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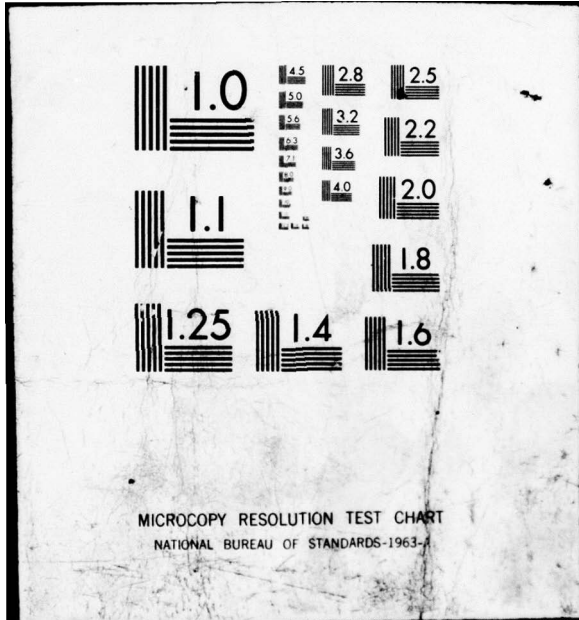
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Personnel Turbulence and Time Utilization in an Infantry Division

Hilton M. Bialek

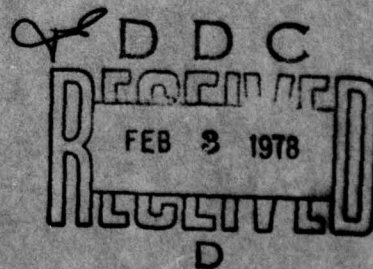
Presentation at the
19th Conference of the
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San Antonio, Texas October 1977

HUMAN RESOURCES RESEARCH ORGANIZATION
300 North Washington Street • Alexandria, Virginia 22314

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Personnel Turbulence Personnel Assignment Practices Time Utilization Training Scheduling Absenteeism Daily Activities		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Purpose of this study was to obtain a clearer picture of turbulence and time utilization patterns to aid in the design of an individual extension training system (IETS). Through analyses of company manning reports and extensive direct observations of training, levels and patterns of turbulence and time utilization were obtained. The amount of movement both in and out of a company and within a company was (continued)		

20. Continued....

found to be considerable. Also, the amount of time spent during a typical training day in actual training was small. Suggestions for further exploration into causes and possible amelioration are reported.



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PREFATORY NOTE

This paper is based on a presentation given at the 19th Conference of the Military Testing Association, October 17-21, 1977, at San Antonio, Texas. The conference was hosted by the Air Force Human Resources Laboratory and the Air Force Occupational Measurement Center.

Dr. Hilton M. Bialek, the paper's author, is a Senior Staff Scientist at the Carmel Research Office in HumRRO's Western Division. The information presented is a product of research accomplished in HumRRO Project TRIPLE-O-SEVEN, "A Performance-Based Training and Evaluation System for the Combat Arms."

PERSONNEL TURBULENCE AND TIME UTILIZATION IN AN INFANTRY DIVISION¹

Hilton M. Bialek

Introduction

In its attempts to comply with recent DOD policy "that learning objectives which can be accomplished more economically in the operational unit, and without unacceptable degradation of unit readiness, should be provided as OJT rather than as individual training," the Army has instituted a number of R&D efforts designed to decentralize training. A number of these efforts, and one I have been involved in for the past two years, utilizes the squad leader as a primary instructor. The idea, in addition to decentralization, is to enhance the leadership role of the squad leader by making him primarily responsible for the individual skill proficiency of the men under his command.

For an instructional system like this to work, some sort of personnel stability would seem necessary. A squad leader needs sufficient time to learn the strengths and weaknesses of his men, time to create a group identity and cohesion, and time, of course, to provide instruction. How stable then, are TO/E companies and squads? That is one question we attempted to answer. The second question had to do with the utilization of time: "How much time does a squad leader typically have to actually devote to training?" These two questions guided the design and conduct of the study I will now describe to you.

Approach

To investigate these questions, two main sources of information were used.

- The manning reports submitted monthly by each company to the battalion headquarters.
- A large sample of 15-minute-by-15-minute first-hand observational records of the daily activities of individual squad members.

Manning reports described the flow of personnel in and out of the four companies in the sample, as well as the duty positions and MOSs of each man in the company. The second data source—observations—provided information concerning what men in a sample of squads selected from the four companies were doing on a quarter hour by quarter hour basis and how long they were doing it.

The operational unit in this instance was a CONUS infantry division. Observations and sub-unit sampling focused on 11B and 11C MOSs because these MOSs had been selected as the initial content of the individual skill training system under development.

¹ Paper presented at Military Testing Association Conference, San Antonio, October 1977.

The Sample

The sample selected reflected our interest in studying turbulence on both the individual and unit level, for MOSs 11B and 11C. The sample of companies and squads within those companies was chosen to represent:

Slide 1

1. Brigades: Two companies each from the division's two maneuver brigades.
2. Battalions: Four of the six maneuver battalions were represented in the sample.
3. Kinds of companies that contain most of the 11Bs and 11Cs: Rifle and combat support companies were studied.
4. The existing ratio of 3 rifle companies to 1 combat support company: 3 of the companies in the sample were rifle companies, the fourth was a combat support company.
5. Kinds of platoons: 10 different platoons within the 4 companies were studied, one squad from each platoon.

Results

I will report first the analysis of the data available from the manning reports and the accompanying information obtained by checking battalion records. Later I will focus on the data obtained from the daily observation phase of the study. Movements in and out of companies and squads is shown in Slide 2 on the next page.

Slide 2 shows that after 4 months:

24% were no longer in the company.

24% had moved to another squad within the company.

In terms of stability, at the squad level, we see that:

52% were in the same squad.

36% were in the same duty position in the same squad.

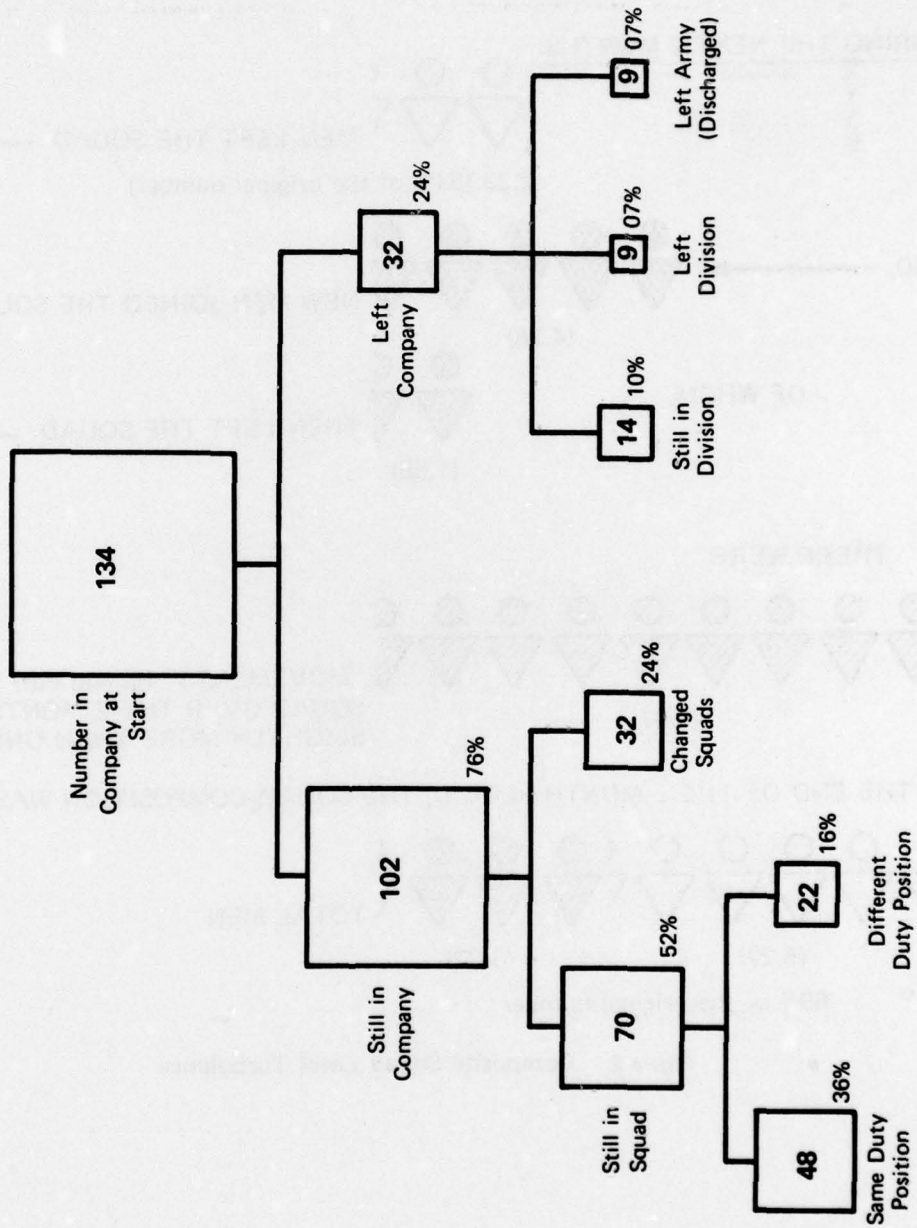
16% were in different duty positions in the same squad.

As backup data for this manning report information, the observers we employed to measure time utilization were required to record the actual names of squad members each time they spent the day with the squad. Averaging the results from observing 10 squads gave the results shown in Figure 3. The results show that 31% of the original squad members left the squad over a two month period. (See Figure 2, page 4.) Assuming a linear relationship, there is about a 15% turnover per month. Comparing this to Figure 2—48% left the squad over a four month period giving a monthly rate of 12% shows the estimate to be quite close. Also shown are the number of "movements"—the arrival or departure of a member—experienced for the composite (average of the ten squads observed) squad. The total number, 8.67 is perhaps a more sensitive turbulence indicator than simple turnover (the proportion of positions initially observed that are held by someone else at the end of the observation period) because it includes individuals who arrive and depart between the initial and final observation points.

We will reserve comment on these findings until after we have presented our time utilization results.

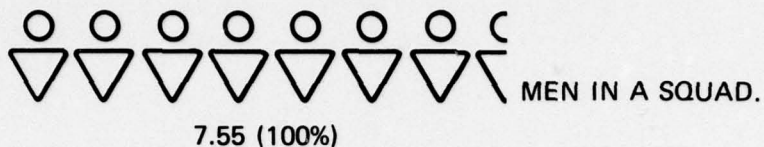
Slide 2

Disposition of Men in a Composite Rifle Company After Four Months

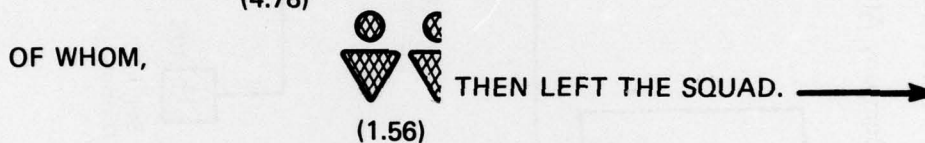
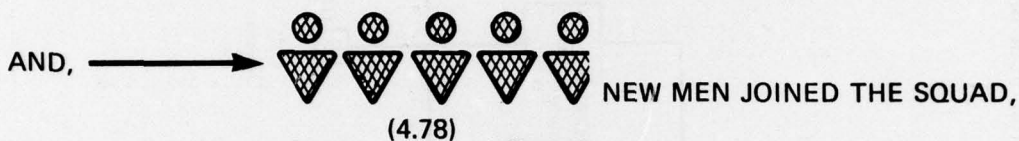
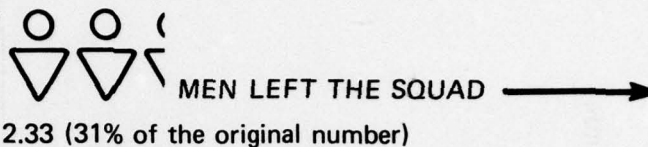


Slide 3

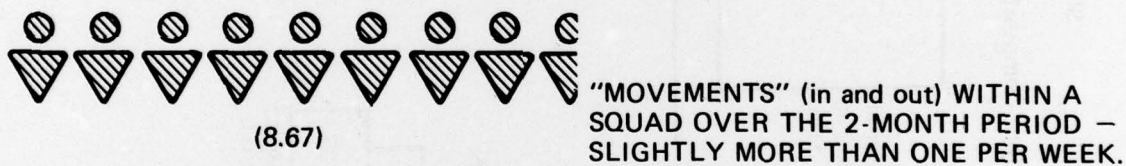
AT THE START OF A TWO MONTH OBSERVATION PERIOD, THERE WERE



DURING THE NEXT 2 MONTHS:



OR, THERE WERE



AT THE END OF THE 2-MONTH PERIOD, THE SQUAD COMPOSITION WAS

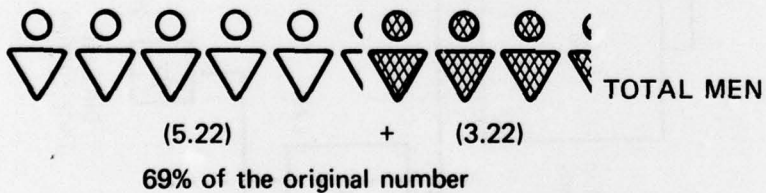


Figure 2. Composite Squad Level Turbulence

The second part of the study—measuring daily turbulence and time utilization—involved a direct observation technique. Four volunteers from an engineering battalion were trained as observers. Each observer was assigned to one of the four companies comprising the sample. Each day the observer would meet with the company at morning

Slide 4

Table 1. Major Activity Observation Categories

ACTIVITY CATEGORY	EXAMPLES
<p><u>Unit Training (U)</u> Focuses on training individuals to perform as members of a team or unit.</p>	<p>ARTEP Field Exercise: squad ambush. Indoor class on assembly area procedures. Field Exercise: company defense.</p>
<p><u>Individual Training (MOS Skills) (I)</u> Focuses on the skills (tasks which the individual needs to do his job).</p>	<p>Weapons qualification. Indoor class on camouflage techniques. Outdoor class on mine detector training. EIB training. Mortar Crew drill. Class on first aid.</p>
<p><u>Individual Training (PT) (Ipt)</u> Physical readiness training.</p>	<p>PT Unit team athletics.</p>
<p><u>Teaching Activities (T)</u> Teaching or assisting in teaching for unit or individual training.</p>	<p>Teaching a class on land navigation. Demonstrating how to set up a minefield.</p>
<p><u>Support/Garrison (S)</u> Activities which support training; garrison duties.</p>	<p>Weapons issue and turn-in. Maintenance of weapons, equipment, vehicles. Maintenance of billets/buildings. Work details. Parades Garrison guard mount. CQ</p>
<p><u>Personal Care (P)</u> Authorized activities only.</p>	<p>Breaks Taking showers. Changing clothes.</p>

formation and spend the remainder of the duty day with a designated squad,¹ following them wherever they went. The observer carried a clip board with a copy of the observation data sheet attached, and every 15 minutes recorded the activity of each member of the squad on the basis of two decisions: (1) which of six major activity areas is the soldier involved in? and (2) within that activity area, which of four modes is he in? The six activity areas are described in Table 1, (on the preceding page) along with examples. Within each of these activity areas, the observed person was categorized into one of four modes: receiving information, performing tasks, waiting to receive instruction or enroute to or from activity.

During the training of observers, reliability checks were conducted by having two observers observing the same squad for a full day. For over 90% of those time-units observed and recorded, both observers recorded the same categories. The differences that did occur were mostly in the "mode" dimension, whereas the major activity areas seemed clearly discriminable.

Using this data collection procedure, the activities of a total of 166 observer days or nearly 40,000 15-minute time units were recorded. I will now talk about how these 40,000 time units were distributed.

Slide 5

Table 2. Distribution of Total Time Units by Major Activity Areas

Activity Areas	Training Days		Non-Training Days		All Days	
	Number of Time Units	Percent of Training Day Total	Number of Time Units	Percent of Non-Training Day Total	Number of Time Units	Percent of All Days Total
Unit Training	2901	14%	850	04%	3751	09%
Individual Training	3078	15%	782	04%	3860	10%
Individual Training (PT)	1722	08%	1982	10%	3704	10%
Support/Garrison	6297	31%	10621	56%	16918	43%
Personal Care	2832	14%	1971	10%	4803	12%
Teaching Activities	139	01%	141	01%	280	01%
Absences (Turbulence)	3657	18%	2778	15%	6435	16%
Totals	20,626		19,125		39,751	
NOTES:						
1. Average number of men per Squad: Training = 8.03						
Non-Training = 8.46						
All Days = 8.25						
2. Time units are recorded from the official start of the duty day to the official close. Lunch time is NOT included as a recorded time unit.						

¹ On those occasions when the unit was engaged in night training exercises, the observer would spend the night observing the squad.

The results are organized to show how, for a typical or average training day, non-training day, and overall average day (the two types of days combined) time and people are utilized. Slide 5 shows the total number of time units observed, broken down by number and percentage. Each time unit represents one man for a period of 15 minutes. For example 2,901 time units were recorded as "unit training" during the training days. This number is 14% of the 20,626 time units observed during training days. Note that a category labeled "absence" (turbulence) is included in the total number of time units. This is the number of time units *lost* because individuals who were officially available for duty were not in fact present. These absences could range from one time unit during the day to the entire day. The numbers shown in Table 2 indicate that 18% of the time units available during training days (15% during non-training days and 16% overall) were unused because of absences.

Perhaps a more direct way of portraying the results is to show what the typical infantryman spends his time doing in a typical duty day, and how much time he spends doing it.

Slide 6

Major Activity	Time Spent	Percent of Total Duty Day
Unit Training	1 hr, 02 minutes	14%
Individual Training	1 hr, 05 minutes	15%
Physical Training (PT)	37 minutes	08%
Training Others	03 minutes	(01%) →
Personal Care	1 hr	14%
Support/Garrison Activities	2 hrs, 14 minutes	31%
Absent (Turbulence)	1 hr, 18 minutes	18%
Total Day = 7 hrs, 19 minutes		

Figure 3. Distribution of Time Devoted to Major Activities During an Average TRAINING Duty Day

The next slide shows this for a training day; I'll not load you down with too much by showing the non-training and combined day but obviously they show less training time.

Turning to the question of what soldiers do when they are absent from the squad (on the average of one hour, 23 minutes per day) a breakdown of their activities appears in the next slide.

Slide 7

Table 3. Breakdown of Activities Engaged in While Absent From Duty

Activity	Percent of Total Time Absent		
	Training Day	Non-Training Day	Combined Day
Medical	10%	03%	07%
Personal	04%	01%	03%
Military Education	21%	28%	25%
Personal Education	08%	04%	07%
Details/CQ	27%	25%	26%
Disciplinary	0	11%	06%
Leave	08%	11%	10%
Clearing	10%	01%	06%
Comp Time	07%	05%	07%
Other	03%	11%	03%
Total Time Absent	1 hr 18 min	1 hr 02 min	1 hr 13 min

Results are, again, shown for a training day, a non-training day, and both days combined. The major turbulence causing activities seem to be work details (27% of the absences during a training day are a results of this) and military schooling (another 21%). The remainder of the time is a result of the other activities listed on the slide. Absences from the squad occur as frequently during actual training time (unit and individual) as during other activities.

One final analysis shows that of the two hours seven minutes designated as training (unit and individual) spent on a "training" day, the average soldier spends 57 minutes of that time actually engaged in hands-on performance behavior. He spends another 25 minutes per day receiving instruction. The last slide (Slide 8 on the following page) shows how the remainder of his actual training time is distributed.

Comments

First a methodological comment. I think this direct observation technique for obtaining data is highly useful and can be applied any time one wishes to find out

Slide 8

Table 4. Analysis of Behavioral Mode During Unit and Individual Training Activities for a TRAINING Duty Day

Mode	Time	Percent of Total Training Time
Receiving Instruction	25 min	20
Performing Tasks	57 min	45
Waiting to Receive Instruction	10 min	08
Enroute	23 min	18
Other	11 min	09
Total 2 hrs 07 min		100%

whether or not organizational policy changes do in fact change patterns of action and time utilization. It is not difficult to train observers and the system is hardly affected by their continuous and extended presence.

Turning now to the results themselves—

Although awareness of turbulence and efficient use of time is recognized and widespread, it seems that this close look at a 3-4 month period in the life of an operational unit is less than comforting. During that period, overall, less than 25% of the time is actually devoted to training and of that time about one-third is lost to delays, movement, and other minor factors.

Certainly the amount of movement of personnel both within and into and out of an operational unit appears excessive and the obvious question is, "Is it all necessary?" Are there personnel management policies in the Army which contribute to this movement? Are commanders usually short-handed and therefore needing to shuttle people around to fill in gaps on a temporary basis? Are administrative and support requirements given greater priority than training/operational requirements? Is the inefficient use of time reported above a consequence of policy decisions, a breakdown in line of command, or due to yet other causes? In other words, is the picture conveyed in this study inevitable or can certain elements be identified which, if modified, would change the pattern of movement and time usage described above.

It may well be, however, that the pattern revealed in this particular kind of operational unit—an infantry division—is not found in other kinds of Army units, operational or otherwise. There may be something special about combat arms (or infantry specifically) that exacerbates the problem. For example, combat oriented operational units are in the unique position of never (except in actual combat) having to perform the jobs they are trained for. Thus, they are always in "training" or in a state of preparation. The distinction between such a unit's operation and its preparation or training for that operation is, at best, fuzzy. It may well be that this unusual circumstance leads to greater turbulence and inefficient time usage as compared to other operational units (a transportation unit, an administrative center—many combat support activities). Another example of a factor that might contribute to turbulence is the *actual* priority

training is given, vis-a-vis the other demands placed on an operational unit; housekeeping, maintenance, unit missions, officer career requirements, etc. The point of this discussion is that a case can be made for investigating the causes and conditions that relate to turbulence and time utilization because (a) it is highly likely that these two phenomena are related to organizational effectiveness and efficiency, and (b) the factors underlying them, once identified and isolated, can probably be greatly modified so as to improve effectiveness and efficiency. It would appear therefore that the need for further direct investigation into the causes and amelioration of these phenomena is warranted while attempts to design training systems which can handle them continues.