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OPTIMUM COMPOSITION OF THE RIFLE SQUAD AND PLATOON

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FINAL REPORT OF EXPERIMENT

HEADQUARTERS UNITED STATES ARMY
COMBAT DEVELOPMENT EXPERIMENTATION CENTER
FORT ORD, CALIFORNIA

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Headquarters
US ARMY COMBAT DEVELOPMENT EXPERIMENTATION CENTER
Fort Ord, California

⑨ Final Report
⑥ 6 MAY - 16 JUN 61.

⑥ OPTIMUM COMPOSITION OF THE RIFLE SQUAD AND PLATOON.

⑪ November 1961

⑫ 105 p.

THIS FINAL REPORT SUPERCEDES LETTER, ATCDC-TC, HEADQUARTERS USA CDEC, 11 JULY 1961, SUBJECT: "TENTATIVE CONCLUSIONS AND RECOMMENDATIONS, SQUAD AND PLATOON EXPERIMENT, USA CDEC SPRING 1961 EXPERIMENT - (THIRD AND FOURTH QUARTERS FY 61) (U)," WHICH IS HEREWITH RESCINDED.

APPROVED:

Charles S. D'Orsa

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Brigadier General, United States Army
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Summary

1. An experiment to determine the optimum composition of the rifle squad and the rifle platoon when equipped with materiel to be available in 1965-1970 was conducted at Hunter Liggett Military Reservation during the period 6 May to 16 June 1961.

2. The performance of three experimental platoons, representing numerous organizational variations, was evaluated during a series of two-sided tactical exercises. The composition of the recommended units is based on this evaluation.

3. Conclusions :

a. The rifle squad should have a strength of 11 men organized with a squad leader and two identical five-man fire teams, with one M60 machine gun in each fire team.

b. The rifle platoon should consist of a platoon headquarters with a platoon leader, platoon sergeant and radio operator/messenger and four identical rifle squads.

c. When the platoon is mechanized, five armored personnel carriers, an assistant platoon sergeant, and five drivers must be added.

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General Information

1. AUTHORITY

Letter, ATSWD-R 322 (CDEC), Headquarters, United States Continental Army Command, 10 March 1961, subject: "Second Half FY 61 CDEC Experimentation Program (U)."

2. PURPOSE

The purpose of the experiment was to determine the optimum composition of the rifle squad and the rifle platoon when equipped with materiel to be available in 1965-1970.

3. SCOPE

A study and an analysis were made of practicable variations in organizational structure, size and materiel distribution for the rifle squad and platoon. From this study a number of candidate units were selected for field experimentation. The selected units were trained and placed in the field where they executed a series of tactical exercises representing selected missions of a squad and platoon. The optimum composition of the squad and platoon was determined by a comparative evaluation of their performance in the field.

4. OBJECTIVES

a. To determine by objective analysis of varying organizational components the optimum composition of the rifle squad when equipped with materiel to be available in 1965-1970.

b. To determine by objective analysis of varying organizational components, to include the number of squads and weapons sections, the optimum composition of the rifle platoon when equipped with materiel to be available in 1965-1970.

II

Selection and Organization of Experimental Units

1. GENERAL

The number of variables in size, organization, and weapons selected for field experimentation was determined by study and analysis of previous experiments, studies and tests from other agencies, and combat reports. The reasons for eliminating certain variations are stated below.

2. REDUCTION OF VARIABLES

a. Squad Considerations

(1) Past USA CDEC experimentation with company-sized units has indicated clearly that small squads, less than eight men, have limited effectiveness. (See references 32 and 33 listed in Section VII.) Small squads are deficient in firepower, are unable to cover an area adequately by fire, and are weak in the assault. Since the squad leader is, to a degree, a non-firing member, his capacity to lead a group of men must be exploited to the fullest extent to assure economy of overhead. Most important, small squads are unable to retain tactical integrity after sustaining losses but must be amalgamated with other squad remnants at an early stage in an operation. It was concluded that further field experimentation with squads of less than eight men would produce no significant, additional data. The argument was advanced that with an increase in weapons effectiveness the squad could be reduced in size and yet retain its original theoretical combat potential. We are not striving, however, merely to retain a previous level of effectiveness but are trying to create, without disregarding control and other requirements, as strong a squad structure as possible.

(2) The study of squad organizations from World War II to the present indicated that large squads ranging in size from 12 to 14 men were frequently unwieldy and difficult to control. The German Army began the war with a 14-man squad which was satisfactory only for an initial period when well-trained squad leaders were still available. The US 12-man squad of World War II was generally considered slightly too large. Although the Marine Corps presently employs 13-man squads, it is believed that the difference in missions between Marine Infantry and Army Infantry precludes a direct comparison in this respect. In relation to the size of the squad an important difference exists between the status and function of squad leader and fire team leader. The squad leader controls the fire and movement of his squad without participating fully as a firing member. In contrast, the fire team leader is expected to join in the action and contributes his fire along with that of his men and at the same time exercises control. He must

not only enforce by command, but encourage by example, aggressiveness in the attack and steadfastness in the defense. By entering energetically into the action, his influence can be felt only by a limited number of personnel in his immediate vicinity. To remain a true fighter-leader his span of control is limited to two on each side, or a total of four. Beyond that figure the fire team leader begins to experience difficulty and must withdraw to some extent from the action to supervise men at a distance from him. Undesirably, he begins to attain the status of a squad leader. The squad is the smallest tactical unit; the fire team is a convenient, and often intermittent, grouping of personnel within the squad structure. Beyond a strength of five, the fire team attains the status of a small squad. The fire team concept, therefore, results in the establishment of an upper limit to the squad strength of about 11 men.

(3) As a result of the foregoing considerations, the lower limit in squad size for the purpose of experimentation was set at eight men, plus a driver when the unit is mounted. The upper limit was selected at 11 men plus a driver.

(4) In addition to the question of size, the squad structure required further study. For many years squad leaders were provided an assistant to aid in maintaining control, but no fixed internal organization of the squad was prescribed. In ROCID the structure was changed by eliminating the assistant and by creating two fire teams within the squad. Based on experience, sound reasons exist to support either concept and it was decided to test both types of squads in the field.

(5) A third variable tested was whether or not the machine gun should be organic to the rifle squad and if so, in what number. The number of machine guns in the squads selected for field testing varied from none to two. The question is closely related to the overall platoon structure.

b. Platoon Structure

The principles of controllability, flexibility, firepower, mobility, simplicity and economy were applied to narrow the field of different platoon organizations for field experimentation. These considerations eliminated the need for experimentation with platoons of less than three squads. Platoons of more than four squads and a weapons element were rejected because attachments to the platoon would overextend the span of control. With the number of squads limited to either three or four, the only remaining issue was whether or not one squad should be a weapons squad in the four-squad platoon or all should be identical rifle squads.

c. Platoon Headquarters

The need for a platoon leader and platoon sergeant was considered so well established that no experimentation was conducted on this point.

Elements selected for field experimentation were the following: the requirement for an assistant platoon sergeant, a radio operator, a messenger, a separate vehicle, and a weapons section in platoon headquarters.

3. EXPERIMENTAL UNITS

In accordance with the above considerations three experimental platoons were organized and placed in the field. These platoons are described below and their detailed organizations are shown in Annex A. In addition, a fold-out sheet showing these organizations is provided at the end of this volume. It is suggested that the reader extend this sheet for ready reference while reading this report.

a. Platoon A comprised a headquarters, a weapons squad, and three rifle squads organized with fire teams. The weapons squad contained two machine guns and two recoilless rifles. The platoon was mounted in four armored personnel carriers.

b. Platoon B consisted of a headquarters, with a recoilless rifle section of two weapons, and four rifle squads. The rifle squads were not organized with fire teams, but did include an assistant squad leader. Each squad was equipped with one machine gun which could be either left in the carrier or taken with the squad in dismounted actions. The platoon was mounted in five armored personnel carriers.

c. Platoon C was composed of a headquarters, including a recoilless rifle team of one weapon, and three rifle squads organized with fire teams and organic machine guns. Platoon headquarters was mounted in an M56 carriage, with the gun removed, representing an armored command and reconnaissance vehicle, M114. The remainder of the platoon was mounted in four armored personnel carriers.

d. Within each platoon the rifle squad was tested in two configurations. In Platoon A the variation was in size. Squad A1 had 9 men with an additional man as driver and A2 had 11 men plus a driver. In Platoon B, size was again the sole variation. Squad B1 consisted of 8 men with 1 additional man as driver and B2 was composed of 10 men plus a driver. The squads of Platoon C varied only in armament. The C2 Squad had one machine gun while C1 had two, one in each fire team. Both squads had 11 men plus a driver.

III Description

1. GENERAL

The planning for this experiment was accomplished at Fort Ord, California, from 4 January to 7 April 1961. The training from 8 April to 5 May 1961, and the field experimentation from 6 May to 16 June 1961 were conducted at Hunter Liggett Military Reservation, California. The evaluation and reporting phase began on 17 June 1961, and was completed on 22 September 1961. At Hunter Liggett Military Reservation three experimentation courses were established with each course consisting of various types of terrain from flat to rolling to mountainous with vegetation variances from open to heavily wooded. Examples of terrain used are shown in Figure 1. During the experimentation phase the weather was bright and clear with moderate temperatures except for the final week when temperatures up to 110° occurred in the afternoons.

2. PERSONNEL

Personnel required to conduct the experiment consisted of the troops in the experimental platoons, Aggressor personnel, evaluators, controllers, and senior officer observers of the combat arms.

a. Personnel for the experimental platoons were furnished by Company A, 3d Armored Rifle Battalion, 41st Infantry, USA CDEC. Ranks and MOS's approximated those required for an infantry platoon. The background and capabilities of the officers and troops for the experimental platoons corresponded very closely to that found in an average unit. The personnel were divided into groups, each having 1 officer and 59 enlisted men, to permit each group to be organized into any one of the three experimental platoons. This number of personnel also permitted each tactical situation to start with the unit at full strength. A section of three tanks was attached to the experimental platoons for selected situations.

b. The Aggressor troops were members of Troop A, 2d Reconnaissance Squadron, 1st Experimental Regiment, USA CDEC. Three platoons were organized to operate against the three experimental platoons. Each Aggressor platoon had 1 officer and 24 enlisted men mounted in three tanks and five 1/4-ton trucks. Their mission was to add realism to the field exercises and to provide actions against which the experimental platoons were expected to react.

c. Twenty officers and non-commissioned officers were used as evaluators. The Chief Evaluator was an Infantry Lieutenant Colonel who was assisted by three Platoon Evaluators, Major or Captain, who were

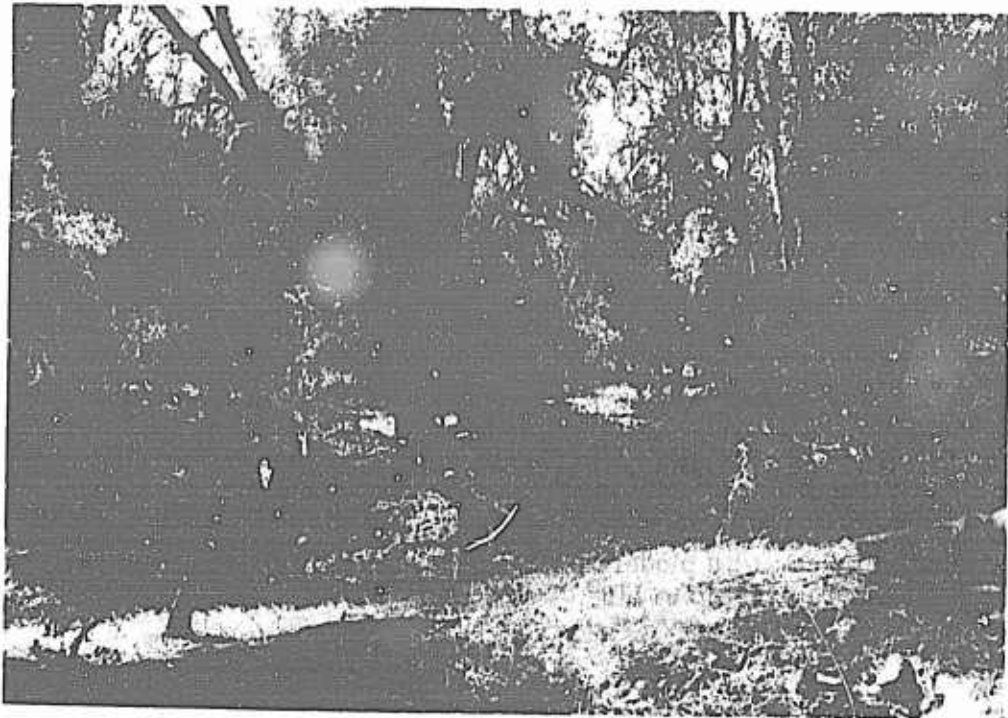




FIGURE 1 EXAMPLES OF TERRAIN

The terrain used in the field experiment varied from flat to mountainous and from open to densely wooded. Examples are shown on these two pages and the page following.

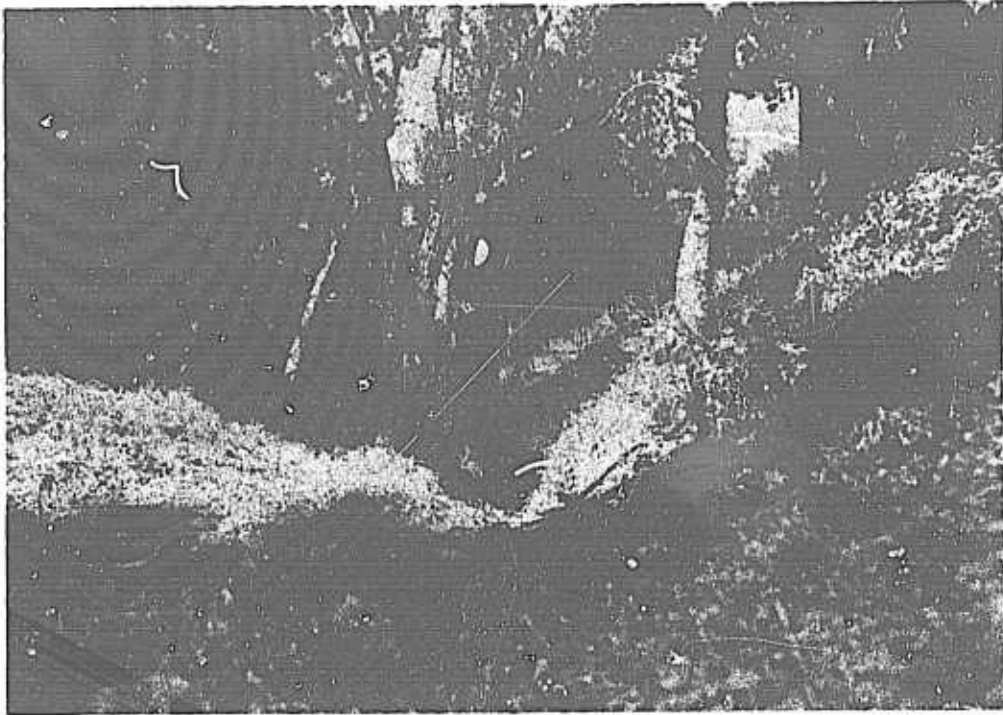


FIGURE 1 EXAMPLES OF TERRAIN (Cont.)

carefully selected on the basis of previous small unit combat experience and general troop duty. Other officer evaluators were lieutenants with basic military education and varying military experience. The enlisted evaluators were senior non-commissioned officers well qualified in all aspects of rifle platoon organization and tactics.

d. Twenty-three officers and non-commissioned officers were used as controllers. A Lieutenant Colonel, with a Major as assistant, was Chief Controller. There was a Captain, Platoon Controller, for each course with a senior non-commissioned controller for each squad. Their duties were to supervise the conduct of the field experiment, to insure adherence to the scenario, and to act as commanders of higher and adjacent units. In addition they rendered an evaluation of the experimental units.

e. Seventeen senior officers of the arms with combat experience were detailed as observers and their evaluations have been considered in this report.

3. EQUIPMENT

a. General

The experimental platoons were fully equipped with either materiel expected to be available in the 1965-1970 period or with substitute items of approximately the same configuration. Annex B shows the materiel assumed to be in the hands of troops during the 1965-1970 period and the item used to simulate that materiel if the actual item was not available or available in insufficient quantity.

b. Communications

Both vehicular mounted and portable radios were provided for operation of a platoon net while mounted or dismounted. The platoon leaders were also required to maintain a station in a simulated company radio net. Experimentation with intra-squad radios was not conducted because the individual radios expected to be standard in the 1965-1970 period were not available. The available substitute items were the AN/PRC-34 and the AN/PRC-26 which had been tested previously in USA CDEC experiments and the deficiencies determined and reported.

c. Individual Loads

The experimental troops were required to carry individual combat loads as developed in the experiment "Optimum Loading Plans for the M113 Armored Personnel Carrier." This equipment approximated that which will be available in 1965-1970. This specified load included essential clothing, equipment, and specific items required for the individual to perform in his assigned position. The individual load represented the minimum needs

of the dismounted infantryman during 24 hours of sustained operation. In visualizing the possible needs of the infantry soldier in dismounted combat over an extended period the experimental load was considered heavy; however, there is no information available on equipment for the 1965-1970 period that would indicate a reduction in this weight.

4. CONTROL

The control of the experiments was exercised through platoon and squad controllers and the Aggressor commander, all of whom followed detailed scenarios. A scenario was prepared for each tactical field test to insure that the actions of each unit were similar to the actions of other units performing the same tasks. Casualties were pre-determined and included in the scenarios for the platoon phase, which allowed observations to be made on their effect on the combat capabilities of the unit. In this manner all possible environmental variables were eliminated and units were tested against the same stresses. This control further insured that specifically required information was generated as a basis for subsequent evaluation.

5. CONDUCT OF EXPERIMENT

a. Training

A training program was conducted which had the objectives of insuring that the individual soldier understood his role in the experiment and was sufficiently well trained to carry it through, and that the organizations involved were able to perform effectively their tactical and administrative missions. Training literature was written to cover those aspects of organization and operations for which official publications were not available. Separate training programs were established for experimental units, Aggressor units, and controller-evaluator personnel. Instruction was conducted to include: orientation on the experiment, organization, tactics and battle drill, characteristics of test weapons and vehicles, as well as the numerous routine refresher subjects usually taught before field work. A later phase of practical training allowed personnel concerned to get the feel of the experiment on the ground before beginning the experimental phase. In addition, Aggressor, controller, and evaluator personnel became intimately familiar with the terrain in the various courses.

b. Phases of Experimentation

This experiment was conducted in two phases, the rifle squad phase and the rifle platoon phase.

(1) The rifle squad phase of the experiment was designed to focus attention on the performance of the rifle squads with a primary objective of

determining an optimum rifle squad for each of the three platoon organizations. In order to evaluate squad performance properly, the squads were employed as part of the platoon organization under the control of a platoon headquarters. During the rifle squad phase, two weeks of experimentation were conducted. In each of these weeks three basic tactical field tests were conducted on each of three terrain courses. On Monday afternoon, Tuesday, and Wednesday morning, exercises were conducted with the platoons organized in the A1, B1 and C1 configurations. Wednesday afternoon, Thursday, and Friday morning the platoons executed the same exercises organized in the A2, B2 and C2 configurations. (See Annex A or fold-out sheet inside back cover.) In this way evaluators could observe the two squad variations for each platoon performing the same tasks on the same terrain.

(2) The platoon phase of the experiment was designed to direct attention to the platoon as a whole. The primary objective of the platoon experiment was to evaluate platoon structure and the variables among the three platoon headquarters and thereby determine the best features of each. A secondary objective was to continue evaluating the squad organizations and determine the best features of each in order to arrive at an optimum squad organization. The rifle squads within each platoon were organized as determined in the rifle squad phase of the experiment. The platoon phase consisted of three weeks of field experimentation. In each of these weeks, four basic tactical field tests were conducted on each of the three terrain courses.

c. Rotation Plan

Evaluators, controllers, and observers were assigned to each of the three terrain courses and remained on the same terrain course throughout the experiment. During each of the two weeks of the rifle squad phase the platoons were rotated to a different terrain course and conducted exercises according to the schedules cited in sub-paragraph 5b (1). This rotation permitted two groups of evaluators to observe the performance of each unit. During the platoon phase each platoon was rotated each week to another terrain course. All three groups of evaluators could then observe the performance of the three platoons accomplishing the same tasks on the same terrain. In addition to rotating units among the terrain courses, the personnel comprising the platoons were rotated, as a group, into a different platoon structure each week. For example, for the first week one personnel group would constitute Platoon A, the following week the same group would be organized as Platoon C, and for the last week the personnel group would make up Platoon B. The other two personnel groups were rotated in a similar manner. The purpose of this rotation plan was to minimize the effects of individual differences in training, personal capabilities, and experience.

d. Tactical Situations

Experimental units were employed as part of simulated larger units and the missions assigned the squads and platoons were realistic, varied, and selected with a view to bringing out the effects of organizational differences. The tactical exercises provided for experimentation in daylight and darkness and varied in time from short periods (2 to 4 hours) to periods of 24 hours of continuous operation. Scenarios included situations in attack, defense, retrograde movement, patrols, and security missions. One of the experimental exercises was designed to test the capabilities of the platoons to operate in coordination with attached tanks.

e. Aggressor

Three identical Aggressor platoons were organized, equipped, and trained for the experiment. Each was assigned to a terrain course and remained on that course throughout the experiment. The Aggressor platoon leader also acted as a controller and evaluated the experimental units from the enemy viewpoint.

IV Evaluation

1. GENERAL

No weighted combination of simple objective measurements has been devised as a basis for evaluating unit performance (combat effectiveness). It was determined, therefore, that evaluations based on the judgments of experienced military personnel would be the most feasible method of evaluation for this experiment. The aim of evaluation planning was to standardize military judgments so as to reduce the variation in result due to individual experience and perception and make the military evaluation scheme approach the characteristics of an effective objective measuring device. The essentials of a good measurement system based on judgments are:

- a. That the actions which evaluators observe and upon which they base their ratings be the most important engaged in by the organization under study, in the sense of these actions being most critical to success in the accomplishment of the mission;
- b. That all evaluators base their evaluations on the same observed actions;
- c. That if a number of evaluators observe the same action their ratings show substantial agreement.

2. DEVELOPMENT OF THE EVALUATION METHOD

The first problem was to create comparable tasks for the various organizations to perform so that meaningful comparisons of proficiency could be made. In addition, of course, it was necessary that these tasks be sufficiently varied and difficult so as to represent adequately the activities the organizations under consideration would be expected to have to perform under combat conditions. Scenarios were written to meet these requirements. They were examined in detail, and the actions were broken down into clearly-defined segments small enough to be observed closely by an evaluator in the field. For each of these activities, a listing was made of observable indications that the organization was performing well or badly. Finally, features of the organizational structure which might be responsible for observed unsatisfactory performances were listed. The primary rating forms used by the evaluators in the field resulted from the process described above. For each segment of action a rating item was written. The first part of each item listed the evidences of possible difficulty in the performance of the action. The purpose was to tell the evaluator what to look for.

The second part of each item consisted of a specification of probable causes of any difficulties listed in the first part. Space was provided for the noting of either difficulties or causes which were not contained in the specified lists.

3. THE EVALUATION METHOD

Evaluators filled out the forms in the field immediately after observing each action. Their responses constituted basic elements of the evaluation scheme. In summary form they provide a comprehensive description of the performance of each of the experimental units and indications of which organizational features may have caused deficiencies in functioning (Annex E, "Squad Rating Data"). In addition to the above, summary questionnaires were completed at the end of each phase of the experiment by all evaluators, controllers, selected personnel in the experimental units and senior officers serving as evaluators. The summary questions were designed to obtain the specific recommendations on organizational features which were varied among the experimental units. In general the answers were based on detailed observations of the units performing essentially identical missions over the same terrain (Annex F, "Summary Questions and Responses"). Finally, an evaluation committee of senior, combat-experienced officers of the combat arms reviewed all of the completed forms (or appropriate summaries) and recommended the optimum squad and platoon organizations. As a further aid in producing good comparative ratings of the units under study, evaluators, controllers, and observers remained on the same terrain courses throughout, so that they could observe each unit accomplishing its tasks over the same ground. In addition, the personnel in the experimental units were rotated to a different unit each week during the platoon phase, thus reducing any biases caused by differences in individual performance. A more detailed discussion of the evaluation plan appears in Annex C.

V Discussion

1. GENERAL

a. The discussion is based primarily on the ratings and judgments made by the evaluators and recorded on the evaluation forms. Their evaluations are summarized in the tables in the annexes. The tables also list summaries of the judgments of observers, controllers and players. The material provided by the latter personnel, while important and useful, is supplementary to that provided by the evaluators, since the evaluators were given more thorough training in the use of the evaluation scheme and had no functions other than to make and record their observations.

b. Annex H consists of comments made by various personnel who participated in the experiment. The material selected for quotation is representative of the large number of comments made. It serves as a general supplement to the data contained in the tables.

2. THE RIFLE SQUAD

a. Introduction

The composition of the rifle squad has been the subject of study and change for many years. The 8-man squad of World War I and after was replaced by a 12-man squad in World War II to be followed by a 9-man squad in the Korean War and now by the present 11-man squad of the ROCID organization. Changing concepts and the introduction of new or improved weapons tend to keep the squad organization under constant revision. The actual strength of any squad, however, is normally in a state of nearly continuous fluctuation as a result of losses of all types. Squads must expect, therefore, to function at variable strengths until they are reduced to a point of ineffectiveness. The authorized strength provides, realistically speaking, an upper limit in strength which will not be exceeded.

b. Selection of Squads Within Platoons

(1) Platoon A: The rifle squads of Platoon A were organized with fire teams and did not have organic machine guns. The only variation was in size. The A1 Squad had 9 men and a driver while the A2 Squad had 11 men and a driver.

(a) On the question of firepower and target coverage, evaluation revealed that the A2 Squad had fewer deficiencies than the A1 Squad (Table E-1, p. 66). The greater volume of fire and better target coverage by the A2 Squad is due to its larger size, theoretically 25 percent more if squad leaders, being non-firers, are not counted. This superior capability

on the part of the A2 Squad became most evident in relatively thick vegetation or broken ground where portions of the target were masked from one rifleman but were visible to another a few yards to one side. Although casualties were not assessed initially, opinions of the evaluators and observers were that had casualties been declared, the A1 Squad would have lacked the ability to sustain itself. During later phases of the experiment when casualties were introduced, this effect of losses on smaller squads was verified. On defense, due to its smaller size, the A1 Squad found it more difficult to provide local security for crew served weapons located in its area and at the same time control effectively its sector of responsibility.

(b) There were no detectable differences between the squads with respect to control, vulnerability of leaders to enemy fires, and mobility (Table E-1, p. 66). Whether in open or close terrain, no difference was observed in the degree of difficulty of exercising control between the squads. Since fire teams were incorporated in both the A1 and A2 Squads, the exposure of the squad leaders in moving about while exercising control was generally the same. In dismounted action, no differences were observed between the squads with respect to mobility because the equipment and individual loads were identical.

(c) The evaluators were unanimous in their selection of the A2 Squad. It was concluded, therefore, that the A2 Squad was clearly superior to the A1, and that the A Platoon, if adopted, should be organized with the A2 Squad. For this reason the A2 Squad was selected for the A Platoon for continued experimentation. The data pertaining to the squad evaluation are shown in Table D-1, p. 62, and Tables E-1 and E-3, pp. 66 and 68.

(2) Platoon C: In the C Platoon both squads had 11 men and a driver. The C1 Squad had two machine guns, one in each fire team, and the C2 Squad had a machine gun in one fire team only. As regards control, vulnerability of leaders, and mobility, no appreciable differences were expected or noted between the two (Table E-1, p. 66). Both squads appeared initially to be affected equally by losses. The real issue between them was the determination of the advantages and disadvantages of one versus two machine guns.

(a) Evaluation revealed that the C1 Squad had fewer deficiencies than the C2 Squad in firepower and target coverage (Table E-1, p. 66). The greater firepower of the C1 Squad is due unquestionably to the presence of the two organic machine guns. Since other factors apparently did not differ between the two, the added firepower would seem to be decisive in proving the C1 Squad superior to C2. Other considerations, however, such as the effect of casualties and the additional ammunition requirement, tended to react in favor of the C2 Squad. Eventually experimentation revealed that as casualties occurred in the rifle squad, whether among riflemen or machine gunners, the tendency on the part of the squad

and platoon leaders was to maintain the machine gun in action. As a result the rifle strength of the squad was more rapidly depleted. To compensate for this, patrol and outpost requirements occasionally made it necessary to separate the machine gun team and use the assistant machine gunner as a rifleman. For example, the machine gunner was left on the outpost and the assistant machine gunner was sent with a patrol. For short periods of time in relatively static situations the machine gunner was able to operate his weapon reasonably well without his assistant. The question of increased ammunition requirements for two machine guns as compared to one was also considered. In action where resupply from carriers was possible, the presence of two machine guns occasioned no ammunition resupply problem. In prolonged dismounted actions, however, the resupply problem could be serious. No data were collected on this question. The general impression gained, however, was that if all leaders recognize its importance, the problem can be anticipated and overcome.

(b) The squad with two machine guns had certain advantages other than volume of fire. With one weapon in each fire team the squad was better balanced. The squad leader was allowed greater flexibility because the two fire teams were interchangeable in their use and could alternate with each other as a base of fire or maneuver element. In those actions when both fire teams could not join in the assault, the availability of two machine guns virtually assured the squad leader of at least one taking part in the final assault. In the defense, while the one gun in the C2 Squad proved reasonably effective, the two guns in the C1 Squad reduced the dead space along the FPL's and allowed a more effective tie-in with adjacent units on all types of terrain. On extended frontages the additional machine gun proved especially valuable.

(c) Squad leaders in both type squads were enthusiastic about the presence of at least one machine gun immediately available and evaluation was emphatic in supporting this feeling (Summary questions and responses - paragraph 2, Annex F, p. 71). Seventy-three percent of the evaluators indicated that the C1 Squad was the better of the two squads (Table D-1, p. 62). It was decided to continue the experiment using the C1 Squad in the C Platoon. Nevertheless, the question of the optimum number of machine guns in the rifle squad was a difficult one and the weight to be given to certain disadvantages of two machine guns was not finally determined in the squad phase. It was therefore decided to continue experimentation on this subject by using squads containing only one machine gun in the B Platoon as indicated in sub-paragraph b(3) (f) below. This decision was supported by the firepower evaluation shown in Table E-1, p. 66. The data pertaining to squad evaluation are shown in Table D-1, p. 62, and Tables E-1 and E-3, pp. 66 and 68.

(3) Platoon B:

(a) The squads of Platoon B varied only in size; B1 had 8 men and a driver, B2 had 10 and a driver. Differences in performance between the two squads were not marked except in regards to firepower and sustainability. The larger B2 Squad was stronger in these respects for essentially the same reasons that the A2 Squad proved more effective than A1.

(b) The squads were organized without a formal fire team structure and contained a squad leader and assistant squad leader. In some situations it appeared that control was better in B1 than in B2. Evaluators noted, however, many deficiencies in control in both squads (Tables E-1 and E-3, pp. 66 and 68). It was concluded that the lack of a fire team organization magnified the difficulties of control caused by increased size.

(c) Firepower and sustainability, the two major differences between the squads of this platoon, have been previously discussed in relation to the squads of Platoon A in sub-paragraph b(1) (a), p. 15. The evaluation of the B1 and B2 Squads resolved itself therefore to a question of the deficiencies resulting from the lack of fire teams in the squad. From the study and analysis prior to experimentation, it appeared that the no-fire-team organization offered some advantages over the fire team structure which were worth testing in the field. Without fire teams a squad leader would feel freer to organize his squad to meet differing situations rather than be confined to a rigid pattern of employing fire teams with a fixed composition. The greater flexibility would allow the squad leader to form his base of fire from any combination of personnel desired and place it, normally, under the assistant squad leader. The squad leader would then lead the remainder of the squad as a maneuver element which he would control directly without recourse to an intermediate leader. Further, the squad leader would remain more in the capacity of a leader and not have a tendency merely to guide his subordinate elements as might occur when fire team leaders were present. Experimentation disclosed, nevertheless, that the anticipated advantages of this type structure were not realized.

(d) The squad leaders were forced to control directly a portion of the squad personnel and at the same time control the actions of a separate group under the direct control of the assistant squad leader. As the size of the group controlled by the squad leader increased, so did the problems of control. When squad performance was compared from this viewpoint, the fire team concept showed, overall, greater advantages. Control appeared consistently better with fire teams and exposure of leaders was less frequent. Broadly speaking, it seemed that squad leaders felt more confidence when using fire teams. They were able to react more quickly and automatically and were not required at moments of stress and during noise and confusion to reach a decision on how to organize their unit. In part, this reaction stemmed from the lack of prior contact with the no-fire-team squad

by the relatively young squad leaders used in the experiment. Squad leaders, as a group, were not experienced or highly trained but were comparable to those found in average infantry units. Whatever the reason, when squad leaders were provided with fire teams they acquired more self-assurance resulting in better control of the fire and movement of their squads. A further important advantage of the fire team structure was brought out in defensive rather than offensive operations. In a defensive situation infantry small unit leaders had a tendency to resort to a cordon type defense where the squad members were spread evenly across the squad sector: the weakest form of defense. When the squad was organized with fire teams, junior officers and NCO's were led naturally into a sound disposition of forces. Strong points of defense were occupied by fire teams which were able to fire principally to the flank across the intervening space and in front of adjacent teams.

(e) The fire team concept is sound and offers the advantages discussed above only when employed by a squad of moderate size. That is, a squad of 10 to 12 men favors the use of fire teams. As losses reduce the squad down to seven or eight men, the fire teams cease to exist and the squad leader reorganizes and continues with what remains, usually resorting to the use of an assistant. As replacements arrive and fill out the unit, then the fire teams reappear. Too much emphasis, therefore, should not be given the fire team concept.

(f) In summary, the conclusion was reached by 85 percent of the evaluators (Table D-1, p. 62) that if the no-fire-team structure is to be adopted, the B2 Squad would be the most acceptable organization for reasons of firepower and sustainability. At the conclusion of the squad phase, further experimentation with either the B1 or B2 squads as organized did not seem warranted because they had such a greater percent of deficiencies than the other type squads (Table E-1, p. 66). More could be gained by substituting a squad organized with a variation of the fire team concept. Further, this change would provide an opportunity to compare more extensively the C1 and C2 type squads mentioned earlier. The decision was made, therefore, to create a B3 Squad for the platoon phase of experimentation which would incorporate fire teams, one organic machine gun per squad, and a strength of nine men and a driver. This change permitted further evaluation of a squad with one machine gun, the B3 Squad, and a squad with two machine guns, the C1 Squad. The B3 Squad's performance was fair and control was excellent. It soon developed, however, that the squad was weak in rifle strength and firepower and that there was an imbalance which hindered the interchanging of fire teams. To improve the squad, an additional rifleman was added to the fire team having no machine gun. In other words, one team had a total of 4 men and a machine gun, and the other had 5 riflemen, for a total strength of 10 men plus a driver. This last change, the B4 Squad, brought the organization closely in line with the C2 Squad which permitted continued evaluation and comparison of the one with the two machine gun concept.

c. Optimum Rifle Squad

(1) In the platoon phase of the experiment the squad from each platoon selected as best during the squad phase was further tested and all three squads compared. The A2 Squad had 11 men and a driver; the B4 Squad, 10 men plus a driver; and the C1 Squad, 11 men with a driver. Organic machine guns varied from none in the A2 Squad to one in the B4 Squad to two in the C1 Squad. All squads were organized with fire teams. On the questions of control, vulnerability of leaders and mobility there were no substantial differences noted (Annex E). The discussion therefore resolved itself to a comparison of the effects of the differences in size and firepower.

(2) Because of its strength in riflemen, an 11-man squad had advantages over a smaller size squad. It was better able to maintain its effectiveness after sustaining casualties, which enhanced its capabilities on offense and defense.

(a) The 11-man rifle squad provided better coverage of the objective and contained sufficient rifle strength to close with the enemy. It was better able to mop-up an objective after initial seizure and to comb out residual enemy resistance. Consolidation was effected more rapidly because more personnel were present to prepare and improve positions, provide local security, secure and emplace crew served weapons, and to establish obstacles such as wire and mines. On independent missions such as flank security, combat patrols, and as the point during movement to contact, the 11-man squad was more likely to succeed, particularly after casualties were sustained, than was a squad of smaller size.

(b) The ability to cover an assigned defensive sector does not depend entirely on the overall effectiveness of weapons, but must start with the ability of the individual to locate targets through his physical senses. When the squad is decreased in size, so must its assigned zone of responsibility be proportionally decreased. Placing fewer individual riflemen with improved weapons across the same front is not necessarily compatible with their ability to defend the zone successfully. A soldier whose observation is masked by terrain features or vegetation can influence only the action within his field of vision, regardless of the effectiveness of his weapon. Thus, it was observed, especially in broken and heavily wooded terrain, that the 11-man squad was better able to cover effectively any assigned sector than was a smaller squad. In only a few instances were squad leaders of the larger squad forced to leave a secondary approach undefended in order to cover adequately a major avenue of approach.

(3) Throughout the experiment, the C1 Squad scored the fewest deficiencies in firepower and was considered the superior squad in this respect (Annex E). The A2 Squad had far less firepower and the B4 Squad

had slightly less firepower than did the C1 Squad. The effect of the number of riflemen in the squad on the overall firepower was discussed in the preceding paragraph. The other major factor affecting firepower is the number of machine guns in the squad.

(a) When considering whether or not the M60 machine gun should be organic to the rifle squad the term "Machine Gun" may be misleading. The M60 machine gun can be visualized in a better perspective when considered more in the role of an automatic rifle/machine gun (Figure 2). There are only two practical locations for the machine gun in the platoon: organic to the rifle squad or in a separate weapons squad. Both concepts were tested during the experiment. Without exception, as shown by the unanimity of the evaluators (Paragraph 2a, Annex F, p. 71), the former method of employment proved more effective and throughout the experiment the advantages of having the weapon in the rifle squad were strikingly apparent. Without organic machine guns it was noted that the time required to bring effective machine gun fire on Aggressor positions was generally longer.



FIGURE 2
M60 MACHINE GUN TEAM IN THE ASSAULT

A request for automatic weapons fire from squad level had to go from the rifle squad leader, to the platoon leader, to the weapons squad leader, and finally to the machine gun team, before the target could be engaged. In order to overcome this difficulty the platoon leader, at times, desired to attach machine guns to the rifle squads, however, during the squad phase the scenario prohibited this because to do so would, in effect, have changed the squad organization. In addition to delay in receiving fire support, in many instances there were insufficient weapons to meet the fire requests of all squad leaders.

(b) Experimentation was conducted with squads containing one machine gun organic to only one fire team and squads containing a machine gun organic to both fire teams. A machine gun in each fire team balanced the squad organization by increasing the flexibility of the squad elements (fire teams) as either could be used as a fire or as a movement element. A machine gun in each fire team provided the rifle squad with easily controlled and maneuverable weapons capable of an immediate large volume of fire. In the defense, while the one gun in the B4 Squad provided reasonable effective employment, the two guns in the C1 Squad reduced the dead space along the FPL's and allowed a more effective tie-in with adjacent units on all types of terrain. On extended frontages the additional machine gun proved especially valuable.

(c) The light weight, design, and operational characteristics of the M60 machine gun required only a two-man team (gunner and assistant gunner). Evaluation was almost unanimous in support of this size team (Paragraph 2b, Annex F, p. 71). The assistant gunner had the primary role of rifleman with the additional duty of assistant machine gunner. The team adapted easily to the 11-man squad. In the C1 Squad, Numbers 4 and 5 in Alfa team and Numbers 9 and 10 in Bravo team are the machine gunner and assistant gunner respectively. The machine gunner needed an individual weapon in addition to the crew-served weapon. The all-purpose hand-held weapon (APHHW) was too heavy to carry in addition to the machine gun, particularly when considering the ammunition required for both weapons. A sidearm was the lightest and least cumbersome individual weapon that fulfilled this need. The assistant machine gunner was ammunition bearer and substitute gunner although his primary function was that of a rifleman. The APHHW allowed the assistant gunner to perform his primary function and did not interfere with the secondary role of assistant machine gunner. Paragraph 2, Annex F, p. 71 presents the results of observation and evaluation of the M60 machine gun and crew.

(4) As indicated in the foregoing discussion, the experiment brought out the advantages of an 11-man rifle squad over squads of smaller size and the advantages of having two machine guns organic to the rifle squad. The C1 Squad possessed both of these characteristics and was therefore selected as the optimum rifle squad by a substantial majority of personnel reporting observations (Paragraph 1, Annex F, p. 70). Eighty-two per-

cent of the evaluators preferred this squad organization (Table D-2, p. 63). The data pertaining to the squad evaluation are shown in Annexes D and E.

3. THE RIFLE PLATOON

a. Introduction

In the years preceding World War II the rifle platoon contained six squads. The number of squads was reduced to three shortly before the war, and after the war was increased to four. The fourth squad was, and has remained, a weapons squad. The size and structure of the rifle platoon are affected, as is the squad, by the introduction of new weapons and concepts of employment. The following sub-paragraphs discuss the observations and evaluations leading to the determination of the optimum rifle platoon.

b. Platoon Headquarters

(1) Platoon leader and Platoon Sergeant: The requirement for a platoon leader and platoon sergeant are sufficiently well established to preclude the necessity for specific experimentation on this point.

(2) Assistant Platoon Sergeant:

(a) The position of platoon guide, or assistant platoon sergeant, was formerly authorized in the infantry rifle platoon. His duties specified in FM 7-10, dated October 1949, were "to enforce orders concerning cover, concealment and discipline; observe situation on flanks and rear of platoon; and supervise ammunition and supply distribution". In mechanized units he would have additional duties as discussed below.

(b) During the experiment, platoons were tested with and without assistant platoon sergeants. It was found that the assistant platoon sergeant increased the effectiveness of the platoon by adding depth to the command structure. Evaluators with the C Platoon, which did not have an assistant platoon sergeant, cited this omission as a reason for the deficiencies in the platoon's operations (Table G-2, p. 78). In the experimental platoons with an assistant platoon sergeant, an NCO was immediately available to assume the functions of either of his superiors or, if necessary, to take charge of a squad. He relieved the platoon leader and platoon sergeant of many routine functions, allowing them to concentrate their efforts on areas of critical importance to the platoon. At times, as in preparation for an attack, his presence permitted both the platoon leader and platoon sergeant to absent themselves for purposes of reconnaissance or to receive the attack order. This availability permitted the platoon sergeant to hear the same instructions as the platoon leader and to ask questions. In situations in which time was important, three senior leaders were available to accomplish the required tasks instead of two.

(c) Experimentation indicated conclusively that a noncommissioned officer was required to control the movement of the mechanized platoon's vehicles when the platoon was dismounted. It was observed that, when this NCO was not authorized, the responsibility for this function fell on the senior driver present with the vehicles. Drivers generally were qualified neither by rank nor by experience to exercise this responsibility and did not occupy a clearly superior position in relation to each other. Throughout the experiment the senior driver's lack of leadership and experience, coupled with the fact that he was required to drive and maintain his own vehicle, led to inadequate supervision of the vehicles and drivers. Frequent mistakes as to route, rendezvous areas and matters of coordination with the dismounted elements of the platoon resulted.

(d) Evaluation revealed that a noncommissioned officer was required to control the supporting fires of the vehicular mounted weapons of the mechanized platoon. When control of these fires was left to the senior driver the same difficulties arose as described in the preceding paragraph, further compounded by the lack of the additional experience and specialized training required in techniques of fire control and distribution. When the platoon sergeant was assigned the duties of controlling the movement of the carriers and the fires of the vehicular weapons, it was observed that a gap in leadership existed in the platoon when engaged in dismounted action.

(e) When an assistant platoon sergeant was included in the composition of a platoon, vehicular maintenance, recovery, and evacuation were more efficiently accomplished than when these duties were delegated to the senior driver. All the evaluators indicated the need for this NCO in the mechanized rifle platoon (Paragraph 3, Annex F, p. 72).

(f) The need for the assistant platoon sergeant in mechanized rifle platoons must be distinguished from his usefulness in infantry rifle platoons. The experiment established that this position in the mechanized rifle platoon is essential if the full potential of the personnel and equipment of the platoon is to be realized. In infantry rifle units this noncommissioned officer, though adding to the effectiveness of the platoon, is not considered essential and was not included in the recommended optimum platoon.

(3) Radio Operator and Messenger:

(a) Three variations in the organization of personnel to handle communications were tested in platoon headquarters. One platoon was provided a radio operator and a messenger. Another had a combined radio operator/messenger. The third had neither, a situation which required the platoon leader to handle communications personally. It was found that when the platoon leader carried and operated the radios, his ability to control and supervise his platoon was seriously reduced. The weight of the equipment caused excessive fatigue and limited his mobility. During the course

of an experimental exercise he exerted progressively less personal supervision over his subordinate elements. In this respect the radios for the 1965-1970 period (AN/PRC-25 and 35, total weight 22 pounds) will not appreciably improve conditions noted in the experiment. The requirement on the platoon leader to operate the equipment further reduced his activity. He tended to become absorbed in the handling of radios, accepted reports over the air rather than verifying situations by visits and personal inspection, and his awareness of terrain and tactical conditions diminished (Figure 3).

(b) Evaluation clearly indicated a requirement for at least a radio operator in platoon headquarters to carry and operate the communication equipment. If this individual is not provided, there is little doubt that a platoon leader, when not under a controlled situation such as an experiment, would obtain a rifleman from one of the squads to perform the functions for him. The addition of a radio operator to a platoon adds, in effect, a rifleman.



FIGURE 3
PLATOON LEADER ACTING AS OWN RADIO OPERATOR

(c) There was also an indication that a messenger in addition to the radio operator was useful in many situations. The need for the messenger, however, was not as apparent as the need for the radio operator, partly due to the reliability of current radios. Because he was not essential he was not included in the optimum platoon headquarters. All personnel reporting on the experiment indicated a requirement for at least one man and a substantial number noted a need for two men (Paragraph 4, Annex F, p. 72).

(4) Individual Weapons:

(a) From many considerations the all-purpose hand-held weapon (APHHW) appeared to be the most suitable arm for the enlisted members of platoon headquarters. The APHHW also increased uniformity in training, ammunition, and maintenance requirements throughout the platoon.

(b) Experimentation was conducted with one platoon leader armed with the APHHW and two platoon leaders with a sidearm. Observation and comparison indicated that the sidearm is the more satisfactory weapon for the platoon leader. The platoon leader should not engage in firing a weapon except at close range in self-defense. Should he become involved in a fire fight he ceases to be a platoon leader directing his unit and becomes merely a rifleman. With a rifle in hand there is a tendency to use it. Carrying a rifle restricted a platoon leader's ability to give arm and hand signals, use field glasses, and carry out other normal activities. The weight of the weapon added an unnecessary burden and increased his fatigue. It is possible that the platoon leader may have been identified as such by the Aggressor more often when not carrying a rifle, though any increased frequency in detection was not particularly apparent during the experiment. A substantial majority of the evaluations indicated the sidearm to be the proper weapon for the platoon leader (Paragraph 5, Annex F, p. 72).

c. Platoon Structure

(1) Number and Type Squads in the Platoon: In the platoon phase of the experiment three basic platoon structures were tested.

(a) There was no notable difference among the three platoons in exposure of leaders to enemy fire when exercising control over their elements (Table G-1, p. 78).

(b) On the question of mobility, the A Platoon showed a slight advantage due to the absence of machine guns in the rifle squads. This was apparent only when the rifle squads were maneuvering and the weapons squad was employed as the base of fire with its machine guns. When the entire platoon was moving, however, as in an advance to contact, there was no apparent advantage in mobility over the other platoons (Table G-1, p. 78).

(c) The problem of control by the platoon leader was magnified when the platoon contained dissimilar elements. The need for specialized employment of the weapons squad in Platoon A and the M67 recoilless rifle team in Platoon C detracted from the platoon leader's primary task of employing his rifle squads. Control problems were less evident and control was slightly more effective in Platoon B when it was organized with four identical rifle squads (Table G-1, p. 78).

(d) The B Platoon with four rifle squads, each containing a machine gun, demonstrated excellent flexibility as the platoon leader could form a base of fire with any one or two squads and still retain three or two squads with which to maneuver. In the A Platoon with three rifle and a weapons squad, the platoon leader was unable to use his two machine guns in both the base of fire and assault roles unless they were split, one to the base of fire and one attached to a rifle squad in the maneuver element. This resulted in neither the base of fire nor the assault element having an adequate volume of fire. If both guns were attached to the assault rifle squads it necessitated one of the other rifle squads being employed as the platoon's base of fire. Without machine guns the rifle squad in the base of fire role provided a reduced volume of fire. A further advantage of the B Platoon was that in an approach to contact when the enemy situation was not clear, it could assume formations that provided greatest flexibility and ideal all-around security. An example of a formation used by the B Platoon was the "Box" formation. This formation placed each of the four rifle squads at one of the corners of a rectangle with the platoon headquarters in the center. This formation was in effect a perimeter defense in motion that permitted fighting in any direction instantaneously. The first squad making contact became the base of fire around which the other squads could maneuver. Because of the number and composition of the squads in the other two platoons such formations and employment were not possible. In the defense the B Platoon also had advantages over the other two platoons. In defense of sectors 1200 to 1400 meters wide, the B Platoon provided the most effective coverage by employing the additional rifle squad. In defending sectors of approximately 400 meters in width, it had the capability of thoroughly organizing the position and still having a reserve element positioned in depth. In a perimeter defense the four-rifle-squad platoon was best able to fit itself to the ground and to provide security in all directions.

(e) Platoon B possessed obvious economy in platoon overhead when compared with Platoon C although no difference in this respect existed in relation to Platoon A. When the span of control is examined, however, the superiority of the B over the A Platoon was evident. In the platoon with three rifle squads and a weapons squad the platoon leader must control five elements: three rifle squads, the machine gun section and the recoilless rifle section of the weapons squad. When an attachment was made to this platoon the span of control of the platoon leader approached the upper limits. Platoon leaders demonstrated that they could control four rifle squads and

still effectively control an attached element such as a section of tanks. In this connection, observations on the question of span of control were based mainly on platoons which contained a section of two M67 recoilless rifles. Also the questions asked on the rating forms referred to a "section," implying the presence of more than one weapon. As a result, the impression created from the table at paragraph 6a, Annex F, (p. 73) is at variance with fact. During the experiment it became evident that the problem of controlling and employing two recoilless rifles was noticeably more difficult than employing one, principally because, to realize their full potential, the two weapons are normally positioned at some distance from each other. This fact places a further control and decision requirement on the platoon leader. In the advance to contact or in the attack, platoon leaders could use one weapon without difficulty; but when two were present, the second weapon was seldom used effectively and frequently merely followed the first, remaining in defilade without being committed. Evaluations, then, were made with this general condition in mind which accounts largely for the rating as it appears in the Annex. Were the ratings based on the use of a one weapon team rather than a section, observations probably would have indicated a greater number of subordinate elements which could be effectively controlled.

(f) A substantial difference in firepower and target coverage among the three platoons was observed. The A Platoon was most deficient in this respect because it had only two machine guns and because of the difficulties in employment of the weapons squad. The B Platoon with its four machine guns, one organic to each squad, had fewer deficiencies than the A Platoon. The C Platoon with its six machine guns, two organic to each squad, was the most effective platoon as concerns firepower, both from the viewpoint of target coverage and volume of fire (Annex G).

(g) The C Platoon had a disadvantage in respect to the other two in that, to form a base of fire, one-third of the platoon had to be used. To some, a separate element specifically created to provide a base of fire, as in the A Platoon, appeared as an advantage in that it would lead an inexperienced platoon leader to employ sound tactics (Paragraph 2a, Annex F, p. 71).

(h) From the viewpoint of simplicity, platoons with identical squads demonstrated advantages in training and employment over the platoon with a separate weapons squad. Any squad can assume the mission of any other and all can be trained together.

(i) From the viewpoint of the platoon leader, having the machine guns organic to the rifle squads may appear to have the disadvantage of precluding the massing of their fires. In order to examine this subject, a situation which required the massing of machine gun fires was included in the field experiment. To meet this requirement the platoon leader retained control of the machine guns by placing them with a

rifle squad under the direct control of the platoon sergeant with a mission of providing fire support for the remaining rifle squads in the attack. This plan worked very satisfactorily and demonstrated that if it is necessary to mass the fires, it can be done.

(2) Weapons Squad: A primary function of a weapons squad is to provide a base of fire for the maneuvering rifle squads. The principle is sound, and the inclusion of the squad increased the effectiveness of the rifle platoon at the time the separate weapons squad concept was adopted. This squad is an outgrowth of the weapons system available in recent years. The use of weapons expected for the period 1965-1970, however, requires a reappraisal of the need for a specialized squad at platoon level.

(a) The Recoilless Rifle, 90mm, M67:

1. Observations made early during the experiment began to cast considerable doubt upon the value of the M67 recoilless rifle as a platoon weapon. The objections to this weapon were based upon its weight (35 pounds), the weight of the ammunition (9 pounds/round), its short range, and the overlap of its capabilities with the Rocket, HE, 66mm, Antitank, M72. It was decided, therefore, to delete the recoilless rifle section from the B Platoon for the remainder of the experiment. This deletion afforded an opportunity for the evaluators to observe a platoon with two recoilless rifles, the A Platoon; a platoon with one, the C Platoon; and a platoon without this weapon, the B Platoon.

2. Because of its limited range, the M67 recoilless rifle could seldom be used in the platoon's base of fire. The weapon usually accompanied the platoon's maneuver element in order to get close enough to an enemy position to be within effective range. The excessive weight of the weapon and consequent limited mobility of the gunner required the maneuver element to slow its pace to that of the recoilless rifle team or else move out well ahead of it.

3. The lightweight (4 1/2 pounds), easily operated, and disposable, M72 proved a suitable antitank and assault weapon for the rifle platoon. During the experiment this weapon was carried by various members of the platoon in addition to their primary weapon. On the average, two were carried by a squad when dismounted. With its simplicity of operation and accuracy, the training problem was insignificant. With the advantages of the M72 in weight, simplicity of operation and training, and economy in personnel as compared to the relatively minor advantages of the M67 in range and terminal effects, it was concluded that the M72 was a more suitable anti-tank weapon for the rifle platoon than the M67 (Figure 4).

4. In the ROAD organization, one concept apparent in the division structure is the flexibility with which the composition of the division can be adapted to fit varying areas and conditions of combat. That

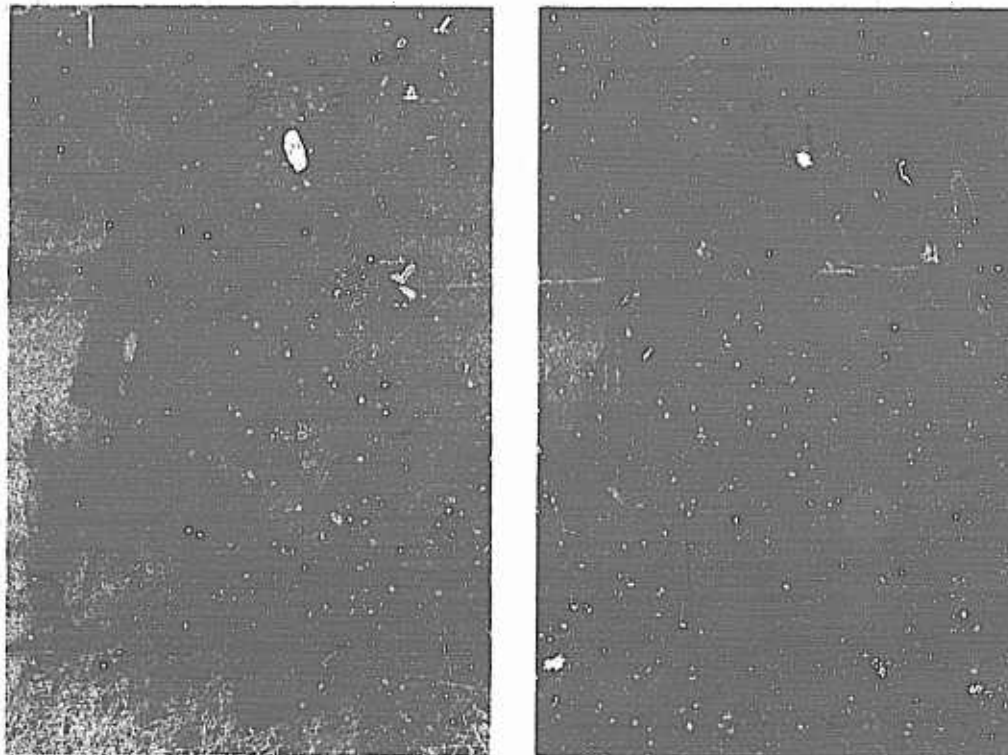


FIGURE 4
M67 RECOILLESS RIFLE COMPARED TO THE
M72 ROCKET LAUNCHER

is, when terrain permits, the division will have a relatively high proportion of tank battalions which will, to a large degree, meet the anti-tank needs of the infantry. In areas less suited for the employment of tanks, friendly or enemy, the ratio of tanks to infantry is reduced and the need for antitank weapons is reduced correspondingly. The requirement for an antitank weapon within the platoon is therefore not as critical as it is in the present division organization.

5. If a decision is made to include the Recoilless Rifle, 90mm, M67, in the rifle platoon, the number should be limited to one and it should be located in the platoon headquarters. Its tactical employment is not facilitated by placing it in a squad with dissimilar weapons. The limitations of the weapon and the infrequency of use preclude the necessity for more than one weapon. If included in the platoon, the weight of the weapon and its ammunition coupled with its operational limitations require a team of four men, including a gunner, an assistant gunner, and

two ammunition bearers. This team provides two men to alternate in carrying the loaded weapon and even with two ammunition bearers allows only six rounds, three per ammunition bearer, to be carried with the team in dismounted actions. To afford maximum security for the weapon and its team, all members except the gunner, should be armed with the APHHW. The gunner needs only a sidearm for individual protection. Any weapon other than a hand weapon would interfere with his operation of the recoilless rifle and add weight to his already overly heavy and cumbersome load. When the assistant gunner takes over in carrying the M67, the gunner could carry his assistant's APHHW. (Summary questions and responses - paragraph 7, Annex F, p. 73).

6. A suitable antitank weapon for the rifle platoon should have an effective range of at least 1000 meters. It should have many of the characteristics of the M72, such as lightweight, disposable launcher, and the capability of being operated by one man. Such a weapon could be issued to the platoon on an as required basis.

(b) The experiment demonstrated the advantages of organic machine guns in the rifle squads. The relative advantages of having them in the rifle squad, as opposed to a weapons squad, are discussed in paragraph 2c (3) above, from the viewpoint of the squad, and in paragraph 3c (1) above as related to the platoon as a whole. With machine guns organic to the rifle squads there is, of course, no requirement to have them in a weapons squad.

(c) The weapons squad, from the viewpoint of organizational structure (as differentiated from its function as a control element for crew-served weapons) was also determined to be undesirable because it reduced flexibility, was less responsive to the needs of the rifle squad leaders, delayed the delivery of automatic weapons fire on targets of opportunity, and complicated the platoon leader's control and training problems. Each of these disadvantages has already been discussed in this report.

(d) In sub-paragraph c (2) (a) above it was pointed out that the M67 recoilless rifle was not a suitable weapon for the rifle platoon. Further, that even if this weapon is included it should be located in the platoon headquarters, not in a weapons squad. In sub-paragraph c (2) (b) above it has also been determined that the machine guns should be organic to the rifle squads. Therefore, with no recoilless rifle and with the machine guns organic to the rifle squads there is no longer a requirement for a separate weapons squad in the rifle platoon.

(3) Optimum Platoon Structure: As discussed above, the experiment demonstrated that the B Platoon with four identical squads was superior or equal to the other two platoons in respect to each of the major criteria except firepower. In firepower it was better than the A Platoon but lacked the volume of fire of the C Platoon. This unfavorable comparison with the

C Platoon was due to the difference in the number of machine guns in the platoon: C had two per squad while B had only one in each squad. By organizing the B Platoon with the optimum squad which contained two machine guns (paragraph 2c(4) above), the resulting platoon would retain the structural advantages of the B Platoon and gain the firepower advantage of the C Platoon. The B Platoon structure organized with the C1 squads is therefore the optimum platoon structure. (Annex G and Summary question and responses - paragraph 6, Annex F, p 73.)

d. Communications

Throughout the experiment the armored personnel carriers in which the experimental platoons were mounted had radios installed for communication within the platoon. The experimental platoons were also equipped with portable radios to enable platoon leaders, platoon sergeants, assistant platoon sergeants, and squad leaders to operate in a dismounted radio net. In addition, for both mounted and dismounted operations, the platoon leaders had radios capable of operating in the company net.

(1) It was found that in mounted operations flexibility and speed of radio communication were essential for the platoon leader to command and control his subordinate elements effectively without restricting mobility. At the same time, the platoon leader required radio equipment capable of simultaneously maintaining a station in the company command net.

(2) Several field tests were conducted without a dismounted radio net to determine the necessity for such a net and the suitability of the organization to operate without radio communications. It was found that the experimental units were capable of operating without radios. It was concluded, however, that radios increased the effectiveness of the platoons in dismounted operations particularly in mountainous, heavily wooded or broken terrain; when deployed over extended frontages; and where visibility was restricted due to weather, dust or smoke.

(3) In the initial exercises, platoon leaders relied too much on their radios and used them excessively. As a result they failed to move about actively controlling and supervising their units. Subsequently when the use of radios was not permitted, an immediate improvement took place in the actions of the platoon leaders. Their awareness of terrain and tactical conditions increased and they were more energetic in supervising, personally, the activities of their subordinate units. Later when the use of radios was restored, it was found that the volume of traffic diminished from the previous level and net discipline improved.

(4) Arm and hand signals, pyrotechnics, and other visual communications means were used to augment radios during periods of listening silence and when equipment failures occurred. At the squad

level, leaders made extensive use of arm and hand signals and during periods when the radios were not used the squad leader communicated with the platoon leader by this means. Whistle signals proved reliable in the control of fire and by the end of the experiment were in general use.

4. MECHANIZATION OF THE RIFLE PLATOON

The optimum rifle platoon, without altering its basic structure, can be mechanized by mounting the platoon in armored personnel carriers.

a. Mechanization of the Optimum Squad

To mechanize the optimum rifle squad, the addition of an armored personnel carrier and a driver is necessary. The assignment of the driving responsibility to one of the riflemen as an additional duty would not only reduce the fighting strength of the squad but would also preclude optimum use of the carrier. When the rifle squad dismounted from its personnel carrier, it was necessary that the driver remain with the vehicle for the purpose of firing the vehicular weapon in support of the squad, providing security for the carrier, moving the carrier forward to rejoin the squad, and performing vehicle maintenance. These functions are full-time duties for one man.

b. Platoon Headquarters Vehicle

(1) Evaluation indicated the necessity for a separate vehicle in the platoon headquarters (Summary question and responses - paragraph 8, Annex F, p. 74). In a mounted formation the location from which the platoon leader could best control his platoon was not necessarily the best location for a squad. In a number of mounted exercises the platoon leader found that a position in the rear of the formation was required in order to control and observe his entire unit. The result was that if he did not have a separate carrier, the squad which was mounted in the same vehicle with the platoon leader arrived at the dismount point later than the other squads and after arriving was not always in the most favorable position to come on line with the other squads for the assault. A separate vehicle for the headquarters permitted both the platoon leader and squad to occupy respectively the most advantageous position. Without a separate vehicle the headquarters personnel were satellited, one man to each squad, for transportation. This separation of the platoon leader from his radio operator disrupted communications at the critical time of dismounting. With a separate vehicle the platoon headquarters remained an entity, each person was readily available to the others. A further advantage of a separate carrier is that the platoon leader was allowed greater freedom of movement. Otherwise he had the choice of dismounting a squad and separating it from the portion of the equipment aboard the vehicle or taking the squad along with him. These are undesirable alternatives. From a resupply and sustainability viewpoint, the additional carrier allowed more supplies to be carried for the platoon.

(2) Comments from the Aggressor platoon leaders indicate that when the platoon headquarters vehicle was of a different type than that used by the squads, it was readily identified and became a prime target for Aggressor fires. This difference also prevented interchangeability with squad carriers and complicated maintenance problems.

(3) The addition of a separate vehicle for the platoon headquarters also required the addition of one man as a driver. The disadvantage of increased costs in personnel and equipment are more than outweighed by the increased combat effectiveness resulting from a separate carrier as discussed above. If, however, considerations beyond the scope of this experiment preclude the inclusion of the separate carrier for the platoon headquarters, the optimum mechanized rifle platoon can be mounted in four carriers. To do so would necessitate loading each of the four carriers with 13 men, which is the rated capacity of the M113 armored personnel carrier.

c. Observation Ports and Firing Hatches: The experiment indicated that observation ports and firing hatches for the M113 armored personnel carrier would be of limited value. The moving personnel carrier is an unstable firing platform which would result in inaccurate and ineffective fire by the rifle squad. Firing from the moving vehicle is not in consonance with the tactical concept of employment of the vehicle. The armored personnel carrier is not designed as a mobile foxhole but as a means of armor-protected transportation between engagements. Observation ports would be of limited value due to dust, movement, and a limited field of vision. Further, installation of observation ports and firing hatches would result in a substantial reduction of storage space which is already at a premium. (Summary questions and responses - paragraph 9, Annex F, p. 75).

d. Vehicle Light Weapon System (VLWS):

(1) Some weapon is necessary for the protection of the individual carrier from enemy personnel and aircraft; the VLWS provides such protection. In addition, the VLWS provides a large volume of long range supporting fires immediately responsive to the platoon leader. To mount the VLWS on only a portion of the personnel carriers would limit the ability of the platoon leader to alter formations, to use these fires in offensive and defensive fire planning, and to change his plans once made.

(2) The VLWS should be capable of being fired from both the commander's cupola and the driver's compartment. The driver cannot fire the weapon when the vehicle is in motion. There is a requirement for the VLWS to be fired immediately upon halting in order to protect the dismounting squad. The squad leader is not available for this purpose since he must orient, lead, and control his squad. Due to the configuration of the M113 armored personnel carrier, the driver has difficulty in moving to the commander's cupola until the carrier is empty of personnel. In many cases, as soon as the personnel have dismounted, the driver must move his vehicle to a more commanding location so that he can furnish better supporting fire.

The driver is often the sole occupant of the vehicle and must be able to fire the VLWS and move the vehicle in rapid succession. This precludes his moving back and forth from the driver's compartment to the commander's cupola. (Summary questions and responses - paragraph 10, Annex F, p. 75).

5. ADAPTATION TO CURRENT CONDITIONS

The optimum composition of the rifle squad and platoon has been developed for a unit equipped with weapons expected to be available during the 1965-1970 period. Actually, the only weapon not immediately available is the APHHW which combines the characteristics of the M14 rifle and the M79 grenade launcher. As an interim measure, it would be entirely feasible to adopt the optimum platoon structure as developed and adapt it to weapons presently in the hands of troops by substituting either the M14 or the M79 for the APHHW.

VI

Conclusions and Recommendations

1. CONCLUSIONS

a. The Rifle Squad

(1) Size: The optimum size for the rifle squad is 11 men. This number can be effectively controlled and provides sufficient strength in the assault and excellent coverage of a sector in the defense. It possesses sustainability in that it can absorb a reasonable number of casualties without becoming ineffective.

(2) Structure: The rifle squad organized with two identical fire teams improves the squad leader's capability to direct and control his fire element and maneuver element. In the defense, squad leaders are led naturally into a sound disposition of their men and weapons by occupying strong points of defense by fire teams.

(3) Weapons: Organic M60 machine guns increase greatly the firepower of the rifle squad. Placement of a machine gun in each fire team of the rifle squad balances the squad organization and thereby allows greater flexibility in employment. With the machine guns organic to the rifle squad, the squad leader has better control of the weapons and they are more responsive to his needs than when attached to or placed in support of the squad. All personnel of the rifle squad should be armed with the all-purpose hand-held weapon except the machine gunners who should be armed with a sidearm.

b. The Rifle Platoon

(1) Platoon Headquarters:

(a) Assistant Platoon Sergeant: An assistant platoon sergeant in the mechanized rifle platoon is essential for the control of the armored personnel carriers and the fires of the vehicle light weapon systems when the platoon is operating dismounted. In the infantry rifle platoon this noncommissioned officer, though adding considerably to effectiveness, is not essential.

(b) Radio Operator/Messenger: One radio operator/messenger is required for the platoon headquarters. The platoon leader cannot carry and operate the radios without seriously reducing his capability to command the platoon.

(c) Individual Weapons: All personnel of the platoon headquarters should be armed with the all-purpose hand-held weapon except the platoon leader who should be armed with a sidearm.

(2) Platoon Structure:

(a) Number and Type of Squads in the Platoon:

1. The four-rifle-squad platoon has the following advantages when compared to the three-rifle-squad platoon: There is an economy in platoon overhead in relation to the number of squads and the span of control is optimized. It possesses greater sustainability and firepower. It has greater flexibility of employment and superior coverage of the platoon objective in the assault. In the defense, the four-rifle-squad platoon provides optimum coverage of the platoon sector.

2. The four-rifle-squad platoon has the following advantages over the platoon with three rifle squads and a weapons squad: Control is improved and simplicity in training and employment is achieved with identical squads. The four-rifle-squad platoon can occupy defensive positions with greater ease and speed and provides optimum coverage of the platoon sector. The firepower of the rifle squad is greatly increased and the machine guns are more responsive to the needs of the squad leaders.

3. A platoon leader is capable of controlling effectively five subordinate elements. When a platoon leader is required to control a unit with three rifle squads and a weapons squad consisting of a machine gun section and recoilless rifle section, the addition of attachments will overextend his capacity for effective control.

(b) Weapons Squad:

1. Recoilless Rifle, 90mm, M67: This weapon, with its excessive weight, short range, personnel requirements, and difficulty of control and employment, should not be organic to the rifle platoon. The capabilities of this weapon overlap to a large extent those of the much lighter Rocket HE, 66mm, Antitank, M72. If the decision is made that the M67 be included in the rifle platoon the number should be one and it should be located in the platoon headquarters to facilitate control and timely employment. A four-man crew is required to employ effectively this weapon: a gunner, an assistant gunner, and two ammunition bearers. All members of the team should be armed with the APHHW except the gunner who should carry a sidearm.

2. By making the machine gun organic to the rifle squad (paragraph 1a (3) above) and by eliminating the recoilless rifle from the platoon (sub-paragraph 1 above), there is no longer a requirement for a weapons squad.

(c) Communication: Vehicular-mounted radios are required in each carrier to facilitate control and movement when the mechanized platoon is operating in its carriers. Portable type radios are required for both the infantry and mechanized rifle platoons in dismounted operations to provide adequate control when terrain, weather or other conditions preclude or hinder effective communication by other means. The net for dismounted operation should include the platoon leader, platoon sergeant, squad leaders, and for the mechanized platoon only, the assistant platoon sergeant.

c. Mechanization of the Rifle Platoon

(1) The rifle squad can be mechanized by the addition of one armored personnel carrier and one man whose primary duty is to drive the vehicle. Assignment of the additional duty of driver to one of the riflemen either reduces the fighting strength of the squad or does not permit optimum use of the carrier. During dismounted combat, operation and security of the carrier and employment of the vehicle light weapon system is a full time duty for the driver.

(2) A separate armored personnel carrier for the headquarters of the mechanized platoon allows the platoon leader to place himself in the most advantageous position to control the platoon, maintains the integrity of the platoon headquarters, and provides additional cargo space. The carrier should be the same type as that of the squads. An additional man is required to drive the carrier.

(3) It is possible to mount the optimum mechanized rifle platoon (Annex J) in four M113 armored personnel carriers, and thereby save one armored personnel carrier and a driver; however, to do so would reduce the overall effectiveness of the platoon as indicated above.

(4) Armored Personnel Carrier (M113): Observation ports and firing hatches would be of marginal value and would materially reduce the load carrying capacity of the vehicle. The VLWS must be mounted on all carriers of the mechanized rifle platoon to permit flexibility of employment and to provide maximum fire support. The VLWS must be capable of being fired from both the commander's cupola and the driver's compartment to provide protection and fire support when moving as well as when stationary and particularly at the critical time of dismounting under fire.

d. Adaptation to Current Conditions The optimum rifle platoon can be adapted to use with weapons currently in hands of troops by substituting a combination of the M14 rifle and the M79 grenade launcher for the APHHW.

2. RECOMMENDATIONS

a. Rifle Squad (Annex I). It is recommended that:

- (1) The strength of the rifle squad be 11 men organized with a squad leader and two identical 5-man fire teams, with one M60 machine gun in each fire team.
- (2) The machine gun teams consist of a gunner and rifleman/assistant machine gunner.
- (3) All personnel of the squad be armed with the all-purpose hand-held weapon (APHHW) except the machine gunners who carry sidearms.

b. Rifle Platoon (Annex I). It is recommended that:

- (1) The platoon headquarters consist of a platoon leader, platoon sergeant, and radio operator/messenger.
- (2) The platoon consist of a platoon headquarters and four identical rifle squads.
- (3) All personnel of the platoon be armed with the all-purpose hand-held weapon except the platoon leader and machine gunners, who should be armed with a sidearm.
- (4) The Recoilless Rifle, 90mm, M67, with its present limitations, be eliminated as an organic weapon of the rifle platoon.
- (5) Portable radios be provided for a platoon net to include squad leaders.

c. Mechanization of the Rifle Platoon (Annex J). It is recommended that:

- (1) When the rifle platoon is mechanized the following equipment and personnel be added:
 - (a) An armored personnel carrier for each of the squads and a separate carrier for the platoon headquarters.
 - (b) A vehicular mounted radio for each carrier.
 - (c) An assistant platoon sergeant.
 - (d) A driver for each of the five armored personnel carriers.
- (2) No modification be made to the armored personnel carrier, M113, to add observation ports and firing hatches.

(3) A vehicle light weapon system (VLWS) be mounted in each of the armored personnel carriers.

(4) A mount be developed for the VLWS which will permit firing from both the commander's cupola and the driver's compartment.

VII References

1. FM 7-10 (Oct 1949 and Jan 1959)
2. FM 7-40
3. FM 17-1
4. FM 17-20
5. FM 17-37
6. FM 100-1
7. PRS Report Number 980, The Effectiveness of Small Military Units, Institute for Research in Human Relations, 30 September 1952 (U).
8. Experimental Investigation of Tables of Organization and Equipment of Infantry Rifle Squad, Parts I and II, Psychological Research Associates, March 1954 (U).
9. A Study of the Infantry Rifle Squad TOE, with Volumes I and II Appendix, Psychological Research Associates, March 1956 (U).
10. Fire Capability of Automatic and Semi-Automatic Small Arms Weapons, Psychological Research Associates, March 1956 (U).
11. Psychological Effectiveness of Small Arms Fire, Psychological Research Associates, March 1956 (U).
12. The Effect of Squad Size on Leader Control and Umpire Reliability, Psychological Research Associates, July 1956 (U).
13. Target Definition, Location, and Selection, Research Study Report V, Psychological Research Associates, June 1957 (U).
14. Staff Study, "The Organization of the 1965-70 Basic Fighter Team (Modern Infantry Squad), " prepared by Doctrine and Organization Section, Combat Development Office, USAIS, 1 December 1959 (U).
15. "Comparison of M59 and M113, " Ground Mobility Department, USAIS.
16. Reference Data for Armor Units, USAARMS, 1960.

17. Infantry Reference Data, USAIS, 1960.
18. USAARMS Responses to CDEC Questions, 27 February 1961 (U).
19. Troop Test Program Report, The Infantry Battalion, 1st Marine Division, 21 December 1960 (U).
20. Small Weapons System Concepts Conference, 25-26 October 1960, Springfield Armory, Springfield, Mass.
21. ATSWD-CA 472 (U), "Proposed Qualitative Materiel Requirement for Vehicle Light Weapon System (U), " 20 January 1961, Hq, USA CONARC, Ft Monroe, Va.
22. "Here's How, " Operation and Maintenance of the M113 APC, February 1960, Food Machinery and Chemical Corporation, San Jose, Calif.
23. "Proposal for Improvement of M113 APC Hull Shape (U), " October 1960, Food Machinery and Chemical Corporation, San Jose, Calif.
24. LAW Characteristics, XM72, 66mm Rocket Launcher (U), Hesse Eastern (a Division Flightex Fabrics, Inc.), November 1960.
25. Report of Project Number 2851X, Confirmatory Test of Launcher, Grenade, XM79, and Service Test of Cartridge, 40mm, XM 382 (U), 10 October 1960.
26. Canadian Army Military Text 7-84, The Infantry Battalion in Battle (APCs) 1959 (Provisional), May 1959 (U).
27. Canadian Army Military Text 7-84, The Infantry Battalion in Battle, Motorized, 1960.
28. Canadian Army Military Text 1-8, The Infantry Brigade Group in Battle, Part I, Tactics, 1960.
29. Canadian Combat Development Study, CDY, 59-3-1; Employment and Organization of the Combat Group, 1961.
30. British Army Staff Washington BAS/66/Inf, 7 February 1961 "British Infantry, Peace Establishment (U). "
31. USA CDEC Training Text 60T7-1, "A Echelon, " July 1959 (U).
32. Evaluation of Tactical Units, Phase I, ATCDC-61-672C, USA CDEC, May 1961.

33. Evaluation of Tactical Units, Phase II, ATCDC-61-1115C, USA CDEC, August 1961.
34. Outline Plan of Experimentation, Optimum Composition of the Rifle Squad and Platoon, Hq, USA CDEC, 24 March 1961.
35. Message, ATSWD-A799974, CG, US CONARC, 4 January 1961, "CDEC Experimentation."
36. Disposition Form, CD, US CONARC to CG, USA CDEC, 27 February 1961, subject: "List of Material for Planning for Experiment."
37. "A Progress Report on a High Velocity Antitank Rocket System (U)." Report CH 38211, Douglas Aircraft Company Inc., Charlotte Division, Charlotte, North Carolina, 26 May 1961.
38. Optimum Loading Plans for the M113 Armored Personnel Carrier, Hq, USA CDEC, November 1961.

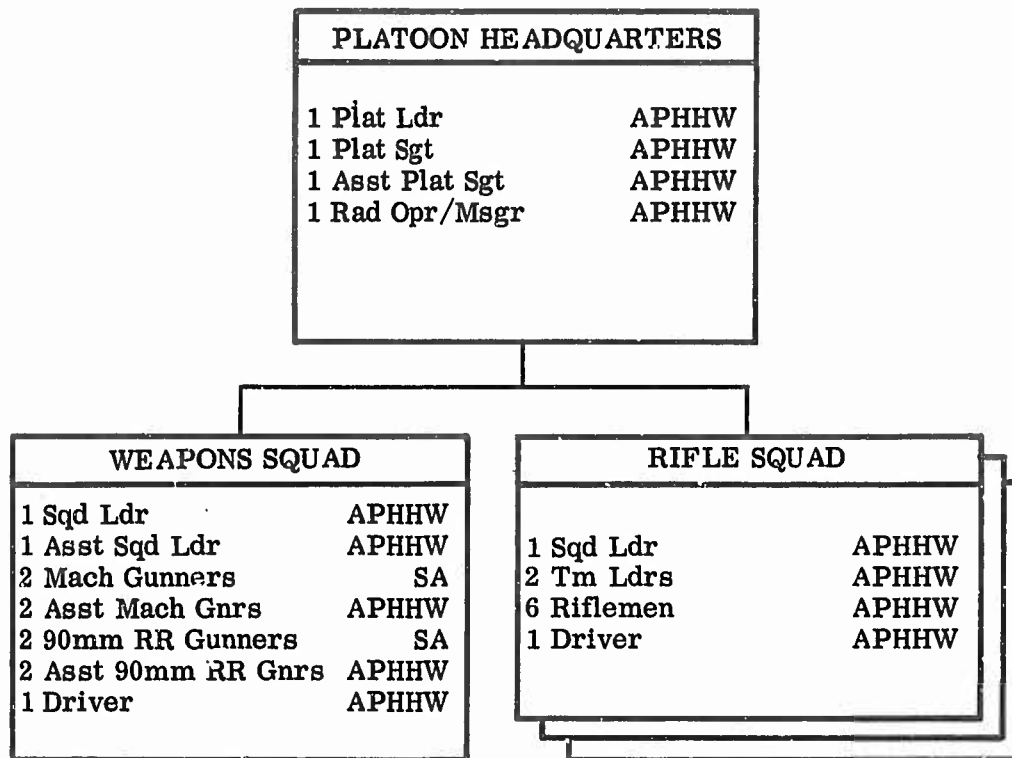
ANNEXES

Annex A

ORGANIZATIONS SELECTED FOR FIELD EXPERIMENTATION

Experimental Platoon A1	46
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Experimental Platoon B1	48
Experimental Platoon B2	49
Experimental Platoon C1	50
Experimental Platoon C2	51

PLATOON A 1

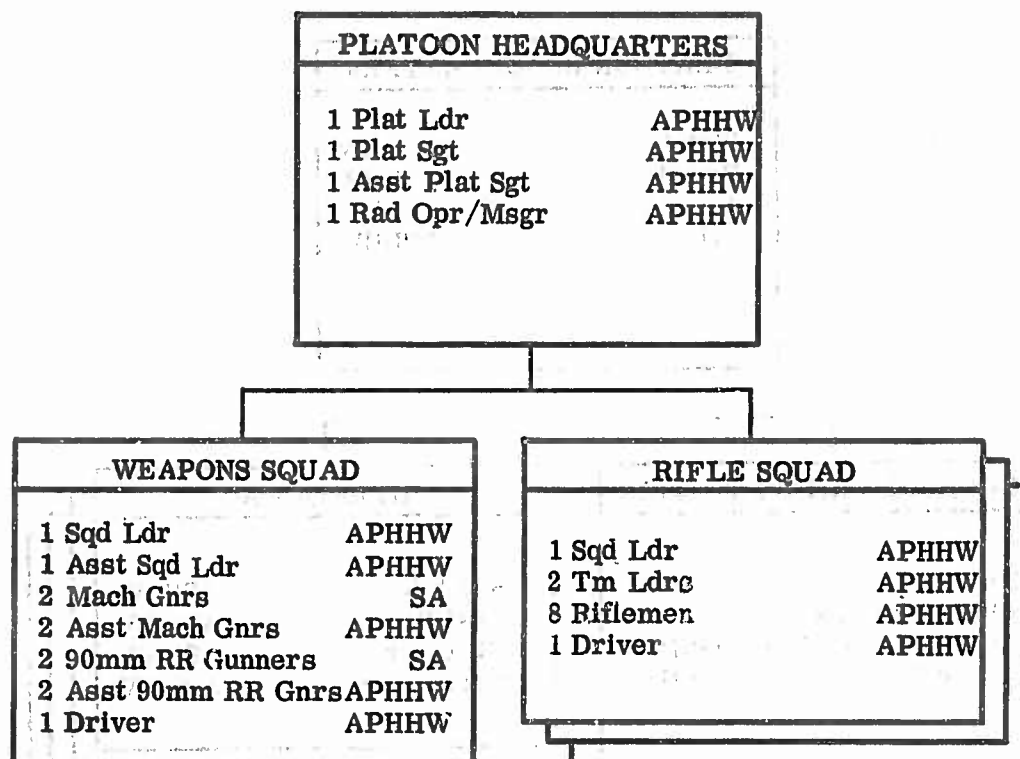


RECAPITULATION:

Personnel			Weapons	Radios	Vehicles
	Off	Em			
Plat Hq	1	3	Sidearm - 4	AN/PRC 10 - 1	M113 APC - 4
Wpns Sqd		11	APHHW - 41	AN/PRC 6 - 7	
3 Rifle Sqds		30	M60 MG - 2	AN/VRC 7 - 2	
	1	44	M67 RR - 2	AN/GRC 8 - 2	
			VLWS - 4		

REMARKS: Platoon Leader and Radio Operator/Messenger ride with 1st Squad.
 Platoon Sergeant rides with the Weapons Squad.
 Assistant Platoon Sergeant rides with 2d Squad.

PLATOON A 2

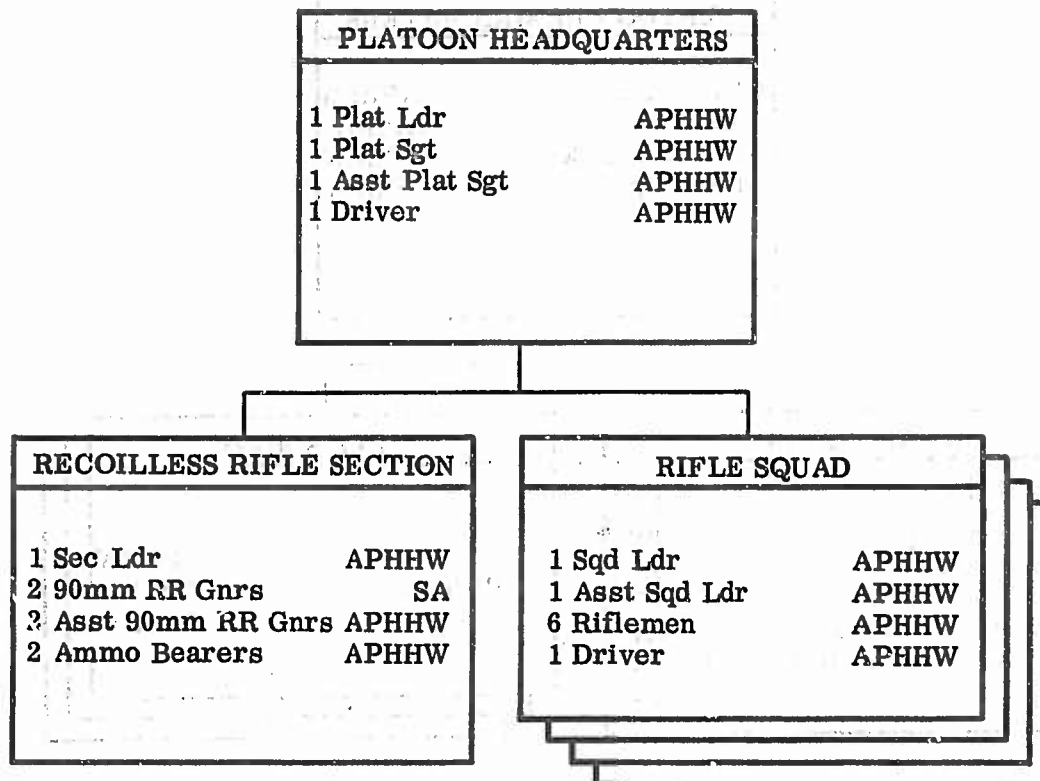


RECAPITULATION:

Personnel			Weapons	Radios	Vehicles
	Off	Em			
Plat Hq	1	3	Sidearm - 4	AN/PRC 10 - 1	M113 APC - 4
Wpns Sqd		11	APHHW - 47	AN/PRC 6 - 7	
3 Rifle Sqds		36	M60 MG - 2	AN/VRC 7 - 2	
	1	50	M67 RR - 2	AN/GRC 8 - 2	
			VLWS - 4		

REMARKS: Platoon Leader and Radio Operator/Messenger ride with the Weapons Squad.
 Platoon Sergeant rides with the 1st Squad.
 Assistant Platoon Sergeant rides with the 2d Squad.

PLATOON B 1



RECAPITULATION:

Personnel		Weapons	Radios	Vehicles
	<u>Off</u> <u>Em</u>			
Plat Hq	1 3	Sidearm - 2	AN/PRC 10 - 1	M113 APC - 5
RR Sec	7	APHHW - 45	AN/PRC 6 - 8	
4 Rifle Sqds	36	M60 MG - 4	AN/VRC 7 - 3	
	1 46	M67 RR - 2	AN/GRC 8 - 2	
		VLWS - 5		

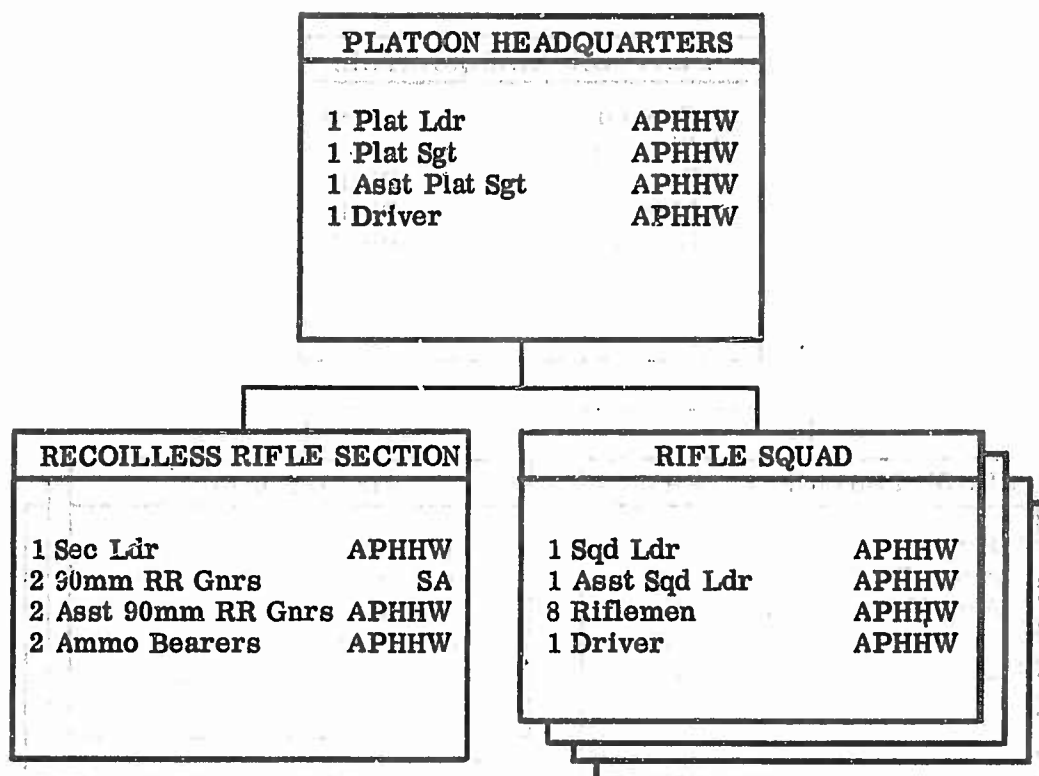
REMARKS: Recoilless Rifle Section and Platoon Headquarters, minus the Platoon Sergeant, ride in the same vehicle.
 Platoon Sergeant rides with a Rifle Squad.
 One Machine Gun in each Rifle Squad.

ANNEX A

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PLATOON B 2

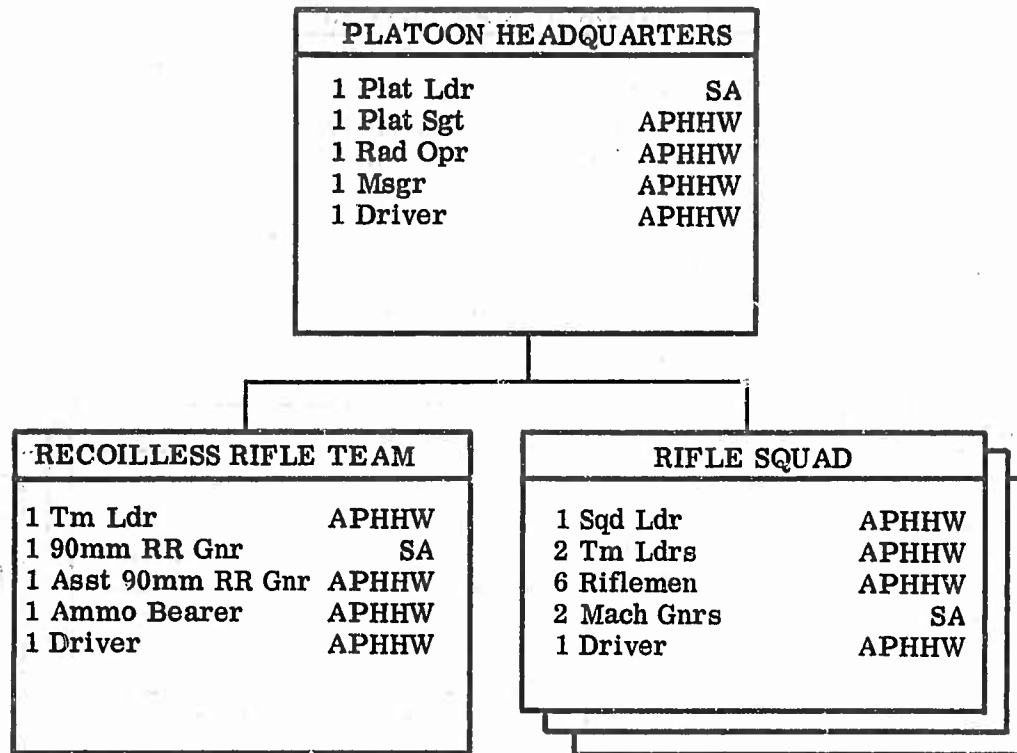


RECAPITULATION:

Personnel			Weapons	Radios	Vehicles
	Off	Em			
Plat Hq	1	3	Sidearm - 2	AN/PRC 10 - 1	M113 APC - 5
RR Sec		7	APHHW - 53	AN/PRC 6 - 8	
4 Rifle Sqds		44	M60 MG - 4	AN/VRC 7 - 3	
	1	54	M67 RR - 2	AN/GRC 8 - 2	
			VLWS - 5		

REMARKS: Recoilless Rifle Section and Platoon Headquarters, minus the Platoon Sergeant, ride in the same vehicle.
Platoon Sergeant rides with a Rifle Squad.
One Machine Gun in each Rifle Squad.

PLATOON C 1



RECAPITULATION:

Personnel			Weapons	Radios	Vehicles
	Off	Em			
Plat Hq	1	4	Sidearm - 8	AN/PRC 10 - 1	M113 APC - 4
RR Tm		5	APHHW - 38	AN/PRC 6 - 6	M114 ACRV - 1
3 Rifle Sqds		36	M60 MG - 6	AN/VRC 7 - 3	
	1	45	M67 RR - 1	AN/GRC 8 - 2	
			VLWS - 5		

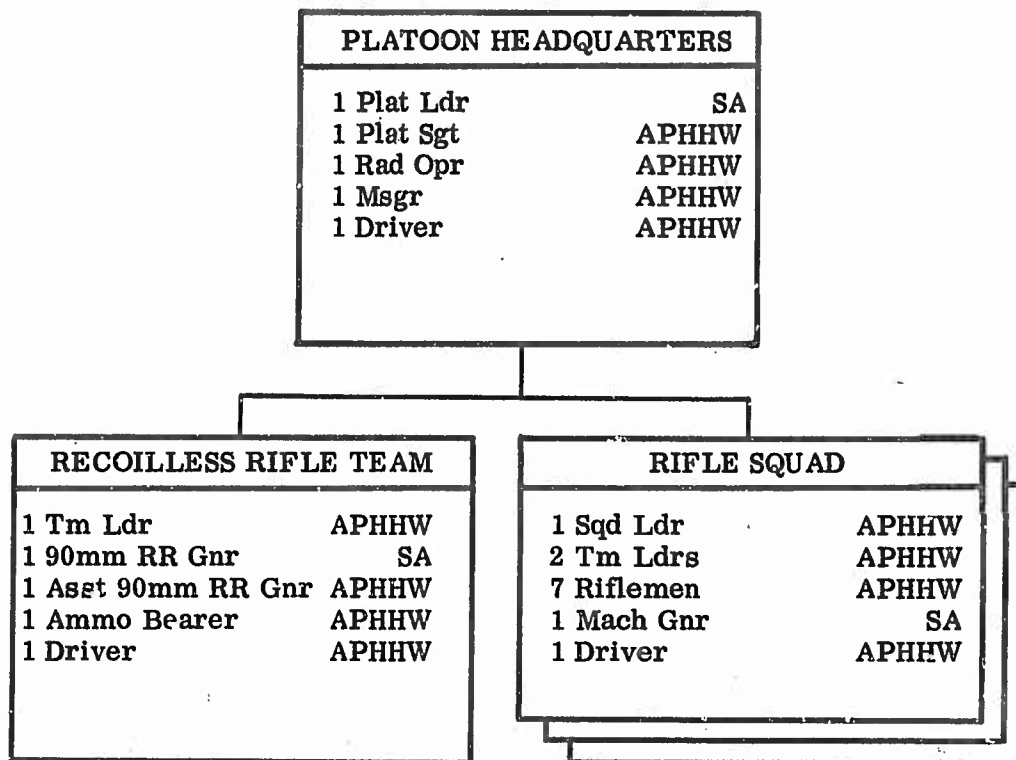
REMARKS: Separate vehicle provided for Platoon Headquarters minus the Platoon Sergeant. Platoon Sergeant rides with a Rifle Squad.

ANNEX A

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PLATOON C 2



RECAPITULATION:

<u>Personnel</u>			<u>Weapons</u>	<u>Radios</u>	<u>Vehicles</u>
	<u>Off</u>	<u>Em</u>			
Plat Hq	1	4	Sidearm - 5	AN/PRC 10 - 1	M113 APC - 4
RR Tm		5	APHHW - 41	AN/PRC 6 - 6	M114 ACRV - 1
3 Rifle Sqds		36	M60 MG - 3	AN/VRC 7 - 3	
	1	45	M67 RR - 1	AN/GRC 8 - 2	
			VLWS - 5		

REMARKS: Separate vehicle provided for Platoon Headquarters minus the Platoon Sergeant.
Platoon Sergeant rides with a Rifle Squad.

Annex B

MATERIEL LIST

Materiel to be available in 1965-1970 and items used to simulate actual materiel not available or available in insufficient quantities for the experiment.

<u>NEW ITEM</u>	<u>NR REQ</u>	<u>NR AVAIL</u>	<u>ITEMS SUBSTITUTED FOR EQUIPMENT NOT AVAILABLE</u>
Carrier, Personnel, M113	13	6	Carrier, Personnel, M59
Armored Command and Reconnaissance Vehicle, M114	1	0	Gun, 90mm, SP, M56 (With- out main armament)
Vehicle Light Weapon System	13	0	Machine Gun, Cal .30, M37, mounted on carrier
All-Purpose Hand-Held Weapon	141	0	Rifle, Cal .30, M1, W/Ex- pended flare container taped to barrel
Recoilless Rifle, 90mm, M67	5	2	Rocket Launcher, 3.5 inch, weighted to 35 lbs.
Machine Gun, 7.62mm, M60	12	10	Machine Gun, Cal .30, M1919A6
Rocket, H. E. 66mm ANTITANK, M72	134	134	None
Sidearm	15	0	Pistol, Cal .45, M1911A1
Radio Set AN/PRC-25	3	0	Radio Set, AN/PRC-10
Radio Set AN/PRC-35	17	0	Radio Set, AN/PRC-6
Radio Set AN/VRC-12	14	0	Radio Sets, AN/GRC-8 and AN/VRC-7

Annex C
EVALUATION PLAN

1. The Problem	56
2. Elements of the Evaluation Plan	56
Appendix - Flow of Data Forms	59

1. THE PROBLEM

a. The Optimum Squad and Platoon experiment presented a measurement problem somewhat different from that typically encountered in previous CDEC experiments in that it was necessary to place much heavier reliance on military evaluation techniques than had usually been the case in the past. The scheme finally devised was tailored to the particular requirements of the Squad and Platoon experiment, but was based on the general principles which apply to the construction of any measurement plan based on ratings.

b. The measuring instruments to be employed in the experiment were military personnel who would observe the actions in the field closely and record their observations and judgments based on them. The aim of any scheme of measurement is objectivity. It is preferable therefore that reliance on opinion or judgment be kept to a minimum. When it is necessary to use judgments or ratings as primary evaluation means, those judgments should rest on a common basis in order to insure that the rating scheme approximates the requirements of any good measurement procedure. These primary requirements are as follows: The measurement procedure must provide that the actions which evaluators observe and upon which they base their judgments be those actions most critical to success in the accomplishment of the mission of the organization. (It follows, of course, that all evaluators should base their evaluations on the same observed actions.) Secondly, repeated measurements of the same actions must produce similar results. If a number of evaluators observe the same action, their rating should show substantial agreement. If they do not, it is as though a rubber yardstick were being used to measure the length of something, so that each time a measurement is taken the results may be difficult.

c. The approach used in developing the squad and platoon evaluation plan consisted of attempting to define what was to be examined by the raters and to specify the words they could use in describing their observations and opinions. Thus they would become measuring instruments in a sense approximating that in which a standard yardstick is a measuring instrument.

2. ELEMENTS OF THE EVALUATION PLAN

a. The first step was the development of scenarios specifying a variety of combat tasks for each organization to perform. The scenarios were then analyzed and separated into short, easily definable segments which were to be the basic action elements for field observations. Each of these segments was examined by military members of the evaluation planning group, and they were asked to state what would indicate to them, as evaluators, that the organization was performing either satisfactorily or unsatisfactorily. These indicators were listed and a determination made as to which of them would probably be observable by evaluators under field conditions. The next step was to try to determine what characteristics of the

organizational structure might be causes of any observed performance deficiencies. This was done by listing organizational differences and, again, drawing on the experiences and judgments of the evaluation planning group for specification of such causes.

b. Rating forms used in the field were based on the information described above. Rating items were written for each of the basic kinds of action segments. Each item specified a list of observable indications of poor performance. The evaluators were to use the list as a guide for their observations and to respond to this part of the question by indicating on a four-point scale the degree to which these difficulties seemed to exist during the course of the given action being observed. The scale points were defined as follows:

- 4 - Problem not evident at all
- 3 - Slight evidence of the problem
- 2 - Frequent evidence of the problem
- 1 - Problem evident all the time.

It should be noted that the list of evidences of difficulty finally chosen represented only a small part of the items considered. These, however, appeared to cover all the frequently occurring difficulties on which observations could be made by evaluators during the course of an action. In addition, space was provided in which the evaluator could indicate any other difficulties which he might have observed that were not covered in the specified list. The second part of each rating item consisted of a listing of organizational features which might be indicated as possible causes of the problems specified in the first part. For each item in part one on which the evaluator had indicated, by means of the four-point scale, that he had perceived a problem, he was asked to specify in part two a probable cause. Here again space was provided for notation of any causes not contained in the specified list.

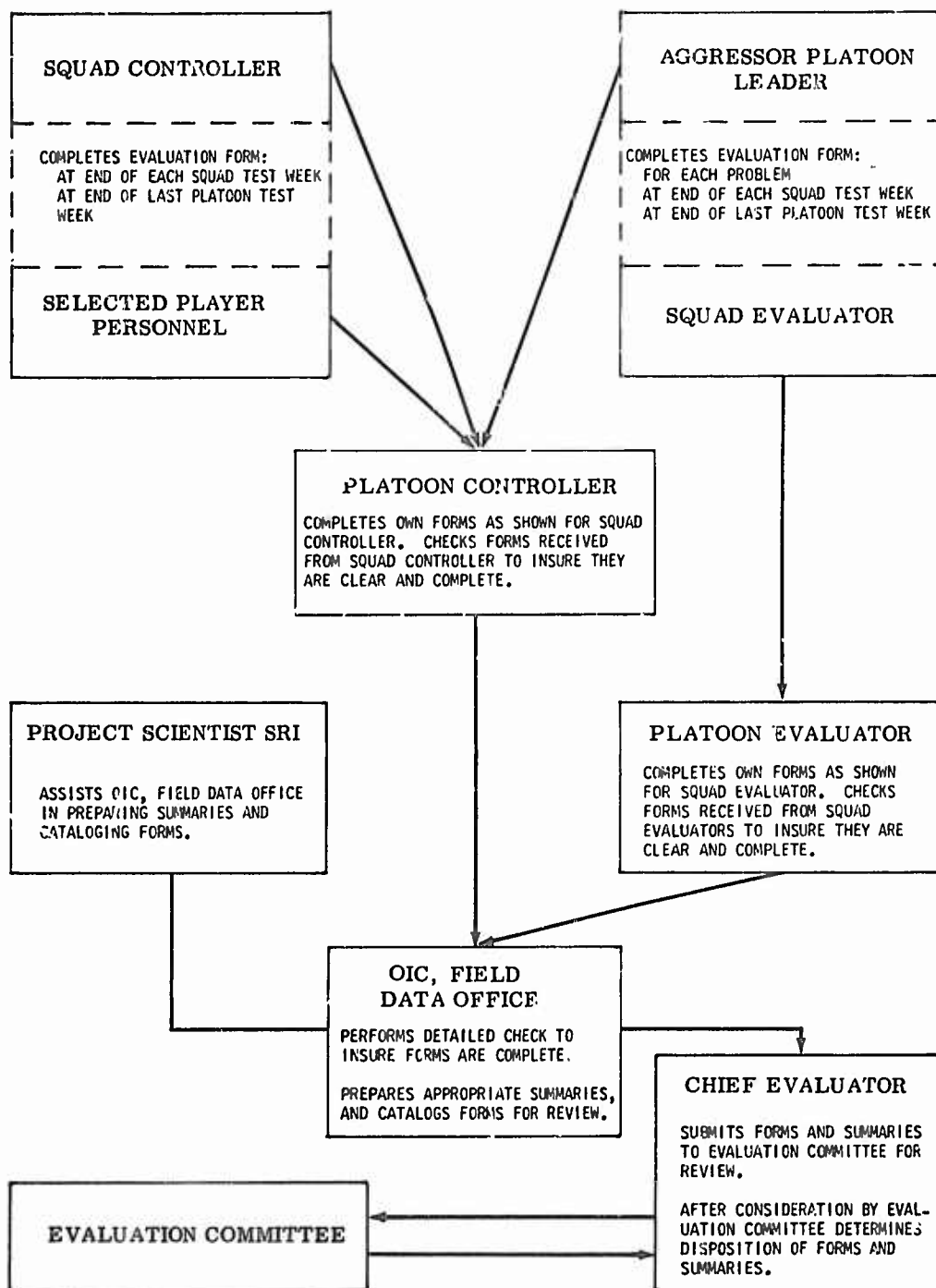
c. As the scenarios were being examined, it became evident that a relatively small number of items would cover the significant actions upon which evaluation could be based. In the case of the squads, for example, such things as changing formation or direction, starting, stopping or shifting fires, and the assault appeared to be the types of activities to which observation and evaluation should be applied. Most of these activities occurred a number of times in each scenario. Items such as those described above were written for each action. These were combined in booklets in the appropriate sequence for each scenario, and the evaluators made and recorded their observations and judgments immediately after each action.

d. Effective use of the evaluation scheme in the field required tight scenario control so as to insure that each organization did indeed perform all the necessary tasks under comparable conditions. In addition, evaluators remained on a given terrain course throughout the experiment. Thus, they were thoroughly familiar with their respective courses and with the scenarios for them and could observe each of the various organizations as they went through each course in order to facilitate organizational comparisons.

e. The rating forms directed the observations of the evaluators to the most significant aspects of performance as determined in advance by experienced military personnel and provided for the recording of observations in systematic fashion so that when summaries were made such organizational differences as might exist would be revealed. The summaries were made in the form of tabulations of numbers of responses in each category for each organization. The summary tabulations appear under headings, such as control and mobility, depending on which aspects of general performance the individual evaluation items appeared to reflect most closely. The overall product is a specification of frequency of occurrence of observed difficulties categorized by degree, and a list of probable causes with frequencies attached.

f. The rating forms were the primary source of information, since they provided for the most careful observation and frequent recording of judgments. In addition, however, there were a set of more general summary questions to be answered by evaluators. These were not filled out in the field but at regular intervals at later times. These questions are less specific and are not keyed so closely to particular observed actions. However, the evaluators' answers were based on their detailed field observations. They called for judgments about particular features of organizational structure or comparative ratings of the various organizations with respect to these features. This information, also, was summarized, with frequency counts where applicable. In addition to the evaluators' judgments upon which primary reliance was placed, controllers, players (including Aggressor) and other observers also recorded observations on some of the forms.

g. Finally, all summarized information was studied by a group of senior evaluators and judgments made as to which of the squad and platoons studied appeared to perform most satisfactorily. These judgments were made both in terms of overall proficiency and in terms of proficiency in certain types of actions and with respect to the various summary categories such as control. The following appendix shows the flow of Evaluator, Controller, and Player forms and summaries.



FLOW OF DATA FORMS

Annex D

SQUAD SUMMARY DATA

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TABLE D-1
SELECTION OF BETTER RIFLE SQUAD WITHIN EACH PLATOON

Personnel Group	PLATOON A		PLATOON B		PLATOON C	
	Squad A1	Squad A2	Squad B1	Squad B2	Squad C1	Squad C2
Evaluators	0.0%	100.0%	15.4%	84.6%	72.7%	27.3%
Controllers	23.1%	76.9%	46.7%	53.3%	70.6%	29.4%
Observers	0.0%	100.0%	0.0%	100.0%	100.0%	0.0%
Players	33.3%	66.7%	37.5%	62.5%	100.0%	0.0%
ALL PERSONNEL	15.6%	84.4%	32.4%	67.6%	78.4%	21.6%

This table shows the percentage of personnel in each group selecting what they considered the better squad within each platoon at the completion of the squad phase.

TABLE D-2
SELECTION OF BEST RIFLE SQUAD AT END OF EXPERIMENT

Personnel Group	Squad							
	A1	A2	B1	B2	B3	B4	C1	C2
Evaluators						5.9%	82.3%	11.8%
Observers		7.1%		14.3%	7.1%	7.1%	35.7%	28.6%
Controllers				10.5%			63.2%	26.3%
Players		5.9%		17.6%	11.8%		41.2%	23.5%
All Personnel	0.0%	3.0%	0.0%	10.5%	4.5%	3.0%	56.7%	22.4%

This table shows the percentage of personnel in each group selecting what they considered the best squad of all those observed during the experiment.

Annex E

SQUAD RATING DATA

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TABLE E-1

	Squad					
	A1	A2	B1	B2	C1	C2
CONTROL						
Nr Evaluations	623	750	794	769	695	721
Nr Deficiencies	2	2	139	156	31	32
% Deficiencies	0.3	0.3	17.5	20.3	4.5	4.4
VULNERABILITY OF LEADERS						
Nr Evaluations	238	234	281	263	251	231
Nr Deficiencies	0	0	34	36	5	2
% Deficiencies	0.0	0.0	12.1	13.7	2.0	0.9
FIREPOWER AND TARGET COVERAGE						
Nr Evaluations	180	190	158	136	135	152
Nr Deficiencies	123	93	137	57	1	41
% Deficiencies	68.3	48.9	86.7	41.9	0.7	27.0
OFF-CARRIER MOBILITY						
Nr Evaluations	28	26	27	29	25	24
Nr Deficiencies	0	0	4	3	2	2
% Deficiencies	0.0	0.0	14.8	10.3	8.0	8.3

This table shows, for each squad, the total number of evaluations that were made and the number and percent of deficiencies observed for each aspect of control, vulnerability, firepower and mobility.

Above data adjusted to eliminate effects due to individual deficiencies and lack of training.

TABLE E-2
OBSERVED DEFICIENCIES RECORDED DURING PLATOON PHASE

	Squad		
	A2	B4	C1
CONTROL			
Nr Evaluations	1532	1122	1608
Nr Deficiencies	57	25	29
% Deficiencies	3.7	2.2	1.8
VULNERABILITY OF LEADERS			
Nr Evaluations	486	375	547
Nr Deficiencies	7	3	0
% Deficiencies	1.4	0.8	0.0
FIREPOWER AND TARGET COVERAGE			
Nr Evaluations	384	309	444
Nr Deficiencies	182	128	10
% Deficiencies	47.4	41.4	2.3
OFF-CARRIER MOBILITY			
Nr Evaluations	97	63	91
Nr Deficiencies	5	0	2
% Deficiencies	5.2	0.0	2.2

This table shows, for each squad, the total number of evaluations that were made and the number and percent of deficiencies observed for each aspect of control, vulnerability, firepower and mobility.

Above data adjusted to eliminate effects due to individual deficiencies and lack of training.

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TABLE E-3
PROBABLE CAUSES OF DEFICIENCIES IN SQUAD PERFORMANCE

Organizational Defect Listed by Evaluator As Cause of Performance Deficiency	SQUAD PHASE							
	SQUAD (Nr of Evaluators)							
	A1 (10)	A2 (10)	B1 (11)	B2 (11)	C1 (9)	C2 (9)	PLATOON PHASE	
Too Many Men in Squad					2		A2 (9)	C1 (10)
Too Few Men in Squad	6		10	4	2	2	1	1
Too Few Assistant Leaders in Squad			6	8	1		2	4
Lack of One MG Organic to Squad	6	6	2	1				1
Too Many MG's in Squad					2			
Lack of Two MG's Organic to Squad	3	4	6	7		7	8	6
Mobility Restricted by MG				1	4			2

The number in each block represents the number of evaluators indicating the listed defect as a cause of a performance deficiency. The total number of evaluators for each squad is shown in parentheses under the squad designation.

Annex F

SUMMARY QUESTIONS AND RESPONSES

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The tables in this annex reflect the responses of personnel, by number and group, for each of the questions asked concerning the composition of the rifle squad and platoon.

1. RIFLE SQUAD ORGANIZATION

Indicate the rifle squad organization you feel is the best organization using materiel to be available in the 1965-1970 period. (The squads listed are not to be considered as mechanized; therefore, the driver is not included.)

<u>Squad</u>	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
A1 (9 men, fire teams, no organic MG)					0
A2 (11 men, fire teams, no organic MG)		1		1	2
B1 (8 men, no fire teams, optional MG)					0
B2 (10 men, no fire teams, optional MG)		2	2	3	7
C1 (11 men, fire teams, 2 MG's)	14	5	12	7	38
C2 (11 men, fire teams, 1 MG)	2	4	5	4	15
B3 (9 men, fire teams, 1 MG)		1		2	3
B4 (10 men, fire teams, 1 MG)	1	1			2

2. MACHINE GUN, M60

- a. Where and in what number should the machine gun, M60, be placed in the rifle platoon?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
<u>Location</u>					
Rifle Squad	21	14	18	12	65
Weapons Squad	0	1	7	7	15
<u>Number of MG's Per Rifle Squad</u>					
None	0	1	0	1	2
One	3	8	7	9	27
Two	14	5	12	7	38

Number of MG's Per Weapons Squad

None*	17	14	11	11	53
One	0	0	1	2	3
Two	5	2	10	6	23
Three	0	0	2	0	2
Four	0	0	1	0	1

*Most of those indicating no machine gun saw no need for a weapons squad.

- b. What is the appropriate machine gun team organization?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
<u>Two Man Team</u>					
Yes	18	14	21	17	70
No	3	1	4	1	9

- c. What is the appropriate individual arm for each team member?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
<u>Gunner</u>					
Sidearm	21	10	19	14	64
APHHW	1	5	6	5	17
<u>Rifleman/Ass't Gr</u>					
Sidearm	0	4	5	8	17
APHHW	21	12	18	10	61

3. ASSISTANT PLATOON SERGEANT

Is there a requirement for an assistant platoon sergeant in the mechanized infantry rifle platoon?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	6	13	8	7	34
No	0	2	0	0	2

4. RADIO OPERATOR/MESSENGER

Is there a requirement for a radio operator/messenger (none, one or two men)?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
None	0	0	0	0	0
One Man	4	8	5	5	22
Two Men	2	8	3	4	17

5. PLATOON LEADER'S INDIVIDUAL WEAPON

What is the proper individual weapon for the platoon leader?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Sidearm	4	9	5	6	24
APHHW	2	7	2	3	14

6. PLATOON LEADER'S SPAN OF CONTROL

- a. How many squads can be effectively controlled by a platoon leader and still enable him to control a 90mm recoilless rifle section and an attached element such as a tank section?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Two Squads	2	0	0	0	2
Three Squads	4	9	7	7	27
Four Squads	1	7	1	1	10
Five Squads	0	0	0	1	1

- b. Without a 90mm recoilless rifle section, how many squads can be effectively controlled by a platoon leader and still enable him to control an attached element such as a tank section?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Three Squads	4	5	3	3	15
Four Squads	3	11	5	4	23
Five Squads	0	0	0	2	2

7. RECOILLESS RIFLE, 90mm, M67

- a. Should the recoilless rifle, 90mm, M67, be organic to the rifle platoon?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	12	4	9	11	36
No	9	12	15	8	44

- b. Where should the recoilless rifle, 90mm, M67, be located in the structure of the rifle platoon?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Platoon HQ	8	12	9	11	40
Weapons Squad	3	1	4	0	8

- c. How should the recoilless rifle team be organized and what individual arms should be assigned its members?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
<u>Team Orgn</u>					
One Gun	6	11	10	3	30
Two Guns	3	1	1	0	5
<u>Personnel</u>					
Three or less	2	0	4	0	6
Four	4	6	5	2	17
Five or more	3	5	2	0	10
<u>Individual Weapon</u>					
Gunner:					
Sidearm	11	14	12	11	48
APHHW	1	1	1	0	3
Ass' t Gnr/Ammo Bearers:					
Sidearm	9	4	2	4	10
APHHW	11	12	10	6	39

8. MECHANIZED RIFLE PLATOON HEADQUARTER'S CARRIER

Should a separate carrier be provided for the mechanized rifle platoon headquarters?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	6	9	4	7	26
No	1	6	3	2	12

9. OBSERVATION PORTS AND FIRING HATCHES

- a. Is there a need for observation ports and firing hatches in the M113 armored personnel carrier when the squad is mounted and moving to contact?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	9	4	6	8	27
No	12	9	13	9	43

- b. Is there a need for observation ports and firing hatches in the M113 armored personnel carrier for security when the squad is mounted and moving through a partially wooded area?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	2	3	0	3	8
No	4	10	7	5	26

10. VEHICLE LIGHT WEAPONS SYSTEM (VLWS)

- a. Is it necessary that all mechanized rifle platoon armored personnel carriers be equipped with the VLWS?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	7	12	7	9	35
No	0	2	0	0	2

- b. Should the VLWS have the capability of being fired from both the driver's compartment and the commander's cupola?

	<u>Evaluators</u>	<u>Observers</u>	<u>Controllers</u>	<u>Players</u>	<u>Total</u>
Yes	16	9	16	16	57
No	6	4	8	2	20

Annex G
PLATOON RATING DATA

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TABLE G-1
PERCENT OF TOTAL EVALUATIONS PER PLATOON
REFLECTING DEFICIENCIES IN PLATOON ORGANIZATION

Deficiency	Platoon		
	A	B	C
Control	5.64	3.99	5.59
Vulnerability of Leaders	2.07	2.47	2.79
Firepower and Target Coverage	37.33	10.44	7.54
Off-Carrier Mobility	9.09	10.55	10.81

Above data adjusted to eliminate effects due to individual deficiencies and lack of training.

TABLE G-2
PROBABLE CAUSES OF DEFICIENCIES IN PLATOON PERFORMANCE

Organizational Defect Listed by Evaluator as Cause of Performance Deficiency	PLATOON (Nr of Evaluators)		
	A (6)	B (4)	C (5)
Too many men in the platoon		1	1
Too few men in the platoon	1	1	1
No assistant platoon sergeant			3
No radio operator/messenger		3	
No separate messenger	1		
Presence of recoilless rifles	1		
No recoilless rifle (one)		2	
Too few recoilless rifles (two)		2	2
Lack of one machine gun per rifle squad	1		
Lack of two machine guns per rifle squad	5	1	
Mobility restricted by machine gun(s)			1

The number in each block represents the number of evaluators indicating the listed defect as a cause of a performance deficiency.

Annex H

TYPICAL EVALUATIVE COMMENTS

The following comments were obtained from personnel engaged in the experiment and appear representative of the general views expressed. Comments have been grouped by subject. Included with each comment is the branch, grade, and combat experience of the person making the comment.

Artillery Captain, in combat as an infantry company commander in Korea:

"This (A2) squad had adequate men to maneuver. The increased number of riflemen over the A1 squad made this a good size maneuver element."

Infantry Sergeant First Class, in combat as infantry squad leader and platoon sergeant in Korea:

"They (A1 Squad) work very good with a squad leader and two team leaders. The squad should have machine guns both for base of fire element and also in the assault. Should have more men per fire team. One or two would not hinder the team leaders' control and they would have more firepower and more men to cover the objective upon consolidating."

Infantry Lieutenant:

"Squad (B1) needs two to three more riflemen to make the unit more effective as a base of fire. It is too slow and ragged with present organization. Needs one more machine gun. Squad leader needs team leaders to improve control."

Infantry Sergeant First Class, in combat as infantry squad leader in Korea:

"When shifting or ceasing fires squad (B2) leader had trouble, should have team leaders to control for more effective squad in combat. Dispersion too great for squad leader to control. Team leaders would do away with most of this because they would be controlling their teams and at the same time take part in the action."

Infantry Sergeant, in combat as infantry squad leader in Korea:

"C1 is the best squad I have ever seen."

Infantry Master Sergeant, in combat as staff NCO in World War II:

"The two machine guns in the squad were very effective. It gives the squad a lot of firepower and will take up most of the firepower slack lost through casualties. With the two machine guns the squad can accomplish all missions assigned. The fire teams are well balanced and allow the squad leader flexibility in utilization."

Armor Captain:

"The optimum rifle squad should have at least 11 men, be organized with fire teams, and have at least one M60 machine gun organic."

Infantry Lieutenant:

"I like the machine gun organic to the rifle squads. Firepower is thus available to the platoon leader at all points at all times and without delay. The characteristics of the M60 made it no problem as regards rate of movement of the rifle squad. It is ideal to the assault only if organic to the rifle squads."

Artillery Sergeant, in combat as artillery section chief in Korea:

(Re machine gun in squad) "They had more opportunity to fire in the rifle squads. It gives the riflemen more coverage when the automatic weapon is with the squad. They know they have good support."

Infantry Captain, in combat as infantry squad leader, platoon sergeant, and 1st sergeant in World War II:

"I was continually impressed with the larger squad organized with fire teams and one machine gun per fire team. The balance within the squads and their ability to immediately return heavy effective fire upon initial contact was particularly impressive. Comparing this squad with those without automatic weapons and requiring time-consuming employment of a weapons squad erased any doubt as to the best squad and platoon organization."

Infantry Lieutenant Colonel, in combat as infantry rifle company commander and battalion S-3 in World War II:

"While the fire team concept offers certain advantages in control the squad leader/assistant squad leader concept permits

tailoring of the squad for a specific mission without the added expense of a third leader. There is a tendency in the fire team concept for the squad leader to direct instead of leading and the tactics employed tend to become stereotyped. I believe the squad leader and assistant concept is inherently more flexible and more adaptable to changing situations."

Infantry Lieutenant Colonel, in combat as infantry platoon leader and company commander in World War II and Korea:

(Re Assistant Platoon Sergeant) "Control of carriers in dismounted operations must be accomplished by someone other than the carrier driver. The very fact that the vehicle firepower will be employed in many instances dictates the requirement."

Infantry Sergeant First Class, in combat as rifleman and infantry squad leader in World War II and Korea:

(Re Assistant Platoon Sergeant) "Yes. Drivers due to limited training and experience are not capable of properly assessing the situation and taking effective action when such is demanded. Control-wise, they are poor at map reading, and will not react properly to the control of a supposed senior driver."

Infantry Major, in combat as infantry platoon leader in Korea:

(Re radio load) "Platoon leader is overburdened and constantly tied to his means of communications. This resulted in his being literally too tired to employ personal supervision."

Artillery Lieutenant Colonel, in combat as battery commander in World War II and battalion S-3, in Korea:

"It was observed that on many exercises the platoon leader of Platoon B was ineffective for some time after arriving on an objective. This inability to function effectively during the critical period of reorganization on the objective was due to physical exhaustion caused by the requirement to carry and operate his own radios."

Armor Captain:

"The weapons squad leader has an impossible job so the platoon leader or platoon sergeant help him do it."

Infantry Lieutenant Colonel, in combat as infantry platoon leader and company commander in World War II and Korea:

(Re diverse weapons in the weapons squad) "The demands and characteristics are so different that they should be separated. It is difficult enough trying to control different weapons of the same type without combining different type weapons."

Infantry Lieutenant:

(Re diverse weapons in the weapons squad) "This is a very hard organization for the squad leader to handle. Even with an assistant, things get out of hand. One man cannot handle two different weapons with two different missions. The squad leader cannot get around fast enough to see that the weapons are properly employed."

Infantry Captain, in combat as infantry squad leader, platoon sergeant, and 1st sergeant in World War II:

"In the extended effort four rifle elements in a platoon were necessary to physically occupy and defend with any reasonable certainty of success. This kind of organization assures the platoon leader of sufficient rifle strength at the objective and sufficient strength to hold it. He is not handicapped by type squads designed for two different functions. Each squad has its own automatic weapons and sufficient rifle strength to hold up its end of the mission."

Armor Captain:

"The four-rifle-squad platoon is the one I would want were I an infantry platoon leader. It has so much more of everything and is no harder to control than any other."

Infantry Lieutenant Colonel, in combat as infantry platoon leader and company commander in Korea:

"The four-rifle-squad platoon had the advantage. It had sufficient fire teams to cover the defensive sector. It was not too large for control nor was it too unwieldy."

Infantry Lieutenant:

"Due to the organization of the B Platoon it was best able to cover assigned sectors. The four rifle squads could cover the largest sector most effectively."

ANNEX H

82

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Infantry Colonel, in combat as infantry battalion commander in World War II, (Pacific):

"The four-rifle-squad platoon appeared superior to the other platoons in every respect. It fitted the terrain better in all types of defense and seemed easier to handle in the advance to contact and the attack."

Armor Captain:

"I wouldn't care if I never saw the 90mm Recoilless Rifle, M67 again in its present state. It is a liability to the rifle platoon."

Infantry Colonel, in combat as infantry battalion commander in World War II, (Europe):

"I question the assignment of a 90mm Recoilless Rifle permanently to a platoon. It is heavy, bulky, and when you add in the ammunition, is a drag for a squad day in and day out. Maybe these weapons belong to the Company Commander for issue as required. Tanks are not everywhere and this is the reason for being of the 90mm."

Infantry Major, in combat as an infantry platoon leader and company commander in World War II:

(Re 90mm, Recoilless Rifle) "Too much weight for value received."

Armor Lieutenant Colonel, in combat as infantry platoon leader, company commander, and tank battalion commander in World War II and Korea:

(Re 90mm Recoilless Rifle) "The range of this weapon makes its placement at company level a waste of time since it must be habitually used in a platoon sector. In fact with its present range and considering its weight and the weight of the ammunition it should be deleted from the company and the Army!"

Armor Major, in combat as tank destroyer platoon leader, tank platoon leader, and tank company commander in World War II:

(Re need for vehicle for platoon headquarters) "Yes. The platoon leader needs this for several reasons--reconnaissance, meetings, etc. If he uses one of the squad's (vehicles) he must dismount or carry the squad with him. This is not good."

Infantry Major, in combat as infantry company commander in Korea:

(Re need for vehicle for platoon headquarters) "Yes. Squad vehicles should be loaded to allow some flexibility in carrying equipment such as increased basic loads and equipment and loads for special operations. The Platoon Leader needs a vehicle for recon and troop leading procedures."

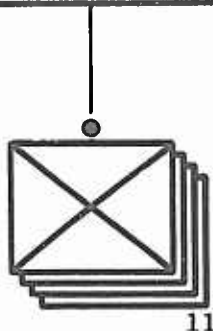
Annex I

OPTIMUM RIFLE PLATOON

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OPTIMUM RIFLE PLATOON

Platoon Headquarters	
Platoon Ldr	SA
Platoon Sgt	APHHW
Radio Opr/Msgr	APHHW



1 Sqd Ldr APHHW
 2 Fire Team Ldrs APHHW
 4 Riflemen APHHW
 2 Machine Gnrs SA
 2 Riflemen/Asst APHHW
 Machine Gnrs

RECAPITULATION

<u>Personnel</u>	<u>Off</u>	<u>Em</u>
Plat HQ	1	2
4 Rifle Sqds		44
	<u>1</u>	<u>46</u>

<u>Weapons</u>		
Sidearm		9
APHHW		38
M60 MG		8

<u>Radios</u>		
AN/PRC-25		1
AN/PRC-35		6

OPTIMUM RIFLE PLATOON
TABLE OF ORGANIZATION AND EQUIPMENT

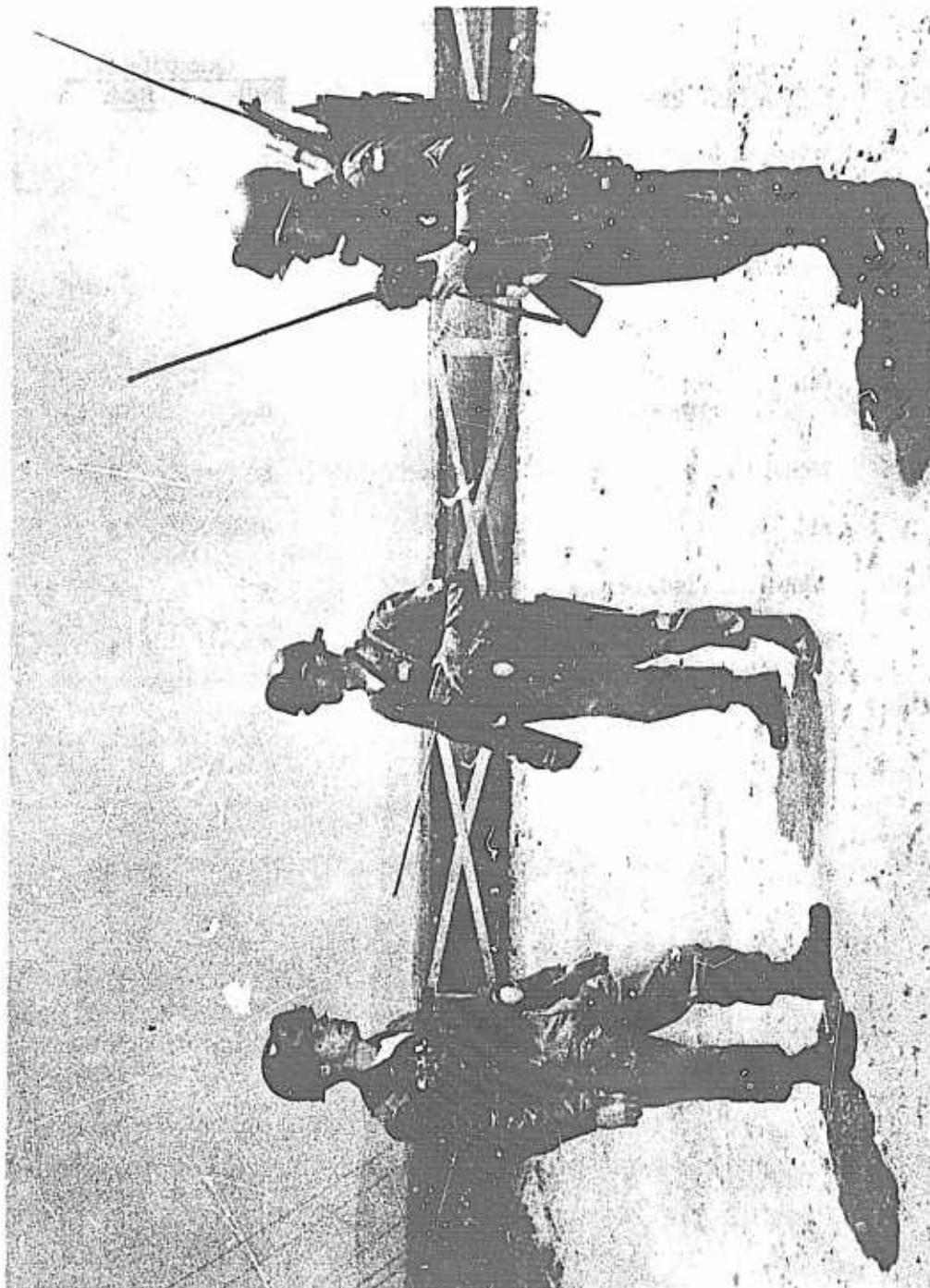
<u>Organization</u>						
<u>Line</u>	<u>Designation</u>	<u>Identify</u>	<u>Branch</u>	<u>Strength</u>		
				<u>Full</u>	<u>Reduced</u>	<u>Cadre</u>
PLATOON HEADQUARTERS						
01	Platoon Leader	O	IN	1	1	
02	Platoon Sergeant	E	NC	1	1	1
03	Radio Opr/Msgr	E		<u>1</u> 3	<u>1</u> 3	<u>1</u> 1
4 RIFLE SQUADS						
01	Squad Leader	E	NC	4	4	4
02	Team Leader	E	NC	8	8	
03	Machine Gunner	E		8	8	
04	Rifleman/Asst Mach Gnr	E		8	8	
05	Rifleman	E		<u>16</u> 44	<u>16</u> 44	<u>4</u> 4

**OPTIMUM RIFLE PLATOON
TABLE OF ORGANIZATION AND EQUIPMENT**

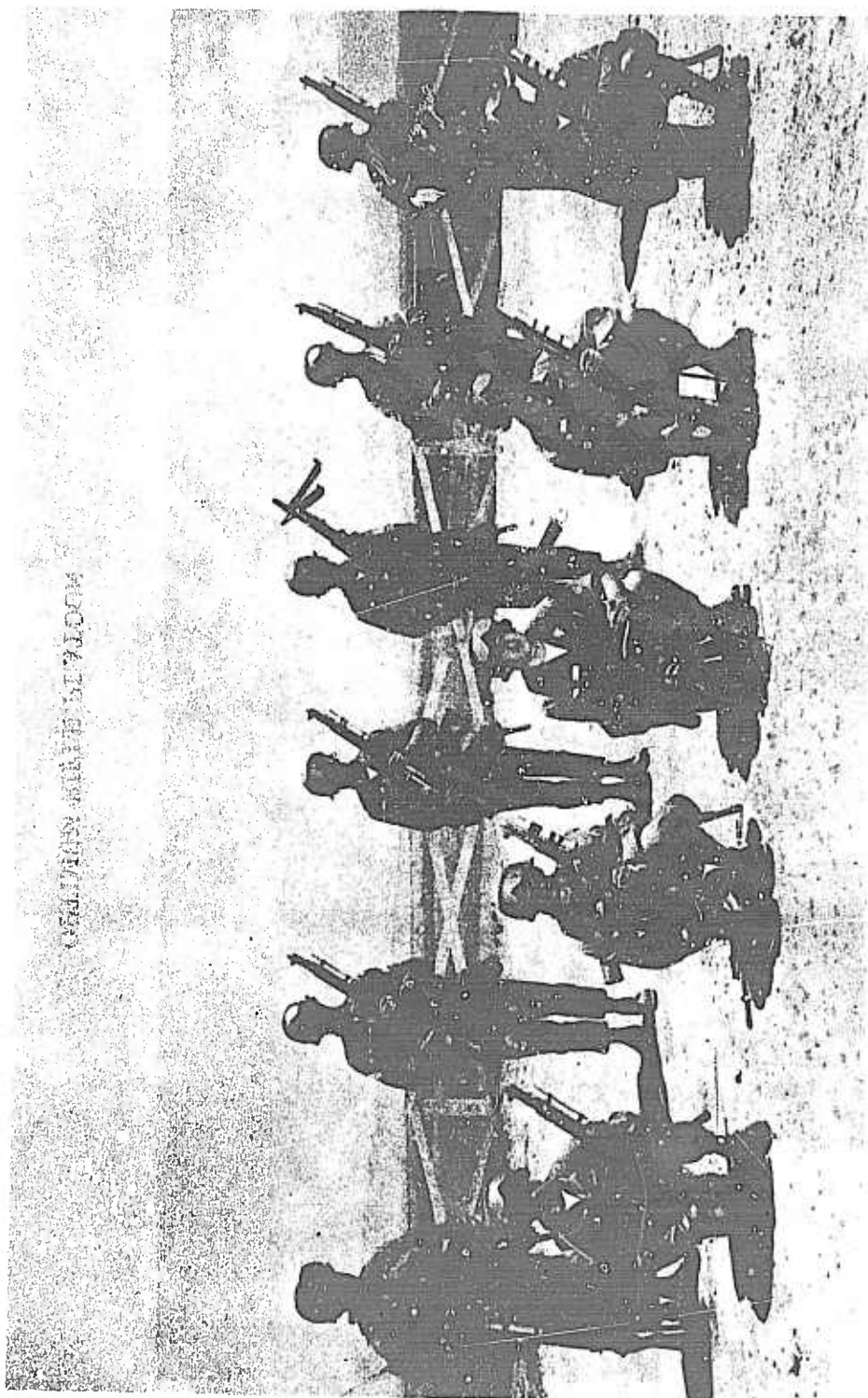
<u>Line Item Number</u>	<u>Item Description</u>	<u>Equipment</u>	
		<u>Quantity</u>	
		<u>Full</u>	<u>Reduced</u>
PLATOON HEADQUARTERS			
222752	Compass Magnetic Lensatic	2	2
251446	Metascope Assy Image Infrared Transistorized	1	1
401248	APHHW	2	2
	Bayonet Knife w/Scabbard for APHHW	3	3
401248	Binocular 6x30 Military Reticle	2	2
	Sidearm	1	1
581069	Whistle Thunderer	2	2
634670	Radiacmeter IM-93/UD	2	2
643675	Radiacmeter IM-108/PD	1	1
	Radio Set AN/PRC-25	1	1
	Radio Set AN/PRC-35	2	2
660060	Reel Equipment CE-11	1	1
668160	Reel Cable DR-8	1	1
676870	Telephone Set TA-1/PT	6	6
688520	Tool Kit TE-33	1	1
4 RIFLE SQUADS			
222752	Compass Magnetic Lensatic	12	12
250050	Machete Rigid Hdl 18-in Lg w-sh	8	8

Equipment (Cont.)

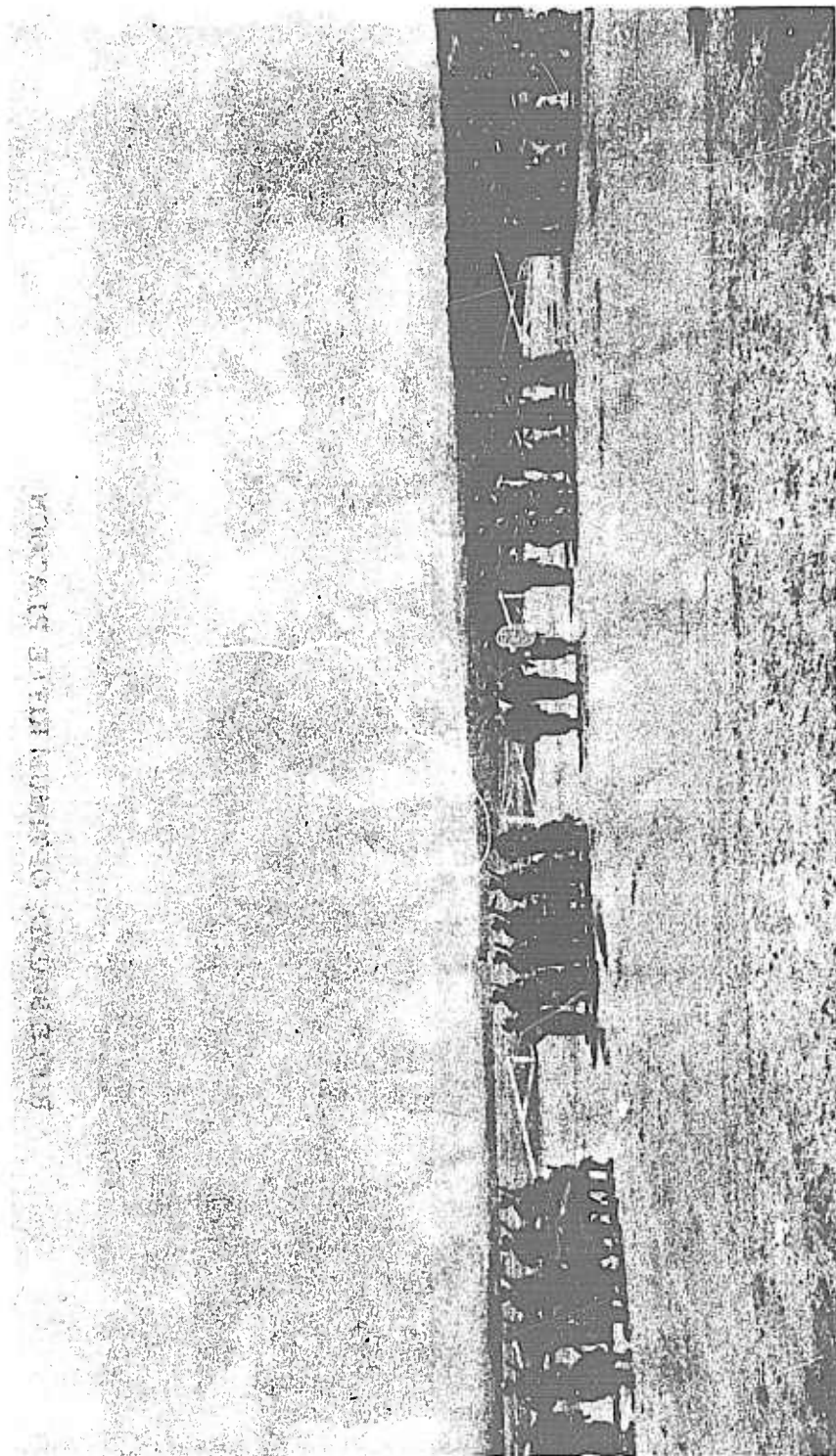
<u>Line Item Number</u>	<u>Item Description</u>	<u>Quantity</u>	
		<u>Full</u>	<u>Reduced</u>
294056	Weapons Sight Infrared	4	4
	APHHW	36	36
	Bayonet Knife w/Scabbard for APHHW	44	44
401248	Binocular 6x30 Military Reticle	4	4
417125	Gun Machine 7.62mm Lightweight General Purpose	8	8
425565	Mount Tripod Machine Gun 7.62mm	8	8
	Sidearm	8	8
581069	Whistle Thunderer	4	4
	Radio Set AN/PRC-35	4	4



PLATOON HEADQUARTERS, OPTIMUM RIFLE PLATOON
Left to right: Platoon Leader, Platoon Sergeant, Radio Operator/Messenger



RIFLE SQUAD, OPTIMUM RIFLE PLATOON



OPTIMUM RIFLE PLATOON

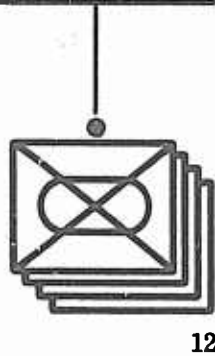
Annex J

OPTIMUM MECHANIZED RIFLE PLATOON

Organization Chart	94
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Platoon Headquarters Photograph	99
Squad Photograph	100
Platoon Photograph	101

OPTIMUM MECHANIZED RIFLE PLATOON

Platoon Headquarters	
Plat Ldr	SA
Plat Sgt	APHHW
Asst Plat Sgt	APHHW
Radio Opr/Msgr	APHHW
Driver	APHHW



1 Sqd Ldr	APHHW
2 Fire Team Ldrs	APHHW
4 Riflemen	APHHW
2 Machine Gnrs	SA
2 Riflemen/Asst Machine Gnrs	APHHW
1 Driver	APHHW

RECAPITULATION

<u>Personnel</u>	<u>Off</u>	<u>Em</u>
Plat HQ	1	4
4 Rifle Sqds		48
	<u>1</u>	<u>52</u>

Weapons

Sidearm	9
APHHW	44
M60 MG	8
Vehicular Wpn	5

Vehicles

M113 APC	5
----------	---

Radios

AN/VRC-12	5
AN/PRC-25	1
AN/PRC-35	7

OPTIMUM MECHANIZED RIFLE PLATOON

TABLE OF ORGANIZATION AND EQUIPMENT

Organization

<u>Line</u>	<u>Designation</u>	<u>Identity</u>	<u>Branch</u>	<u>Strength</u>		<u>Cadre</u>
				<u>Full</u>	<u>Reduced</u>	
PLATOON HEADQUARTERS						
01	Platoon Leader	O	IN	1	1	
02	Platoon Sergeant	E	NC	1	1	1
03	Asst Plat Sgt	E	NC	1	1	
04	Rad Opr/Msgr	E		1	1	
05	Driver	E		<u>1</u> 5	<u>1</u> 5	<u>1</u> 1
4 RIFLE SQUADS						
01	Squad Leader	E	NC	4	4	4
02	Team Leader	E	NC	8	8	
03	Machine Gunner	E		8	8	
04	Rifleman/Asst MG Gunner	E		8	8	
05	Rifleman	E		16	16	
06	Driver	E		<u>4</u> 48	<u>4</u> 48	<u>4</u> 4

OPTIMUM MECHANIZED RIFLE PLATOON
TABLE OF ORGANIZATION AND EQUIPMENT

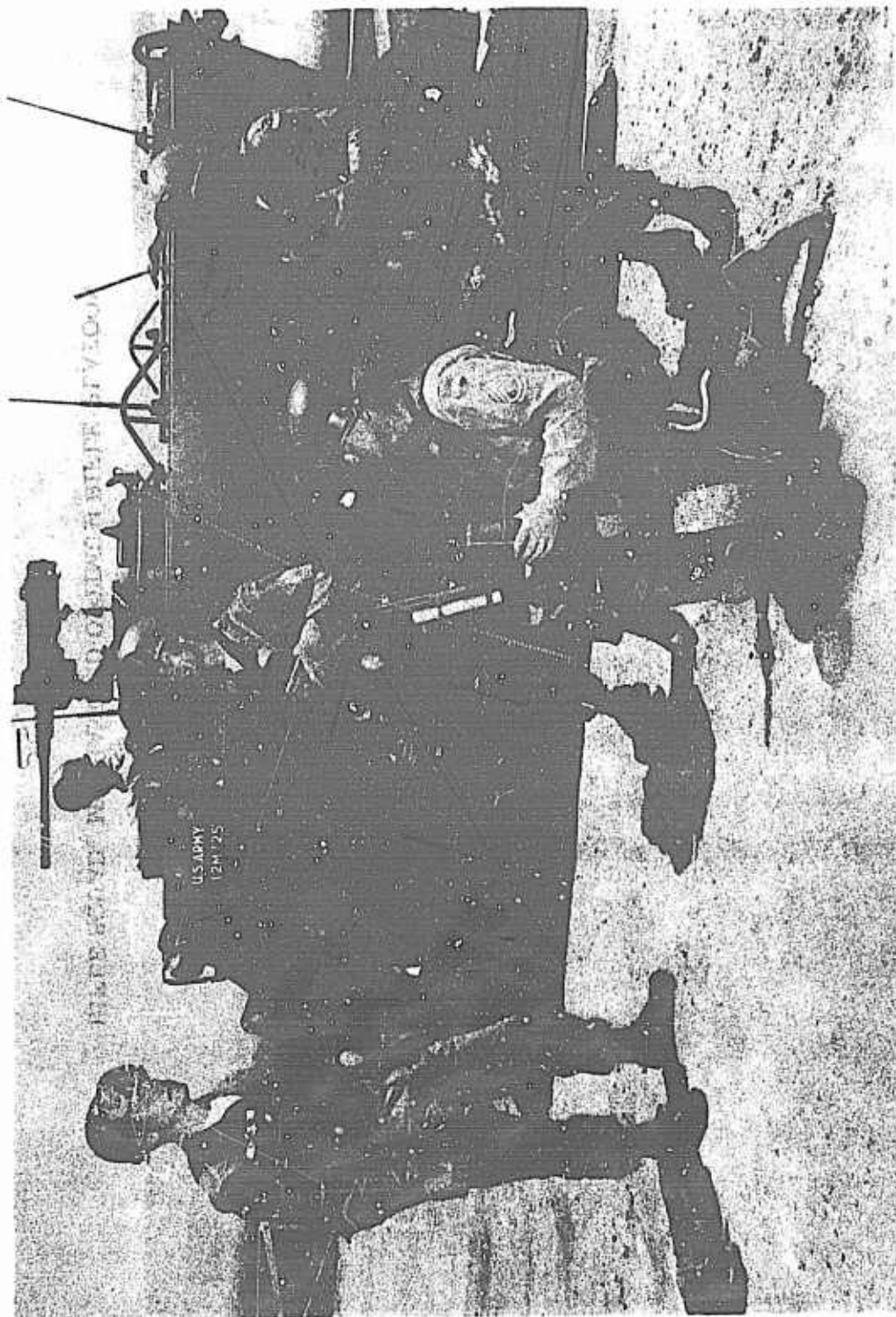
<u>Equipment</u>			
<u>Line Item Number</u>	<u>Item Description</u>	<u>Quantity</u>	
		<u>Full</u>	<u>Reduced</u>
PLATOON HEADQUARTERS			
222752	Compass Magnetic Lensatic	2	2
232940	Flashlight Plastic 2 cell	3	3
251446	Metascope Assy Image Infrared Transistorized	1	1
325437	First Aid Kit General Purpose 12 unit	1	1
	APHHW	4	4
	Bayonet Knife w/Scabbard for APHHW	5	5
401248	Binocular 6x30 Military Reticle	2	2
405225	Carrier Personnel Full Tracked w/VLWS	1	1
	Sidearm	1	1
465380	Watch Wrist Grade II	3	3
520683	Cook Set Field	1	1
538886	Goggles M1944	2	2
570109	Stove Gasoline Burner One Burner 5500 BTU	2	2
581069	Whistle Thunderer	3	3
	Control Group AN/GRA-39	1	1
634670	Radiacmeter IM-93/UD	2	2

Equipment (Cont.)

<u>Line Item</u> <u>Number</u>	<u>Item Description</u>	<u>Quantity</u>	
		<u>Full</u>	<u>Reduced</u>
643675	Radiacmeter IM-108/PD	1	1
	Radio Set AN/PRC-25	1	1
	Radio Set AN/PRC-35	3	3
	Radio Set AN/VRC-12 Mtd in Carrier Personnel	1	1
660060	Reel Equipment CE-11	1	1
668160	Reel Cable DR-8	1	1
676870	Telephone Set TA-1/PT	6	6
688520	Tool Kit TE-33	1	1
744520	Life Preserver Yoke Gas or Oral Inflation w/Gas Cylinder	5	5
	4 RIFLE SQUADS		
222752	Compass Magnetic Lensatic	12	12
232940	Flashlight Plastic 2 cell	4	4
250050	Machete Rigid HDL 18-in Lg w-sh	8	8
294056	Weapons Sight Infrared	4	4
325437	First Aid Kit General Purpose 12 Unit	4	4
	APHHW	40	40
	Bayonet Knife w/Scabbard for APHHW	48	48
401248	Binocular 6x30 Military Reticle	4	4
405225	Carrier Personnel Full Tracked w/VLWS	4	4

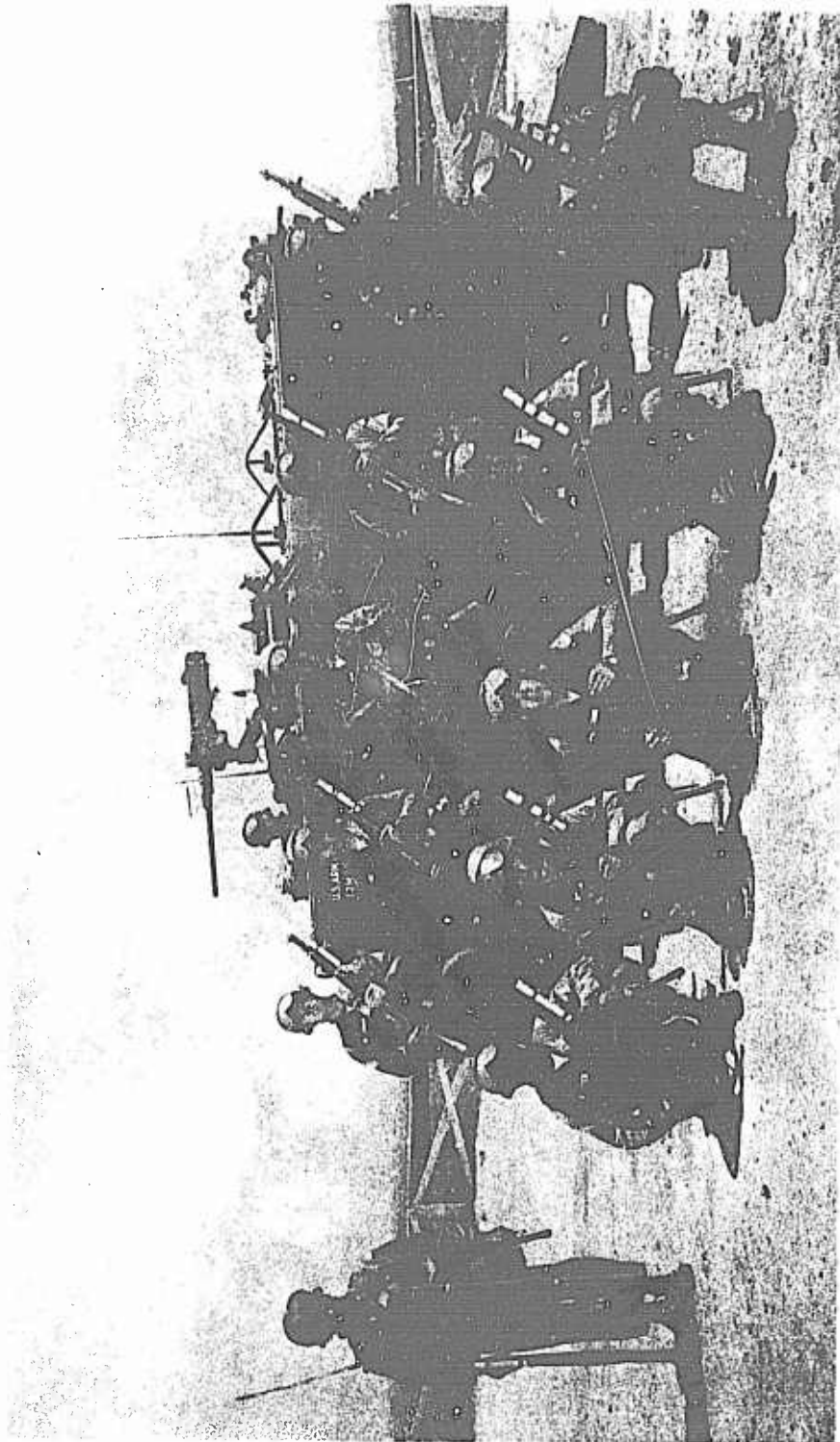
Equipment (Cont.)

<u>Line Item Number</u>	<u>Item Description</u>	<u>Quantity</u>	
		<u>Full</u>	<u>Reduced</u>
417125	Gun Machine 7.62mm Light Weight General Purpose	8	8
425565	Mount Tripod Machine Gun 7.62 mm	3	8
	Sidearm	8	8
465380	Watch Wrist Grade II	4	4
501495	Axe Single Bit 4 3/4-in cut 36-in Handle	4	4
520653	Cook Set Field	8	8
538886	Goggles M-1944	8	8
542030	Mattock Pick 5 lb Normal Size 36-in Handle	4	4
569801	Shovel Hand Rd Pt D Handle 12 1/2-in Blade	4	4
570109	Stove Gasoline Burner one Burner 5500 BTU	8	8
581069	Whistle Thunderer	4	4
	Radio Set AN/PRC-35	4	4
	Radio Set AN/VRC-12 Mtd in Carrier Personnel	4	4
744520	Life Preserver Yoke Gas or Oral Inflation w/Gas Cylinder	48	48

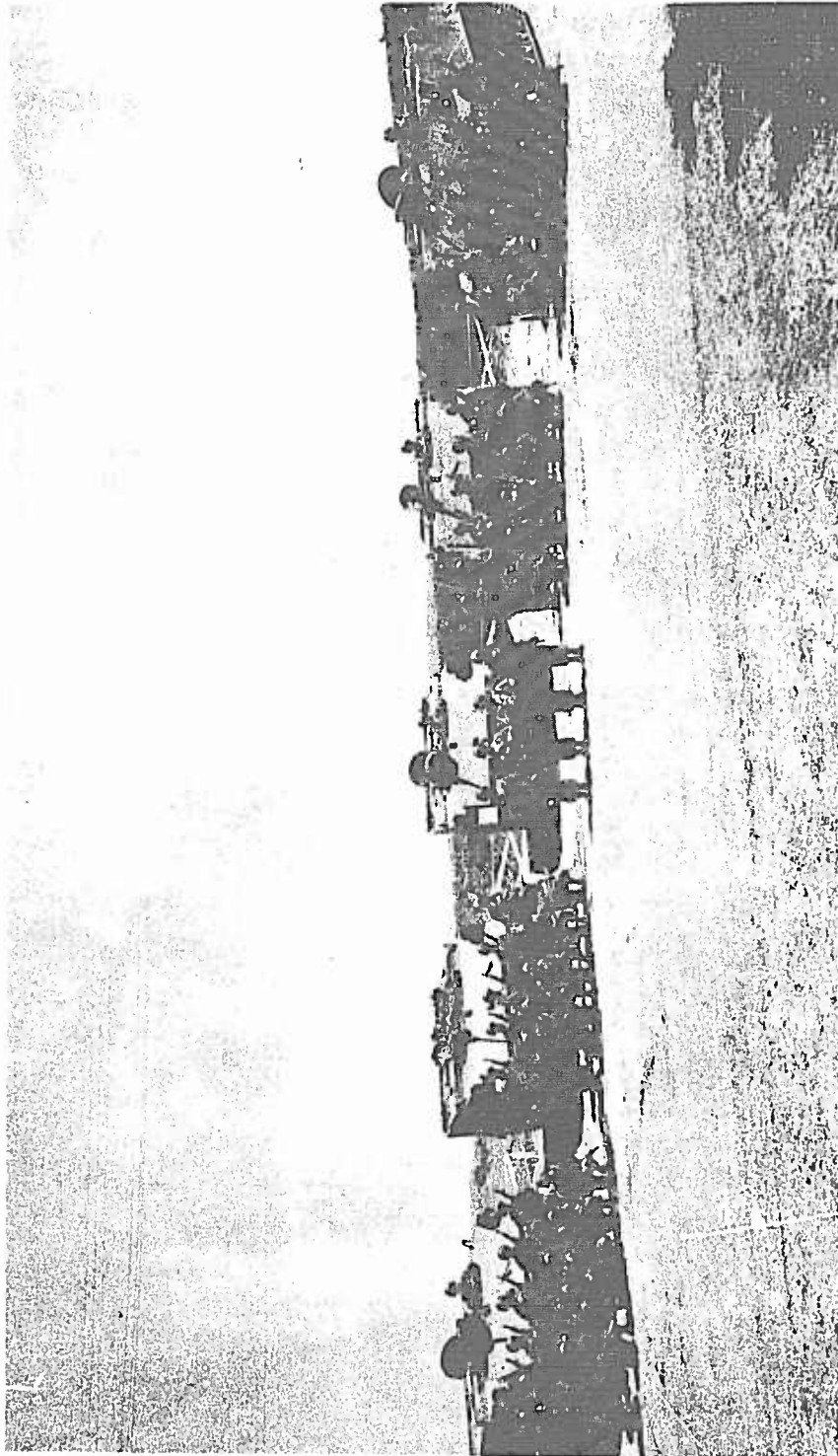


PLATOON HEADQUARTERS, MECHANIZED OPTIMUM RIFLE PLATOON

Left to right: Platoon Leader, Driver, Platoon Sergeant, Assistant Platoon Sergeant, Radio Opr/Msgr



RIFLE SQUAD, MECHANIZED OPTIMUM RIFLE PLATOON



OPTIMUM MECHANIZED RIFLE PLATOON

EXPERIMENTAL PLATOON ORGANIZATIONS



Fold out for ready reference

NOTE

The organization of a given platoon can easily be seen by grouping the various components (headquarters, weapons, and rifle squads) according to the numerical designation. For example, reading from left to right, Platoon A1 consisted of Platoon Headquarters A1 (the same as A2 in this case), Weapons Squad A1 (also the same as A2), and 3 Rifle Squads A1 (which differed from A2 in that the latter had 8 riflemen). Variations on each component within a platoon are indicated in color.

PLAT
A

PLAT
B

PLAT
C

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EXPERIMENTAL PLATOON ORGANIZATIONS

PLAT A	A1, A2 PLATOON HEADQUARTERS 1 Plat Ldr APHHW 1 Plat Sgt APHHW 1 Asst Plat Sgt APHHW 1 Rad Opr/Msgr APHHW	A1, A2 1 WEAPONS SQUAD 1 Sqd Ldr APHHW 1 Asst Sqd Ldr APHHW 2 Mach Gnrs SA 2 Asst Mach Gnr APHHW 2 90mm RR Gnrs SA 2 Asst RR Gnrs APHHW 1 Driver APHHW	A1 3 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 6 Riflemen APHHW 1 Driver APHHW
			A2 3 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 8 Riflemen APHHW 1 Driver APHHW
PLAT B	B1, B2 PLATOON HEADQUARTERS 1 Plat Ldr APHHW 1 Plat Sgt APHHW 1 Asst Plat Sgt APHHW 1 Driver APHHW	B1, B2, B3 1 RECOILLESS RIFLE SEC 1 Sec Ldr APHHW 2 90mm RR Gnrs SA 2 Asst RR Gnrs APHHW 2 Ammo Bearers APHHW	B1 4 RIFLE SQUADS 1 Sqd Ldr APHHW 1 Asst Sqd Ldr APHHW 6 Riflemen APHHW 1 Driver APHHW (1 MG optional)
			B2 4 RIFLE SQUADS 1 Sqd Ldr APHHW 1 Asst Sqd Ldr APHHW 8 Riflemen APHHW 1 Driver APHHW (1 MG optional)
	B3, B4 PLATOON HEADQUARTERS 1 Plat Ldr SA 1 Plat Sgt APHHW 1 Asst Plat Sgt APHHW 1 Driver APHHW	B4 No Weapons Section	B3 4 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 5 Riflemen APHHW 1 Mach Gnr SA 1 Driver APHHW
			B4 4 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 6 Riflemen APHHW 1 Mach Gnr SA 1 Driver APHHW
PLAT C	C1, C2 PLATOON HEADQUARTERS 1 Plat Ldr SA 1 Plat Sgt APHHW 1 Rad Opr APHHW 1 Msgr APHHW 1 Driver APHHW	C1, C2 1 RECOILLESS RIFLE TEAM 1 Tm Ldr APHHW 1 90mm RR Gnr SA 1 Asst RR Gnr APHHW 1 Ammo Bearer APHHW 1 Driver APHHW	C1 3 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 6 Riflemen APHHW 2 Mach Gnrs SA 1 Driver APHHW
			C2 3 RIFLE SQUADS 1 Sqd Ldr APHHW 2 Tm Ldrs APHHW 7 Riflemen APHHW 1 Mach Gnr SA 1 Driver APHHW

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1. ORIGINATING ACTIVITY (Corporate author) USACDC Experimentation Command, Fort Ord, California 93941		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP	
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b. PROJECT NO.			
c.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
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13. ABSTRACT The purpose of this experiment was to determine optimum composition of the rifle squad and platoon when equipped with materiel to be available in the 1965-1970 time frame. Three experimental rifle platoons, representing numerous organizational variations, were examined in a series of two-sided tactical exercises in the field. Performance was systematically evaluated by experienced military personnel. Conclusions were drawn as to the optimum strength, organization, and equipment of the rifle squad, rifle platoon, and mechanized rifle platoon.			

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Rifle squad, organization and equipment						
Rifle platoon, organization and equipment						
Mechanized rifle platoon, organization and equipment						
Armored personnel carrier (M113)						
Recoilless rifle, 90mm (M67)						
Machinegun (M60)						
All-Purpose Hand-Held Weapon (APHHW)						

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