (-)	MED DET	–	–	–	–	0	0
31-Dec-44	CCR	777 AAA AW BN (-)	HHC	–	–	–	–	0	0
31-Dec-44	CCR	777 AAA AW BN (-)	C BTRY	–	–	–	–	0	0
31-Dec-44	CCR	777 AAA AW BN (-)	MED DET	–	–	–	–	0	0
31-Dec-44	DIVARTY	HHB	–	–	–	–	–	0	0
31-Dec-44	DIVARTY	MED DET	–	–	–	–	–	0	0
31-Dec-44	DIVARTY	231 ARM FA BN	HHB	–	–	–	–	0	0
31-Dec-44	DIVARTY	231 ARM FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	231 ARM FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	231 ARM FA BN	B BTRY	–	–	–	1	1	0
31-Dec-44	DIVARTY	231 ARM FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	231 ARM FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIVARTY	D BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
31-Dec-44	DIVARTY	HHB, 193 FA GROUP	–	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	HHB	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	177 FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	HHB	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	253 ARM FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIVARTY	696 ARM FA BN	HHB	–	–	–	–	0	0
31-Dec-44	DIVARTY	696 ARM FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	696 ARM FA BN	A BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	696 ARM FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	696 ARM FA BN	C BTRY	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 3 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
31-Dec-44	DIVARTY	696 ARM FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIVARTY	776 FA BN	SVC BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	776 FA BN	A BTRY	–	–	–	1	1	0
31-Dec-44	DIVARTY	776 FA BN	B BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	776 FA BN	C BTRY	–	–	–	–	0	0
31-Dec-44	DIVARTY	776 FA BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	HHC	–	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	76 ARMD MED BN	HHC	–	1	–	1	2	1
31-Dec-44	DIV TRAINS	76 ARMD MED BN	A CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	76 ARMD MED BN	B CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	76 ARMD MED BN	C CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	128 ORD MAINT BN	HHC	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	128 ORD MAINT BN	A CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	128 ORD MAINT BN	B CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	128 ORD MAINT BN	C CO	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	128 ORD MAINT BN	MED DET	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	–	–	–	–	0	0
31-Dec-44	DIV TRAINS	SPT TROOPS	146 ARM SIG CO	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	HHC	–	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	HHT & SVC TRP	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	A TRP	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	B TRP	–	–	–	1	1	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	C TRP	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	D TRP	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	E TRP	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	F CO	–	–	–	–	0	0
31-Dec-44	DIV HQS (FWD)	86 CAV RCN SQN	MED DET	–	–	–	–	0	0
									0
01-Jan-45	CCA	HHC	–	–	–	–	1	1	0
01-Jan-45	CCA	MED DET	–	–	–	–	–	0	0
01-Jan-45	CCA	69 TANK BN	HHC	–	–	–	–	0	0
01-Jan-45	CCA	69 TANK BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCA	69 TANK BN	A CO	1	1	–	2	4	2
01-Jan-45	CCA	69 TANK BN	B CO	–	3	–	–	3	3
01-Jan-45	CCA	69 TANK BN	C CO	–	–	–	–	0	0
01-Jan-45	CCA	69 TANK BN	D CO	–	–	–	–	0	0
01-Jan-45	CCA	69 TANK BN	MED DET	1	2	–	–	3	3
01-Jan-45	CCA	44 ARM INF BN	HHC	–	–	–	1	1	0
01-Jan-45	CCA	44 ARM INF BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCA	44 ARM INF BN	A CO	–	4	–	7	11	4
01-Jan-45	CCA	44 ARM INF BN	B CO	–	5	1	5	11	6
01-Jan-45	CCA	44 ARM INF BN	C CO	1	9	2	11	23	12
01-Jan-45	CCA	44 ARM INF BN	MED DET	1	–	–	–	1	1
01-Jan-45	CCA	128 ARM FA BN	HHB	–	–	–	–	0	0
01-Jan-45	CCA	128 ARM FA BN	SVC BTRY	–	–	–	1	1	0
01-Jan-45	CCA	128 ARM FA BN	A BTRY	–	–	–	–	0	0
01-Jan-45	CCA	128 ARM FA BN	B BTRY	–	1	–	–	1	1
01-Jan-45	CCA	128 ARM FA BN	C BTRY	–	1	–	–	1	1

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 4 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
01-Jan-45	CCA	128 ARM FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	CCA	C CO, 25 ARM ENGR CBT BN	–	–	–	–	2	2	0
01-Jan-45	CCA	A CO, 603 TD BN	–	–	–	–	–	0	0
01-Jan-45	CCA	A BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
01-Jan-45	CCB	HHC	–	–	–	–	–	0	0
01-Jan-45	CCB	68 TANK BN	HHC	–	–	–	–	0	0
01-Jan-45	CCB	68 TANK BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCB	68 TANK BN	A CO	–	1	–	1	2	1
01-Jan-45	CCB	68 TANK BN	B CO	–	1	–	–	1	1
01-Jan-45	CCB	68 TANK BN	C CO	–	–	–	–	0	0
01-Jan-45	CCB	68 TANK BN	D CO	–	–	1	–	1	1
01-Jan-45	CCB	68 TANK BN	MED DET	–	–	–	–	0	0
01-Jan-45	CCB	50 ARMD INF BN	HHC	–	–	–	1	1	0
01-Jan-45	CCB	50 ARMD INF BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCB	50 ARMD INF BN	A CO	2	9	–	3	14	11
01-Jan-45	CCB	50 ARMD INF BN	B CO	4	33	1	2	40	38
01-Jan-45	CCB	50 ARMD INF BN	C CO	–	6	–	3	9	6
01-Jan-45	CCB	50 ARMD INF BN	MED DET	–	3	–	–	3	3
01-Jan-45	CCB	212 ARM FA BN	HHB	–	–	–	–	0	0
01-Jan-45	CCB	212 ARM FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	CCB	212 ARM FA BN	A BTRY	1	–	–	–	1	1
01-Jan-45	CCB	212 ARM FA BN	B BTRY	–	–	–	–	0	0
01-Jan-45	CCB	212 ARM FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	CCB	212 ARM FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	CCB	A CO, 25 ARM ENGR BN	–	–	–	–	1	1	0
01-Jan-45	CCB	C CO, 603 TD BN	–	1	6	–	–	7	7
01-Jan-45	CCB	B BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
01-Jan-45	CCR	HQ	–	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	HHC	–	–	–	1	1	0
01-Jan-45	CCR	15 TANK BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	A CO	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	B CO	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	C CO	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	D CO	–	–	–	–	0	0
01-Jan-45	CCR	15 TANK BN	MED DET	–	–	–	–	0	0
01-Jan-45	CCR	9 ARM INF BN	HHC	–	–	–	4	4	0
01-Jan-45	CCR	9 ARM INF BN	SVC CO	–	–	–	–	0	0
01-Jan-45	CCR	9 ARM INF BN	A CO	–	–	–	–	0	0
01-Jan-45	CCR	9 ARM INF BN	B CO	–	–	–	–	0	0
01-Jan-45	CCR	9 ARM INF BN	C CO	–	–	–	–	0	0
01-Jan-45	CCR	9 ARM INF BN	MED DET	–	–	–	–	0	0
01-Jan-45	CCR	25 ARM ENGR CBT BN (-)	HHC	–	–	–	–	0	0
01-Jan-45	CCR	25 ARM ENGR CBT BN (-)	B CO	–	–	–	1	1	0
01-Jan-45	CCR	25 ARM ENGR CBT BN (-)	MED DET	–	–	–	–	0	0
01-Jan-45	CCR	603 TD BN (-)	HHC	–	–	–	–	0	0
01-Jan-45	CCR	603 TD BN (-)	RCN CO	–	–	–	–	0	0
01-Jan-45	CCR	603 TD BN (-)	B CO	–	–	–	2	2	0
01-Jan-45	CCR	603 TD BN (-)	MED DET	–	–	–	–	0	0
01-Jan-45	CCR	777 AAA AW BN (-)	HHC	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 5 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
01-Jan-45	CCR	777 AAA AW BN (-)	C BTRY	–	–	–	–	0	0
01-Jan-45	CCR	777 AAA AW BN (-)	MED DET	–	–	–	–	0	0
01-Jan-45	DIVARTY	HHB	–	–	–	–	–	0	0
01-Jan-45	DIVARTY	MED DET	–	–	–	–	–	0	0
01-Jan-45	DIVARTY	231 ARM FA BN	HHB	–	–	–	–	0	0
01-Jan-45	DIVARTY	231 ARM FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	231 ARM FA BN	A BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	231 ARM FA BN	B BTRY	–	–	–	1	1	0
01-Jan-45	DIVARTY	231 ARM FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	231 ARM FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIVARTY	D BTRY, 777 AAA AW BN	–	–	–	–	1	1	0
01-Jan-45	DIVARTY	HHB, 193 FA GROUP	–	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	HHB	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	A BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	B BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	177 FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIVARTY	253 ARM FA BN	HHB	–	–	–	1	1	0
01-Jan-45	DIVARTY	253 ARM FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	253 ARM FA BN	A BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	253 ARM FA BN	B BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	253 ARM FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	253 ARM FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIVARTY	696 ARM FA BN	HHB	–	–	–	–	0	0
01-Jan-45	DIVARTY	696 ARM FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	696 ARM FA BN	A BTRY	–	–	–	1	1	0
01-Jan-45	DIVARTY	696 ARM FA BN	B BTRY	–	–	–	2	2	0
01-Jan-45	DIVARTY	696 ARM FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	696 ARM FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIVARTY	776 FA BN	SVC BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	776 FA BN	A BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	776 FA BN	B BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	776 FA BN	C BTRY	–	–	–	–	0	0
01-Jan-45	DIVARTY	776 FA BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	HHC	–	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	76 ARMD MED BN	HHC	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	76 ARMD MED BN	A CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	76 ARMD MED BN	B CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	76 ARMD MED BN	C CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	128 ORD MAINT BN	HHC	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	128 ORD MAINT BN	A CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	128 ORD MAINT BN	B CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	128 ORD MAINT BN	C CO	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	128 ORD MAINT BN	MED DET	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	SPT TROOPS	MP PLATOON	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	SPT TROOPS	DIVISION BAND	–	–	–	–	0	0
01-Jan-45	DIV TRAINS	SPT TROOPS	146 ARM SIG CO	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	HHC	–	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 6 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	HHT & SVC TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	A TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	B TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	C TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	D TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	E TRP	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	F CO	–	–	–	–	0	0
01-Jan-45	DIV HQS (FWD)	86 CAV RCN SQN	MED DET	–	–	–	1	1	0
									0
02-Jan-45	CCA	HHC	–	–	–	–	1	1	0
02-Jan-45	CCA	MED DET	–	–	–	–	–	0	0
02-Jan-45	CCA	9 ARM INF BN	HHC	–	–	–	4	4	0
02-Jan-45	CCA	9 ARM INF BN	SVC CO	–	–	–	–	0	0
02-Jan-45	CCA	9 ARM INF BN	A CO	1	9	–	6	16	10
02-Jan-45	CCA	9 ARM INF BN	B CO	2	19	1	–	22	22
02-Jan-45	CCA	9 ARM INF BN	C CO	2	11	3	6	22	16
02-Jan-45	CCA	9 ARM INF BN	MED DET	–	1	–	5	6	1
02-Jan-45	CCA	44 ARM INF BN	HHC	–	–	–	–	0	0
02-Jan-45	CCA	44 ARM INF BN	SVC CO	–	–	–	–	0	0
02-Jan-45	CCA	44 ARM INF BN	A CO	–	–	–	–	0	0
02-Jan-45	CCA	44 ARM INF BN	B CO	–	–	–	4	4	0
02-Jan-45	CCA	44 ARM INF BN	C CO	–	–	–	3	3	0
02-Jan-45	CCA	44 ARM INF BN	MED DET	–	–	–	1	1	0
02-Jan-45	CCA	15 TANK BN	HHC	–	–	–	–	0	0
02-Jan-45	CCA	15 TANK BN	SVC CO	–	–	–	–	0	0
02-Jan-45	CCA	15 TANK BN	A CO	–	2	2	1	5	4
02-Jan-45	CCA	15 TANK BN	B CO	1	3	3	3	10	7
02-Jan-45	CCA	15 TANK BN	C CO	1	3	–	1	5	4
02-Jan-45	CCA	15 TANK BN	D CO	1	–	–	1	2	1
02-Jan-45	CCA	15 TANK BN	MED DET	–	1	–	–	1	1
02-Jan-45	CCA	B CO, 69 TANK BN	–	–	–	–	–	0	0
02-Jan-45	CCA	C TRP, 86 CAV RCN SQN	–	–	1	–	1	2	1
02-Jan-45	CCA	C CO, 25 ARM ENGR CBT BN	–	–	–	1	2	3	1
02-Jan-45	CCA	A CO, 603 TD BN	–	–	–	–	1	1	0
02-Jan-45	CCA	A BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
02-Jan-45	CCB	HHC	–	–	1	–	–	1	1
02-Jan-45	CCB	50 ARMD INF BN	HHC	–	2	–	–	2	2
02-Jan-45	CCB	50 ARMD INF BN	SVC CO	–	–	–	–	0	0
02-Jan-45	CCB	50 ARMD INF BN	A CO	1	11	–	6	18	12
02-Jan-45	CCB	50 ARMD INF BN	B CO	–	9	3	4	16	12
02-Jan-45	CCB	50 ARMD INF BN	C CO	–	10	7	8	25	17
02-Jan-45	CCB	50 ARMD INF BN	MED DET	–	–	–	–	0	0
02-Jan-45	CCB	68 TANK BN	HHC	–	–	–	1	1	0
02-Jan-45	CCB	68 TANK BN	SVC CO	–	–	–	–	0	0
02-Jan-45	CCB	68 TANK BN	A CO	–	1	–	1	2	1
02-Jan-45	CCB	68 TANK BN	B CO	–	6	10	–	16	16
02-Jan-45	CCB	68 TANK BN	C CO	–	6	–	1	7	6
02-Jan-45	CCB	68 TANK BN	D CO	–	–	–	–	0	0
02-Jan-45	CCB	68 TANK BN	MED DET	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 7 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
02-Jan-45	CCB	69 TANK BN (-)	HHC	–	–	–	–	0	0
02-Jan-45	CCB	69 TANK BN (-)	SVC CO	–	–	–	–	0	0
02-Jan-45	CCB	69 TANK BN (-)	A CO	1	1	–	3	5	2
02-Jan-45	CCB	69 TANK BN (-)	C CO	–	–	–	2	2	0
02-Jan-45	CCB	69 TANK BN (-)	D CO	–	–	–	–	0	0
02-Jan-45	CCB	69 TANK BN (-)	MED DET	–	–	–	–	0	0
02-Jan-45	CCB	A CO, 44 ARM INF BN	–	–	3	–	7	10	3
02-Jan-45	CCB	A TRP, 86 CAV RCN SQN	–	–	–	–	–	0	0
02-Jan-45	CCB	A CO, 25 ARM ENGR CBT BN	–	–	–	–	1	1	0
02-Jan-45	CCB	C CO, 603 TD BN	–	–	3	–	2	5	3
02-Jan-45	CCB	B BTRY, 777 AAA AW BN	–	–	–	–	–	0	0
02-Jan-45	CCR	HHC	–	–	–	–	–	0	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	HHT & SVC TRP	–	–	–	1	1	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	B TRP	–	–	–	1	1	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	D TRB	–	–	–	–	0	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	E TRP	–	–	–	–	0	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	F CO	–	–	–	1	1	0
02-Jan-45	CCR	86 CAV RCN SQN (-)	MED DET	–	–	–	–	0	0
02-Jan-45	CCR	25 ARM ENG BN (-)	HHC	–	–	–	–	0	0
02-Jan-45	CCR	25 ARM ENG BN (-)	B CO	–	–	–	–	0	0
02-Jan-45	CCR	25 ARM ENG BN (-)	MED DET	–	–	–	–	0	0
02-Jan-45	CCR	603 TD BN (-)	HHC	–	–	–	–	0	0
02-Jan-45	CCR	603 TD BN (-)	RCN CO	–	–	–	–	0	0
02-Jan-45	CCR	603 TD BN (-)	B CO	–	–	–	4	4	0
02-Jan-45	CCR	603 TD BN (-)	MED DET	–	–	–	–	0	0
02-Jan-45	CCR	777 AAA AW BN (-)	HHC	–	–	–	–	0	0
02-Jan-45	CCR	777 AAA AW BN (-)	C BTRY	–	–	–	–	0	0
02-Jan-45	CCR	777 AAA AW BN (-)	MED DET	–	–	–	–	0	0
02-Jan-45	DIVARTY	HHB	–	–	–	–	–	0	0
02-Jan-45	DIVARTY	MED DET	–	–	–	–	–	0	0
02-Jan-45	DIVARTY	128 ARM FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	128 ARM FA BN	SVC BTRY	–	–	–	1	1	0
02-Jan-45	DIVARTY	128 ARM FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	128 ARM FA BN	B BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	128 ARM FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	128 ARM FA BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIVARTY	212 ARM FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	212 ARM FA BN	SVC BTRY	–	2	–	–	2	2
02-Jan-45	DIVARTY	212 ARM FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	212 ARM FA BN	B BTRY	–	–	1	–	1	1
02-Jan-45	DIVARTY	212 ARM FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	212 ARM FA BN	MED DET	–	–	–	1	1	0
02-Jan-45	DIVARTY	231 ARM FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	231 ARM FA BN	SVC BTRY	–	1	–	–	1	1
02-Jan-45	DIVARTY	231 ARM FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	231 ARM FA BN	B BTRY	–	–	–	1	1	0
02-Jan-45	DIVARTY	231 ARM FA BN	C BTRY	–	–	–	1	1	0
02-Jan-45	DIVARTY	231 ARM FA BN	MED DET	–	1	1	2	4	2
02-Jan-45	DIVARTY	D BTRY, 777 AAA AW BN	–	–	–	–	1	1	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 8 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
02-Jan-45	DIVARTY	HHB, 193 FA GROUP	–	–	–	–	–	0	0
02-Jan-45	DIVARTY	177 FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	177 FA BN	SVC BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	177 FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	177 FA BN	B BTRY	1	–	–	–	1	1
02-Jan-45	DIVARTY	177 FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	177 FA BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIVARTY	253 ARM FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	253 ARM FA BN	SVC BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	253 ARM FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	253 ARM FA BN	B BTRY	–	–	–	1	1	0
02-Jan-45	DIVARTY	253 ARM FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	253 ARM FA BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIVARTY	696 ARM FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	696 ARM FA BN	SVC BTRY	–	–	–	2	2	0
02-Jan-45	DIVARTY	696 ARM FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	696 ARM FA BN	B BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	696 ARM FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	696 ARM FA BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	HHB	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	SVC BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	A BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	B BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	C BTRY	–	–	–	–	0	0
02-Jan-45	DIVARTY	776 FA BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	HHC	–	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	76 ARMD MED BN	HHC	–	–	–	1	1	0
02-Jan-45	DIV TRAINS	76 ARMD MED BN	A CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	76 ARMD MED BN	B CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	76 ARMD MED BN	C CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	128 ORD MAINT BN	HHC	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	128 ORD MAINT BN	A CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	128 ORD MAINT BN	B CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	128 ORD MAINT BN	C CO	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	128 ORD MAINT BN	MED DET	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	SPT TROOPS	MP PLATOON	–	–	–	1	1	0
02-Jan-45	DIV TRAINS	SPT TROOPS	DIVISION BAND	–	–	–	–	0	0
02-Jan-45	DIV TRAINS	SPT TROOPS	146 ARM SIG CO	–	–	–	–	0	0
02-Jan-45	DIV HQS (FWD)	HHC	–	–	–	–	–	0	0
									0
03-Jan-45	CCA	HHC	–	–	–	–	–	0	0
03-Jan-45	CCA	MED DET	–	–	–	–	–	0	0
03-Jan-45	CCA	9 ARM INF BN	HHC	–	–	–	2	2	0
03-Jan-45	CCA	9 ARM INF BN	SVC CO	–	–	–	1	1	0
03-Jan-45	CCA	9 ARM INF BN	A CO	–	26	1	1	28	27
03-Jan-45	CCA	9 ARM INF BN	B CO	–	17	5	11	33	22
03-Jan-45	CCA	9 ARM INF BN	C CO	–	5	–	7	12	5
03-Jan-45	CCA	9 ARM INF BN	MED DET	–	–	–	–	0	0
03-Jan-45	CCA	44 ARM INF BN	HHC	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 9 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Jan-45	CCA	44 ARM INF BN	SVC CO	--	--	--	--	0	0
03-Jan-45	CCA	44 ARM INF BN	A CO	--	--	--	--	0	0
03-Jan-45	CCA	44 ARM INF BN	B CO	1	13	--	9	23	14
03-Jan-45	CCA	44 ARM INF BN	C CO	--	--	--	--	0	0
03-Jan-45	CCA	44 ARM INF BN	MED DET	--	3	--	23	26	3
03-Jan-45	CCA	15 TANK BN	HHC	--	--	--	--	0	0
03-Jan-45	CCA	15 TANK BN	SVC CO	--	--	--	--	0	0
03-Jan-45	CCA	15 TANK BN	A CO	--	2	--	1	3	2
03-Jan-45	CCA	15 TANK BN	B CO	--	--	--	2	2	0
03-Jan-45	CCA	15 TANK BN	C CO	--	--	--	5	5	0
03-Jan-45	CCA	15 TANK BN	D CO	--	--	--	--	0	0
03-Jan-45	CCA	15 TANK BN	MED DET	--	--	--	--	0	0
03-Jan-45	CCA	B CO, 69 TANK BN	--	--	--	--	--	0	0
03-Jan-45	CCA	C TRP, 86 CAV RCN SQN	--	--	--	--	1	1	0
03-Jan-45	CCA	C CO, 25 ARM ENGR CBT BN	--	--	--	--	3	3	0
03-Jan-45	CCA	A CO, 603 TD BN	--	--	--	--	--	0	0
03-Jan-45	CCA	A BTRY, 777 AAA AW BN	--	--	1	--	--	1	1
03-Jan-45	CCB	HHC	--	--	--	--	--	0	0
03-Jan-45	CCB	50 ARMD INF BN	HHC	1	1	--	--	2	2
03-Jan-45	CCB	50 ARMD INF BN	SVC CO	--	--	--	--	0	0
03-Jan-45	CCB	50 ARMD INF BN	A CO	1	6	--	7	14	7
03-Jan-45	CCB	50 ARMD INF BN	B CO	--	3	--	8	11	3
03-Jan-45	CCB	50 ARMD INF BN	C CO	1	9	--	20	30	10
03-Jan-45	CCB	50 ARMD INF BN	MED DET	--	--	--	1	1	0
03-Jan-45	CCB	68 TANK BN	HHC	--	--	--	2	2	0
03-Jan-45	CCB	68 TANK BN	SVC CO	--	--	--	--	0	0
03-Jan-45	CCB	68 TANK BN	A CO	--	--	--	2	2	0
03-Jan-45	CCB	68 TANK BN	B CO	--	--	--	3	3	0
03-Jan-45	CCB	68 TANK BN	C CO	--	--	--	--	0	0
03-Jan-45	CCB	68 TANK BN	D CO	--	1	--	--	1	1
03-Jan-45	CCB	68 TANK BN	MED DET	--	--	--	--	0	0
03-Jan-45	CCB	69 TANK BN (-)	HHC	--	--	--	--	0	0
03-Jan-45	CCB	69 TANK BN (-)	SVC CO	--	--	--	--	0	0
03-Jan-45	CCB	69 TANK BN (-)	A CO	--	--	--	--	0	0
03-Jan-45	CCB	69 TANK BN (-)	C CO	--	--	--	1	1	0
03-Jan-45	CCB	69 TANK BN (-)	D CO	--	3	--	1	4	3
03-Jan-45	CCB	69 TANK BN (-)	MED DET	--	--	--	--	0	0
03-Jan-45	CCB	A CO, 44 ARM INF BN	--	--	2	--	9	11	2
03-Jan-45	CCB	A TRP, 86 CAV RCN SQN	--	2	2	--	--	4	4
03-Jan-45	CCB	A CO, 25 ARM ENGR CBT BN	--	--	--	--	3	3	0
03-Jan-45	CCB	C CO, 603 TD BN	--	--	--	--	1	1	0
03-Jan-45	CCB	B BTRY, 777 AAA AW BN	--	--	--	--	--	0	0
03-Jan-45	CCR	HHC	--	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	HHT & SVC TRP	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	B TRP	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	D TRB	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	E TRP	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	F CO	--	--	--	--	0	0
03-Jan-45	CCR	86 CAV RCN SQN (-)	MED DET	--	--	--	--	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 10 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Jan-45	CCR	25 ARM ENG BN (-)	HHC	–	–	–	1	1	0
03-Jan-45	CCR	25 ARM ENG BN (-)	B CO	–	–	–	–	0	0
03-Jan-45	CCR	25 ARM ENG BN (-)	MED DET	–	–	–	–	0	0
03-Jan-45	CCR	603 TD BN (-)	HHC	–	–	–	2	2	0
03-Jan-45	CCR	603 TD BN (-)	RCN CO	–	–	–	–	0	0
03-Jan-45	CCR	603 TD BN (-)	B CO	–	9	–	1	10	9
03-Jan-45	CCR	603 TD BN (-)	MED DET	–	–	–	–	0	0
03-Jan-45	CCR	777 AAA AW BN (-)	HHC	–	–	–	–	0	0
03-Jan-45	CCR	777 AAA AW BN (-)	C BTRY	–	–	–	1	1	0
03-Jan-45	CCR	777 AAA AW BN (-)	MED DET	–	–	–	–	0	0
03-Jan-45	DIVARTY	HHB	–	–	–	–	–	0	0
03-Jan-45	DIVARTY	MED DET	–	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	SVC BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	A BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	B BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	C BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	128 ARM FA BN	MED DET	–	–	–	–	0	0
03-Jan-45	DIVARTY	212 ARM FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	212 ARM FA BN	SVC BTRY	–	1	–	–	1	1
03-Jan-45	DIVARTY	212 ARM FA BN	A BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	212 ARM FA BN	B BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	212 ARM FA BN	C BTRY	–	1	–	–	1	1
03-Jan-45	DIVARTY	212 ARM FA BN	MED DET	–	–	–	–	0	0
03-Jan-45	DIVARTY	231 ARM FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	231 ARM FA BN	SVC BTRY	–	–	–	3	3	0
03-Jan-45	DIVARTY	231 ARM FA BN	A BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	231 ARM FA BN	B BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	231 ARM FA BN	C BTRY	–	1	–	–	1	1
03-Jan-45	DIVARTY	231 ARM FA BN	MED DET	–	1	–	–	1	1
03-Jan-45	DIVARTY	D BTRY, 777 AAA AW BN	–	–	2	–	1	3	2
03-Jan-45	DIVARTY	HHB, 193 FA GROUP	–	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	SVC BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	A BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	B BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	C BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	177 FA BN	MED DET	–	–	–	–	0	0
03-Jan-45	DIVARTY	253 ARM FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	253 ARM FA BN	SVC BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	253 ARM FA BN	A BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	253 ARM FA BN	B BTRY	–	2	–	1	3	2
03-Jan-45	DIVARTY	253 ARM FA BN	C BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	253 ARM FA BN	MED DET	–	–	–	–	0	0
03-Jan-45	DIVARTY	696 ARM FA BN	HHB	–	–	–	–	0	0
03-Jan-45	DIVARTY	696 ARM FA BN	SVC BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	696 ARM FA BN	A BTRY	–	–	–	1	1	0
03-Jan-45	DIVARTY	696 ARM FA BN	B BTRY	–	–	–	–	0	0
03-Jan-45	DIVARTY	696 ARM FA BN	C BTRY	–	–	–	–	0	0

Table F-5. Losses in the US 6th Armor Division, Compton Data (page 11 of 11)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total	TBC
03-Jan-45	DIVARTY	696 ARM FA BN	MED DET	--	--	--	--	0	0
03-Jan-45	DIVARTY	776 FA BN	HHB	--	1	1	--	2	2
03-Jan-45	DIVARTY	776 FA BN	SVC BTRY	--	--	--	--	0	0
03-Jan-45	DIVARTY	776 FA BN	A BTRY	--	--	--	--	0	0
03-Jan-45	DIVARTY	776 FA BN	B BTRY	--	--	--	--	0	0
03-Jan-45	DIVARTY	776 FA BN	C BTRY	--	--	--	--	0	0
03-Jan-45	DIVARTY	776 FA BN	MED DET	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	HHC	--	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	76 ARMD MED BN	HHC	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	76 ARMD MED BN	A CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	76 ARMD MED BN	B CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	76 ARMD MED BN	C CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	128 ORD MAINT BN	HHC	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	128 ORD MAINT BN	A CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	128 ORD MAINT BN	B CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	128 ORD MAINT BN	C CO	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	128 ORD MAINT BN	MED DET	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
03-Jan-45	DIV TRAINS	SPT TROOPS	146 ARM SIG CO	--	--	--	--	0	0
03-Jan-45	DIV HQS (FWD)	HHC	--	--	--	--	1	1	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 1 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
17-Dec-44	CCA	HHC	--	--	--	--	--	0	0
17-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	HHC	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	A CO	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	B CO	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	C CO	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	D CO	--	--	--	--	0	0
17-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCA	48 ARM INF BN	HHC	--	--	--	--	0	0
17-Dec-44	CCA	48 ARM INF BN	SVC CO	--	--	--	--	0	0
17-Dec-44	CCA	48 ARM INF BN	A CO	--	--	--	--	0	0
17-Dec-44	CCA	48 ARM INF BN	B CO	--	1	--	--	1	1
17-Dec-44	CCA	48 ARM INF BN	C CO	--	--	--	1	1	0
17-Dec-44	CCA	48 ARM INF BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
17-Dec-44	CCA	D TRP, 87 CAV RCN SQN	--	--	--	--	--	0	0
17-Dec-44	CCB	HHC	--	--	--	--	--	0	0
17-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	HHC	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	SVC CO	--	--	10	--	10	10
17-Dec-44	CCB	31 TANK BN	A CO	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	B CO	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	C CO	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	D CO	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCB	31 TANK BN	B CO, 33 ENGR CBT BN	--	--	--	--	0	0
17-Dec-44	CCB	23 ARM INF BN	HHC	--	--	--	--	0	0
17-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
17-Dec-44	CCB	23 ARM INF BN	A CO	--	--	--	--	0	0
17-Dec-44	CCB	23 ARM INF BN	B CO	--	--	--	--	0	0
17-Dec-44	CCB	23 ARM INF BN	C CO	--	--	--	1	1	0
17-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCB	38 ARM INF BN (-)	HHC	--	--	--	--	0	0
17-Dec-44	CCB	38 ARM INF BN (-)	SVC CO	--	--	--	--	0	0
17-Dec-44	CCB	38 ARM INF BN (-)	A CO	--	--	--	--	0	0
17-Dec-44	CCB	38 ARM INF BN (-)	B CO	--	--	--	--	0	0
17-Dec-44	CCB	38 ARM INF BN (-)	MED DET	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	1	--	--	1	1
17-Dec-44	CCB	87 CAV RCN SQN	C TRP	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	D TRP	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	--	--	0	0
17-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
17-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
17-Dec-44	CCB	168 ENGR CBT BN	A CO	--	--	--	--	0	0
17-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
17-Dec-44	CCB	168 ENGR CBT BN	C CO	4	5	--	--	9	9
17-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCB	A CO, 814 TD BN	--	--	--	--	--	0	0
17-Dec-44	CCR	HHC	--	--	--	--	--	0	0
17-Dec-44	CCR	17 TANK BN	HHC	--	--	10	1	11	10
17-Dec-44	CCR	17 TANK BN	SVC CO	--	--	5	--	5	5
17-Dec-44	CCR	17 TANK BN	A CO	--	--	--	--	0	0
17-Dec-44	CCR	17 TANK BN	B CO	--	--	--	--	0	0
17-Dec-44	CCR	17 TANK BN	C CO	--	--	--	--	0	0
17-Dec-44	CCR	17 TANK BN	D CO	--	--	--	--	0	0
17-Dec-44	CCR	17 TANK BN	MED DET	--	--	--	--	0	0
17-Dec-44	CCR	C CO, 38 ARM INF BN	--	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 2 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
17-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
17-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	--	--	--	0	0
17-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
17-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	HHB	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	A BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	B BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	C BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	434 ARM FA BN	MED DET	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
17-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
17-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
17-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	HHC	--	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	--	--	--	0	0
17-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	HHC	--	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
17-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
18-Dec-44	CCA	HHC	--	--	--	--	--	0	0
18-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
18-Dec-44	CCA	40 TANK BN	HHC	--	--	--	--	0	0
18-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
18-Dec-44	CCA	40 TANK BN	A CO	--	--	--	--	0	0
18-Dec-44	CCA	40 TANK BN	B CO	--	--	--	2	2	0
18-Dec-44	CCA	40 TANK BN	C CO	--	1	--	--	1	1
18-Dec-44	CCA	40 TANK BN	D CO	--	--	--	--	0	0
18-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCA	48 ARM INF BN	HHC	--	--	--	2	2	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 3 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
18-Dec-44	CCA	48 ARM INF BN	SVC CO	--	--	--	--	0	0
18-Dec-44	CCA	48 ARM INF BN	A CO	--	6	--	--	6	6
18-Dec-44	CCA	48 ARM INF BN	B CO	--	--	--	1	1	0
18-Dec-44	CCA	48 ARM INF BN	C CO	--	6	1	4	11	7
18-Dec-44	CCA	48 ARM INF BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
18-Dec-44	CCA	D TRP, 87 CAV RCN SQN	--	--	--	--	1	1	0
18-Dec-44	CCB	HHC	--	--	--	--	--	0	0
18-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	HHC	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	SVC CO	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	A CO	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	B CO	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	C CO	--	--	--	1	1	0
18-Dec-44	CCB	31 TANK BN	D CO	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCB	31 TANK BN	B CO, 33 ENGR CBT BN	--	--	--	--	0	0
18-Dec-44	CCB	23 ARM INF BN	HHC	--	--	--	2	2	0
18-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
18-Dec-44	CCB	23 ARM INF BN	A CO	--	--	--	1	1	0
18-Dec-44	CCB	23 ARM INF BN	B CO	--	--	--	1	1	0
18-Dec-44	CCB	23 ARM INF BN	C CO	--	2	--	1	3	2
18-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCB	38 ARM INF BN (-)	HHC	--	2	--	--	2	2
18-Dec-44	CCB	38 ARM INF BN (-)	SVC CO	--	--	--	--	0	0
18-Dec-44	CCB	38 ARM INF BN (-)	A CO	--	--	--	1	1	0
18-Dec-44	CCB	38 ARM INF BN (-)	B CO	4	12	--	5	21	16
18-Dec-44	CCB	38 ARM INF BN (-)	MED DET	--	--	--	--	0	0
18-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	--	--	0	0
18-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	1	--	--	1	1
18-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	9	--	--	9	9
18-Dec-44	CCB	87 CAV RCN SQN	C TRP	--	3	--	--	3	3
18-Dec-44	CCB	87 CAV RCN SQN	D TRP	--	--	--	--	0	0
18-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	--	--	--	0	0
18-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	--	--	0	0
18-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
18-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
18-Dec-44	CCB	168 ENGR CBT BN	A CO	1	1	--	2	4	2
18-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
18-Dec-44	CCB	168 ENGR CBT BN	C CO	--	1	1	1	3	2
18-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCB	A CO, 814 TD BN	--	--	--	--	--	0	0
18-Dec-44	CCR	HHC	--	--	--	--	--	0	0
18-Dec-44	CCR	17 TANK BN	HHC	--	1	--	--	1	1
18-Dec-44	CCR	17 TANK BN	SVC CO	--	--	--	--	0	0
18-Dec-44	CCR	17 TANK BN	A CO	--	1	--	--	1	1
18-Dec-44	CCR	17 TANK BN	B CO	--	--	--	--	0	0
18-Dec-44	CCR	17 TANK BN	C CO	--	2	--	1	3	2
18-Dec-44	CCR	17 TANK BN	D CO	--	--	--	--	0	0
18-Dec-44	CCR	17 TANK BN	MED DET	--	--	--	--	0	0
18-Dec-44	CCR	C CO, 38 ARM INF BN	--	--	--	--	2	2	0
18-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
18-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	--	--	1	1	0
18-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
18-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	HHB	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	A BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	B BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	C BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	434 ARM FA BN	MED DET	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 4 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
18-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
18-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
18-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	1	--	--	1	1
18-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
18-Dec-44	DIVARTY	275 AFA BN	HHB	--	--	--	--	0	0
18-Dec-44	DIVARTY	275 AFA BN	SVC BTRY	--	--	--	--	0	0
18-Dec-44	DIVARTY	275 AFA BN	A BTRY	--	3	--	--	3	3
18-Dec-44	DIVARTY	275 AFA BN	B BTRY	--	1	1	1	3	2
18-Dec-44	DIVARTY	275 AFA BN	C BTRY	--	--	1	--	1	1
18-Dec-44	DIVARTY	275 AFA BN	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	HHC	--	--	--	1	--	1	1
18-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	--	3	--	3	3
18-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	4	--	1	5	4
18-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	1	1	0
18-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	5	--	1	6	5
18-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	1	--	--	1	1
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	HHT	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	A TRP	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	B TRP	--	--	3	--	3	3
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	C TRP	--	14	10	--	24	24
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	E TRP	1	4	1	--	6	6
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	F CO	2	4	4	2	12	10
18-Dec-44	DIV TROOPS	18 CAV RCN SQN	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	--	--	1	1	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	--	2	--	--	2	2
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	--	--	--	0	0
18-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	HHC	--	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
18-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 5 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
19-Dec-44	CCA	HHC	--	--	--	--	--	0	0
19-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
19-Dec-44	CCA	40 TANK BN	HHC	--	--	--	--	0	0
19-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCA	40 TANK BN	A CO	--	--	--	--	0	0
19-Dec-44	CCA	40 TANK BN	B CO	--	--	--	1	1	0
19-Dec-44	CCA	40 TANK BN	C CO	--	1	--	2	3	1
19-Dec-44	CCA	40 TANK BN	D CO	--	--	--	1	1	0
19-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCA	48 ARM INF BN	HHC	--	--	--	--	0	0
19-Dec-44	CCA	48 ARM INF BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCA	48 ARM INF BN	A CO	2	10	--	1	13	12
19-Dec-44	CCA	48 ARM INF BN	B CO	--	--	--	2	2	0
19-Dec-44	CCA	48 ARM INF BN	C CO	--	--	--	1	1	0
19-Dec-44	CCA	48 ARM INF BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
19-Dec-44	CCB	HHC	--	--	--	--	--	0	0
19-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	HHC	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	A CO	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	B CO	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	C CO	--	--	--	1	1	0
19-Dec-44	CCB	31 TANK BN	D CO	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	31 TANK BN	B CO, 33 ENGR CBT BN	--	--	--	--	0	0
19-Dec-44	CCB	17 TANK BN	HHC	--	6	--	--	6	6
19-Dec-44	CCB	17 TANK BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCB	17 TANK BN	A CO	--	1	--	--	1	1
19-Dec-44	CCB	17 TANK BN	B CO	--	--	--	--	0	0
19-Dec-44	CCB	17 TANK BN	C CO	--	1	--	--	1	1
19-Dec-44	CCB	17 TANK BN	D CO	--	3	--	--	3	3
19-Dec-44	CCB	17 TANK BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	B CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
19-Dec-44	CCB	23 ARM INF BN	HHC	--	3	--	--	3	3
19-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCB	23 ARM INF BN	A CO	--	4	--	1	5	4
19-Dec-44	CCB	23 ARM INF BN	B CO	--	1	--	1	2	1
19-Dec-44	CCB	23 ARM INF BN	C CO	--	--	--	--	0	0
19-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	38 ARM INF BN	HHC	--	--	--	1	1	0
19-Dec-44	CCB	38 ARM INF BN	SVC CO	--	--	--	--	0	0
19-Dec-44	CCB	38 ARM INF BN	A CO	--	4	--	2	6	4
19-Dec-44	CCB	38 ARM INF BN	B CO	4	5	--	6	15	9
19-Dec-44	CCB	38 ARM INF BN	C CO	--	--	--	1	1	0
19-Dec-44	CCB	38 ARM INF BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	--	--	0	0
19-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	2	--	1	3	2
19-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	--	--	2	2	0
19-Dec-44	CCB	87 CAV RCN SQN	C TRP	--	2	--	1	3	2
19-Dec-44	CCB	87 CAV RCN SQN	D TRP	--	--	--	--	0	0
19-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	--	--	--	0	0
19-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	--	--	0	0
19-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
19-Dec-44	CCB	168 ENGR CBT BN	A CO	--	--	--	--	0	0
19-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
19-Dec-44	CCB	168 ENGR CBT BN	C CO	1	--	--	2	3	1
19-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	434 ARM FA BN	HHB	--	--	--	--	0	0
19-Dec-44	CCB	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 6 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
19-Dec-44	CCB	434 ARM FA BN	A BTRY	--	--	--	--	0	0
19-Dec-44	CCB	434 ARM FA BN	B BTRY	--	--	--	--	0	0
19-Dec-44	CCB	434 ARM FA BN	C BTRY	--	--	--	--	0	0
19-Dec-44	CCB	434 ARM FA BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	275 AFA BN	HHB	--	--	--	--	0	0
19-Dec-44	CCB	275 AFA BN	SVC BTRY	--	--	--	1	1	0
19-Dec-44	CCB	275 AFA BN	A BTRY	--	--	--	1	1	0
19-Dec-44	CCB	275 AFA BN	B BTRY	--	--	--	--	0	0
19-Dec-44	CCB	275 AFA BN	C BTRY	--	--	--	--	0	0
19-Dec-44	CCB	275 AFA BN	MED DET	--	--	--	--	0	0
19-Dec-44	CCB	A CO, 814 TD BN	--	--	3	--	--	3	3
19-Dec-44	CCR	HHC	--	--	--	--	--	0	0
19-Dec-44	CCR	B CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
19-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	--	--	--	0	0
19-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
19-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
19-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
19-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	1	1	0
19-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	1	--	1	2	1
19-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
19-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
19-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	1	1	0
19-Dec-44	DIVARTY	C BRTY, 203 AAA AW BN	--	--	--	--	2	2	0
19-Dec-44	DIV TROOPS	HHC	--	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	HHT	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	A TRP	--	--	--	1	1	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	B TRP	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	C TRP	--	--	--	1	1	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	E TRP	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	F CO	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	18 CAV RCN SQN	MED DET	--	--	--	1	1	0
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	1	--	2	3	1
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	--	1	--	2	3	1
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
19-Dec-44	DIV TROOPS	D TRP, 87 CAV RCN SQN	--	--	--	--	1	1	0
19-Dec-44	DIV TRAINS	HHC	--	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	1	1	0
19-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 7 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
19-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	4	1	2	7	5
19-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
19-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
20-Dec-44	CCA	HHC	--	--	--	--	--	0	0
20-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
20-Dec-44	CCA	40 TANK BN	HHC	--	--	--	2	2	0
20-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
20-Dec-44	CCA	40 TANK BN	A CO	--	1	--	--	1	1
20-Dec-44	CCA	40 TANK BN	B CO	--	--	--	--	0	0
20-Dec-44	CCA	40 TANK BN	C CO	--	--	--	--	0	0
20-Dec-44	CCA	40 TANK BN	D CO	--	--	--	--	0	0
20-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCA	48 ARM INF BN	HHC	--	1	--	--	1	1
20-Dec-44	CCA	48 ARM INF BN	SVC CO	--	1	--	--	1	1
20-Dec-44	CCA	48 ARM INF BN	A CO	--	4	--	4	8	4
20-Dec-44	CCA	48 ARM INF BN	B CO	--	1	--	--	1	1
20-Dec-44	CCA	48 ARM INF BN	C CO	--	--	--	1	1	0
20-Dec-44	CCA	48 ARM INF BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
20-Dec-44	CCB	HHC	--	1	--	--	3	4	1
20-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
20-Dec-44	CCB	31 TANK BN	HHC	--	--	--	--	0	0
20-Dec-44	CCB	31 TANK BN	SVC CO	--	--	--	--	0	0
20-Dec-44	CCB	31 TANK BN	A CO	--	--	--	--	0	0
20-Dec-44	CCB	31 TANK BN	B CO	--	1	--	--	1	1
20-Dec-44	CCB	31 TANK BN	C CO	--	--	--	3	3	0
20-Dec-44	CCB	31 TANK BN	D CO	--	--	--	--	0	0
20-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	17 TANK BN	HHC	--	--	--	--	0	0
20-Dec-44	CCB	17 TANK BN	SVC CO	--	--	--	1	1	0
20-Dec-44	CCB	17 TANK BN	A CO	--	--	--	--	0	0
20-Dec-44	CCB	17 TANK BN	B CO	--	--	1	--	1	1
20-Dec-44	CCB	17 TANK BN	C CO	--	--	--	1	1	0
20-Dec-44	CCB	17 TANK BN	D CO	--	--	--	--	0	0
20-Dec-44	CCB	17 TANK BN	MED DET	--	1	--	--	1	1
20-Dec-44	CCB	B CO, 33 ENGR CBT BN	--	--	1	--	2	3	1
20-Dec-44	CCB	23 ARM INF BN	HHC	--	--	--	--	0	0
20-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
20-Dec-44	CCB	23 ARM INF BN	A CO	--	--	--	2	2	0
20-Dec-44	CCB	23 ARM INF BN	B CO	--	--	--	--	0	0
20-Dec-44	CCB	23 ARM INF BN	C CO	--	--	--	--	0	0
20-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	38 ARM INF BN	HHC	--	1	--	--	1	1
20-Dec-44	CCB	38 ARM INF BN	SVC CO	--	--	--	--	0	0
20-Dec-44	CCB	38 ARM INF BN	A CO	--	--	--	--	0	0
20-Dec-44	CCB	38 ARM INF BN	B CO	--	--	--	2	2	0
20-Dec-44	CCB	38 ARM INF BN	C CO	--	--	--	--	0	0
20-Dec-44	CCB	38 ARM INF BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	4	--	4	4
20-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	3	--	2	5	3
20-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	3	1	--	4	4
20-Dec-44	CCB	87 CAV RCN SQN	C TRP	1	3	--	--	4	4
20-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	--	--	1	1	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 8 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
20-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	--	1	1	0
20-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
20-Dec-44	CCB	168 ENGR CBT BN	A CO	--	4	--	1	5	4
20-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
20-Dec-44	CCB	168 ENGR CBT BN	C CO	--	3	--	--	3	3
20-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	434 ARM FA BN	HHB	--	--	--	--	0	0
20-Dec-44	CCB	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0
20-Dec-44	CCB	434 ARM FA BN	A BTRY	--	--	--	1	1	0
20-Dec-44	CCB	434 ARM FA BN	B BTRY	--	--	--	--	0	0
20-Dec-44	CCB	434 ARM FA BN	C BTRY	--	1	--	--	1	1
20-Dec-44	CCB	434 ARM FA BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	HHB	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	SVC BTRY	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	A BTRY	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	B BTRY	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	C BTRY	--	--	--	--	0	0
20-Dec-44	CCB	275 AFA BN	MED DET	--	--	--	--	0	0
20-Dec-44	CCB	A CO, 814 TD BN	--	--	1	--	1	2	1
20-Dec-44	CCR	HHC	--	--	--	--	--	0	0
20-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	1	--	--	1	1
20-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	--	--	1	1	0
20-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
20-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
20-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
20-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	2	1	3	2
20-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
20-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
20-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	1	1	0
20-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
20-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
20-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
20-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	HHC	--	--	--	2	--	2	2
20-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	1	--	--	1	1
20-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	1	--	--	1	1
20-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	--	1	--	1	1
20-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	2	2	1	5	4
20-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	HHT	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	A TRP	1	--	1	3	5	2
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	B TRP	--	--	--	2	2	0
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	C TRP	--	1	--	1	2	1
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	E TRP	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	F CO	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	18 CAV RCN SQN	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	1	4	--	1	6	5

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 9 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TROOPS	D TRP, 87 CAV RCN SQN	--	--	1	--	2	3	1
20-Dec-44	DIV TRAINS	HHC	--	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	2	--	--	2	2
20-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	2	1	--	3	3
20-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	2	2	--	4	4
20-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
20-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
21-Dec-44	CCA	HHC	--	3	1	3	--	7	7
21-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
21-Dec-44	CCA	40 TANK BN	HHC	--	--	--	1	1	0
21-Dec-44	CCA	40 TANK BN	SVC CO	--	--	2	--	2	2
21-Dec-44	CCA	40 TANK BN	A CO	--	--	--	--	0	0
21-Dec-44	CCA	40 TANK BN	B CO	--	--	4	--	4	4
21-Dec-44	CCA	40 TANK BN	C CO	--	--	--	--	0	0
21-Dec-44	CCA	40 TANK BN	D CO	--	--	--	--	0	0
21-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
21-Dec-44	CCA	48 ARM INF BN	HHC	1	--	3	--	4	4
21-Dec-44	CCA	48 ARM INF BN	SVC CO	--	--	--	--	0	0
21-Dec-44	CCA	48 ARM INF BN	A CO	2	--	2	--	4	4
21-Dec-44	CCA	48 ARM INF BN	B CO	--	3	--	1	4	3
21-Dec-44	CCA	48 ARM INF BN	C CO	--	--	--	--	0	0
21-Dec-44	CCA	48 ARM INF BN	MED DET	--	2	1	1	4	3
21-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	1	--	1	1
21-Dec-44	CCB	HHC	--	--	--	--	--	0	0
21-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
21-Dec-44	CCB	31 TANK BN	HHC	--	--	--	1	1	0
21-Dec-44	CCB	31 TANK BN	SVC CO	--	1	--	--	1	1
21-Dec-44	CCB	31 TANK BN	A CO	1	--	--	--	1	1
21-Dec-44	CCB	31 TANK BN	B CO	--	2	--	--	2	2
21-Dec-44	CCB	31 TANK BN	C CO	--	--	--	1	1	0
21-Dec-44	CCB	31 TANK BN	D CO	--	--	--	--	0	0
21-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
21-Dec-44	CCB	17 TANK BN	HHC	--	--	--	--	0	0
21-Dec-44	CCB	17 TANK BN	SVC CO	--	--	--	--	0	0
21-Dec-44	CCB	17 TANK BN	A CO	--	--	1	2	3	1
21-Dec-44	CCB	17 TANK BN	B CO	--	--	--	1	1	0
21-Dec-44	CCB	17 TANK BN	C CO	--	--	--	--	0	0
21-Dec-44	CCB	17 TANK BN	D CO	--	--	--	--	0	0
21-Dec-44	CCB	17 TANK BN	MED DET	--	--	2	--	2	2
21-Dec-44	CCB	B CO, 33 ENGR CBT BN	--	1	1	--	--	2	2
21-Dec-44	CCB	23 ARM INF BN	HHC	1	4	--	--	5	5
21-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	2	2	0
21-Dec-44	CCB	23 ARM INF BN	A CO	--	21	2	2	25	23
21-Dec-44	CCB	23 ARM INF BN	B CO	--	1	--	1	2	1
21-Dec-44	CCB	23 ARM INF BN	C CO	--	6	3	2	11	9
21-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	1	--	1	1
21-Dec-44	CCB	38 ARM INF BN	HHC	--	2	1	--	3	3
21-Dec-44	CCB	38 ARM INF BN	SVC CO	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 10 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
21-Dec-44	CCB	38 ARM INF BN	A CO	--	3	85	--	88	88
21-Dec-44	CCB	38 ARM INF BN	B CO	--	10	1	2	13	11
21-Dec-44	CCB	38 ARM INF BN	C CO	--	--	--	2	2	0
21-Dec-44	CCB	38 ARM INF BN	MED DET	--	--	4	--	4	4
21-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	6	1	--	7	7
21-Dec-44	CCB	87 CAV RCN SQN	A TRP	2	3	--	--	5	5
21-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	4	--	2	6	4
21-Dec-44	CCB	87 CAV RCN SQN	C TRP	2	2	--	--	4	4
21-Dec-44	CCB	87 CAV RCN SQN	E TRP	1	--	--	--	1	1
21-Dec-44	CCB	87 CAV RCN SQN	F CO	--	1	--	1	2	1
21-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
21-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
21-Dec-44	CCB	168 ENGR CBT BN	A CO	--	3	63	4	70	66
21-Dec-44	CCB	168 ENGR CBT BN	B CO	--	5	64	--	69	69
21-Dec-44	CCB	168 ENGR CBT BN	C CO	2	4	66	5	77	72
21-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	4	--	4	4
21-Dec-44	CCB	434 ARM FA BN	HHB	--	--	--	--	0	0
21-Dec-44	CCB	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0
21-Dec-44	CCB	434 ARM FA BN	A BTRY	--	--	2	--	2	2
21-Dec-44	CCB	434 ARM FA BN	B BTRY	--	--	1	--	1	1
21-Dec-44	CCB	434 ARM FA BN	C BTRY	--	--	--	--	0	0
21-Dec-44	CCB	434 ARM FA BN	MED DET	--	--	--	--	0	0
21-Dec-44	CCB	275 AFA BN	HHB	3	3	--	--	6	6
21-Dec-44	CCB	275 AFA BN	SVC BTRY	--	--	--	--	0	0
21-Dec-44	CCB	275 AFA BN	A BTRY	--	--	--	--	0	0
21-Dec-44	CCB	275 AFA BN	B BTRY	--	3	--	1	4	3
21-Dec-44	CCB	275 AFA BN	C BTRY	1	--	--	--	1	1
21-Dec-44	CCB	275 AFA BN	MED DET	--	--	--	--	0	0
21-Dec-44	CCB	A CO, 814 TD BN	--	--	1	--	1	2	1
21-Dec-44	CCR	HHC	--	--	1	--	--	1	1
21-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
21-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	--	--	--	0	0
21-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
21-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
21-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
21-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
21-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	HHC	--	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	--	--	1	1	0
21-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	HHT	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	A TRP	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 11 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	B TRP	--	--	3	--	3	3
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	C TRP	1	--	--	--	1	1
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	E TRP	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	F CO	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	18 CAV RCN SQN	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TROOPS	D TRP, 87 CAV RCN SQN	--	1	4	3	--	8	8
21-Dec-44	DIV TRAINS	HHC	--	--	--	1	--	1	1
21-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	1	1	0
21-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
21-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
22-Dec-44	CCA	HHC	--	--	--	--	--	0	0
22-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	HHC	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	A CO	--	3	--	--	3	3
22-Dec-44	CCA	40 TANK BN	B CO	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	C CO	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	D CO	--	--	--	--	0	0
22-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCA	48 ARM INF BN	HHC	--	1	--	--	1	1
22-Dec-44	CCA	48 ARM INF BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCA	48 ARM INF BN	A CO	--	5	2	1	8	7
22-Dec-44	CCA	48 ARM INF BN	B CO	--	8	--	--	8	8
22-Dec-44	CCA	48 ARM INF BN	C CO	--	8	11	--	19	19
22-Dec-44	CCA	48 ARM INF BN	MED DET	--	--	4	--	4	4
22-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	2	7	--	9	9
22-Dec-44	CCB	HHC	--	--	--	--	--	0	0
22-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
22-Dec-44	CCB	31 TANK BN	HHC	--	--	1	--	1	1
22-Dec-44	CCB	31 TANK BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCB	31 TANK BN	A CO	--	1	2	1	4	3
22-Dec-44	CCB	31 TANK BN	B CO	--	1	1	--	2	2
22-Dec-44	CCB	31 TANK BN	C CO	--	1	--	--	1	1
22-Dec-44	CCB	31 TANK BN	D CO	--	3	--	2	5	3
22-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB	17 TANK BN	HHC	--	--	--	--	0	0
22-Dec-44	CCB	17 TANK BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCB	17 TANK BN	A CO	--	1	--	1	2	1
22-Dec-44	CCB	17 TANK BN	B CO	--	--	--	--	0	0
22-Dec-44	CCB	17 TANK BN	C CO	--	--	--	--	0	0
22-Dec-44	CCB	17 TANK BN	D CO	--	--	--	1	1	0
22-Dec-44	CCB	17 TANK BN	MED DET	--	--	--	2	2	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 12 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
22-Dec-44	CCB	B CO, 33 ENGR CBT BN	--	--	1	1	--	2	2
22-Dec-44	CCB	23 ARM INF BN	HHC	--	--	23	--	23	23
22-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCB	23 ARM INF BN	A CO	--	1	98	2	101	99
22-Dec-44	CCB	23 ARM INF BN	B CO	--	1	65	4	70	66
22-Dec-44	CCB	23 ARM INF BN	C CO	--	--	2	--	2	2
22-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	1	--	1	1
22-Dec-44	CCB	38 ARM INF BN	HHC	--	--	61	1	62	61
22-Dec-44	CCB	38 ARM INF BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCB	38 ARM INF BN	A CO	--	9	--	1	10	9
22-Dec-44	CCB	38 ARM INF BN	B CO	--	3	--	--	3	3
22-Dec-44	CCB	38 ARM INF BN	C CO	--	--	--	--	0	0
22-Dec-44	CCB	38 ARM INF BN	MED DET	--	--	2	--	2	2
22-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	--	--	0	0
22-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	5	1	--	6	6
22-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	1	72	--	73	73
22-Dec-44	CCB	87 CAV RCN SQN	C TRP	--	1	--	--	1	1
22-Dec-44	CCB	87 CAV RCN SQN	D TRP	--	3	--	1	4	3
22-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	--	9	1	10	9
22-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	9	1	10	9
22-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
22-Dec-44	CCB	168 ENGR CBT BN	A CO	--	--	--	--	0	0
22-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
22-Dec-44	CCB	168 ENGR CBT BN	C CO	--	--	--	--	0	0
22-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	1	--	1	1
22-Dec-44	CCB	434 ARM FA BN	HHB	--	1	--	--	1	1
22-Dec-44	CCB	434 ARM FA BN	SVC BTRY	--	1	--	--	1	1
22-Dec-44	CCB	434 ARM FA BN	A BTRY	--	--	1	--	1	1
22-Dec-44	CCB	434 ARM FA BN	B BTRY	--	--	--	--	0	0
22-Dec-44	CCB	434 ARM FA BN	C BTRY	--	--	--	--	0	0
22-Dec-44	CCB	434 ARM FA BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB	275 AFA BN	HHB	1	--	--	--	1	1
22-Dec-44	CCB	275 AFA BN	SVC BTRY	--	--	--	--	0	0
22-Dec-44	CCB	275 AFA BN	A BTRY	--	--	--	--	0	0
22-Dec-44	CCB	275 AFA BN	B BTRY	--	--	--	--	0	0
22-Dec-44	CCB	275 AFA BN	C BTRY	--	--	1	--	1	1
22-Dec-44	CCB	275 AFA BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB	A CO, 814 TD BN	--	1	6	1	--	8	8
22-Dec-44	CCB (9AD)	HHC	--	--	2	--	1	3	2
22-Dec-44	CCB (9AD)	811 TD BN	HHC	--	--	1	1	2	1
22-Dec-44	CCB (9AD)	811 TD BN	RCN CO	--	2	1	--	3	3
22-Dec-44	CCB (9AD)	811 TD BN	A CO	--	--	2	2	4	2
22-Dec-44	CCB (9AD)	811 TD BN	B CO	--	--	--	--	0	0
22-Dec-44	CCB (9AD)	811 TD BN	C CO	--	--	--	2	2	0
22-Dec-44	CCB (9AD)	811 TD BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB (9AD)	14 TANK BN	HHC	1	1	--	--	2	2
22-Dec-44	CCB (9AD)	14 TANK BN	SVC CO	--	--	--	--	0	0
22-Dec-44	CCB (9AD)	14 TANK BN	A CO	--	--	1	--	1	1
22-Dec-44	CCB (9AD)	14 TANK BN	B CO	--	3	--	--	3	3
22-Dec-44	CCB (9AD)	14 TANK BN	C CO	--	--	--	1	1	0
22-Dec-44	CCB (9AD)	14 TANK BN	D CO	--	--	--	--	0	0
22-Dec-44	CCB (9AD)	14 TANK BN	MED DET	--	--	--	--	0	0
22-Dec-44	CCB (9AD)	27 ARM INF BN	HHC	--	7	--	--	7	7
22-Dec-44	CCB (9AD)	27 ARM INF BN	SVC CO	--	1	--	--	1	1
22-Dec-44	CCB (9AD)	27 ARM INF BN	A CO	--	9	2	--	11	11
22-Dec-44	CCB (9AD)	27 ARM INF BN	B CO	--	16	--	1	17	16
22-Dec-44	CCB (9AD)	27 ARM INF BN	C CO	--	2	7	--	9	9
22-Dec-44	CCB (9AD)	27 ARM INF BN	MED DET	--	8	4	--	12	12
22-Dec-44	CCR (7AD)	HHC	--	--	--	--	--	0	0
22-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	--	--	1	1	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 13 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
22-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	3	--	--	3	3
22-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
22-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
22-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	--	--	0	0
22-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
22-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	HHC	--	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	1	--	--	1	1
22-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	2	1	1	4	3
22-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	HHT	--	1	--	--	1	1
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	A TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	B TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	C TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	E TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	F CO	--	--	1	--	1	1
22-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	1	--	--	1	1
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	--	--	2	--	2	2
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	--	--	--	0	0
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	1	--	--	1	1
22-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	HHC	--	--	--	2	--	2	2
22-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	2	--	2	2
22-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
22-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
23-Dec-44	CCA	HHC	--	--	--	--	--	0	0
23-Dec-44	CCA	MED DET	--	--	--	--	--	0	0
23-Dec-44	CCA	40 TANK BN	HHC	--	--	--	1	1	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 14 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
23-Dec-44	CCA	40 TANK BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCA	40 TANK BN	A CO	--	1	6	1	8	7
23-Dec-44	CCA	40 TANK BN	B CO	--	--	--	--	0	0
23-Dec-44	CCA	40 TANK BN	C CO	--	1	--	--	1	1
23-Dec-44	CCA	40 TANK BN	D CO	--	1	3	--	4	4
23-Dec-44	CCA	40 TANK BN	MED DET	--	--	--	--	0	0
23-Dec-44	CCA	48 ARM INF BN	HHC	--	--	--	--	0	0
23-Dec-44	CCA	48 ARM INF BN	SVC CO	--	2	1	4	7	3
23-Dec-44	CCA	48 ARM INF BN	A CO	--	3	--	4	7	3
23-Dec-44	CCA	48 ARM INF BN	B CO	--	--	--	--	0	0
23-Dec-44	CCA	48 ARM INF BN	C CO	--	8	11	--	19	19
23-Dec-44	CCA	48 ARM INF BN	MED DET	--	1	1	--	2	2
23-Dec-44	CCA	A CO, 33 ENGR CBT BN	--	--	--	--	--	0	0
23-Dec-44	CCB	HHC	--	--	--	--	--	0	0
23-Dec-44	CCB	MED DET	--	--	--	--	--	0	0
23-Dec-44	CCB	31 TANK BN	HHC	--	--	--	1	1	0
23-Dec-44	CCB	31 TANK BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB	31 TANK BN	A CO	--	2	7	--	9	9
23-Dec-44	CCB	31 TANK BN	B CO	--	--	--	--	0	0
23-Dec-44	CCB	31 TANK BN	C CO	--	1	1	--	2	2
23-Dec-44	CCB	31 TANK BN	D CO	--	1	1	1	3	2
23-Dec-44	CCB	31 TANK BN	MED DET	--	--	--	1	1	0
23-Dec-44	CCB	17 TANK BN	HHC	--	1	--	--	1	1
23-Dec-44	CCB	17 TANK BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB	17 TANK BN	A CO	--	--	--	--	0	0
23-Dec-44	CCB	17 TANK BN	B CO	--	--	--	--	0	0
23-Dec-44	CCB	17 TANK BN	C CO	--	4	2	--	6	6
23-Dec-44	CCB	17 TANK BN	D CO	--	5	--	1	6	5
23-Dec-44	CCB	17 TANK BN	MED DET	--	--	--	--	0	0
23-Dec-44	CCB	B CO, 33 ENGR CBT BN	--	--	1	7	5	13	8
23-Dec-44	CCB	23 ARM INF BN	HHC	--	--	--	1	1	0
23-Dec-44	CCB	23 ARM INF BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB	23 ARM INF BN	A CO	1	2	7	1	11	10
23-Dec-44	CCB	23 ARM INF BN	B CO	--	1	--	--	1	1
23-Dec-44	CCB	23 ARM INF BN	C CO	--	2	1	--	3	3
23-Dec-44	CCB	23 ARM INF BN	MED DET	--	--	1	--	1	1
23-Dec-44	CCB	38 ARM INF BN	HHC	--	--	--	--	0	0
23-Dec-44	CCB	38 ARM INF BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB	38 ARM INF BN	A CO	--	--	--	2	2	0
23-Dec-44	CCB	38 ARM INF BN	B CO	--	--	71	3	74	71
23-Dec-44	CCB	38 ARM INF BN	C CO	--	--	6	--	6	6
23-Dec-44	CCB	38 ARM INF BN	MED DET	--	--	4	--	4	4
23-Dec-44	CCB	87 CAV RCN SQN	HH&SVC TRP	--	--	--	--	0	0
23-Dec-44	CCB	87 CAV RCN SQN	A TRP	--	--	1	2	3	1
23-Dec-44	CCB	87 CAV RCN SQN	B TRP	--	--	--	1	1	0
23-Dec-44	CCB	87 CAV RCN SQN	C TRP	--	--	--	--	0	0
23-Dec-44	CCB	87 CAV RCN SQN	D TRP	--	--	--	--	0	0
23-Dec-44	CCB	87 CAV RCN SQN	E TRP	--	7	18	3	28	25
23-Dec-44	CCB	87 CAV RCN SQN	F CO	--	--	1	--	1	1
23-Dec-44	CCB	87 CAV RCN SQN	MED DET	--	--	--	1	1	0
23-Dec-44	CCB	168 ENGR CBT BN	HHC	--	--	--	--	0	0
23-Dec-44	CCB	168 ENGR CBT BN	A CO	--	--	--	--	0	0
23-Dec-44	CCB	168 ENGR CBT BN	B CO	--	--	--	--	0	0
23-Dec-44	CCB	168 ENGR CBT BN	C CO	1	--	--	--	1	1
23-Dec-44	CCB	168 ENGR CBT BN	MED DET	--	--	3	--	3	3
23-Dec-44	CCB	434 ARM FA BN	HHB	--	--	--	--	0	0
23-Dec-44	CCB	434 ARM FA BN	SVC BTRY	--	--	--	--	0	0
23-Dec-44	CCB	434 ARM FA BN	A BTRY	--	--	--	--	0	0
23-Dec-44	CCB	434 ARM FA BN	B BTRY	--	--	--	--	0	0
23-Dec-44	CCB	434 ARM FA BN	C BTRY	--	--	--	--	0	0
23-Dec-44	CCB	434 ARM FA BN	MED DET	--	--	--	--	0	0

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 15 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
23-Dec-44	CCB	275 AFA BN	HHB	--	--	--	--	0	0
23-Dec-44	CCB	275 AFA BN	SVC BTRY	--	--	--	1	1	0
23-Dec-44	CCB	275 AFA BN	A BTRY	--	--	--	--	0	0
23-Dec-44	CCB	275 AFA BN	B BTRY	--	--	--	--	0	0
23-Dec-44	CCB	275 AFA BN	C BTRY	--	--	--	--	0	0
23-Dec-44	CCB	275 AFA BN	MED DET	--	--	--	1	1	0
23-Dec-44	CCB	A CO, 814 TD BN (-)	--	--	--	1	--	1	1
23-Dec-44	CCB (9AD)	HHC	--	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	811 TD BN	HHC	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	811 TD BN	RCN CO	--	1	--	--	1	1
23-Dec-44	CCB (9AD)	811 TD BN	A CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	811 TD BN	B CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	811 TD BN	C CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	811 TD BN	MED DET	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	14 TANK BN	HHC	--	--	1	--	1	1
23-Dec-44	CCB (9AD)	14 TANK BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	14 TANK BN	A CO	--	1	2	--	3	3
23-Dec-44	CCB (9AD)	14 TANK BN	B CO	--	2	1	--	3	3
23-Dec-44	CCB (9AD)	14 TANK BN	C CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	14 TANK BN	D CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	14 TANK BN	MED DET	--	2	--	--	2	2
23-Dec-44	CCB (9AD)	27 ARM INF BN	HHC	--	--	23	--	23	23
23-Dec-44	CCB (9AD)	27 ARM INF BN	SVC CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	27 ARM INF BN	A CO	--	6	9	1	16	15
23-Dec-44	CCB (9AD)	27 ARM INF BN	B CO	--	--	--	--	0	0
23-Dec-44	CCB (9AD)	27 ARM INF BN	C CO	--	2	1	1	4	3
23-Dec-44	CCB (9AD)	27 ARM INF BN	MED DET	--	2	--	--	2	2
23-Dec-44	CCR (7AD)	HHC	--	--	--	--	--	0	0
23-Dec-44	CCR	C CO, 33 ENGR CBT BN	--	--	1	--	1	2	1
23-Dec-44	CCR	B CO, 814 TD BN (-)	--	--	1	--	--	1	1
23-Dec-44	DIVARTY	HHB	--	--	--	--	--	0	0
23-Dec-44	DIVARTY	MED DET	--	--	--	--	--	0	0
23-Dec-44	DIVARTY	440 ARM FA BN	HHB	--	--	--	--	0	0
23-Dec-44	DIVARTY	440 ARM FA BN	SVC BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	440 ARM FA BN	A BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	440 ARM FA BN	B BTRY	--	2	6	--	8	8
23-Dec-44	DIVARTY	440 ARM FA BN	C BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	440 ARM FA BN	MED DET	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	HHB	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	SVC BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	A BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	B BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	C BTRY	--	--	--	--	0	0
23-Dec-44	DIVARTY	489 ARM FA BN	MED DET	--	--	1	--	1	1
23-Dec-44	DIVARTY	A BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
23-Dec-44	DIVARTY	C BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	HHC	--	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	MED DET	--	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	HHC	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	33 ARM ENGR CBT BN (-)	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	814 TD BN (-)	HHC	--	2	--	--	2	2
23-Dec-44	DIV TROOPS	814 TD BN (-)	RCN CO	--	2	14	--	16	16
23-Dec-44	DIV TROOPS	814 TD BN (-)	C CO	--	10	6	1	17	16
23-Dec-44	DIV TROOPS	814 TD BN (-)	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	203 AAA AW BN (-)	HHB	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	203 AAA AW BN (-)	D BTRY	--	--	14	--	14	14
23-Dec-44	DIV TROOPS	203 AAA AW BN (-)	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	HHT	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	A TRP	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	B TRP	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	C TRP	--	3	9	--	12	12

Table F-6. Losses in the US 7th Armor Division, Compton Data (page 16 of 16)

Date	Sub-unit level 1	Sub-unit level 2	Sub-unit level 3	KIA	WIA	MIA	NB	Total losses	TBC
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	E TRP	--	--	4	--	4	4
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	F CO	--	--	1	--	1	1
23-Dec-44	DIV TROOPS	18 CAV RCN SQN (-)	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	HHT	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	A TRP	--	--	--	--	0	0
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	B TRP	1	2	--	--	3	3
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	C TRP	--	--	2	--	2	2
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	E TRP	--	6	--	1	7	6
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	F CO	--	--	1	--	1	1
23-Dec-44	DIV TROOPS	32 CAV RCN SQN	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	HHC	--	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	129 ORD MAINT BN	HHC	--	--	--	1	1	0
23-Dec-44	DIV TRAINS	129 ORD MAINT BN	A CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	129 ORD MAINT BN	B CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	129 ORD MAINT BN	C CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	129 ORD MAINT BN	MED DET	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	77 ARM MED BN	HHC	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	77 ARM MED BN	A CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	77 ARM MED BN	B CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	77 ARM MED BN	C CO	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	B BTRY, 203 AAA AW BN	--	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	446 QM TRK CO	--	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	SPT TROOPS	MP PLATOON	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	SPT TROOPS	DIVISION BAND	--	--	--	--	0	0
23-Dec-44	DIV TRAINS	SPT TROOPS	147 ARM SIGNAL CO	--	--	--	--	0	0
			GRAND TOTAL	51	507	1044	230	1832	1602

APPENDIX G

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GLOSSARY

1. INTRODUCTION. Some of the abbreviations and special terms used in this document are listed below. If the definition given is an official one, the organizations that have adopted it are given in parentheses; otherwise, no indication of its adoption are given. Note that the definitions used by other countries or by the US in earlier times may differ more or less from those given below and may be interpreted in various ways even within the US Department of Defense.

2. DEFINITION OF TERMS

Battle casualty - (DOD) Any casualty incurred in action. "In action" characterizes the casualty status as having been the direct result of hostile action, sustained in combat or relating thereto, or sustained going to or returning from a combat mission provided that the occurrence was directly related to hostile action. Included are persons killed or wounded mistakenly or accidentally by friendly fire directed at a hostile force or what is thought to be a hostile force. However, not to be considered as sustained in action and thereby not to be interpreted as battle casualties are injuries due to the elements, self-inflicted wounds, and, except in unusual cases, wounds or death inflicted by friendly forces while the individual is in absent without leave or dropped from rolls status or is voluntarily absent from a place of duty. See also died of wounds received in action; nonbattle casualty; wounded.

Bloody losses - The sum of the KIA and WIA.

Casualty - (DOD, IADB) Any person who is lost to the organization by reason of having been declared dead, wounded, injured, diseased, interned, captured, retained, missing, missing in action, beleaguered, besieged or detained; see also battle casualty; nonbattle casualty; wounded.

CMIA - Captured or missing in action. See POW and MIA.

CRO - Carded for record only. (Adapted from Beebe, Gilbert W.; and De Bakey, Michael E., *Battle Casualties: Incidence, Mortality, and Logistic Considerations,* Charles C. Thomas (publisher), 1952.) Basically, admissions to a medical treatment facility include all cases admitted for medical care and not returned to duty on the same calendar day as that on which first seen. Cases which are treated on an outpatient (duty) status, are designated as carded for record only (CRO).

DNBI - Disease and nonbattle injury. Personnel treated for diseases and for injuries not received in action. See Nonbattle casualty.

DOW - Died of wounds received in action (DOD, NATO). A battle casualty who dies of wounds or other injuries received in action, after having reached a medical treatment facility. See also killed in action.

DTIC - Defense Technical Information Center.

EAD - Echelon(s) above division.

KIA - Killed in action (DOD, NATO, IADB). A battle casualty who is killed outright or who dies as a result of wounds or other injuries before reaching a medical treatment facility. See also died of wounds received in action.

Losses - (Adapted from FM 101-10-1/2, Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors, October 1987). A personnel loss is any reduction in the assigned strength of a unit. Personnel losses are recorded in three general categories: battle, nonbattle, and administrative.

- Battle losses are those incurred in action. They include wounded or injured in action (including those who died of wounds and died of injuries received in action), killed in action, and missing in action or captured by the enemy.

- Nonbattle losses are those not directly attributable to action regardless of when sustained. They include nonbattle dead, nonbattle accident/injury, nonbattle missing, and illness/disease.

- Administrative losses are those resulting from transfer from the unit, absence without leave, desertion, personnel rotation, and discharges.

LWIA - Lightly wounded in action (see Slightly wounded).

MIA - (adapted from FM 101-10-1/2, Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors, October 1987). Missing in action describes battle casualties whose whereabouts or fate cannot be determined and who are not known to be in an unauthorized absence status (desertion or absence without leave). Missing in action (MIA) casualties are not usually included in medical statistical records or reports received by The Surgeon General, but are reportable to The Adjutant General.

NFW - Nonfatal wound. A person who is wounded in action (WIA), but who does not die of wounds (DOW).

Nonbattle casualty - (DOD, NATO, IADB) A person who is not a battle casualty but who is lost to his organization by reason of disease or injury, including persons dying from disease or injury, or by reason of being missing where the absence does not appear to be voluntary or due to enemy action. See also battle casualty; wounded.

Nonbloody loss - Battle casualties other than KIA and WIA; include (for example) MIA, POW, absent without leave, stragglers, and deserters.

NP - Neuropsychiatric.

POW - Prisoner of war. Detainee (DOD). A term used to refer to any person captured or otherwise detained by an armed force. (According to FM 101-10-1/2, Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors, October 1987, captured describes all battle casualties known to have been taken into custody by a hostile force as a result of and for reasons arising out of any armed conflict in which US armed forces are engaged. Captured casualties are not usually included in medical statistical records or reports received by The Surgeon General but are reported to The Adjutant General.)

Seriously wounded - (DOD, IADB) A stretcher case. See also WIA.

Slightly wounded - (DOD, IADB) A casualty that is a sitting or walking case. See also WIA.

SWIA - Seriously wounded in action (see Seriously wounded).

TBC - Total battle casualty. The sum of the KIA, WIA, and CMIA casualties.

WIA - Wounded in action (DOD, NATO, IADB). A battle casualty other than "killed in action" who has incurred an injury due to an external agent or cause. The term encompasses all kinds of wounds and other injuries incurred in action, whether there is a piercing of the body, as in a penetrating or perforated wound, or none, as in the contused wound; all fractures, burns, blast concussions, all effects of biological and chemical warfare agents, the effects of exposure to ionizing radiation, or any other destructive weapon or agent.

3. TERMS AND MATHEMATICAL SYMBOLS UNIQUE TO THIS STUDY

ARIMA - Autoregressive moving average, used to describe a certain kind of time series.

Attenuation - The tendency for casualty rates averaged over an extended period of time to be less than the casualty rates associated with relatively intense combat activity.

BD - Battle deaths, the sum of the KIA and DOW.

Dilution - The tendency for casualty rates averaged over a large force to be less than the casualty rates associated with relatively heavily engaged elements of the force.

FER - Fractional exchange ratio, the ratio of the percentage losses on one side to the percentage losses to the other side.

kp - Kilo personnel, that is, 1,000 personnel.

kpd - Kilo personnel-days, that is, 1,000 personnel-days (used as a level of effort or exposure to risk).

kpy - Kilo personnel-years, that is, 1,000 personnel years. Used as an index of exposure to risk.

/kpd - Used as an abbreviation for the phrase "per thousand per day." Thus, the statement that "the attrition rate amounted to 10 per thousand per day" is abbreviated to "the attrition rate amounted to 10/kpd."

/kpy - Used as an abbreviation for the phrase "per thousand per year." Thus, the statement that "the attrition rate amounted to 10 per thousand per year" is abbreviated to "the attrition rate amounted to 10/kpy."

pd - Personnel-days (used as a level of effort or exposure to risk).

RMSE - Root mean square error, a measure of the scatter of data points about a trendline.

WNM - Wounded not mortal, the difference between WIA and DOW.