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COMMAND AND GENERAL STAFF COLLEGE

COMBAT CASUALTIES AND
MISSION ACCOMPLISHMENT

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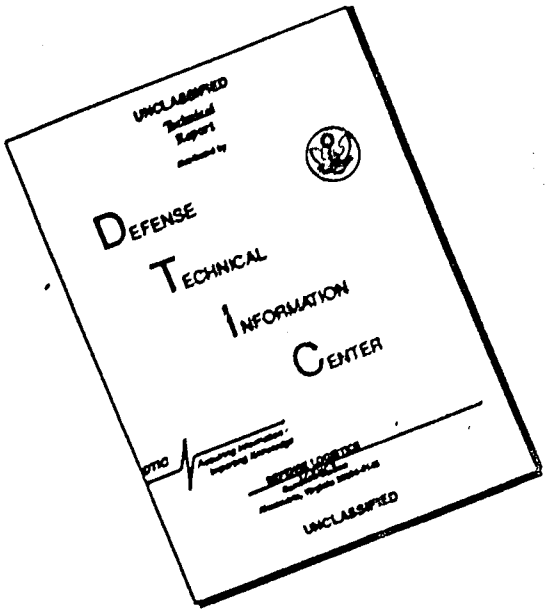

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COMBAT CASUALTIES AND MISSION ACCOMPLISHMENT

A Student Paper Written for the
Individual Research Elective

by

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INTRODUCTION

> The objective of a military force is the goal or aim, usually expressed as a mission, for which the force was constituted. This principle is overriding; it is applicable to any operation at any level of command.... Success in combat is measured by the accomplishment of the mission.[1]

Such is the voice of doctrine -- doctrine buttressed by the personal philosophy of generations of professional soldiers. It represents the philosophy of the United States Army which accords the mission primacy in decision making at all levels. This philosophy permeates the Army's educational system from bottom to top. Mission primacy is one of the first institutional values a professional internalizes in his basic training and is evident in the military scholarship envinced at the War College.

> The statement of the mission of land combat forces is crucial because of the complexity of land warfare. Mission influences everything else and must state attainable objectives. The statement of mission presupposes allocation of necessary resources; however, all commanders are expected to accomplish their missions with resources assigned.[2]

If mission primacy is central to military philosophy, doctrine, and professional thought, it is presumably reflected in professional methodology and practice. Indeed, casual observation indicates that

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[1]U.S. Department of the Army, FM 7-11, Rifle Company, Infantry Airborne Infantry, and Mechanized Infantry, with Change 1, 23 February 1968 (20 April 1965), p. 13.

[2]U.S. Department of the Army, "Draft FM 100-25, Land Warfare Basic Army Doctrine," (U.S. Army War College, Carlisle Barracks, Pennsylvania, 4 January 1962), p. 18.

such primacy is in fact presumed by military professionals and is implicitly assumed by command arrangements and decision structures. There remains the nagging question, however, of whether we might be indulging in another professional proclivity, that of self delusion, in accepting this implicit assumption. Since qualified acceptance of this assumption can be strongly counterproductive, the question of its validity is highly relevant.

In any discussion of small unit combat, a frequently-heard comment is, "That's fine in theory, but in practice..." Such remarks are usually a clue that the role of theory is not understood or that the available theory has not addressed relevant variables. As an extension of theory, the assumption of mission primacy has deducible implications which may be tested empirically. If mission accomplishment is really the criterion of combat success, then, ipso facto, other considerations within the purview of the tasked commander are secondary, and the only acceptable reasons for non-accomplishment must lie either with the physical environment which prevents it or with the enemy. If we exclude those special cases in which a quirk of weather or terrain absolutely blocks an operation, the relevant cause of mission failure is enemy action.[1] Enemy actior is normally the application of combat power and results in casualties inflicted upon friendly forces. If the mission is accomplished, the implication is that the enemy applied insufficient combat

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[1]Environmental obstacles are undoubtedly highly significant to naval and air forces; their impact on smaller infantry units is usually restricted to impeding movement.

power -- inflicted insufficient casualties -- to prevent it. Hence, if the mission is not accomplished, obviously the enemy did inflict sufficient casualties to prevent it. If one holds other variables constant, or, what is equivalent, considers sufficient examples so that the extraneous differences cancel each other out, unsuccessful missions should result in higher casualties on the average than do successful missions.

It is this expected result, implicit in the mission primacy tenets of philosophy, doctrine, and intellectual consensus, that is questioned in this study. Is there, in fact, the negative correlation between mission success and casualties which conventional wisdom predicts? Although the institution so supposes, do those units which actually do the fighting behave the way the manuals, texts, and staff papers assume they do? If not, what are the consequences? As long as the Army's role includes the conduct of ground combat operations, the questions are relevent.[6] To address them, this study describes an academic reconnaissance in force conducted by selecting a sample of World War II rifle companies, determining their mission accomplishment and associated casualties, and analyzing the results statistically. This analysis reveals no indication of correlation between incidence of mission success and casualties. Since the study uses data at the small unit level, it is obvious that even though the Army as an institution holds assigned mission to be paramount, the individual commanders and leaders who are members of this institution do not actually behave accordingly. Such a "reality gap" can have significant consequences. ( )

II

METHODOLOGY

A data base is established by selecting an historical sample of combat actions at the rifle company level. These actions are classified as successful or unsuccessful. The casualties suffered by these units during periods corresponding to the actions are tabulated and juxtaposed to the record of success and failure. If the companies in the historical sample did in fact behave as doctrine implies subordinate units will behave, then the instances in which missions were not accomplished should represent instances in which the enemy possessed sufficient combat power (in the doctrinal sense) to physically prevent success. This condition would be manifested by the enemy inflicting casualties upon the attacking company. Conversely, successful actions represent instances in which the enemy possessed insufficient combat power to inflict enough casualties on the attacking company to prevent accomplishment of its mission. On the average then, doctrine implies that casualties should be significantly higher for unsuccessful than for successful actions.

The sample is selected to be reasonably homogeneous. It is hoped by this means to reduce the effects of extraneous variables. Any model is logically dependent on an implicit ceteris paribus assumption. By considering only actions within a short time frame (several weeks), within a limited geographical area (Rapido River portion of the Winter Line), and in one form of combat (attack of prepared positions), the logical burden of this assumption is lessened.

Only offensive actions are used since these permit assessment of relative success in spatial terms. In addition, they provide the proponent with a greater freedom of action within which actual performance can be a reasonably sensitive indicator of human and group dynamics. By contrast, it would appear that the options available to the occupant of a defensive position are limited to "stay" and "go" and probably weighted so strongly in favor of the former that historically discernible variations in performance would reflect only the most extreme constellations of circumstances. Moreover, review of the tactical substance taught in the Army school system indicates that at a given level of command there is no significant difference in the decision requirement of offensive as opposed to defensive missions.[1]

The company-day is used as the sample unit. A wide variety of sources reinforce the suggestion that it is in the small unit that the man-organization interface will be best observed. Contemporary contract research concludes that there is a qualitative dichotomy between decision performance at company level and below, on the one hand, and that at battalion level and above on the other.[2] It further avers that the primary group is crucially important to military effectiveness because, although the formal organization may state the unit goals, the informal

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[1]U.S. Naval Training Devices Center, Army Participation Group, Study of Functional Requirements of Training Equipment for Army Command Tactical Decision Making, by W.S. Vaughan, Jr., R.D. Franklin, and R.B. Johnson, Human Sciences Research, Inc. (Port Washington, New York: February 1966), p. 8.

[2]Ibid., p. 7.

organization determines how and with what success these goals are pursued.[1] General S.L.A. Marshall has stated that his conclusion drawn in World War II -- that men fight mainly out of obligation to their immediate group -- has not been changed by observation of either the Korean War or of Israel's "100-hour War" of 1956.[2] Another study from World War II identifies group loyalty as a major determinant of stability under battle stress.[3] Hence, in the present study the smallest unit whose casualties and mission performance are identifiable in the available historical records is used. In this case it is the company.

Choice of the unit time span is also determined by available records. Casualties are recorded by date, not by operational mission. If casualties are to be juxtaposed to mission success, some common denominator must be established. The activity patterns of the companies studied typically show less action between nightfall and about 0400 hours. This apparently was predominantly day combat with actions logically divisible into calendar day segments. Most S-3 periodic reports did not have a 0001 to 2400 hours reporting period, but do reflect the times of reported actions, thus permitting their allocation

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[1]Richard H. Williams, "The Military Group," Human Factors in Military Operations, p. 350.

[2]S.L.A. Marshall, "Combat Leadership," Infantry, III (May-June 1962), front inside cover ÷.

[3]Colonel Russell P. Reeder, "A Man Will Do More for Company A," Armor, LXXVII (March-April 1968), 19, citing Major R. Sobel, Combat Psychiatric Supplement, November 1949.

to the appropriate calendar day. On the other hand, morning reports aggregate casualties for each calendar day and do not reflect the time of day at which the casualty occurred. Hence, the company-day is the sample unit used.

In order to validate assessment of mission accomplishment in spatial terms, data are drawn only from infantry units. This restriction reduces to a minimum the possibility that a company ceased its forward movement because of reasons more akin to transportation difficulties than enemy combat power. It is highly unlikely that a terrain barrier of such a nature as to totally preclude the continued advance of a rifle company would go unmentioned in unit journals or message files.

The focus of this study is on the nexus between performance and casualties. The question remains as to what constitutes a casualty which has a functional relationship with mission accomplishment. Since this cannot be deduced, all categories of combat casualties -- killed, wounded, and missing -- are used in varying combinations and in total. Sick and injured are not included, with some exceptions explained below. Since it is the correlation with group performance that is being examined, it is logical to employ casualties per group, as contrasted to casualties per strength. Unfortunately informal groups are not identifiable as such; their existence can only be inferred. The formal group, however, coincides neatly with mission allocation so casualties, by category, are recorded per company per day. One caveat, however, is necessitated by inability to determine individual platoon status. Casualties are ascribed to the parent company even though sustained by a platoon while

assisting another company. Conversely, casualties which impacted strongly on a company's decision whether or not to continue its mission might have occurred in an attached platoon and be ascribed to its parent company. To the extent that World War II organization and doctrine militated against cross-attachment on anything like the scale now practiced, the distortion so introduced is suppressed.

The historical period from which the data are drawn is that of the Winter Line Campaign in Italy during the period November 1943 through January 1944. The German Tenth Army had been delaying to the north after its unsuccessful defense of southern Italy. By mid-November 1943 it had terminated its delay and established a defense on two lines to hold the allies south of Rome for the winter. The southernmost of these lines was the "Winter Line", running across the Italian peninsula generally along the Garigliano, Rapido, and Sangro Rivers. This line was a prepared position in depth in mountainous terrain. The weather was typical of Mediterranean winters in the mountains -- wet, moderately cold, with intermittent fog and snow. Both terrain and weather favored the defender.

Fifteen Army Group (Allied) planned a three-phase campaign to take Rome. During the second phase, commencing the end of November, the Fifth Army made the army group main attack to clear Mt. Camino and the approaches to the Liri Valley. This attack was made in three phases. In Fifth Army's first phase, II and X Corps made the main effort against Mt. Camino in the south while VI Corps conducted secondary attacks in the mountainous area around Mt. Patano in the north. During this period

the 34th and 45th Divisions were assigned to VI Corps. Actions of the 168th Infantry Regiment, 34th Division, during 29 November - 3 December 1943 on Mt. Patano and of the 179th Infantry Regiment, 45th Division, during 3-7 December 1943 south of Mt. Patano are included in the sample.

In the second phase of Fifth Army's attack to clear Mt. Camino and the approaches to the Liri Valley, II Corps made the main attack in the San Pietro area while VI Corps again made secondary attacks in the north. The 45th Division was still part of VI Corps and actions of two of it regiments, the 157th and 179th, during 9-16 December 1943 are included in the sample. The 34th Division was relieved by a Morrocan division and did not participate in phase II.

Fifth Army commenced the third phase of its attack on 5 January 1944 and eventually accomplished its mission. II Corps again made the main attack generally on the same axis -- San Pietro - Cassino. Prior to the opening of the third phase, elements of the 45th Division conducted local offensive operations in the VI Corps zone. Actions of its 180th Infantry Regiment during 30-31 December 1943 are included in the sample. During this final phase, the 34th Division, attached to II Corps on 24 December, made the corps main attack in the vicinity of San Vittore. Actions of its 135th and 168th Infantry Regiments during 4-13 January 1944 are included in the sample.[1]

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[1]Historical data of the preceding paragraphs is drawn from T. Dodson Stamps and Vincent Esposito (eds.), A Military History of World War II (with Atlas), Vol. II (West Point, New York: United States Military Academy, 1956), pp. 137-147, Atlas Maps 99-102.

It should be noted at this juncture that the data are drawn from World War II while the subject of this paper impinges on current decision doctrine and future policy. Study of contemporary field manuals shows that doctrine during World War II was based on essentially the same philosophy of mission primacy as obtains today.[1] Conclusions based on the data cannot be invalidated on grounds of doctrinal differences.

To determine mission accomplishment, recourse is made to the original unit records on file with Modern Military Records Division of the National Archives and Records Service, General Services Administration, Alexandria, Virginia.[2] Screening the records confirms that company level units left no written records. Some battalions left records, but few are usable. Regimental records prove to be the most useful because of their relative legibility and coherence and because they report actions down to company level. Division records are useful mainly for providing background from which company actions can be better understood. The most useful records are S-3 journals, message files, and periodic reports. Some summary reports referred to variously as "operational reports" or "histories" are also used.

Since the sources vary widely in form and quality, selection of specific units to include in the sample depends largely on whether the

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[1]U.S. War Department, FM 7-10, Rifle Company, Infantry Regiment, (18 March 1944); _____, FM 7-40, Rifle Regiment (9 February 1942); _____, FM 100-5, Field Service Regulations - Operations, with Change 2 (12 November 1942).

[2]Believed to have since moved to somewhere in Maryland, vicinity Washington, D. C.

data are usable. The procedure followed is to study the source material pertaining to the historical period and to select a company-day for inclusion in the sample if it meets three criteria: (1) the unit must be a rifle company, (2) it must have been assigned an affirmative mission[1], and (3) it must have encountered significant resistance during the day's execution. Once included in the sample, the selected company-day is categorized as successful or unsuccessful and as an attack or a defense according to explicit criteria. If, during a given day, the rifle company continued its forward movement until it secured its objective, had its orders changed by higher headquarters, or "buttoned up for the night," that company-day is classified as a "successful attack." If forward movement stopped under any other conditions, the company-day is classified as an "unsuccessful attack." During offensive operations which extended over a number of days it was not uncommon for a company to spend most of a day defending against counter attacks. In these cases, the company-day is classified as a "successful defense" if the counterattack was repelled and as an "unsuccessful defense" if the company was dislodged.

Considering the number of calendar days each regiment was in contact with the enemy and the nine rifle companies in each regiment, the source material covers a total of 279 relevant company-days. Of this total, however, information content of the sources permits

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[1]An affirmative mission was assumed in those cases in which a source recorded that the company had "commenced the attack," "crossed the LD," etc., even though the specific objective was not identified or the mission explicitly stated.

identification of company activities for only 229 company-days. Of these, 78 meet the criteria for inclusion in the sample, with 38 being classified as successful and 40 as unsuccessful.

To obtain the other side of the equation, casualty figures are extracted from company morning reports on file at the National Personnel Records Center, St. Louis, Missouri. Administrative considerations prevented on site examination of the sources so it was necessary to enlist the aid of the Personnel Records Center staff. Upon request by mail listing the specific units and dates of actions, this group was kind enough to make available copies of those morning reports which they determined to reflect casualties incurred on the listed dates. It is from those photo copies that the casualty data for this study are extracted.

Casualties are accumulated in categories of killed in action, seriously wounded in action, lightly wounded in action, and missing in action. Within each category the rank distribution is shown as officers, sergeants (all types), corporals, and privates (to include privates first class). The morning reports of the 179th and the 180th Infantry, however, do not differentiate between seriously and lightly wounded. In contrast to the problem of determining mission accomplishment, extraction of casualty data presents few ambiguities. The listed categories are selected because that is the way the casualties are classified in the sources. The other reported categories, sick and injured, are in general not included since any correlation with mission success or failure would be masked by the dependence of these categories on

vicissitudes of terrain and weather. Their functional relationship, if any, with the mission accomplishment variable would probably be indirect and articulated through intermediate variables. The relatively large numbers which would be introduced by their inclusion could mask the direct effects of mission accomplishment, and thereby bias the data against the doctrinal prediction. It is difficult to check for a watch ticking in a boiler factory.

Despite the unambiguity of casualty figures, a few items should be mentioned. In some cases personnel were reported as injured in action but the circumstances of the injury were such that it appears likely to this investigator that its perceptional impact on the group would be tantamount to that of a wound. An example is injury by rocks thrown by an exploding artillery or mortar shell. For the purposes of this investigation, personnel with injuries of this nature are included in the wounded category. Individuals reported as died of wounds are retained in the wounded category for the day of wounding since it was this event that impinged on the perception of their formal and informal groups on the day of action. Likewise, most individuals reported as missing in action were later reclassified. For the purpose of this study, however, they are held as missing and applicable to the company-day for which they were initially reported. What is relevant is the cognition of group members and leaders during execution of the mission, not the results of a later sorting out process.

The original plan for this research envisioned a rough inspection of the data to determine trends. After the data had been

accumulated, however, the sufficiency of the sample size suggested that a more sophisticated treatment was possible. This is fortunate since inspection of the raw data provides no insights. Consequently some rudimentary statistical treatments are applied. Initially using all categories, mean casualties are calculated for each regiment and for the sample as a whole for successful and unsuccessful operations. Considering the doctrinal prediction that mission accomplishment and casualties will be negatively correlated, a null hypothesis of independence between the two variables, mission accomplishment and casualties, is formulated. The casualty data are then formed into a frequency table with a column each for success and non-success and a row for each casualty interval. These observed frequencies provide marginal frequencies from which a hypothetical distribution is calculated based on the independence hypothesis. The "goodness of fit" between the observed and hypothetical frequencies is then tested with the chi-square statistic. The data are deemed sufficient to support this test since expert opinion has stated that a sample size of 50 is the minimum for use of chi-square although 100 is preferred.[1] The sample of 78 actually used is hence appropriate. Likewise, the frequency table to which chi-square is applied should not contain cells of less than about 5.[2] This difficulty is avoided by appropriate grouping of data. For this use in a frequency table, resort to unequal intervals is not detrimental.

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[1]Lecture by Professor Hendrik S. Houthakker, Harvard University, 14 December 1964.

[2]Ibid.

Another test is conducted by formulating the null hypothesis that the sub-samples of successful and unsuccessful company-days were in fact drawn from the same population. To test this hypothesis the difference between sub-sample means is standardized with pooled variance and tested in the "t" distribution. Logically, this null hypothesis is equivalent to the one used for the chi-square test. Heuristically, however, it permits the application of an independent and confirming statistical test.

Having performed the above two statistical tests on a data base using all categories of casualties, a selection of categories is made to explore the possibility that an empirical indication of what constitutes a relevant casualty can be noted. A second data base is constructed by excluding from the total casualties those listed as missing, i.e., including only the killed and wounded. Both the chi-square test for "goodness of fit" with a null hypothetical distribution and a "t" test for the significance of difference between sample means are applied. A third data base is constructed from the killed and seriously wounded categories only. The data from the 179th and the 180th Infantry are not included since these regiments did not differentiate between severe and light wounds in their morning reports. Consequently the sample size is reduced to 54, close to the minimum for which the chi-square test is appropriate. Both tests are applied to this data base but no further attempt is made to stratify the sample.

III

DATA AND ANALYSIS

Of the 78 company-days in the sample, 38 are classified as successful and 40 are classified as unsuccessful. The casualties associated with each company-day of the sample are shown in Appendixes A and B.

When the sample is segregated by regiment and all casualty categories are included, the following mean casualties per company-day result:

Unit	Successful	Unsuccessful
135	11.30	7.33
168	8.65	10.25
179	6.91	6.43
180	13.00	14.25
Total	8.74	9.85

Inspection of these data reveals little. Differences between regiments can be attributed to variation in local combat conditions. Difference within each regiment between casualties for successful and unsuccessful actions might indicate higher casualties for unsuccessful actions. Such would be the doctrinal prediction. The means for three of the five regiments and the aggregate means are consistent. The question is whether this represents sampling variation or a significant difference.

Using the total casualty data, the sample is recast as distributions of successful and unsuccessful actions with adjusted intervals to insure satisfaction of chi-square criteria. The resultant 2 x 6 table

is shown below in Table 1. The fourth column and seventh row of this table show the observed marginal frequencies from which the hypothetical distribution is calculated based on the null hypothesis of independence between the mission success variable and the number of casualties per company-day.

Table 1

Sample Distribution Using
Total Casualties

Number of Casualties	Successful Actions*	Unsuccessful Actions*	Marginal Frequency
0	5 / 5.36	6 / 5.64	11
1 - 3	7 / 6.34	6 / 6.66	13
4 - 6	7 / 6.34	6 / 6.66	13
7 - 9	7 / 5.85	5 / 6.15	12
10 - 14	6 / 6.34	7 / 6.66	13
15 -	6 / 7.79	10 / 8.21	16
TOTAL	38 / 38.02**	40 / 39.98**	78

*Observed frequency/null-hypothetical frequency
**Difference from observed frequency due to rounding

The chi-square statistic calculated from the above table is 1.561 with 5 degrees of freedom.* The probability of obtaining at least this large a statistic from sampling error alone is between .90 and .95. This means that if the null hypothesis is true, there would be a 90% to 95% chance of drawing a sample which deviates as much from the hypothetical distribution as does this one. It is obvious that by any conventional criteria the data come nowhere close to casting doubt on the null hypothesis. In topical context this means that the data cannot be construed as indicating an association between the number of casualties incurred by a unit and its success in accomplishing its mission. If there is no association there can be no causation; the rifle company is not prevented from reaching its objective by the application of enemy combat power to cause casualties.

To further explore the significance of the data, we formulate another null hypothesis with equivalent implications. Considering the successful and unsuccessful company days as separate sub-samples, we ask whether they are drawn from the same population. Standardizing the difference of 1.11 between the sub-sample means with an estimated standard deviation (pooled variance), Student's "t" statistic is

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* $\chi^2 = \frac{(f_o - f_e)^2}{f_e}$; f_o = observed frequency, f_e = hypothetical frequency

calculated to be 1.672 with 76 degrees of freedom.* Based on a two-tailed test, the probability is approximately 0.10 that two samples drawn from the same population would have means differing by at least this amount, purely from sampling error. Hence at either the conventional 3% or 5% level of significance the null hypothesis cannot be rejected. The result of this test confirms that of the chi-square test.

If total casualties cannot be shown to correlate with mission accomplishment, perhaps certain categories of casualties have greater leverage than others on the perception, and hence actions, of commanders and informal group leaders. Reconstituting the data base by excluding the category of missing, the 2 x 5 matrix of Table 2, on the following page, yields a chi-square of 1.493 with 4 degrees of freedom. Within the chi-square distribution this value lies between the probabilities of 0.80 and 0.90. Even with the stratified sample the association between casualties and mission accomplishment predicted by doctrine cannot be established. Applying the "t" test to the new data base results in a statistic of 0.94 with 76 degrees of freedom calculated from a

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* $$t = \frac{\bar{x}_1 - \bar{x}_2}{s\sqrt{(1/n_1) + (1/n_2)}}$$

$$s^2 = \frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1 + n_2 - 2}$$

n_i = sub-sample size; $\bar{x}_i$ = sub-sample mean; s_i^2 = sub-sample estimated

difference of 0.46 between subsample means. The two-tail probability associated with these values is approximately 0.35. This second test confirms the chi-square test. Apparently if one defines casualties as consisting only of killed, missing, and wounded, the empirical reflection of doctrine is still elusive.

TABLE 2

Sample Distribution Using Killed and Wounded Categories

Number of Casualties	Successful Actions*	Unsuccessful Actions*	Marginal Frequency
0 - 1	7 / 7.31	8 / 7.69	15
2 - 5	12 / 10.22	9 / 10.78	21
6 - 9	8 / 7.31	7 / 7.69	15
10 - 13	6 / 6.82	8 / 7.18	14
14 -	5 / 6.33	8 / 6.67	13
Total	38 / 37.99**	40 / 40.01**	78

*Observed frequency/null-hypothetical frequency
**Difference due to rounding

A further stratification of the sample can be accomplished by reconstructing the data base to include only the categories of killed and seriously wounded. As explained in the previous section, this does reduce the effective sample size but not sufficiently to destroy its usefulness. The observed and null-hypothetical distributions are shown in Table 3. Chi-square for their "goodness of fit" is 1.219 with 2 degrees of freedom, establishing a probability between 0.50 and 0.70 of drawing a sample with this much deviation from a population which does in fact meet the null hypothesis of independence between the examined variables. Once again calculating Student's "t" for the difference between sub-sample means, one finds that for this data base "t" is 1.067 with 52 degrees of freedom. The two-tailed probability of observing this amount of sampling error is approximately 0.29. One cannot reject the hypothesis that successful and unsuccessful actions are drawn from the same population of events.

It's apparent that statistical tests conducted on all variants of the data base confirm each other. There has been nothing discernible in the data to warrant any conclusion other than that incurrence of casualties is unrelated to mission accomplishment at the company level. Hence, in the historical contest from which the sample is drawn, and at least for the scale of losses reflected, one must infer that company commanders were not behaving doctrinally by according their missions primacy in their tactical decisions.

Table 3

Sample Distribution Using Killed and Seriously Wounded Categories

Number of Casualties	Successful Actions*	Unsuccessful Actions*	Marginal Frequency
0	6 / 7.71	10 / 8.29	16
1 - 3	12 / 11.55	12 / 12.45	24
4 -	8 / 6.74	6 / 7.26	14
Total	26 / 26.00	28 / 28.00	54

*Observed frequency/null-hypothetical frequency

IV

DISCUSSION

Two characteristics of tactical decision making are its hierarchical nature and the necessity of its implementation by human beings. The former alludes to the formal structure within which doctrine prescribes a rational process of decision and execution. The latter injects the probability of dichotomy between individual and group goals and the consequant possibility of group-irrational results from individual-rational actions. Absence of empirical correlation between mission accomplishment and casualties is a group-irrational result. Assuming individual rationality, this discussion probes the man-organization interface in search of the structural determinants of group irrationality; in common parlance, it attempts to come to grips with the frequently-invoked but seldom-defined "human element".

Taking a cue from the jargon of resource management, one can view tactical decision-making in analytical terms as a problem in constrained optimization at each echelon of command. By specifying the mission as the sine qua non, the commander at any echelon in effect identifies the prime constraint in the decision problem he presents the commander at the next subordinate echelon.[1] In order to meet the

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[1]A simple model would envision optimazation on (maximization or minimization of) some objective function subject to specified constraints, for example, minimizing losses subject to the constraints of available troops and fire support, and mission accomplishment.

constraint of his own mission, he assigns missions to his subordinates such that the totality of their missions constitutes his mission.[1] Obviously his subordinates must, in turn, accord their missions primacy; if anyone should fail, he fails. However, although they are bound to the constraints he imposes, he can himself trade off between them with subsequent modifying instructions, always constrained by the requirement that their totality be sufficient. This after all is reasonable. A subordinate commander is seldom in a position to evaluate externalities, the effects of his unit's performance on other friendly forces. But that which is external to a subordinate is internal to his commander who is in a position to assess the cross-effects of each subordinate's performance and rationally exploit the success of some while reducing the requirements of others.[2] Should a commander have no subordinate experiencing success to exploit, he can not trade off on subordinate missions, and all subordinates must accomplish their missions in order for him to succeed in his. Mission accomplishment at each level insures accomplishment at each next higher level, culminating in the accomplishment of the overall combat mission which is the legitimate raison d'etre of the force.

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[1]Doctrinally this is explicitly applicable from platoon to brigade level. U.S. Department of the Army, FM 7-11, Rifle Company, Infantry, Airborne Infantry, and Mechanized Infantry, with Change 1, 23 Feb 68 (20 Apr 1965), p. 13; idem, FM 7-20, Infantry, Airborne Infantry, and Mechanized Infantry Battalions (28 May 1965), p. 360; idem, "Final manuscript, draft FM 7-11, The Infantry Rifle Company," (Combat Developments Command, June 1967), p. 12.

[2]Note that this commander will, in turn, have externalities which he cannot assess and which therefore lie in the purview of his commander.

While the doctrinal decision structure appears to be rational, whether it can produce optimal results depends on its human operators. Controlled experimentation indicates that subjects can, perhaps intuitively, identify probabilistically optimal alternatives even when they are unable to perform the mathematical computations required to derive rigorously an optimal solution.[1] However, under the same laboratory conditions, subjects did not always adopt an optimal action strategy; i.e., did not select the optimal alternative although it was to their advantage to do so. Is there any reason to believe that an optimal tactical decision, even though identifiable, will be implemented by a fallible human in the combat environment? Surprisingly, professional periodical literature has little to say on this subject. Most articles touching on tactical decisions concentrate on the procedure by which an optimal solution may be identified, or examine execution as a sequence of subsequent modifying decisions, still within the rational framework of the formal structure. The non-institutional characteristics of the decision maker are not addressed.

The dichotomy between institutional rationality and individual viccissitude is, however, recognized in a World War II, Marine Corps handbook for junior leaders based on the combat experiences of Guadalcanal.

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[1]U.S. Naval Training Devices Center, Training Aspects of Decision Making, by Warren H. Teichner and Jerome L. Myers, University of Massachusetts (Port Washington, New York: March 1961), pp. 40, 47.

> Positions are seldom lost because they have been destroyed, but almost invariably because the leader has decided in his own mind that the position cannot be held.[1]

What takes shape at this point in the discussion is the awareness that combat is not the reflection of a series of static decisions. Tactical decisions, critical points in a matrix of execution, are made in a dynamic context. Hence even if an initial decision represents a group-optimal solution, the inevitable subsequent decisions during execution may not be stable, that is may not adhere to a dynamic optimum. Unfortunately there appears to have been little research conducted on decision stability. One review of research on leadership, command, and team function, specifically addresses leader and group interaction in a military context, and reports no relevant literature from the late 1950's through 1964.[2] Another review of literature relevant to the trainable aspects of decision-making comments specifically that consistency and stability of decisions have received little attention from researchers.[3]

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[1]Reprint in "Battle Doctrine for Front Line Leaders," Marine Corps Gazette, XLVI (November 1962), p. 17.

[2]Meredith P. Crawford, A Review of Recent Research and Development on Military Leadership, Command, and Team Function, research memorandum (Human Resources Research Office, George Washington University, 7 September 1964).

[3]U.S. Naval Training Devices Center, Research on Generalized Skills Related to Tactical Decision Making, by Raymond C. Sidorsky and Joan F. Houseman, General Dynamics Corporation (Port Washington, New York: December 1966), p. 58.

Although there has been little formal research specifically addressed to the stability of the military decision system, some work has indicated that there exist underlying psychological tendencies which militate in favor of doctrinal behavior. One group of investigators, on the basis of experimental evidence, suggests that once a person has made a decision, he tends to become unreceptive to subsequent information at variance with the original decision. As a consequence, when successive decisions are required, decision makers will show a lag in adjusting to changes.[1] James Deese generalizes from scholarly opinion that the adaptiveness of human behavior decreases under stress -- that confusion or the sense of being "rattled" is a common symptom of combat fear.[2] To the extent that his generalization is accurate, one might expect low echelon, tactical decision-makers to be reluctant to take affirmative action to change from an established course of action. Such an effect would contribute to the stability of the decision system.

On the other hand, considerable evidence can be adduced to support the notion that tactical decision-makers can be expected to deviate from organizationally optimal solutions. Even if the commander of a

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[1]Richard Snyder, Carl H. Rittenhouse, and George E. Deane, An Investigation of Flexibility in Tactical Decision Making, Staff Memorandum (Human Resources Research Office, George Washington University, December 1957), p. 3.

[2]James Deese, "Skilled Behavior Under Conditions of Stress," Human Factors in Military Operations: Some Applications of the Social Sciences to Operations Research, ed. Richard H. Williams, Technical Memorandum ORO-T-259 (Operations Research Office, The Johns Hopkins University, 7 January 1954), p. 176.

small unit can view a mission and situation objectively, as a rational person he may recognize that what is best for the organization (mission accomplishment) may not be best for him. Hence even if he were a coldly objective optimizer, the chances are that he would optimize on his own utility function, not on a benefit function ascribable to the organization. To the extent that this situation exists, one can expect a dichotomy.[1]

However, the presumption that the commander is an objective optimizer is questionable. The tactical decision process is highly complex, possessing numerous points at which subjectivity can impinge. For example, even in a persuasively simple schema of the decision process, the commander receives situation inputs, gathers these in short-term memory, and makes use of his ability to estimate and use probabilities to arrive at a status decision. He then applies to that status his long term memory and his ability to weigh risks and value in order to produce an action decision.[2] The complex and subjective nature of the tactical decision is readily apparent.

The stress of the combat environment also militates against objective optimization. In this context, one authority defines stress

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[1]For a brilliant demonstration of the divergence of group and individual interests and the potential irrationality of individual participation in group activities, see Mancur Olson, Jr., The Logic of Collective Action: Public Goods and the Theory of Groups, Harvard Economic Series, Vol. CXXIV (Cambridge, Massachusetts: Harvard University Press, 1965).

[2]U.S., Training Aspects, pp. 4-5.

as, "... a condition brought about by some threat to the well-being or equilibrium of the unit in question ...."[1] Another authority describes stress in terms of the shock occasioned by the "nearly occurrence of a casualty."[2] Despite protracted periods of boredom and preoccupation with routine activities, most tactical decision and execution, at the small unit level, is accomplished in a high-stress environment. Under conditions of stress there is initially a tendency to increase speed of activity while accuracy decreases. As stress continues, speed also decreases. If the task is difficult, speed decreases from the beginning. In general, research indicates that stress usually results in a deterioration in skilled behavior.[3] Obviously objective optimization is skilled behavior of a high order and one can expect it to decline under continued stress.

Fatigue, whether occasioned by expenditure of effort or subjection to repeated periods of stress, can be expected to cause a decrease in objecivity. Repeated fatiguing without the opportunity for intervening recuperation can retard the recovery rate and engender a condition known as "cululative fatigue." Such fatigue can cause a commander to accept lower standards of performance while he remains honestly convinced that tasks are being performed as well as ever! In more severe

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[1]Deese, op. cit., p. 171.

[2]U.S. Department of the Army, Combat Developments Command, The Value of Life in Combat Risk Situations, by T.J. Wang, et al., The Institute for Creative Study, The American University (30 September 1968), pp. 22-3.

[3]Deese, op. cit., p. 175.

cases, if the recovery rate is slower than the rate of fatiguing by successive periods of stress and exertion, exhaustion may occur and military effectiveness may be destroyed. In extreme cases, the condition of "chronic fatigue" occurs, a symptom of which is obsession by abnormal fears.[1] Fatigue, the constant companion of ground combat, is not conducive to objective optimization.

On a more theoretical level, experimentation indicates that the quality of decisions can be adversely affected when the subject believes himself to be at a disadvantage.[2] These experiments were conducted in an unstressed environment and involved the engagement of targets in anti-submarine and anti-air warfare. The results showed a bimodal distribution of selected firing times indicating vacillatory behavior. It is questionable whether these laboratory results may be reasonably applied directly to the battlefield, but the fact remains that there is strong evidence of underlying psychological proclivity toward non-optimal behavior when a decision maker is faced with a relative disadvantage in a contest situation.

Also, at the theoretical-psychological level, there is evidence that destabilizing forces may be inherent in small military units.

> Evidence from psychiatric sources strongly suggests that the unconscious forces of identification, which stem back to early experiences in the family, are

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[1]Thomas G. Andrews, "Fatigue," Human Factors in Military Operations, pp. 257-8.

[2]U.S., Research on Generalized Skills, pp. 19-21.

> important in the motivation of behavior in such groups. These forces are ambivalent, in the sense that they contain tendencies toward fear and hate as well as toward acceptance and love. The military group develops particularly strong emotional ties... the ambivalence of these same ties creates the danger of regression or some degree of return to more infantile patterns of thinking, feeling, and behavior, and consequently, a greater capacity within the group for capricious, impulsive, rebellious, persecutory, aggressive, or destructive behavior which may be quite explosive in its unpredictable occurrence.[1]

Although it is not known to what extent these behaviorial characteristics are operative at different levels, it is likely that they are most relevant at the lowest level at which the primary group can dominate performance -- probably the squad. It is also likely that the platoon's combat performance is only slightly less affected since it is, in general, a primal maneuver unit whose members operate in visual and auditory contact with each other. Furthermore, in practice, the platoon is the smallest unit given a separate terrain objective in the attack. At company level the influences of primary groups are probably articulated only through their effect on the platoons. Platoons maintain contact primarily by radio and operate only within supporting distance of each other (in contrast to being in physical contact), so members of different platoons are normally not in contact with each other during combat missions. The impact of primary group dynamics is transmitted to the company

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[1] F.R. Hanson, "Psychological Factors in Adaptation to Combat," Appendix 86, Report of the Working Group on Human Behavior Under Conditions of Military Service, Joint project of the Research and Development Board and the Personnel Policy Board in the Office of the Secretary of Defense, June 1951, cited by Richard H. Williams, "The Military Group," Human Factors in Military Operations, p. 351.

commander through the formal hierarchy (the platoon leaders) and is hence probably attenuated.

The casualties sustained by a military force are a major cost category in the tactical calculus. If casualties represent a cost, their valuation is germane to any decision system that aspires to rationality. There exists, however, a distinct cultural bias against explicitly assigning a value to human life. This does not mean that we do not act as if life has a finite value. Despite the often-heard assertion that life is so valuable as to be priceless, we actually behave in ways such that a finite valuation (not necessarily monetary) can be imputed from our actions. In other words, a priori valuations of human life are socially and psychologically unacceptable, while a posteriori valuations are not. Equally obvious, however, a priori valuation is essential if anything approximating objective optimization is to be achieved.[1]

The central position of life in our cultural value system implies that casualties are a major explanatory variable in the commander's personal utility function at the same time that they constitute a major cost variable in the benefit function on which the organization is attempting to optimize. Although the institution will presumably employ incentives and sanctions to link the organizational benefit function to the commander's utility function, the simultaneous articulation of casualties in both functions vastly complicates the already tenuous

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[1]U.S., The Value of Life, p. 25.

nexus which is expected to insure that a solution which maximizes the commander's personal utility also optimizes on the organizational benefit function.

In view of the foregoing discussion, it is evident that one does, a priori, expect subordinate commander behavior to deviate from that which would produce organizationally-optimal solutions. Mission primacy can then be viewed as a reasonably-successful, pragmatic adaption of military institutions to human proclivities. There the matter might rest if it did not exercise such extreme leverage on operational efficiency. This leverage attaches because for combat purposes any army, no matter how large, is essentially composed of small units. While this may sound like a truism, it might be worth while to reflect that the point of battalion is a squad, as it is of a division. In fact that squad is also the point of the field army and if that squad stops, so does the field army. When one says that a corps attacks, substitute therefore the image of X number of rifle companies attacking with normal support and the perceptional effect is perhaps a little more realistic. The TASCOM may throughput, the FASCOM may support, and high-powered staffs may maneuver major forces, but when that force reaches the line of contact it consists of small units, each critically subject to primary group dynamics.

If professional attention focuses on the refinement of tactical decisions to objective optima, we run the risk of stamping on the ants while the elephants run wild. Conducting exquisite analyses of forces, terrain, and other tangible (and hence easily mensurable) variables may

be dealing with perhaps 30% of the relevant determinants of combat success. The most rational decision, based primarily on a subset of variables of lesser importance, can hardly be expected to even grossly approximate an optimum. The imagery evoked by our professional terminology makes it obvious that we have focused on such a lesser subset by attempting to de-humanize (make objective) the essentially very human and social process of combat. If one considers "spearhead," "momentum," and "penetration," one visualizes manipulable and responsive instruments which can be "thrust" ahead, "inserted" with surgical precision, or controlled to slice through to the "decisive objective." But groups of humans are neither lances nor swords, and reality might be better reflected and rationality be better served if we espoused a more accurate imagery as an aid to recognizing combat units for what they are. If we realize that a "spearhead" is more like a well-cooked asparagus being pushed through a pile of partially mashed potatoes we might have a more valid analogy. One need only to flick one's memory lightly over history to agree that the dangers of tactical decisions disassociated from reality -- of not "telling it like it is" -- are grave.

Recognizing the realities of group dynamics in combat is also germane to the continuing process of creating and preparing units for entry into combat. If the more dramatic aspects of force structure and hardware continue to capture resources and command attention while the traditional lip-service areas of esprit, leadership, human/organization interface, and incentive stagnate, the ant-elephant syndrome will be

perpetuated. An indication, meager in the overall scheme of things yet still encouraging, that there is at least intuitive recognition of the relative relevance of human dynamics, is the opinion of General Howze that in the shaping of our combat units we should strive for an improvement in quality, not quantity, of the foxhole strength. Arguing that increased combat and service support is useless unless the modern rifleman is motivated and skilled, he proposes a number of measures to accord special status to the combat unit member.[1] The findings of the present study support this type of approach since they indicate that doctrinal decision structure and measures of combat power lose relevance at the small unit level, that even though the formal organization may say, "attack," the attack stops not so much when tangible combat power is changed as when some unknown person or persons in the various informal groupings of humans on the line of contact changes his mind.

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[1]General Hamilton H. Howze, "Thirty-five Years," Army, XVI (April 1966), p. 41.

V

SUMMARY AND CONCLUSIONS

Our current formulations of tactical concept, doctrine, and organization presuppose a decision structure which subsumes rational optimization and mission primacy. This inquiry has shown that the mission primacy presumption in the paradigm is simplistic and inoperative at the contact level and that little is known of the individual and group dynamics involved. The paradox is emphasized when one considers that supposedly the only purpose of the massive superstructure and support apparatus of military forces is to facilitate the success of the rifle company, and that we yet have (doctrinally) an inaccurate notion of how that unit behaves at the crucial juncture.

All this is not say that Army officers do not know how a rifle company behaves in contact. Obviously many do. They recognize the departure of reality from "theory" and make pragmatic adaptations. In other words, they learn from their own experience. It would, of course, be preferable to learn from the experience of others. This efficiency is precisely what doctrine is supposed to facilitate and can facilitate if it takes cognizance of the relevant variables in the problem. Further, it is not here implied that the concept of mission primacy is inappropriate. Given the outlines of the direction in which human and group dynamics tend to lead, mission primacy is probably an extremely useful device. What is suggested is that the consequences for the decision system of human and group dynamics should be explored.

Mission primacy is a structural member of the decision system along which this study has taken an exploratory corss-section.

Because of pragmatic adaptation, decision makers at the rifle company level suffer only because doctrine is not as helpful to them as it could be. Each higher echelon, however, is handicapped successively more by inability to adapt with as great efficacy, by lower density of officers who appreciate the dichotomy between reality and doctrine, and by a bureaucratic environment which makes doctrinal parameters attractive to staff members. At the remote levels of administrative and policy decisions which have indirect or delayed effects on operations (e.g., formulation of TO&E's, assignment policies, etc.) the doctrinal view of combat may well be accepted in toto.

The results of this study suggest some areas for further investigation. Table 4 summarizes the probabilities obtained. Keeping in mind that both statistics were used to test null hypotheses the refutation of which would be necessary to sustain doctrinal implications, and that each probability has a meaning circumscribed by the logic of statistical theory, a suggestive pattern is discernible. Chi-square probabilities show a progression whereas the "t" probabilities do not. We can conjecture that the low probabilities of "t" obtained from the unstratified data base result from the inclusion of the MIA category which contains a few extreme values. These could have thrown the sample as a whole out to the edge of the sampling distribution. These extreme values are not usual, and their occurrence in this particular sample logically makes the sample not as usual as most, i.e., results

in the low probabilities shown. The same data, however, provided the highest chi-square probabilities. This is probably a result of the grouping of data which suppresses the leverage of extreme values, all of which fall into the last, open-ended group.

The progressive pattern of the chi-square probabilities is, however, suggestive. The more finely the data are stratified the lower is the probability that its deviation from the null-hypothetical is purely random. Perhaps if a further refinement were possible a systematic deviation could be found. If one were to identify more restrictive categories of casualties (for example, those which occur within direct sensory range of the commander), a category might be found which correlates either positively or negatively with performance. Examination of such a variable should provide insights into the man/system interface.

Table 4

Probabilities Associated with Calculated Statistics

Data Used	Probability Associated with Chi-square	Probability Associated with Student's "t"
All	.90 - .95	.10
KIA & WIA	.80 - .90	.35
KIA & SWIA	.50 - .70	.29

Initially, however, an inquiry of the same scope as this paper could be made using data drawn from other theaters of World War II, and from the Korean conflict. Analysis of data from Vietnam would probably require different treatment because of the absence of terrain objectives in the doctrinal sense. If an historical instance can be found in which an organization participated in a sufficient number of similar actions to provide a significant sample, inter-company comparisons could be made. Any company which showed the negative correlation implied by doctrine could be examined in exhaustive detail for causal factors.

Further questions not addressed by this study are the effects of scale and timing. Recalling doctrinal nuclear targeting parameters (35% casualties provides unit destruction; 10% provides neutralization), one asks whether the findings of this study would hold for higher casualties, for casualties incurred in shorter time spans, or for data which introduce the effects of cumulative casualties.

A more general comment is appropriate in closing. The vogue today is on modernization. It is assumed that an army must continually modernize or fall by the wayside. In international competition one must run merely not to be left behind. Accordingly we strain to develop and field bigger and better weapons systems, command and control systems, and service support systems, ad infinitum. Lest we be charged with hardware fixation, we also develop new software -- staff papers expound on new organizations, concepts, and doctrine. There is even some integration of all the above which reflects cognizance of the

concept of a combat system. But the whole edifice depends for its justification and its vindication on the advance of a rifleman, about whom the system knows little more today than it did 25 years ago. It is suggested that this is where quantum jumps in combat effectiveness can be engineered.

APPENDIXES

APPENDIX A (CASUALTIES SUSTAINED IN 38 COMPANY-DAYS CLASSIFIED AS SUCCESSFUL ACTIONS)

UNIT	DATE	KIA[1]	SWIA[2]	LWIA[3]	MIA[4]	KIA & SWIA	TOTAL LESS MIA	TOTAL
135th Inf								
E	7 Jan 44	0/0/0/2*	2/0/0/1	0/3/1/4		5	13	13
F	7 Jan 44	0/2/0/1	0/0/1/5	2/2/1/10	0/0/0/1	9	24	25
G	7 Jan 44	0/0/0/3	0/0/1/2	1/2/0/10		6	19	19
I	5 Jan 44		0/0/1/0	0/0/1/0		1	2	2
I	6 Jan 44	0/1/0/0	0/0/0/2	0/0/0/3		3	6	6
I	8 Jan 44	0/0/0/1		0/2/0/2	0/0/0/1	1	5	6
K	6 Jan 44		0/0/1/0	0/1/1/5		1	8	8
168th Inf								
A	2 Dec 43		0/0/0/3	0/1/0/3	0/0/0/2	4	8	10
A	7 Jan 44		0/0/0/2	0/0/1/2	0/0/0/1	2	5	6
A	10 Jan 44		0/0/0/1	0/0/0/2	0/0/0/1	1	3	4
B	2 Dec 43		0/0/0/2	2/0/0/3		2	7	7
B	7 Jan 44		0/0/0/3	0/1/2/4	0/0/1/2	3	10	13
C	2 Dec 43		0/1/0/5	0/2/0/2	1/0/0/2	6	10	13
C	5 Jan 44					0	0	0
C	7 Jan 44	0/0/0/2	0/0/0/2	0/0/1/7	0/1/0/3	4	12	16

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[1]Killed in Action
[2]Seriously Wounded in Action
[3]Lightly Wounded in Action
[4]Missing in Action
*Officers/Sergeants/Corporals/Privates

UNIT	DATE	KIA	SWIA	LWIA	MIA	KIA & SWIA	TOTAL LESS MIA	TOTAL
C	10 Jan 44	0/0/0/1	1/0/0/1	0/1/1/0		3	5	5
E	7 Jan 44	0/0/0/4	1/1/0/5	0/1/2/19	1/2/0/17	11	33	53
G	10 Jan 44			0/0/0/1		0	1	1
I	30 Nov 43					0	0	0
I	11 Jan 44					0	0	0
K	8 Dec 43			0/0/1/0	2/0/0/5	0	1	8
K	11 Jan 44					0	0	0
L	2 Dec 43		0/1/0/3	0/0/0/1	0/0/1/3	4	5	9
L	5 Jan 43		0/0/0/2			2	2	2
157th Inf								
B	15 Dec 43	0/1/0/2		3/0/0/3		3	9	9
K	15 Dec 43	0/0/1/2		0/0/0/5		3	8	8
179th Inf			MIA[5]					
A	15 Dec 43		1/0/0/1		1/2/0/3		2	8
B	15 Dec 43	0/0/0/3					3	3
E	7 Dec 43						0	0
F	6 Dec 43	0/1/1/3	0/0/0/9				14	14
F	7 Dec 43	0/0/0/2	0/0/0/1				3	3
I	6 Dec 43		0/1/0/10		0/0/0/1		11	12
I	7 Dec 43	0/1/0/0	0/1/1/4				7	7
I	15 Dec 43	0/1/1/0	0/0/0/3				5	5

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[5] Wounded in Act on

UNIT	DATE	KIA	WIA	MIA	KIA & SWIA	TOTAL LESS MIA	TOTAL
K	6 Dec 43		0/1/1/1			3	3
K	16 Dec 43	0/1/0/1	3/1/1/8			15	15
L	15 Dec 43	0/0/0/2	0/0/0/4			6	6
180th Inf							
L	30 Dec 43	0/1/0/5	1/1/1/4		___	13	13
	TOTALS				74	278	332
	MEANS				2.84	7.32	8.74

APPENDIX B (CASUALTIES SUSTAINED IN 40 COMPANY-DAYS CLASSIFIED AS UNSUCCESSFUL ACTIONS)

UNIT	DATE	KIA[1]	SWIA	LWIA	MIA	KIA & SWIA	TOTAL LESS MIA	TOTAL
135th Inf								
B	5 Jan 44		0/1/0/0	0/0/1/3		1	5	5
C	5 Jan 44	0/0/1/1	0/1/0/2	0/0/1/4		5	10	10
K	5 Jan 44	0/1/0/2		0/0/2/2		3	7	7
160th Inf								
A	29 Nov 43	0/0/0/1	0/1/1/3	2/1/1/7	1/0/1/10	6	17	29
A	30 Nov 43		0/0/0/3	2/1/1/10	0/0/1/6	3	17	24
A	6 Jan 44		1/0/0/1	0/0/0/2	0/0/0/2	2	4	6
B	29 Nov 43		0/3/0/1	1/0/1/7	0/0/0/1	4	13	14
B	30 Nov 43		0/0/0/1	0/0/0/2		1	3	3
B	6 Jan 44		0/0/1/0	1/0/1/4	0/0/0/2	1	7	9
C	29 Nov 43					0	0	0
C	30 Nov 43			1/0/0/5		0	6	6
C	4 Jan 44					0	0	0
E	2 Dec 43		1/0/0/9	0/3/2/16	2/0/0/1	10	31	34
F	7 Jan 44		0/0/0/2			2	2	2
G	2 Dec 44	0/0/0/1			0/0/0/1	1	1	2
I	4 Jan 44					0	0	0

[1] Same symbology as in Appendix A

UNIT	DATE	KIA	SWOA	LWIA	MIA	KIA & SWIA	TOTAL LESS MIA	TOTAL
I	6 Jan 44			0/0/0/2		0	2	2
K	3 Dec 43		1/0/0/1	1/2/0/4		2	9	9
K	4 Jan 44					0	0	0
K	6 Jan 44		1/0/0/1	2/2/2/8	0/1/0/1	2	16	18
L	3 Dec 43		0/0/0/4	1/1/2/11	0/0/1/5	4	19	25
L	4 Jan 43	0/0/0/1	0/1/0/1	0/0/0/1		3	4	4
L	6 Jan 43			0/0/0/16		0	16	16
157th Inf								
C	15 Dec 43	0/1/0/5	0/0/0/1	0/0/0/3	0/1/1/14	7	10	26
E	15 Dec 43			0/1/0/0		0	1	1
E	16 Dec 43			0/0/0/1		0	1	1
G	16 Dec 43			1/1/1/3	0/0/1/9	0	6	16
L	9 Dec 43		1/0/0/0	2/0/1/5		1	9	9
179th Inf			WIA					
A	3 Dec 43						0	0
B	3 Dec 43	0/0/0/2			0/1/0/2		2	5
E	5 Dec 43		1/2/1/8				12	12
F	5 Dec 43		1/2/1/10				14	14
G	3 Dec 43						0	0
G	4 Dec 43	0/0/0/2	0/1/2/5				10	10
L	16 Dec 43	0/0/1/3					4	4
180th Inf								
A	31 Dec 43		0/4/1/5				10	10

UNIT	DATE	KIA	WIA	MIA	KIA & SWIA	TOTAL LESS MIA	TOTAL
B	30 Dec 43	0/0/0/1	1/2/1/5			10	10
B	31 Dec 43		1/2/2/2			7	7
C	30 Dec 43		0/4/0/10	0/0/0/3		14	17
K	30 Dec 43	1/0/0/0	1/0/0/10	0/3/1/11	___	12	27
	TOTALS				58	311	394
	MEANS				2.07	7.78	9.85

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*These and subsequently listed Morning Reports are on file at the National Personnel Records Center, General Services Administration, St. Louis, Missouri.

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