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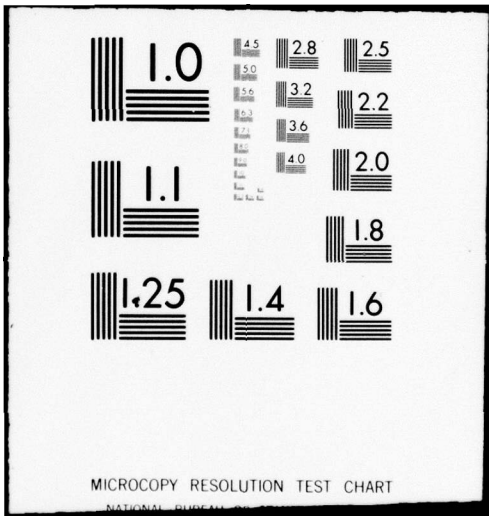
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FOR THE CHIEF:

ALEXANDER NICOLINI
Major, Infantry
R&D Coordinator

INFANTRY INSTRUCTORS' CONFERENCE
UNITED STATES ARMY INFANTRY SCHOOL
Fort Benning, Georgia
23-27 June 1958
REPORT

PURPOSE: The Infantry Instructors' Conference was convened to standardize Infantry doctrine, tactics, and technique taught at schools of the Army Educational System.

MISSION: The mission of the Infantry Instructors' Conference was:

a. To exhibit an active and constructive interest in Infantry Instructors at other service schools as primary representatives of the US Army Infantry School.

b. To bring Infantry Instructors abreast of the latest equipment, thinking, and trends in the Infantry.

c. To become informed of and to discuss Infantry Instructors' problems on an individual and collective basis.

AUTHORITY: Paragraph 7, e, Section III, letter, ATTNG-31 352/517 (3 Dec 53), OCAFF, 20 April 1954, subject: "Policies and Administrative Instructions - Army Service Schools," as amended by Change 3, dated 30 September 1954; and US CONARC Message, ATTINF 38831, 15 March 1957.

CONFEREES: Representatives of Army Service Schools, Colleges, and The Military Academy; Army Infantry Instructors at other Service Schools, Colleges and Academies, USAF Bases; and Marine Corps Schools (Appendix 1.)

[redacted]

MAJOR GENERAL PAUL L. FREEMAN, JR.

Commandant, United States Army Infantry School

Commanding General, United States Army Infantry Center

BRIGADIER GENERAL J. F. RUGGLES

Deputy Commanding General
United States Army Infantry Center

BRIGADIER GENERAL STANLEY R. LARSEN

Assistant Commandant
United States Army Infantry School

AGENDA FOR INFANTRY INSTRUCTORS' CONFERENCE
FORT BENNING, GEORGIA
23 - 27 JUNE 1958

MONDAY, 23 JUNE 1958

0825	Assemble in Pratt Hall
0830-0920	Welcome - Assistant Commandant
	Orientation and Outline of Conference - Director of Instruction
0920-0940	Coffee Break
0940-0950	En Route to Brown Hall
1000-1025	Presentation: Communications Department
	Scope: Welcome by Department Director; The Infantry Battle Group Communication System, known areas of weaknesses and remedial action that may be taken with existing equipment. (USAIS Current School Position 118.)
1025-1050	Presentation: Communications Department
	Scope: Characteristics and capabilities of the new combat leaders voice radios, to include trends and developments in communication equipment and electronic surveillance. Last 10 minutes devoted to question and answer period.
1050-1110	En Route to Pratt Hall
1115-1150	Presentation: Command and Staff Department
	Scope: Helicopterborne Battle Group Operations. Conference in which the special considerations involved in the planning and conducting of helicopterborne battle group operations are presented.
1150-1300	Lunch
1305	Assemble - Ground Mobility Department (E-1)
1315-1405	Presentation: Ground Mobility Department
	Scope: Essentials of Ground Mobility. Conference and demonstration covering the means of mobility, capability and limitations of means, operation of the means and maintenance of the means. (This will include a demonstration of the Mechanical Mule and the M-56 Assault Gun Carrier.)
1405-1415	Break
1415-1505	Presentation: Ground Mobility Department
	Scope: Conference on the theory and requirements for a system of vehicle navigation; techniques of land navigation and developmental trends of navigational aids.
1530	Assemble in Pratt Hall

1530-1630 Conferees meet with various Department representatives to set up times for the answering of previously submitted questions, and/or to arrange for visiting scheduled problems.

1730-1830 Commandant's Reception: TSB Area. BOQ Bldg 2755-B, Hqs Co, 2d Student Battalion.

TUESDAY, 24 JUNE 1958

0755 Assemble in Pratt Hall

0800-0845 Presentation: Department of NRI

Scope: Conference concerning the functions of the Department of Non-Resident Instruction; the type, level, purpose, method of procurement and the benefits derived from the use of nonresident instructional material. A discussion concerning the revised Army Pre-Commission, Infantry Company and Advanced Extension Course Programs the United States Army Reserve School Program; to include a discussion concerning the awarding of constructive credit between the Company and Advanced Extension Course Programs and the USAR School Program.

0845-0905 Coffee Break

0910-0950 Presentation: Command and Staff Department

Scope: Conference in which the results from the final report of the Intelligence Seminar are presented (Scheduled for 19 - 24 May 58).

0950-1005 En Route to Theater No. 1

1005-1200 Presentation: United States Army Infantry Board

Scope: Development and Test function of CONARC Boards with particular emphasis on developmental items currently undergoing test at the Infantry Board.

1200-1250 Lunch

1250-1330 En Route to Problem 2067

1330-1415 Presentation: Command and Staff Department (Problem 2067)

Scope: Demonstration (Live Firing) showing the actions and orders of the weapons and assault gun platoon leaders in the preparation phases of the attack; conduct of fire prior to and during the attack emphasizing the collective effectiveness of the fires of the platoons; flexibility, displacement and the use of communications to coordinate fire and movements to their platoons.

1415-1500 En Route to Main Post (Sightseeing Field)

1500-1525 Coffee Break

1525-1545 Presentation: Airborne-Air Mobility Department

Scope: A discussion of Air Mobility concepts, tests and problem areas.

1545-1635 Presentation: Airborne-Air Mobility Department

Scope: An integrated conference and demonstration on the employment of Army Pathfinder teams; utilization of Terminal Guidance personnel in Army operations; and Air Mobility, using Army Aircraft.

WEDNESDAY, 25 JUNE 1958

0755 Assemble - English and Simpson Range Area

0800-1000 Presentation: Weapons Department

Scope: Orientation on range procedures for Trainfire I to include 25 meter range, field firing range, target detection range and record firing range.

1000-1020 Coffee Break

1020-1030 Presentation - Weapons Department

Scope: Orientation on recent changes to ROTC Manual 130-45 pertaining to marksmanship training with the Cal. .22 rifle. Orientation on current USAIS position relative to the U. S. Sniper.

1030-1050 Presentation: Weapons Department

Scope: Orientation on new developments in automatic rifle training with emphasis on proposed changes to conform with Trainfire I.

1050-1100 En Route to Hook Range

1100-1120 Presentation: Weapons Department

Scope: Discussion of Trainfire II training methods, range requirements and status of troop test.

1120-1135 Presentation: Weapons Department

Scope: Discussion of the need for lighter machine gun mount and demonstration of new mount currently being developed by Weapons Department.

1135-1150 Presentation: Weapons Department

Scope: Conference and firing demonstration covering general data, capabilities, and limitations of the M56 as a carrier for the 90mm gun, 106mm recoilless rifle, quad 50 machine gun, 4.2-inch mortar, and 81mm mortar.

1200-1300 Lunch

1300-1700 Conferences with Instructional Departments and/or observation of scheduled problems.

THURSDAY, 26 JUNE 1958

0755 Assemble in Theater No. 1

0800-0815 Presentation: Special Subjects Department

Scope: New developments in leadership training. To familiarize conferees with the employment of the Trainlead films as a training aid in development of leadership.

0820-0825 En Route to Brown Hall

0825-0850 Presentation: Special Subjects Department

Scope: New Developments in Atomic Weapons. To familiarize the Infantry instructors with recent and impending developments in atomic weapons, their delivery systems, and target analysis techniques.

0850-0910 Coffee Break

0910-0925 Presentation: Editorial and Pictorial Office

Scope: To cite the importance of INFANTRY Magazine to the Infantryman as an extension of school instruction and as a means of bridging the gap between the formulation of new tactics, organization and doctrine and their publication in Department of the Army media. To encourage conferees to promote the subscription of INFANTRY Magazine in their parent units and to solicit articles for publication from units in the field.

0930-1050 Presentation: Instructor Training Section

Scope: Mission of ITS, policy on attendance, scope of ITC, scope of orientation. The 3 parts of a presentation (introduction, body, and conclusion), the preparation of teaching points, supporting material, subsummaries, and transitions; conference method, control of interest. The indicators of speaker attitude (sincerity, confidence, enthusiasm, and sense of humor); platform technique; use of voice. Emphasis is placed upon the instructor's making the most effective use of his own best qualities. Scheduling of student presentations, with emphasis upon developing effectiveness for learning; development of student confidence in speech practice (skit of 3 min talk and critique by instructor) demonstration of speech workshop techniques; small group instruction; improvements in instructional facilities and training aids.

1050-1100 Break

1100-1150 Period reserved for the Assistant Commandant

1200-1300 Lunch

1300-1700 Conferences with Instructional Departments and/or observation of scheduled problems.

FRIDAY, 27 JUNE 1958

0900-1000 En Route to Problem 2155 Area - Moore Road

1000-1040 Presentation: Command and Staff Department

Scope: Problem 2155 - Mobile Task Force Operations - Dress Rehearsal. Demonstration (Live Firing) of a company-size combined arms mobile task force in offensive action; demonstration depicts task force utilizing active atomic support, attached tanks, Infantry carriers, engineer support, aerial reconnaissance, and employment of helicopters to evacuate casualties and resupply ammunition.

1040-1140 Return to Main Post

1145-1300 Lunch

1305 Assemble in Pratt Hall

1310-1400 Presentation: Combat Developments Office

Scope: Presentation of the materiel development objectives and related materiel requirements and concepts which have application to the future employment of Infantry during the time frame 1960-70, to include USAIS views with regard to specific development projects of direct interest.

1400-1410 Break

1410-1500 Presentation: Combat Developments Office

Scope: A comprehensive presentation on organizational and operational objectives of the Infantry battle group of the 1960-70 time frame. A comparison is made between the current battle group organizational structure and that planned for the 1960-65 period. Because of the expected availability of new equipment and the impact of new weapons systems on tactical formations, the operational concepts of the Infantry battle group are projected.

1500-1530 Coffee Break

1530 Assemble in Pratt Hall

1530-1630 Assistant Commandant's Forum

1635-1650 Closing Remarks - Commandant

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DIRECTORY OF
STAFF AND DEPARTMENT DIRECTORS

POSITION	NAME	TELEPHONES OFFICE	HOME
COMMANDANT	Maj Gen P. L. Freeman, Jr.	20101	25100
Aide de Camp	Capt L. McCall, Jr.	27131	25195
DEPUTY COMMANDING GENERAL	Brig Gen J. F. Ruggles	32132	31200
Aide de Camp	1st Lt J. P. Ceglowski	21233	35168
ASSISTANT COMMANDANT	Brig Gen S. R. Larsen	31222	30225
Aide de Camp	1st Lt C. O. Neal	31212	20235
CHIEF OF STAFF	Col R. H. York	22111	26216
COMBAT DEVELOPMENTS OFFICE	Col D. E. Townsend	26101	37109
Project Officer	Lt Col J. H. Chambers	31223	61228
DIRECTOR OF INSTRUCTION	Col N. B. Edwards	26211	32100
Project Officer	Lt Col A. L. Dean, Jr.	27124	33108
OPERATIONS OFFICER	Col R. L. Crouch, Jr.	37292	29107
Project Officer	Capt J. E. Tyler	37164	MU 90554
SECRETARY	Col J. L. Osgard	20291	34128
LIBRARIAN	Miss Ruth Wesley	24172	MU 93871
AIRBORNE-AIR MOBILITY DEPARTMENT	Col W. E. Ekman	25102	35295
Project Officer	Maj L. L. Mowery	33123	MU 92532
GROUND MOBILITY DEPARTMENT	Col J. J. Pavick	22192	35218
Project Officer	Maj B. F. Marshall	29261	26119
COMMUNICATIONS DEPARTMENT	Lt Col A. P. Brown	29102	MU 96375
Project Officer	Lt Col J. C. Pleasant	24131	31206
DEPARTMENT OF NON-RESIDENT INSTRUCTION	Col R. S. Cain	38133	23208
Project Officer	Capt R. Arter	36124	MU 94100
SPECIAL SUBJECTS DEPARTMENT	Col G. A. McGee, Jr.	34101	35154
Project Officer	Lt Col. G. B. Hankins	36285	30220
RANGER DEPARTMENT	Col J. T. Corley	64224	25146
Project Officer	1st Lt O. A. Schludecker	62221	MU 96945
COMMAND AND STAFF DEPARTMENT	Col F. M. Izenour	29291	21127
Project Officer	Capt G. L. Owens	32168	MU 92765
WEAPONS DEPARTMENT	Col S. T. McDowell	37211	22208
Project Officer	Capt C. H. Ford	32151	MU 95560

POSITION	NAME	TELEPHONES OFFICE	HOME
EDITORIAL AND PICTORIAL OFFICE	Col G. S. Peters	30121	20239
Project Officer	1st Lt L. P. Boucher, Jr.	30256	MU 94761
RECEPTION AND PROTOCOL DIVISION	Lt Col H. S. Sheldon	24211	23120
COMMANDING OFFICER THE SCHOOL BRIGADE	Col A. L. Hoebeke	21292	33146
Project Officer	1st Lt T. H. Parsons	30135	MU 92299
COMMANDING OFFICER INFANTRY SCHOOL DETACHMENT	Lt Col R. O. Manasco	34103	24138
COMMANDING OFFICER 1ST STUDENT BATTALION	Lt Col J. L. Bryan	39212	31209
COMMANDING OFFICER 2D STUDENT BATTALION	Lt Col J. B. Zanin	30211	34127
COMMANDING OFFICER 4TH STUDENT BATTALION	Lt Col B. W. Hart	22123	39239
COMMANDING OFFICER 5TH STUDENT BATTALION	Maj J. L. Treadwell	25224	36135
UNITED STATES ARMY INFANTRY BOARD			
PRESIDENT	Col H. B. Kunzig	25192	27118
Project Officer	Lt Col A. H. Phillips	20212	33215

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CHAPTER 1
CONFERENCE INTRODUCTION

Section I. ASSISTANT COMMANDANT'S OPENING REMARKS

BRIGADIER GENERAL STANLEY R. LARSEN

On behalf of General Freeman, I welcome you to the Infantry School, your home as Infantrymen, and to relay his regrets that he cannot be here personally this morning to welcome you. We want groups such as yours which come to the Infantry School, to recognize that the Infantry is a progressive branch and never stands still. It is particularly essential that you recognize this today, because everything is moving so rapidly. We must continue to come forth with new ideas and new trends to further the Infantry and the Army as a whole.

I will cover a few points, after which Colonel Edwards will give you a short orientation. We hope, in these few days, to give you the latest trends, developments, doctrinal thinking, and equipment ideas which we have at the Infantry School and within the Infantry branch. There have been changes within the last year and we hope they will be drastic enough so that those of you who were here last summer will feel that progress is being made and that there is a difference between last year and this year. We hope our presentations will assist you in your individual jobs, wherever you might be stationed. We also hope they will aid you in putting out the story of the Infantry so we can have a unified idea throughout our branch, as to where we are heading and what our future will be.

You Infantrymen know, as I know, that one of our problems has been that wherever one hundred Infantrymen get together there are one hundred different ideas as to exactly what the Infantry means, where it is going, and what it stands for. This has been a problem ever since I can remember and I am convinced that it has been so always. Sometimes this is progressive; however, it can often be detrimental. We hope during these few days to get your ideas on this subject.

I should like to illustrate our way of doing business with a specific example of ROCID. When the divisions were changed from the triangular to the Pentomic organizations, the Infantry School had no officers who were qualified ROCID experts. Therefore, we had to lean very heavily on units in the field for basic ideas and trends. As a matter of fact, we have developed a monthly letter from the Commandant to units in the field to probe for thoughts and ideas applicable to the ROCID concept. Consequently, the doctrine and ideas we teach in the future will depend largely on ideas obtained from people away from the Infantry School.

The Infantry should be proud of its place in today's Army. As to the concepts of the future of the Army, the Infantry School is in full accord with directives and doctrine that have been placed upon the Army as a whole by higher headquarters. We are in full accord with the guidance given for the future. However, within this guidance, there are some points we as Infantrymen should give serious thought. One of these is the matter of command. The Infantryman today, up through the grade of captain, has command. From then on, he must wait roughly 14 years until he becomes a colonel and is eligible to command again. Here we have the Infantryman, supposed to be a commander; yet there is no opportunity for him to gain command experience during the cream of his life.

Another point is the personnel carrier in the ROCID division. At present, it is assigned to the Transportation Corps. However, the Infantry personnel carrier - or armored personnel carrier, if you want to call it that - will be used primarily by the infantry in battle. Close coordination with Infantry units and a thorough knowledge of Infantry operations will be essential. This can best be achieved if these carriers are operated by Infantrymen.

The Infantryman of today is no longer a rifleman who can be expected to pack all of his fighting tools on foot. This brings to mind a question which has never been answered for me, just what is an Infantry weapon? I would like to have someone of you during your stay come up with the answer, if you will. We have had an Infantry branch for nearly two hundred years but no one has ever defined an Infantry weapon properly. We are inclined to think of an Infantry weapon as one which the Infantryman habitually uses in carrying out his job on the front lines; one which fires at a target visible by frontline observation. Is this thinking correct, in view of the requirements of the modern battlefield? The idea of the Infantryman today having to carry all his fighting equipment on his back, I believe, is outmoded. Future trends require the Infantryman to be able to fight on vehicles and off vehicles. Even now a light tracked vehicle is being developed which will enable an Infantryman to do this.

What is an Infantryman? Is a paratrooper who wears crossed rifles an Infantryman? Yes, he is. Is a man who belongs to an armored division and called an Armored Infantryman still an Infantryman? Yes, he is. All these various types of Infantrymen are still basically Infantry. The Infantryman of the future must be able to swim rivers in amphibious tracked vehicles; he must be able to cross mountains with Army aviation and have staying power when he gets there, whether it be jungle, hilly country, snow, or island warfare. There is no doubt that the Infantryman is going to be needed in any warfare of the future. The point is we, in the Infantry, must be trained and equipped to perfrom our mission when and if the time comes.

We have many organizational changes in the Infantry School which we hope will be of interest and of assistance to you in your work, wherever you are stationed. All of the department heads and the Infantry Board will give you briefings. A list of key officers and personnel has been issued to you. We hope that you will be able to contact these individuals in your free time and that you will have an opportunity to solve some of your major problems while you are here. Personally, I hope that I'll have an opportunity to see those of you whom I've known before, as well as to meet those I have not met previously. I will now turn you over to Colonel Edwards who will give you a further orientation on the Infantry School.

Section II. DIRECTOR OF INSTRUCTION ORIENTATION

COLONEL NORMAN B. EDWARDS

Director of Instruction

Gentlemen, I wish to add my welcome to that extended to you by the Assistant Commandant.

As General Larsen stated, for some of you, this is not your first conference. To those, a small part of my orientation may be a little repetitious. However, a brief refresher never hurt anyone and I am sure that you are all interested in the major changes in the organization of the School that have taken place recently. Also, the two afternoons which have been set aside for you to visit the various departments will be more beneficial if you understand the School organization and the functions of these departments.

Now to briefly review the mission of the United States Army Infantry School. The primary missions of the Infantry School are:

To prepare Infantry officers and selected enlisted personnel to perform those duties within the battle group they may be called upon to perform in war.

To formulate and publish in appropriate training literature Infantry, Airborne, and Ranger doctrine and techniques.

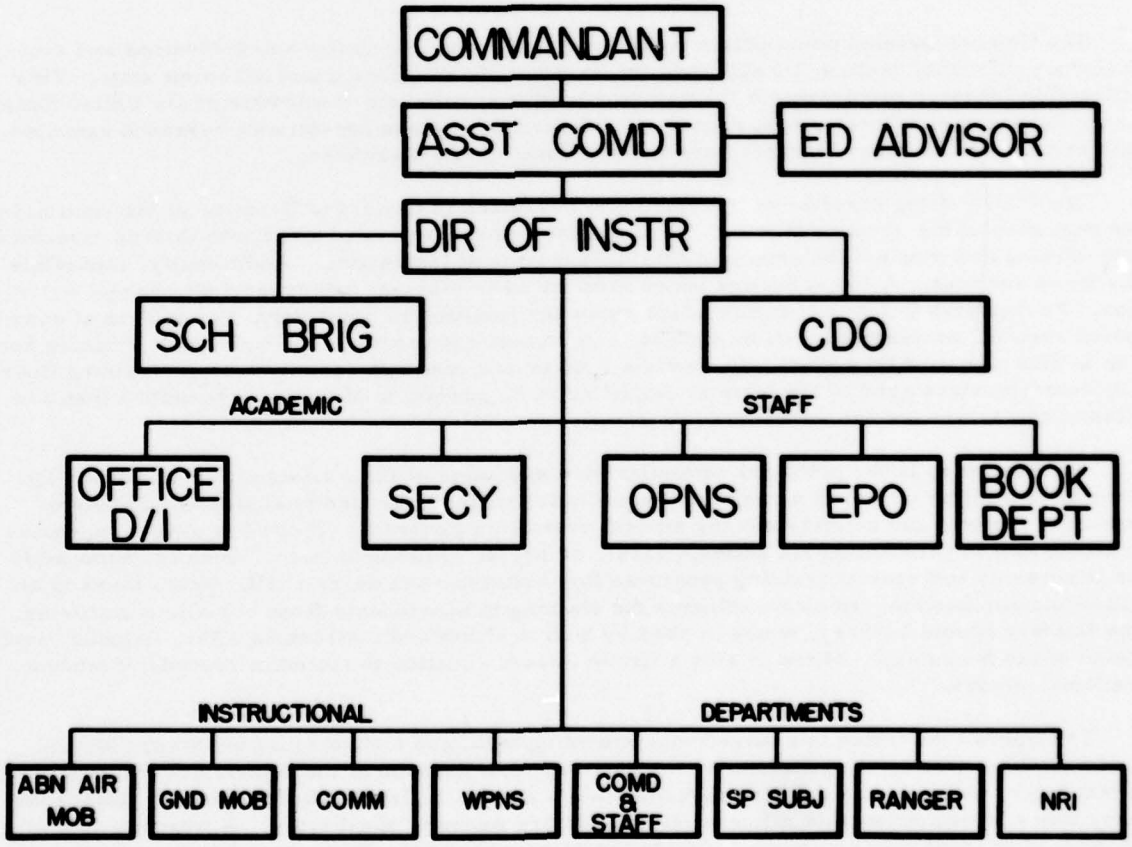

Figure 1. Organization of the United States Army Infantry School.

The Commandant (Major General Freeman) commands and supervises the operations of the School and is also the Commanding General of the United States Army Infantry Center. The Infantry Center is composed of the various post units not directly connected with the School, with exception of the 2d Infantry Division.

The Assistant Commandant (Brigadier General Larsen) acts for the Commandant in all matters pertaining to the Infantry School. In this respect, he supervises the activities of all School agencies which are shown in figure 1. Each of these agencies will be explained in detail.

To assist the Assistant Commandant, there is an Educational Advisor (Dr. Tate). His primary function is to maintain liaison between the USAIS and civilian educational institutions to insure a free exchange of educational concepts and instructional techniques.

The Director of Instruction (Col Edwards) insures that the objectives of each Program of Instruction are appropriate and up-to-date. In addition, he exercises general supervision over the day-by-day operations of the School. (The agencies shown in figure 1 represent the major elements of the School; we will consider each of them separately. Later, we will return to figure 1 for any questions you may have concerning the organization in general.)

The School Brigade consists of the various companies and battalions required to administer and provide logistical support for all resident students. Its mission requires approximately 180 officers and 1200 enlisted men. Some examples of their activities are student discipline, housing, and inspections.

The Combat Developments Office is the long range planning group which develops and evaluates new doctrine, tactics, techniques, and organization of Infantry and Airborne units. This office also initiates requirements for new type weapons within the framework of the United States Army Research and Development Agency. CDO maintains close liaison with research agencies, both civilian and military, located here at Fort Benning and elsewhere.

The Office of the Director of Instruction is organized to assist the Director of Instruction in the execution of his responsibilities. Here are located the Advanced and Basic Course directors who develop and monitor the principal USAIS Programs of Instruction. Additionally, this office has three sections. A Plans Section which aids the DI in planning and supervising School Activities. An Analysis & Review Section which evaluates instruction constantly, by analysis of examination results, problem inspection reports, and student comments. The Instructor Training Section is also a part of this office. It conducts a three and one-half week Instructor Training Course. All instructors assigned to the Infantry School must be graduates of this course before they are allowed to conduct formal instruction.

The Secretary is the principal administrative executive of the Assistant Commandant. His position is similar to that of a registrar in our universities. He also is custodian of student academic records and administers the student evaluation program. There are several agencies to assist him in performing his duties. First, a Special Training Section, which is responsible for itineraries and special training programs for visitors, such as yourself. Next, there is an Allied Liaison Section, which coordinates the training of all students from our allied countries. The Infantry School Library, which is used by both students and instructors alike, is under supervision of the Secretary. There is also a Grade Records Section to maintain records of student academic grades.

The Operations Office is charged with providing facilities and services necessary for the academic departments to present their instruction. One function of the Operations Office is the scheduling of classes. To do this, they maintain a master training schedule board. Among the many items of equipment this office must provide are weapons of all types. A weapons pool is maintained to issue these weapons. Due to the complexity of the Operations Office activities, a more detailed briefing will be given by that office following my presentation.

The Editorial and Pictorial Office prepares the many visual aids used by instructors. This office supervises the preparation of, and edits all training literature originating at the School. It also publishes the Infantry Magazine. In addition, the Editorial and Pictorial Office supervises the Army Field Printing Plant which prints all instructional material used at the School.

The Book Department operates the Book Store. Here the students may purchase various stationery supplies and materials needed to assist them in their studies. This also gives students a source from which to build up their own personal library.

Now let's consider the seven instructional departments.

The Airborne-Air Mobility Department is responsible for a certain amount of technical instruction for the leadership type courses. However, its primary concern is conduct of the Basic Airborne and Pathfinder Courses. This department also conducts tests and formulates doctrine relative to airborne operations and air-mobility matters as opposed to airborne tactics which is the responsibility of another department.

The Ground Mobility Department teaches leader classes those things they should know concerning organizational maintenance, utilization, operation, and inspection of wheel and track vehicles of the battle group. In addition, it conducts specialist classes for battle group motor officers and automotive supervisors.

The Communications Department, as its name implies, has responsibility for instruction in the organizational maintenance, operation and utilization of all signal equipment found within the battle group. It also conducts specialist classes for battle group communication officers and communication supervisors.

The Weapons Department presents instruction in all weapons organic to the battle group, from the .45 caliber pistol through the 106mm recoilless rifle. In addition to this technical instruction, the Weapons Department is responsible for formulating techniques of fire, including the new concept of Trainfire.

The Special Subjects Department is charged with instruction in military management, map and aerial photograph reading, military medicine, leadership, atomics instruction, and other common subjects which may be directed.

The Command and Staff Department instructs in all aspects of organization, staff functions, tactics and command of Infantry units from company though the brigade and in the techniques and employment of supporting arms and services. Sufficient instruction is also given at division level for orientation of students. Throughout their instruction, the emphasis is on battlefield mobility, flexibility, and the use of atomic and other supporting weapons. It is in this department that the tactics of airborne and air landed operations are taught.

Whereas the Command and Staff Department is responsible for tactical training from company level up, the Ranger Department is responsible for tactical training of the individual soldier, squad and platoon. In addition, it conducts physical training, hand-to-hand combat, and bayonet training for all courses receiving this type instruction.

The Ranger Department also conducts an 8-week special course, called the Ranger Course, for selected volunteers. This course is a strenuous one emphasizing leadership and endurance. It is rugged, specialized training, using long range combat and reconnaissance patrols as teaching vehicles. The training is conducted in three different locations.

The fundamentals are taught here at Fort Benning.

The students are then moved to the coast of Florida for jungle and amphibious training.

After completion of the Florida phase, students are then taken to the mountains of North Georgia for training in mountain climbing and long range mountain patrolling.

These are all of the departments which present resident instruction; however, there is one department that provides instruction to non-resident students.

The Department of Non-Resident Instruction administers the Army extension courses which are similar to correspondence courses in a civilian school system. This department also prepares and distributes instructional material for reserve components, National Guard, and ROTC units. Their mailing list includes 274,000 addressees. To accomplish these functions they maintain warehouses and have a separate mail section.

Having seen the mission and organization of the USAIS let us now examine the Army Educational System and see the part that the USAIS plays in the system. We will then consider the School curriculum.

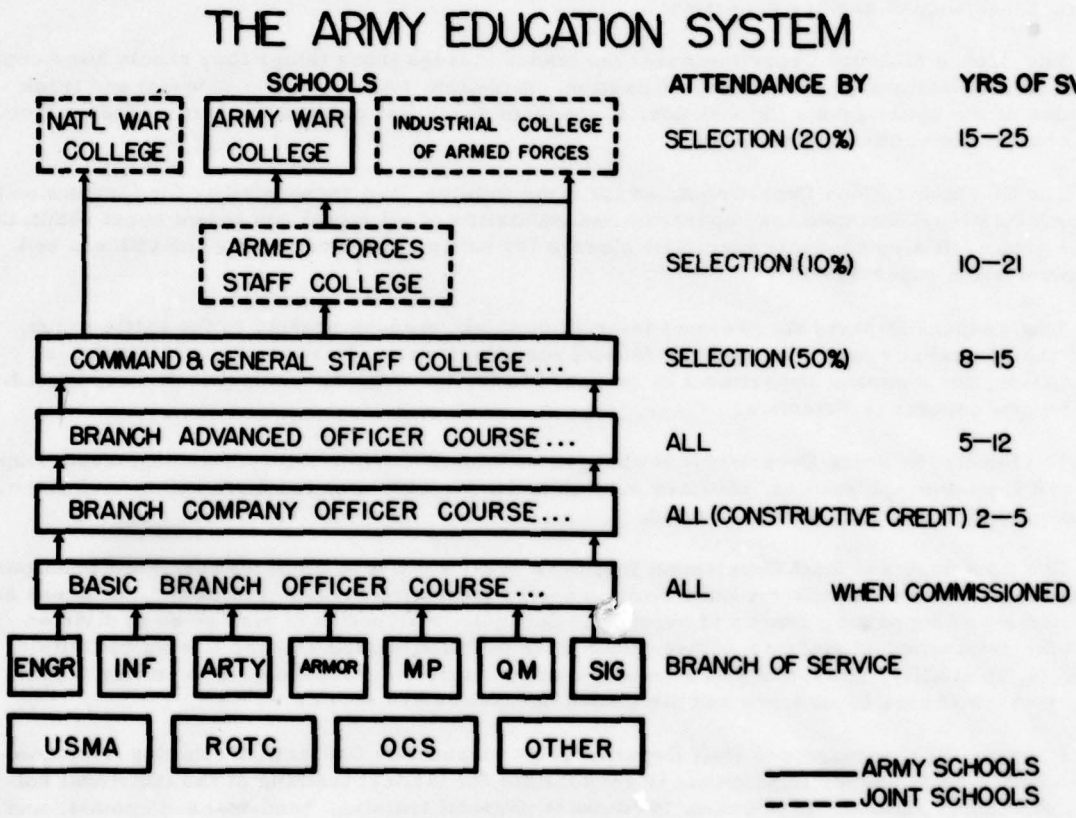

Figure 2. Sources of Commissions.

Officers are commissioned into branches of the Army from these courses (Figure 2). With one exception, they all attend their branch basic course after being commissioned. The exception to this is those officers who are commissioned from OCS, which is similar to the branch basic course.

Following the basic course, all Regular Army lieutenants must take at least one of the following: Airborne Course, Ranger Course, or Army Aviation Flight Training.

After two to five years service, an officer may return for an intermediate course of instruction - the Associate Company Officer Course. This course prepares an officer for duty as a company commander and junior staff officer of the battle group. Normally, RA officers receive constructive credit for this course. It is usually attended by officers who, for various reasons, have not received the normal troop duty assignments and need additional instruction to compensate for lack of experience. In most cases, this course is attended by reserve officers who come on active duty for the specific course.

Between the 5th and 12th year of commissioned service, the officer returns to the Infantry School for the Advanced Course. This course trains an officer for duty as a battle group staff officer and commander.

Up to this point, all schooling has been a requirement. All further schooling is by selection.

.pproximately 50% of the Infantry officers attend the Command and General Staff College between their 8th and 15th years of service. This college prepares an officer for division and higher level duties.

The percentages attending the top level schools, i.e., the Armed Forces Staff College, National War College, and the Industrial College, are considerably less. All of these, except the Army War College, are attended by officers from all of the services.

You will note that the Infantry School conducts all the "must have" courses for Infantry career officers. The basic course, of eight weeks duration, is designed for the Infantry platoon leader with stress placed on small unit tactics instruction. In the intermediate course of sixteen weeks duration, emphasis is given to duties of the company commander and junior staff officer. Advanced tactics are introduced, but less emphasis is placed on weapons as the student by this time has assimilated much of this training through experience. The advanced level course, attended by officers of considerable company and junior staff experience, is 34 weeks in length. Here the officer receives instruction to include the reinforced battle group with the staff procedures and combined arms tactics necessary for this type organization, plus training to qualify him as an atomic staff officer. An orientation on division level staff procedures is also included.

In all of our courses we place emphasis on the tactical employment of atomic weapons, guided missiles, and rockets. We have not, however, disregarded instruction in conventional warfare, without atomics, thereby maintaining flexibility. We stress greater battlefield mobility, the key to success, through the use of helicopters and Infantry personnel carriers; we stress night training and individual proficiency in night firing of weapons. As they become available, we integrate new communications equipment, vehicles, and weapons into our instruction.

The over-all student load is approximately 11,500 for this fiscal year. In addition to this, we conduct special courses. For example, a two-week course for 600 US Military Academy Cadets, as well as a one-week course for US Air Force Academy Cadets. Assistance is given to 1800 ROTC Cadets and the US Army Reserve units during this summer training. We also conduct the Army orientation for approximately 160 members of the Joint Civilian Orientation Conference as part of the Department of Defense Orientation. At these times, we hold an open house for approximately 4,000 other students from various service schools such as Ordnance, Signal, and Armed Forces Staff College.

A few minutes ago I mentioned the Basic Infantry Officer Course. As of 1 July this 15-week course will be discontinued. An 8-week Infantry Officer Leader Course will take its place. Study revealed that the 15-week BIOC course duplicated much of the USMA program of instruction ATP 145-60, general science curriculum for civilian and military colleges. The 8-week IOLC eliminates this duplication and more closely follows a ranger type course - emphasizing self-confidence and aggressiveness. It does not replace the ranger course. All newly commissioned officers must still take the Ranger and/or Airborne Course, or the Army Aviation Course.

I would like to mention a new course - acutally a subcourse. This is our Nuclear Weapons Employment Officer Course. The advanced class receives approximately 135 hours of atomics. Upon graduation, those who successfully complete the atomics instruction are awarded a prefix 5 to their MOS. The associate advanced class receives 77 hours of atomics. Those students who achieve certain standards are held over after they graduate and receive another 60 hours of atomic instruction. Successful completion of these hours qualifies them for a prefix 5. In addition to this relatively large single block of instruction, the advanced level classes receive approximately 184 additional hours of integrated atomic instruction presented by other than our atomics committee. We have had 3 classes complete this sub-course so far - two regular classes and one associate class. Approximately 65% of the two regular classes were qualified as nuclear weapons employment officers and approximately 30% of the associate class was qualified.

Gentlemen, that ends my presentation. Are there any questions?

CHAPTER 2
NON-RESIDENT INSTRUCTION PROGRAM

CAPTAIN ROBERT ARTER

Operations Officer, Department of Non-Resident Instruction

During your visit to the United States Army Infantry School, you have seen and will be shown many of the facilities which exist here to support the training of the fifteen thousand plus students who annually attend resident instruction. I'm wondering--just how many of you realize that the Infantry School supports a current non-resident student enrollment of 290,000? During this period we will discuss the non-resident programs in which these students are participating and the types, benefits, and methods of procurement of non-resident instructional material prepared to support these programs.

To administer and coordinate the support of the non-resident programs of the United States Army Infantry School, the Department of Non-Resident Instruction has been established.

The department is organized as follows:

A department headquarters with a colonel, Director, and lieutenant colonel, Deputy Director. The Deputy Director in this instance wears two hats as he is also the Infantry ROTC Advisor and as such makes visits throughout the country, learning how he can better support the ROTC program.

An Operations Section consisting of the Administrative Branch which performs the normal administrative duties of an S1 section, and the Planning and Coordinating Branch which has the responsibility for coordinating all activities of the department. It is this branch which serves as the department's liaison agent with all other departments and agencies concerned with the production of non-resident instructional material. Its activities can best be likened to those of an S3 office. This office also monitors the expenditures of all funds allocated to support the various non-resident programs.

The Logistical Section performs a dual function. It is responsible for distribution of non-resident material to individual students in the case of Army Extension Courses and to the instructors in the other non-resident programs. It also serves as the supply agency for the department.

The Editorial Committee is charged with the writing, rewriting, and editing of all non-resident instructional material. It is composed of officers with considerable military experience, and civilians who have had military experience and who possess excellent writing backgrounds.

The AEC Committee is responsible for administration of the Army Extension Courses; it grades student lessons and maintains extensive records on all students. For your information, approximately eighteen thousand student papers are graded weekly.

In keeping with the reorganizations which have taken place throughout the military establishment to strengthen support of the reserve program, a Reserve-ROTC Committee was organized (Figure 3). The Reserve-ROTC Committee assists the ROTC Advisor in maintaining liaison with and providing proper support for ROTC units and maintains liaison through visits and correspondence with NG and USAR units supported by the Infantry School.

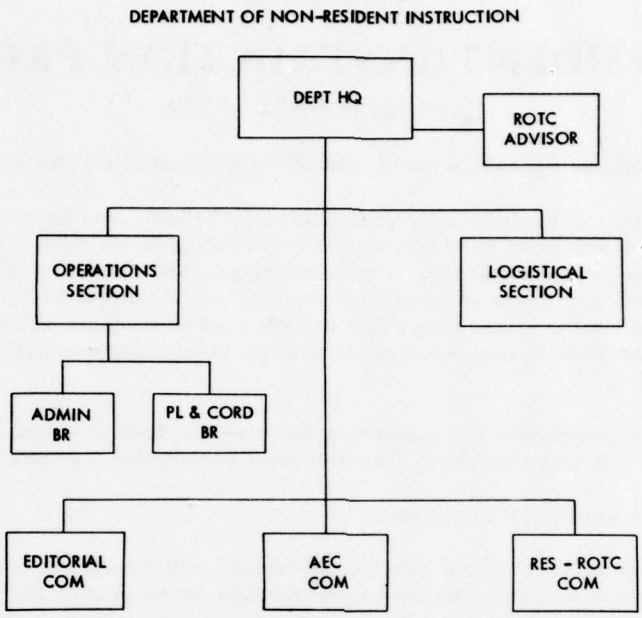

Figure 3. Organization of the Department of Non-Resident Instruction.

By now, I'm sure that you are beginning to wonder, "What is this non-resident material and how is it used?" To best understand it, let's consider a man's life cycle. Yes--our scope nearly covers "from the cradle to the grave."

There are four major non-resident programs supported by the Infantry School. These are: Reserve Officers' Training Corps, United States Army Reserve, National Guard, and Army Extension Courses.

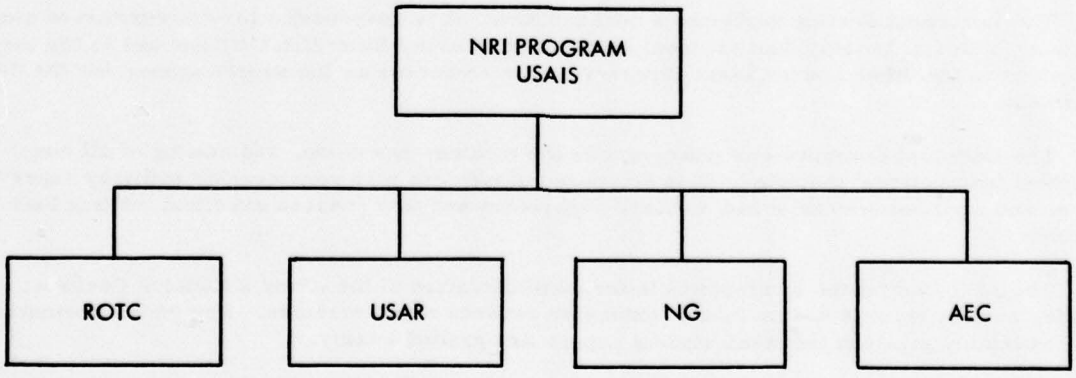

Figure 4. Non-Resident Programs.

Let's consider an average American boy whom we find enrolled in the Reserve Officers' Training Corps Program of his local high school (Figure 4). He's participating either in the Junior ROTC or National Defense Cadet Corps and will receive 96 hours of training in basic military subjects each year for three years. This training is designed to make him a better American citizen and to prepare him for possible service as an enlisted man. There are two types of units at this level of instruction, the regular Junior ROTC units and the National Defense Cadet Corps units training under Section 55c, the National Defense Act. The latter units are supported only by instructional material, whereas, regular Junior ROTC units are provided active Army instructors as well as training material support.

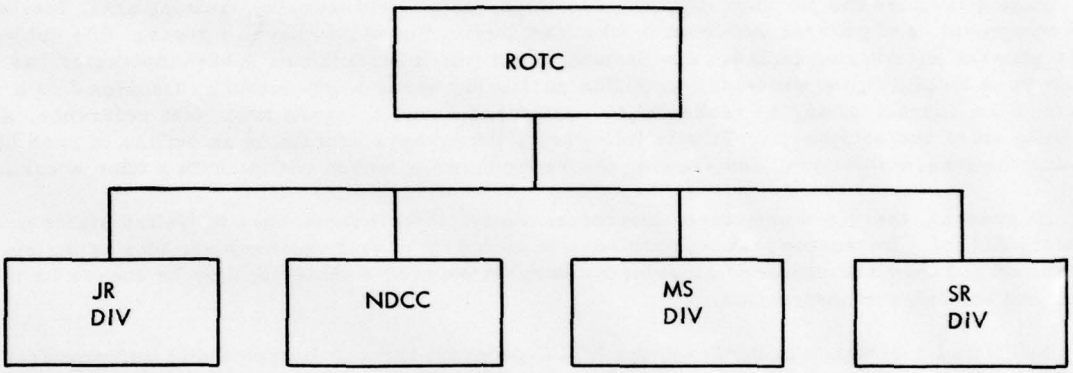

Figure 5. ROTC Programs.

Our lad could have participated in the Military Schools Division of ROTC (Figure 5). It consists of military institutes and military junior colleges with an enrollment of approximately 13,500. These schools have a six-year curriculum with 150 hours of military instruction per year.

Now, let's assume that our lad has graduated from high school and enrolled in college. Here he may receive additional training under an ROTC program which parallels the resident OCS course. There are 250 senior ROTC units which are supported by the Infantry School; this includes 202 General Military Science and 49 Branch Material units including 17 Infantry units. Total enrollment is around 144,500. The General Military Science (GMS) curriculum is keyed to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in any branch of the United States Army. The Infantry branch-type curriculum, as the name implies, is designed to train officers for Infantry commissions. Effective this school year, both programs included relatively the same subjects for the freshman and sophomore years with little difference in the final two years. The trend is to convert all branch-type units to GMS units.

A senior ROTC student receives 90 hours of instruction each year for the first two years and 150 hours annually for his last two years. In addition, to qualify for a commission, he must attend summer camp. This is normally accomplished between the third and fourth years of ROTC. Last school year, 14,656 officers were commissioned through the ROTC program with about 2004 going into the infantry. (The Artillery Branch received the largest number of officers, about 4,000.)

The ROTC curriculum has been changed to include instruction of the new organizations.

To support the ROTC programs there are 53 subject schedules, 3 instructor manuscripts, and 1 new developments pamphlet prepared here. There are an additional 15 subject schedules and 11 instructor manuscripts which are prepared by other service schools but which are edited, published, and distributed by the United States Army Infantry School. Let's take a look at a typical subject schedule. Please refer to Subject Schedule Nr 480. This particular subject schedule was prepared to assist the Professor of Military Science and Tactics in presenting instruction on the Rocket Launcher 3.5, Hand and Rifle Grenades. The cover contains the title as well as the school year and ATP paragraph which the subject schedule supports. On the reverse side is a table of contents.

Page 1 outlines the purpose, training objective, scope, references, training aids, facilities and equipment, and general information which an instructor should have to present this subject. This general information includes any training hints which the Infantry School instructor has found to be helpful in the presentation of this particular block of instruction. On page 2 is a chart of the course, giving a breakdown by period and showing lesson title, text reference, area, training aids, and equipment. This is followed by paragraphs containing an outline of each hour, stating the lesson objective, and showing the recommended lesson outline with a time breakdown.

At present, there are only three instructor manuscripts written here at United States Army Infantry School. Instructor manuscripts contain complete narratives for each hour of instruction supported and they are prepared on subjects wherein reference material may be scarce or there is a need for uniform instruction.

Additional assistance is rendered the ROTC program through liaison visits and procurement of special items such as name tags, magazine subscriptions, and books. Certain instructional items are purchased and automatically distributed. Recently, plastic working models of several weapons were purchased through a special training fund and have been distributed to ROTC units. Each senior school is allocated money quarterly from the ROTC Support Fund. This money is used to purchase items which are not available through supply channels. There are several Senior ROTC manuals and one Junior ROTC manual which are now published by the Department of the Army as text references. The United States Army Infantry School does have responsibility for preparing those portions of the manuals which pertain to instruction at this school. These publications are currently being revised along ROCID lines and will be available through AG publication channels as they are printed.

Let's assume that our hypothetical individual has graduated from ROTC and has been commissioned a second lieutenant, Infantry. He is called to active duty with his first assignment being here at Fort Benning where he attends the Basic Infantry Officer Course. Under the 1955 Reserve Forces Act he may complete his 6 months' active duty requirement by attending BIOC and then attending further schooling or being assigned at Benning until discharged. If he elects a two-year tour of active duty he's assigned according to the needs of the service upon completion of BIOC.

Let's assume that our young man has completed his two years' active service and reverted to a civilian status. If he is to remain active with the military, he may participate in the USAR or NG programs. Let's assume that he elects to join the USAR. There are two USAR activities in which he may participate.

The first USAR school was organized at Allentown, Pennsylvania, in 1949 and the program met with such success that today there are 84 USAR schools with 154 Infantry Departments operating throughout the United States (including schools in France, Germany, and Hawaii). The enrollment is about 1800 officers (Figure 6).

What is a USAR school and how is it organized? A USAR school is run by reserve officers for reserve officers. The faculty consists of a commandant with his regular staff (S1, S3, S4) plus a special staff. The school is organized into departments based on branches with an instruc-

tor for each branch. A minimum of 10 students is required to organize a department. Since everybody involved--students and instructors, are civilians, the material which is prepared for them must be complete to the last detail. A civilian instructor has no library facilities, etc., he can turn to--and we don't want him to need them.

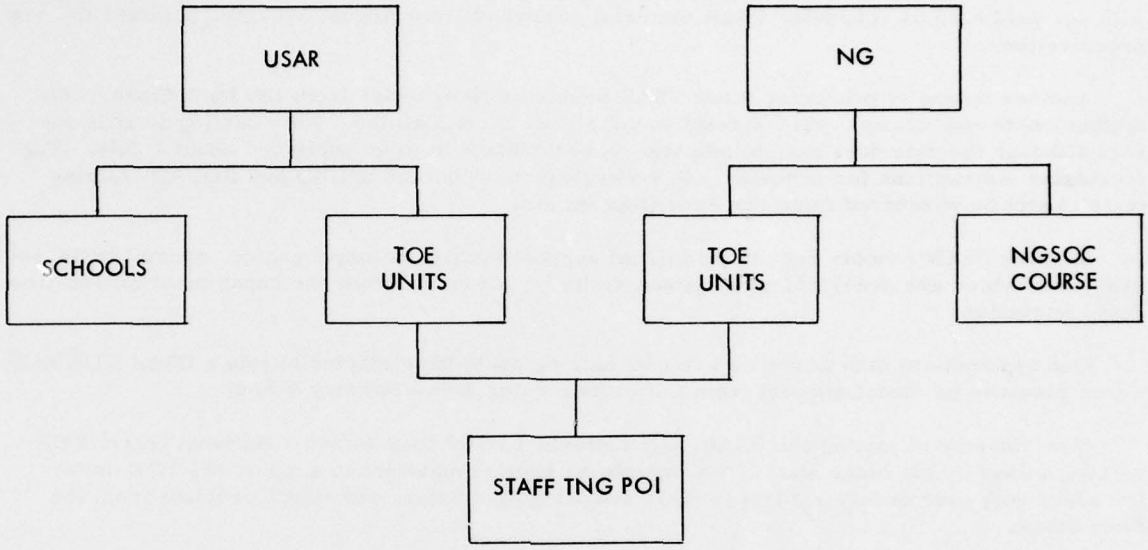

Figure 6. USAR and NG Programs.

It's possible for a USAR student to spend 11 years in a USAR school. Each Infantry branch department has two courses of three years each. The USAR Associate Company Course parallels the resident Associate Company Course and the USAR Associate Advanced Course parallels the resident Associate Advanced Course. Each year is broken down into two phases--the active duty for training and the reserve duty phases. The reserve duty phase consists of 48 hours of instruction which is presented in the individual's hometown. The active duty for training phase of 80 hours is received during a two-week summer camp which is conducted at a military post. In addition, the Command and General Staff College has a five-year program for USAR schools.

Let's take a look at the type of material which is prepared to support instruction in USAR schools. Pick up problem number 4901-R which is on your desk. A USAR problem normally consists of two parts--an instructor and a student set; however, this particular problem does not require any homework by the student and hence there is no student set. Look at the heading. It contains the subject, time allotted, type of instruction, scope, subject schedule, special preparation by the instructor (included here are all details or items which the resident instructor has encountered in the presentation of this problem and which should be passed on to the reserve instructor), and special preparation by the student (the exact same study of assignment that is given resident students). Note the outline of presentation, time chart, and complete narrative. At the end of each phase of USAR school instruction an examination, which is prepared by the Department of Non-Resident Instruction, is administered to each reserve student by the USAR school faculty. There are two established ways for you to obtain these USAR problems.

The first of these is through the Monthly List of Instructional Material. This publication is distributed monthly by the Editorial and Pictorial Office (formerly Publications and Visual Aids Office) to PMST's, senior Infantry instructors at service schools, chiefs of military districts,

senior advisors to National Guard and USAR units, and various other agencies. Addressees are authorized to receive without cost one copy of all problems listed therein. It should be SOP for someone in your shop to check this list closely, circulate it among interested persons, and then order your free material within 45 days. The number of addressees who fail to take advantage of this free service is surprising. The Infantry USAR school curriculum has been converted to ROCID effective with the active duty for training phase, school year 1957-58. In accordance with our publications schedule, USAR material published from August 1957 on, included the new organizations.

Another means of procuring these USAR problems is by order from the Book Store. This method costs you money. Please refer to your Book Store Catalog. This catalog is still current although the date does not so indicate. A new edition is to be published about 1 July. Page 1 contains instructions for ordering. For your information, the ROCID and ROTAD training texts cannot be purchased from the Book Department.

Infantry USAR schools receive additional support through transparencies, special texts, and handbooks which are provided, plus liaison visits by personnel from the Department of Non-Resident Instruction.

Our hypothetical man whom we are considering could have elected to join a USAR TOE unit which receives no direct support from the United States Army Infantry School.

Now, instead of joining the USAR, our individual could have joined a National Guard TOE unit organized by his home state. We provide no special material to support NG TOE units; however, they may order, subject to their availability of funds, any USAR problem from the Book Store.

Both USAR and NG TOE units are supported by a staff training catalog which is prepared and forwarded to all state adjutant generals and Reserve Corps Headquarters. This catalog contains a recommended list of USAR school problems for training Infantry Division and Battle Group; Armored Division and Armored Infantry battalion staffs. This training is conducted during the periods while the companies are drilling. Material is ordered in December and shipped the next July. All NG material is paid for by National Guard funds, whereas USAR units receive material which is paid for by Infantry School non-resident instruction funds. The program has been converted to ROCID for school year 1958-59.

The Infantry School is the sole agency which supports the National Guard State Officer Candidate Program. At present, this program is being conducted by 33 states through the operation of 43 schools with an enrollment of 2468 students. The course is supported by 21 Annexes containing 227 hours of instruction which parallel the resident Officer Candidate Course. These annexes are used by NG officers to teach classes, normally held on weekends, to National Guard Officer Candidates. In addition, most states require their officer candidates to serve in a second lieutenant's job at summer camp. This way he is evaluated as to his job performance as well as academic standing. A commission gained through the NGSOCS program does not have to be recognized by the federal government; however, it normally is when the unit is called into federal service.

Let's look at a typical NGSOCS problem. Please pick up National Guard problem 1806. A similar problem is prepared for every period of instruction in this program. Turn to page 1 and note its similarity to page 1 of a USAR problem. Look on page 2. Here begins the narrative. Just as in USAR problems, each problem normally consists of an instructor set and a student set. The student set outlines the home study assignment and normally contains a preclass requirement. Each phase of instruction is followed by an examination which is administered by the state and graded here at the Infantry School by personnel of the Department of Non-Resident Instruction. Within 48 hours after receipt of these exams, they are graded, recorded, and on their way back to the appropriate state schools. NGSOC schools are also supported by transparencies, special texts and liaison visits.

The National Guard State Officer Candidate Course curriculum has been revised to include the new organizations effective with school year 1958-59. Material prepared to support this course is automatically distributed to Commandants of NGSOC schools only. I will have information copies of the National Guard State Officer Candidate Course and USAR School Programs of Instruction available after this class for those who are particularly interested.

Let's assume now that our selected individual has grown older. Perhaps he has served several years with a USAR or NG TOE unit. Due to his family and business activities, he is no longer able to regularly attend meetings at the armory. However, he wants to keep active in the military and to gain retirement benefits; then we have the solution to his needs--participation in the Army Extension Courses Program. Army Extension Courses provide a progressive non-resident course of military instruction for all components of the Army.

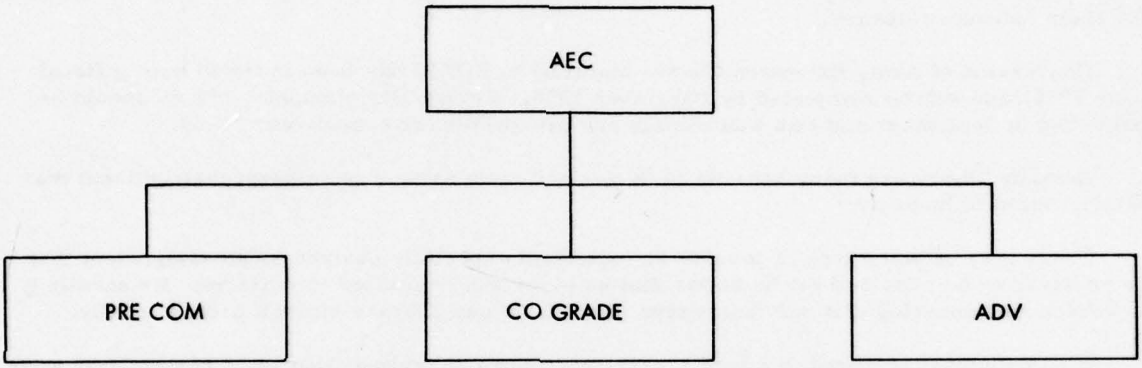

Figure 7. Army Extension Course Program.

Effective 2 July 1956, the Army Extension Course Program was revised from a series-type organization to a course-type organization. It now consists of the Pre-Commission Extension Course which is to generally parallel the resident OCS Course; the Company Grade Extension Course; and the Advanced Extension Course which parallels the resident Associate Infantry Officers Advanced Course (Figure 7).

Any officer on active duty may enroll in any subcourse; however, a reserve student must complete the subcourses appropriate to his grade before enrolling in more advanced instruction. For your information, the percentage of enrollment by component breaks down as follows:

56% - NG
20% - USAR
24% - Active Army (this includes all RA, USAR, & NG personnel on active duty; ROTC cadets, WAC's, Air Force, and Naval personnel.)

Please refer to the publication with the picture of a lieutenant briefing two sergeants on the cover. This is a typical subcourse. This particular one happens to be Infantry subcourse 21 and is prepared for instruction on the company officer's level. Let's hurriedly look at it.

On page 2 is the beginning of lesson 1. NOTE--at the top of the page is shown the AEC credit hours, text assignment, materials required , lesson objective, and suggestions to the student. Usually there is an introduction. As you leaf through the lesson, you will note that there are a series of general and special situations followed by multiple choice questions, normally twenty per lesson.

Turn to the back page of the booklet. This is the answer sheet which the student should tear off and mail in upon completion of lesson 1. Remember that Army Extension Courses cost the student absolutely nothing and all correspondence is handled through franked envelopes. This answer sheet is graded by personnel of the AEC Committee, and then the student's grade along with a correct solution sheet and discussion of difficult questions is on the way back to him within 48 hours. Students completing a subcourse receive a letter of completion through channels while students completing a course receive a certificate of completion.

Special Texts are written in the form of field manuals but are better reading and easier to understand. Everyone realizes that often the latest doctrine or techniques which you are teaching are not contained in the field manual. The only way that we can make this material available to the non-resident student is through the preparation of special texts or attached memorandum. Special texts are popular with non-resident students and they are permitted to retain them for their reference library.

Conversion of Army Extension Course material to ROCID has been initiated during fiscal year 1958, and will be completed by December 1958. Revised DA Pamphlet 350-60 should be published in September and this will contain our prospectus for school year 58-59.

Actually, there are many benefits to be derived from using non-resident instructional material. Some of these are:

There may be some type of job that an individual especially desires or an assignment that he receives orders for and yet he knows that he is not fully qualified to perform. By enrolling in subcourses covering that particular type of duty, he can prepare himself professionally.

If an individual is slated to attend a service school and realizes that he is particularly weak in a given subject, he may enroll and review that subject. Chances are he would study many of the same problems and situations that he would encounter in resident instruction.

I doubt that there are few here who have not at some time been assigned the task of presenting a class about some subject with which they were not familiar. Imagine how valuable a USAR problem with a complete narrative would be under such conditions. Everyone will agree that possession of a narrative does not make a good instructor; however, it certainly provides the best point to start preparation of a class.

In addition to Infantry subcourses, there are also subcourses covering all subjects taught at other service schools. These can be had without cost to the student. (Examples are color television, accounting procedures, radio, etc.)

There are many other benefits to be derived from participation in the non-resident program. One is that it can enable reserve personnel to gain retirement or retention points. Three Army Extension Course credit hours equal 1 credit point. Twenty-seven points are required by reserves to remain active and 50 points must be accrued annually to qualify for retirement benefits. Also completion of certain designated subcourses is required to qualify National Guard officers for promotion.

The Infantry publicity poster such as is displayed on the board is prepared for the purpose of arousing ROTC Cadets' interest in the Infantry. It is also distributed to Infantry instructors and liaison officers at the various service schools and headquarters, and to Infantry USAR and National Guard State Officer Candidate Schools. If you are not presently included in the mailing list, please see me at the conclusion of this period. There are nine issues printed annually, for each month of the school year. These posters should be prominently displayed wherever possible.

During this period we have briefly discussed the organization and functions of the Department of Non-Resident Instruction, the various non-resident programs with their 290,000 students, and the types of non-resident instructional material prepared to support these non-resident programs. Further, I have pointed out the schedule dates for conversion of non-resident instructional material to the new organizations. You have been told what material is available and how you can obtain it, the next step is yours.

CHAPTER 3
INFANTRY COMMUNICATIONS

Section I. INTRODUCTION

COLONEL JULIAN H. MARTIN

Director Communication Department

On behalf of the officers and men of the Communication Department, I wish to extend our welcome, and to invite you, while here, to call on any or all of the personnel of the department to assist you as you require.

Over and over again, great and successful combat leaders have reiterated that the three most important ingredients for success in combat have been and will continue to be, one, communication; two, firepower; and three, mobility. We in the Communication Department believe that because of the characteristics of the future battlefield, the word "communication," and all it connotes, has gained added importance. Because of the extended distances on the future battlefield, the problem of command and control will be increased many times beyond that known in the past. We believe that unless the commander fully capitalizes on the communication available to him, he will not be able to deal with the extended distance problem and success in combat will be an almost impossible task.

The planners of the new ROCID organization, cognizant of the importance of communication to the commander, reorganized the communication structure of the Infantry division. Since this reorganization however, it has been concluded, through studies, investigations, and reports from field commanders, that the communication personnel and communication equipment organic to the battle group are not adequate. As a result of this conclusion, the Infantry School has recommended that various items of communication equipment and additional personnel be added to the battle group TOE. If this recommendation is approved by United States Continental Army Command and Department of the Army, we believe that the commander will have the tools with which to successfully command and control his subordinate units as well as support units. This Infantry School recommendation will be discussed in detail by Captain Piaseczny, Research Coordinator, Communication Department, during the first portion of the period this morning.

As in all other military fields, continuous experimentation and research are being conducted in the field of electronics. Each new idea or suggestion for improvement is exploited to the fullest. Current developments and trends, and a final version of many pieces of equipment that will be in the hands of troops during 1960, will be discussed by Major McDonnell, Chief of the Radio Maintenance Group, Communication Department, during the second half of this morning's presentation.

At the conclusion of the two presentations just mentioned, we have set aside a ten minute period to answer your questions. At this time I would like to present Captain Piaseczny.

Section II. INFANTRY BATTLE GROUP COMMUNICATIONS

CAPTAIN JOSEPH J. PIASECZNY

Research Coordinator, Communications Department

The United States Army Infantry School is vitally interested in continually improving the means of communication available to our Infantry units, and in particular, the rifle company.

We believe that if complete and reliable means of communication are provided to the rifle company, the remainder of our problem areas will more easily fit into place.

Several communication studies have been undertaken by the Infantry School during the past year in order to improve upon Infantry communications. Units in the field were solicited for comment, and as a result, a formal position regarding battle group communications was adopted by the School and forwarded to USCONARC in February 1958.

The improvements called for may be accomplished with existing equipment, the highlights of which are as follows: Our problem begins with the Infantry rifle platoon (Figure 8).

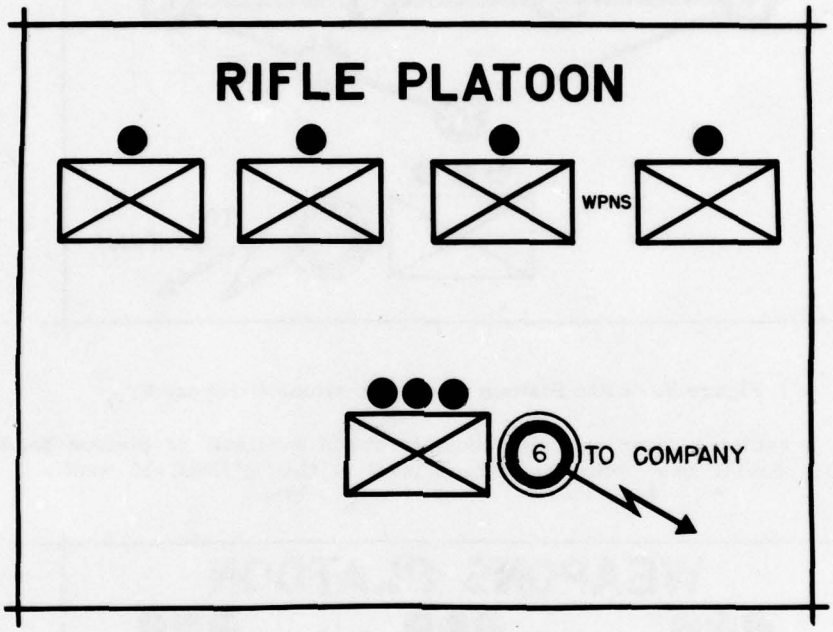

Figure 8. Rifle Platoon Communications.

The platoon leader does not possess organic means of communication to control his squads. The means of communication available to this unit have not changed very much since the dawn of Infantry. The need for organic means of communication within the rifle platoon has long been recognized in Airborne and Armored Infantry units. However, the platoon leader is provided a radio to communicate with company. The AN/PRC-6 with a limited one mile range is provided for this purpose. This radio as you know may be hand held for operation, which is the more common method used, or it may be shoulder carried which may be more convenient, utilizing a handset with extension cord. This allows the hands to be free since the handset may be hung on the Infantryman's pocket.

We propose to add five additional AN/PRC-6 radios to the rifle platoon in order to establish an organic platoon command net (Figure 9). This distribution would include the platoon leader, platoon sergeant, and each squad leader. This is considered to be an interim measure only pending availability of lighter weight equipment. For communication back to company, the more improved AN/PRC-10 radio should be provided to the platoon leader. This radio set with a 3 to 5 mile range would fill a more realistic range requirement. Since it is essentially a back

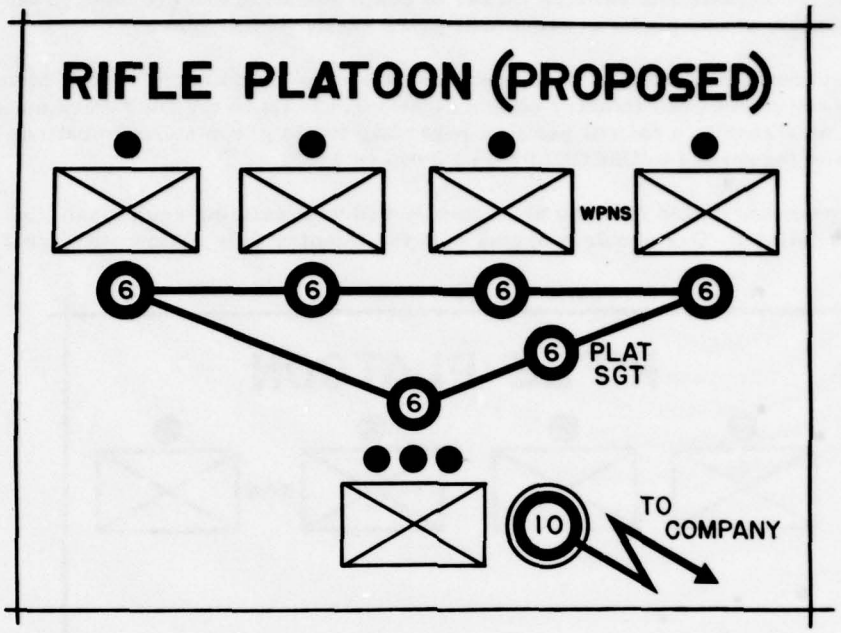

Figure 9. Rifle Platoon Communications (Proposed).

carried radio, a radiotelephone operator must be made available at platoon headquarters. This then would provide two radios at platoon level — the AN/PRC-10 with a 3 to 5 mile

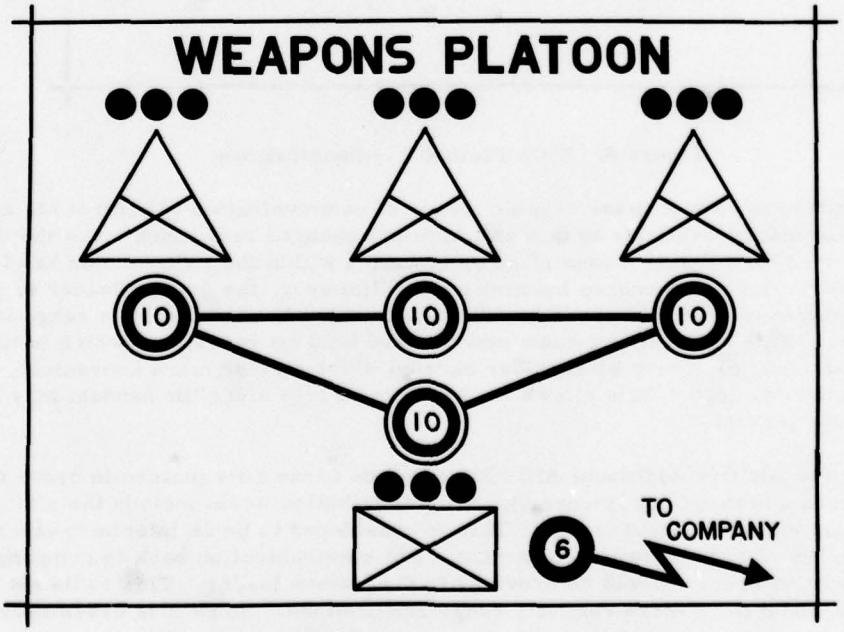

Figure 10. Weapons Platoon Communications.

range for communication with company and the AN/PRC-6 for communicating with squad leaders. Our rifle platoon communication system would then correspond more favorably with the Airborne and Armored Infantry rifle platoons. Five additional sound powered telephones have also been recommended for the rifle platoon to complement the radio system.

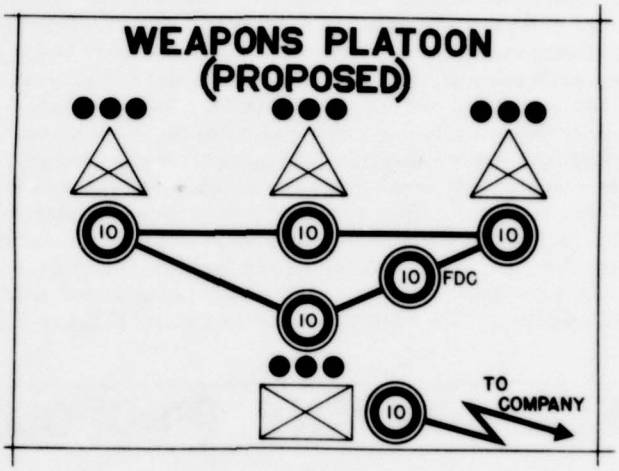

Figure 11. Weapons Platoon Communications (Proposed).

The rifle company weapons platoon is in somewhat better condition (Figure 10). Here the AN/PRC-10 with its 3 to 5 mile range is used exclusively within the platoon for communication between platoon headquarters and each of the forward observers. However, the AN/PRC-6 radio with limited one mile range is again used here for communicating back to company. This condition may be improved upon. We propose to provide two additional AN/PRC-10 radios to this unit (Figure 11).

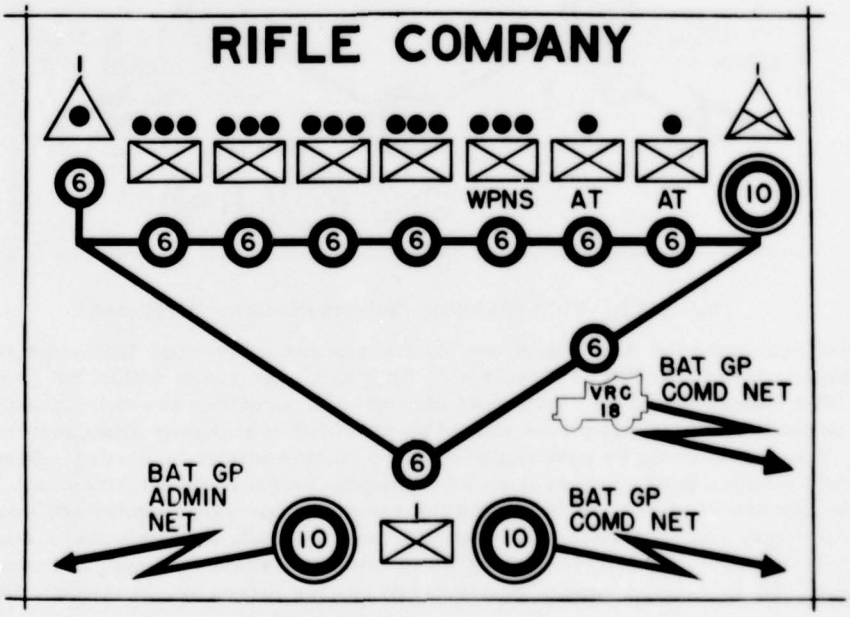

Figure 12. Rifle Company Communications.

This additional distribution would allow for an improved radio for communicating back to company, and one additional set within the platoon for displacement of the FDC. Additional wire and radio remote control equipment has also been recommended for this platoon.

The means of communication within the rifle company must be considered (Figure 12). At the present time the rifle company employs nine AN/PRC-6 radios with one mile range for communicating in the Rifle Company Command Net which in addition to the commander includes company headquarters, each platoon, the antitank squads and the mortar battery forward observer, who provides his own radio set for this purpose. The one mile range of this radio, as brought out earlier, is not adequate for this net and must be substituted. Two AN/PRC-10 radios with 3 to 5 mile ranges are employed at the command post for communicating with battle group. The range of this equipment is not considered adequate for use in a Battle Group Net, and in order to make them effective, improved stationary type antennas must be used. An additional AN/PRC-10 radio is provided to the company commander for use while dismounted from his vehicle or on a company OP. For communicating back to battle group, the rifle company commander is provided a very good 10 mile range vehicular set, the AN/VRC-18 which is mounted in his 1/4-ton vehicle. This system can be improved (Figure 13).

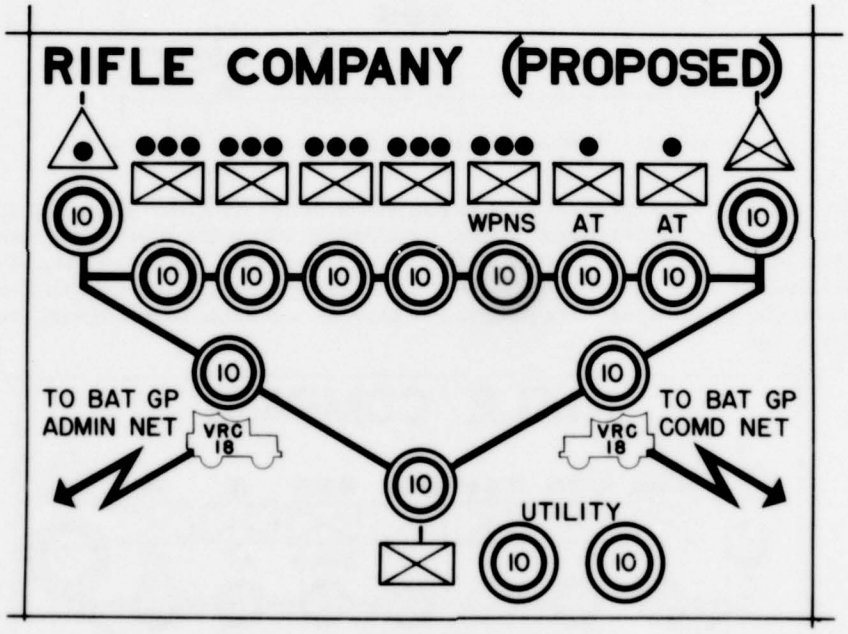

Figure 13. Rifle Company Communications (Proposed).

We propose to eliminate the AN/PRC-6 one mile range radio from use within the company, and substitute the improved AN/PRC-10 radio with its 3 to 5 mile range within the company command net. This change would be concurrent for the radio provided the mortar battery forward observer. In addition, two utility sets should be provided at company headquarters for added flexibility. These sets could be used for patrols or relay stations as needed. Speaking of relay, they could be used better when set up as automatic retransmission stations. Automatic retransmission can assist greatly in extending the ranges of our radio equipment when necessary. When used however, two frequencies or channels must be made available and a special cable, the retransmission cable kit MK-126, must be provided. Personnel must be trained to perform this technique. To gain added range, particularily during defensive operations, the improved

antenna RC-292 may be used at the retransmission site. For communication with battle group, the rifle company executive officer should be provided with a vehicular mounted 10 mile range radio similar to the rifle company commander. This is considered essential not only to improve upon the Battle Group Administrative Net, but to enable the executive officer to rapidly regain control of the company in the event the company commander becomes a casualty and his vehicular radio equipment is damaged or destroyed. Time does not permit elaborate maintenance procedures within the rifle company during offensive actions. The AN/PRC-10 radio, is again recommended for the commander and executive officer for dismounted use. Improved wire, wire recovery equipment, and additional radio telephone operators have also been recommended. Now what about the battle group itself.

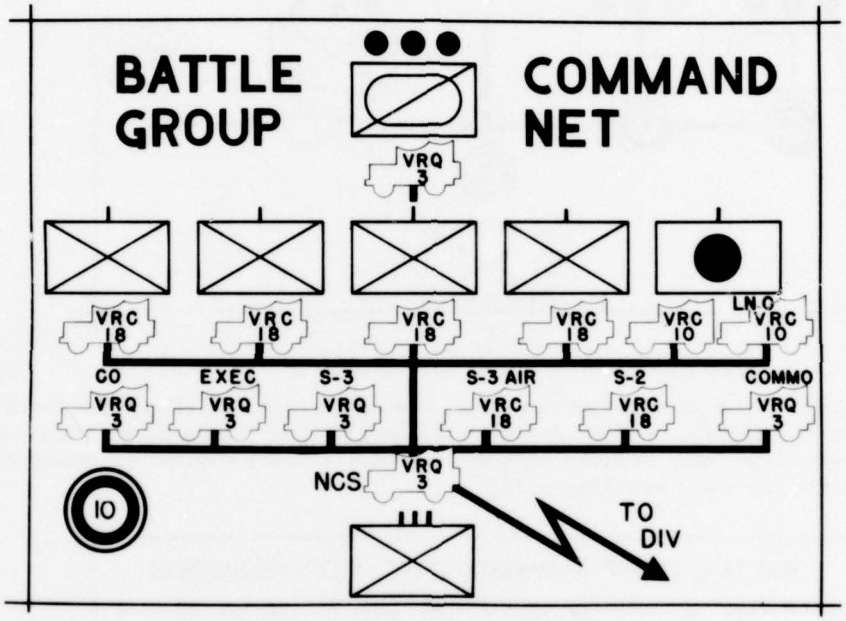

Figure 14. Battle Group Command Net.

The battle group commander, selected staff members, and all units operate in the Battle Group Command Net with a 10 mile range radio of one type or another (Figure 14). The rifle company commanders, S2 and S3 - Air for example, are provided the vehicular radio set AN/VRC-18. On the other hand the battle group commander is provided the radio set AN/VRQ-3, a portion of which he uses to also communicate with division. The executive officer, S3, and Commo are provided similar sets. This radio net appears to be adequate except that it may be further refined by providing the AN/VRQ-3 to the company commanders and S2.

The Battle Group Administrative Net is a different matter (Figure 15). Here all members of the net are provided the AN/PRC-10 radio with a 3 to 5 mile range to communicate over the same distances as the command net. The S4 and supply and maintenance platoon leader are the only members provided with a 10 mile range vehicular set to communicate over these distances. This imposes a decided advantage in favor of the 10 mile range radios. The other stations, with low powered equipment would be required to frequently stop and select improved radio sites. It is felt that radio sets with similar characteristics must be employed in order to render any radio net effective. The net control station at battle group headquarters does not actually exist in this

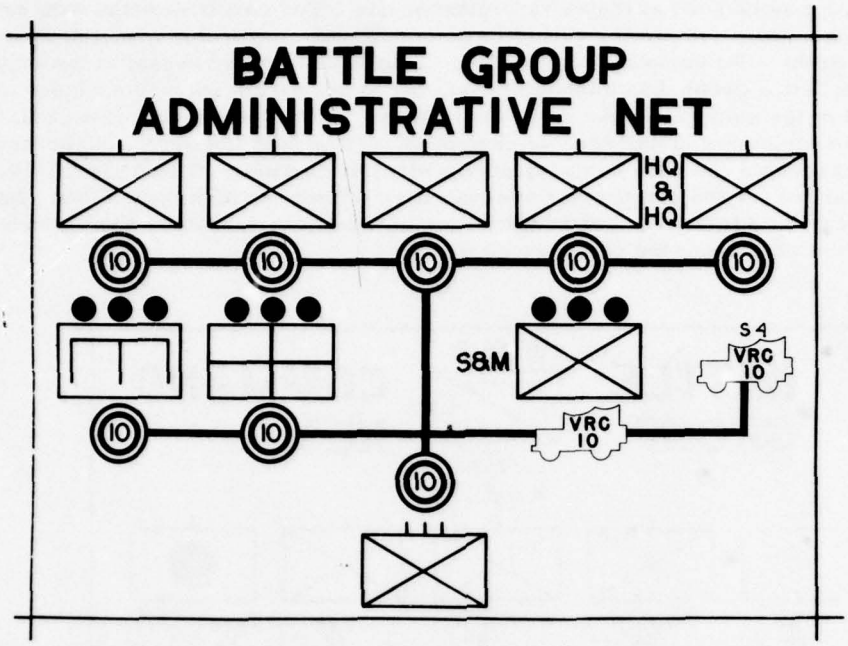

Figure 15. Battle Group Administrative Net.

net. The radio used for NCS purposes is one of the four utility AN/PRC-10 radios obtained from the communication platoon, and the operator is diverted from other duties. This is not a desirable arrangement. We may improve upon this net by providing similar equipment to all stations as used in the command net (Figure 16).

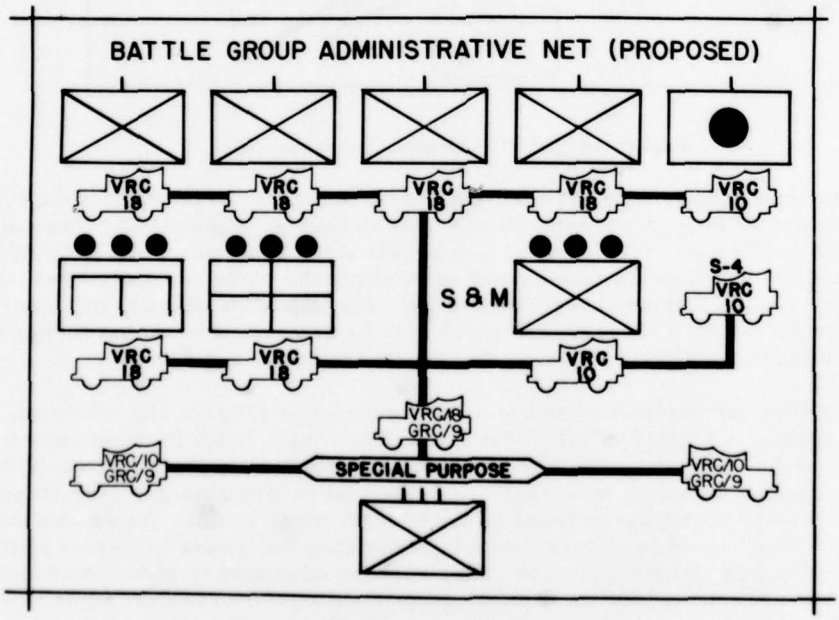

Figure 16. Battle Group Administrative Net (Proposed).

ERRATA SHEET

The following changes will be incorporated in the Infantry Instructors' Conference Report, dtd 23 - 27 June 1958:

1. Table of Contents, page i, Chapter 4, change "...34" to read "...40."
2. Table of Contents, page i, Chapter 4, section I, change "...34" to read "...40."
3. Table of Contents, page i, Chapter 4, section II, change "...34" to read "...40."
4. Table of Contents, page i, Chapter IV, section III, change "...ROTCM 130-45" to read "...ROTCM 145-30."
5. Table of Contents, page i, Chapter IV, section III, change "...46" to read "...52."
6. Table of Contents, page i, Chapter IV, section IV, change "...49" to read "...55."
7. Page 52, section III, line 2, change "...Manual 130-45" to read "... Manual 145-30."
8. Page 52, section III, line 6, change "...ROTCM 130-45" to read "...ROTCM 145-30."
9. Page 52, section III, line 10, change "...Manual 130-45" to read "...Manual 145-30."

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As previously mentioned, the provision of 10 mile range AN/VRC-18 type radios to the rifle company executive officers will materially assist here. The other stations including mortar battery must be provided with similar 10 mile range equipment including the net control station at battle group.

At this time we would also like to introduce a recommendation for a Battle Group Special Purpose Net. We believe that we are leaning a bit too heavily upon our frequency modulated (FM) radio equipment. With the increased need for more radio nets, a shortage of available FM frequencies or channels can be safely predicted. We have recommended that three utility radio teams be provided to the battle group communications platoon. Each team would mount an amplitude modulated (AM) radio set similar to the combat proven AN/GRC-9 or its newer equivalent. These type radios have about similar range characteristics as our other radios when operated on voice, but are capable of greater ranges if needed when used on keyed operation or CW by a trained operator. Perhaps more important, they do not use any of the critical FM channels or frequencies and may easily be removed from vehicles for ground operation when necessary, which is a missing characteristic in the AM type radios we presently use to communicate with division. Our other AM type sets are vehicular bound. The utility teams thus provided, with driver/operators would add considerable flexibility to our battle group radio system when attached to long range patrols, or special operations typified in helicopterborne assaults. For added flexibility, an FM radio similar to the AN/VRC-10 may be mounted in the same vehicle. Since one of these teams would be required to remain at the battle group command post, the FM radio mounted in this vehicle would also fulfill the requirement for a net control station in the Battle Group Administrative Net. So much for radio.

A fourth wire team and more wire has been recommended for the communication platoon. This platoon cannot be expected to efficiently install, maintain and operate wire circuits to four companies, mortar battery, attachments and rear installations without sufficient equipment. Although time may prevent the elaborate wire installations to which we have grown accustomed in the past, it must be available when needed, pending the development of a better substitute.

A Lieutenant platoon leader has been recommended for the communication platoon.

Gentlemen, these are only the highlights of what we are trying to do in order to improve upon our Infantry communications with existing methods and equipment.

On the battlefield of today, with its unprecedented firepower, time will not permit the improvisations to which we frequently resorted in the past.

Complete and reliable means of communications must be made available and reflected in our tables of organization if we desire to take full advantage of the firepower and mobility given to us today.

Communication studies will continue in order to take complete advantage of new developments as they occur.

At this time, I will turn you over to Major McDonnell who will cover signal communication trends and developments.

Section III. TRENDS AND DEVELOPMENTS IN COMMUNICATIONS AND ELECTRONIC EQUIPMENT

MAJOR PATRICK J. McDONNELL

Chief, Radio Maintenance Group, Communication Department

The Communication Department is vitally interested in improving the ability of the Infantry commander to communicate with all of his subordinate commanders and with higher headquarters. During the past year many improvements in the field of command control communication have been made.

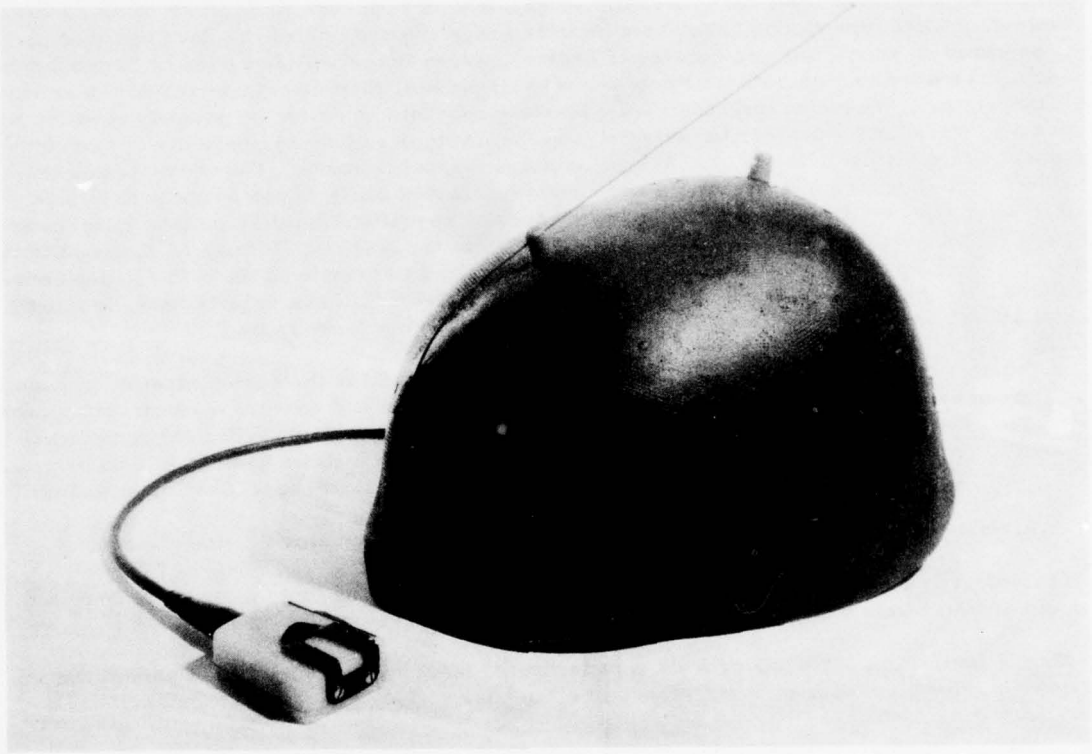

Figure 17. Radio Set AN/PRC-36.

In order to give our squad leader and gun team leaders a means of communications, the AN/PRC-36 (Figure 17) individual radio is presently being manufactured. As you saw this set last year the antenna was mounted internally. However, due to the directional aspects of the internal antenna, the small whip antenna will be used, and a push-to-talk lightweight microphone.

The receiver-transmitter and battery are mounted in the interior of the helmet radio. The earphone terminates in audio tubes. The tone modulated generator has an ON-OFF switch, a volume control and a small push button which when depressed causes the set to transmit a "beep" type tone. This will be extremely useful where our spoken word would enable the enemy to detect our position. By the use of the tone modulated generator prearranged signals may be transmitted. This radio will have a new voice range of 250 yards to 500 yards and will have a frequency range of 38.0 to 51.0 mc allowing 12 channels of communication, any one of which

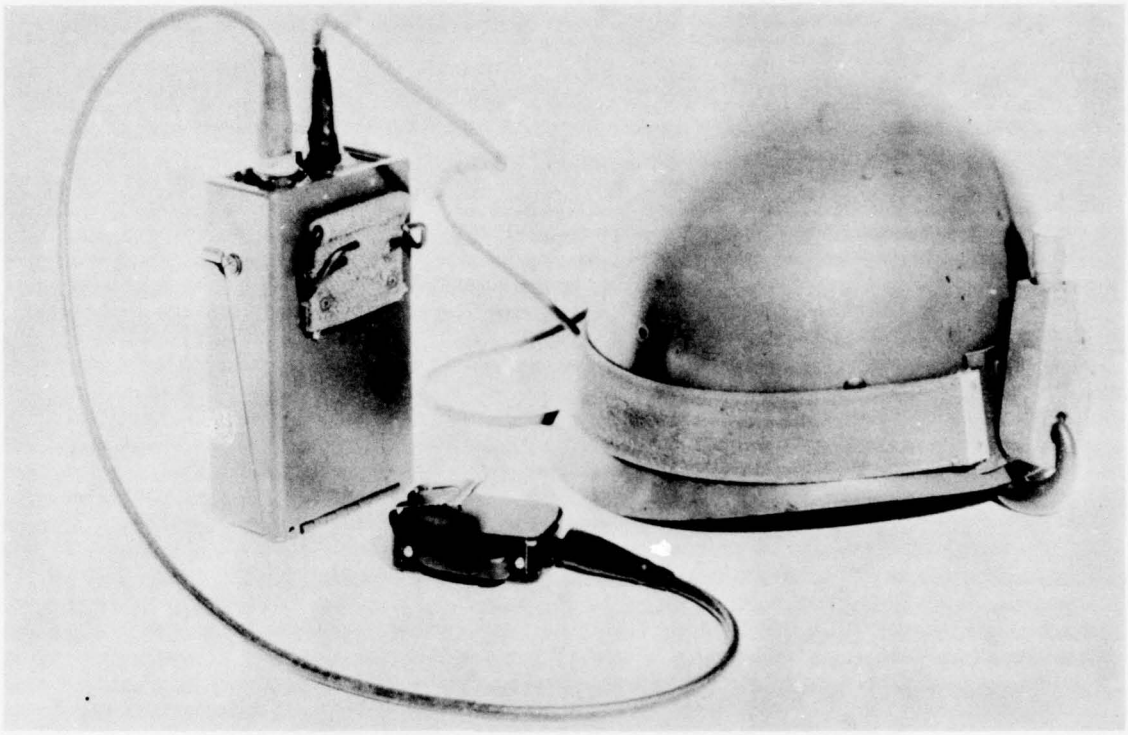

Figure 18. Radio Set AN/PRC-34.

must be preset. It will weight approximately 2 pounds. The companion set is the belt radio known as the AN/PRC-34 (Figure 18). It will have identical operating characteristics but will have the capability of being mounted on the users belt. The antenna and audio tube are fastened to any conventional helmet by this elastic band. The components are housed in a small case 2 by 3 by 5 inches. Components of the belt and helmet radio will be interchangeable. 800 of these radios are scheduled for a test in early FY 59 by as yet an unnamed division of the Third US Army. The AN/PRC-6 (Figure 19) will be replaced by the AN/PRC-35 (Figure 20).

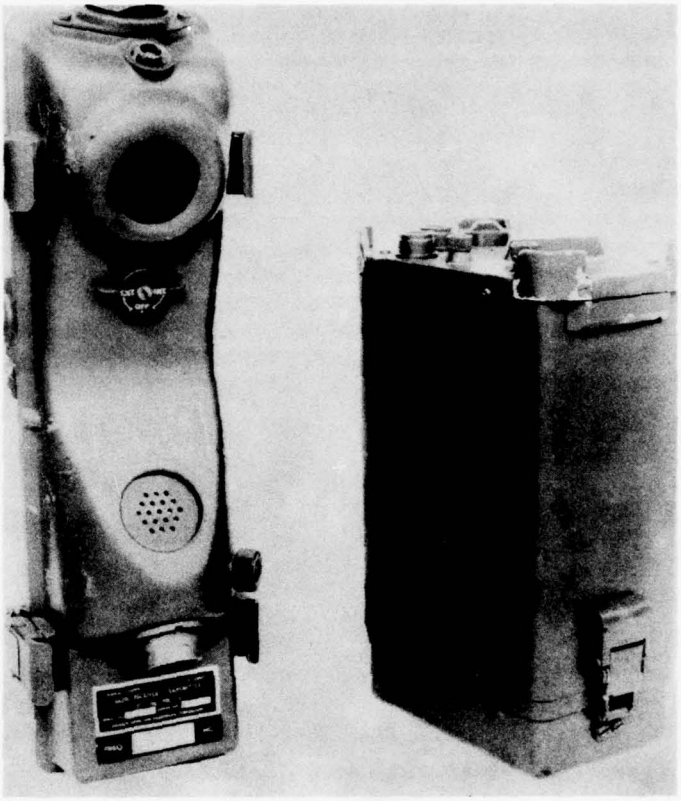

Figure 19. Radio Sets AN/PRC-6 and AN/PRC-35.

It will weigh approximately 8 pounds. This is an increase over the original requirement of 4 pounds, however, this is necessary to give us what we want. It will be pouch or sling mounted. It will have range of 1 mile with a frequency range of 30.0 mc to 70.0 mc allowing 800 channels of communications. This set has a selector knob that will allow the operator to select any one of four frequencies or channels which have been preset.

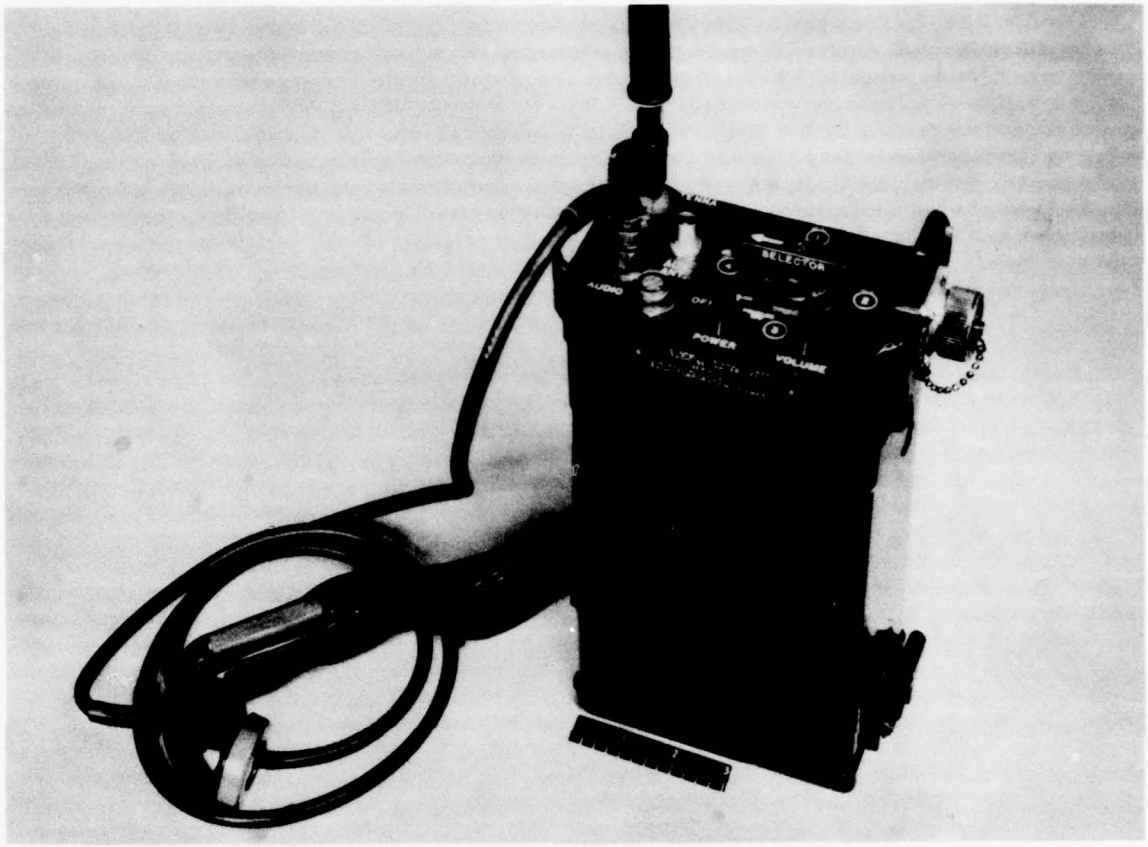

Figure 20. Radio Set AN/PRC-35.

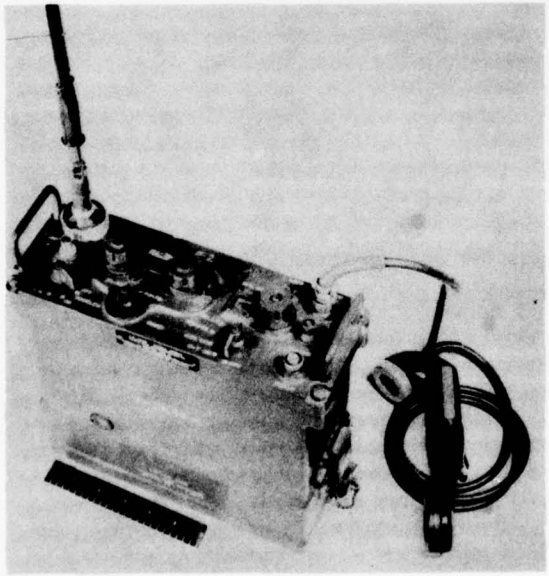

Figure 21. Radio Set AN/PRC-25.

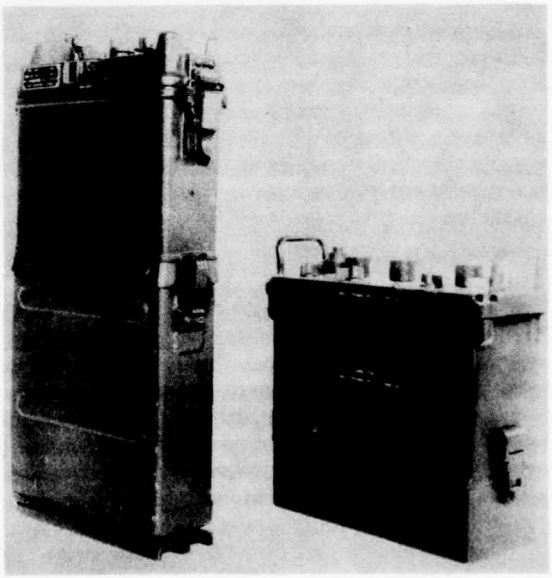

Figure 22. Comparison of Radio Set AN/PRC-10 with AN/PRC-25.

The AN/PRC-25 (Figures 21 and 22) will replace the AN/PRC-8, 9 and 10. It will weigh approximately 15 pounds; this is more than the original 11 pounds that was written into the MC's. It will have a voice range of 3 to 5 miles by the use of a lightweight high gain antenna equipment. This set will have a frequency coverage of 30.0 to 76.0 mc affording 920 channels of communication continuously tunable by the operator. This is an increase of 120 channels over the set which we discussed last year. In addition to the receiver-transmitter, it will also have an auxiliary receiver which will allow the user to monitor a second net while operating in a primary net. Figure 23 shows the vehicular power supply that may be used in place of the dry battery when operating the AN/PRC-25 or 35 in a vehicle.

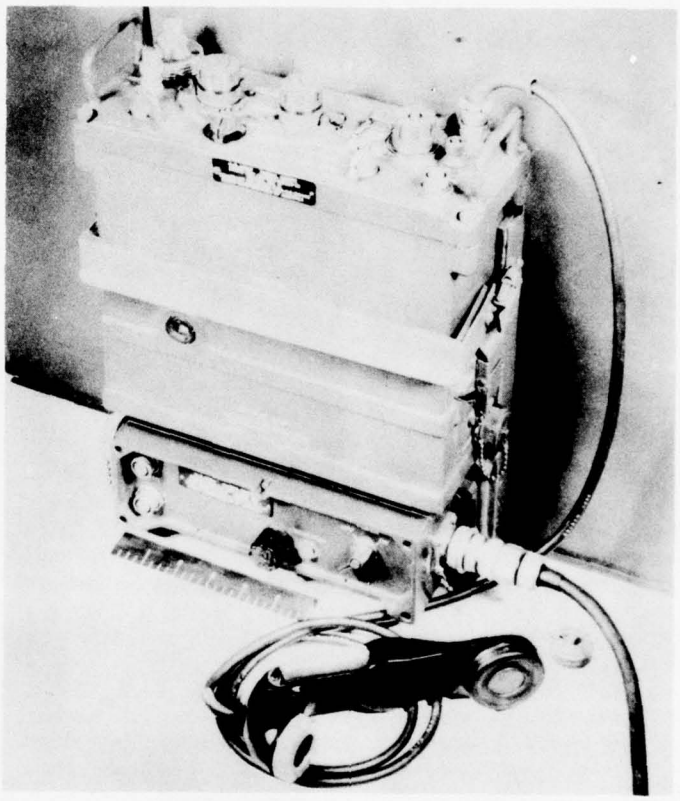

Figure 23. Vehicle Version AN/PRC-25.

The entire AN/GRC-3 thru 8 series radios (Figure 24) is to be replaced by the AN/VRC-12 This set will weigh approximately 85 pounds plus or minus. The receiver-transmitter (Figure 25) will have a voice range of 20 miles while operating on a moving vehicle using a whip antenna. Given the opportunity to select a site and using lightweight high gain antenna equipment this range can be increased to 50 miles. The set has a frequency range of 30.0 to 76.0 mc affording 920 channels continuously tunable by the operator. This set has also been increased in frequency range allowing 120 additional channels. For rapid frequency changing any ten frequencies/channels may be preset and selected by using the buttons in the right center of the operating panel. One of the marked improvements of this set is the absence of power distribution arrangements in the mount. This mount is merely a carrying rack.

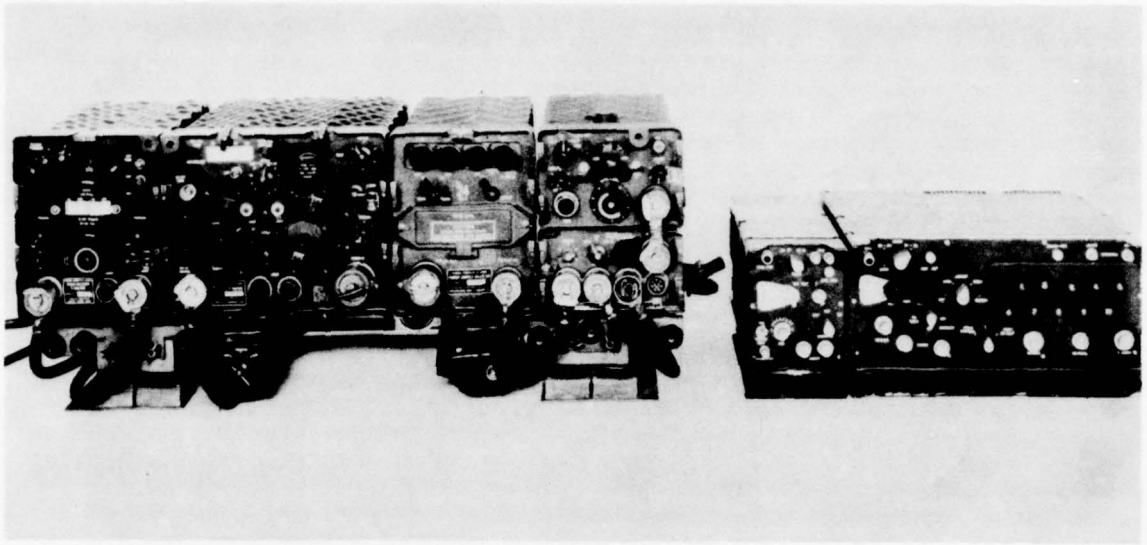

Figure 24. Comparison of Radio Set AN/GRC-7 with Receiver-Transmitter RT-246 and Receiver R-442/VRC-12.

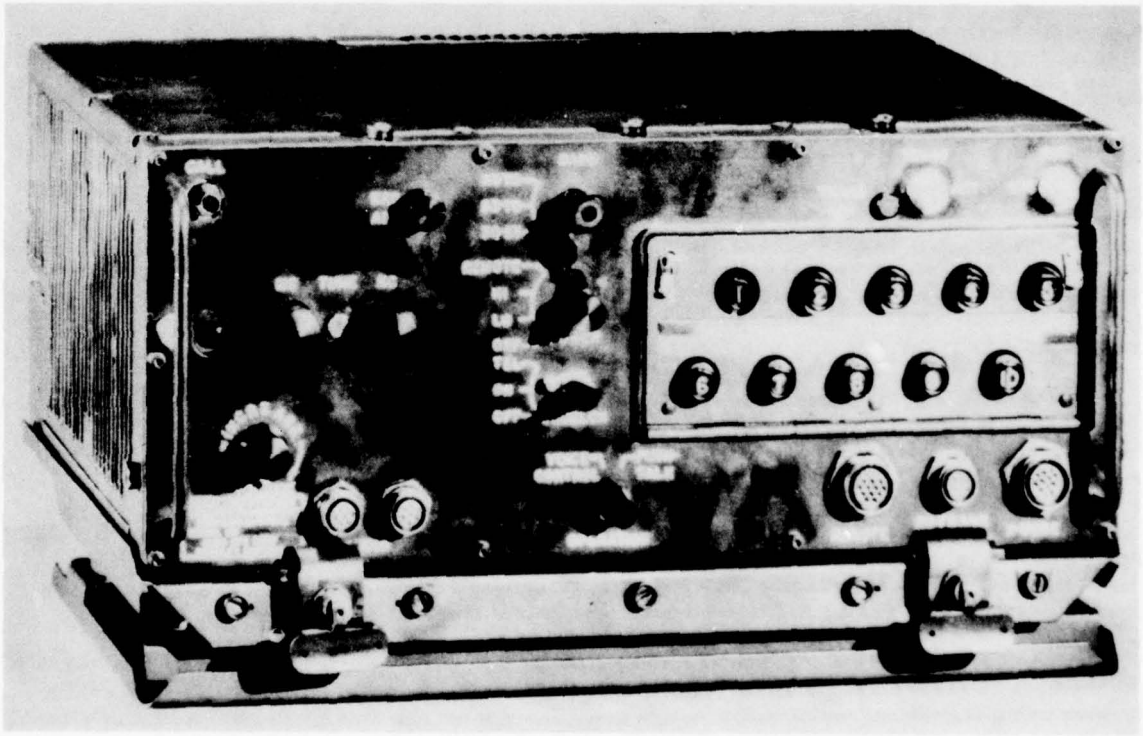

Figure 25. Receiver-Transmitter.

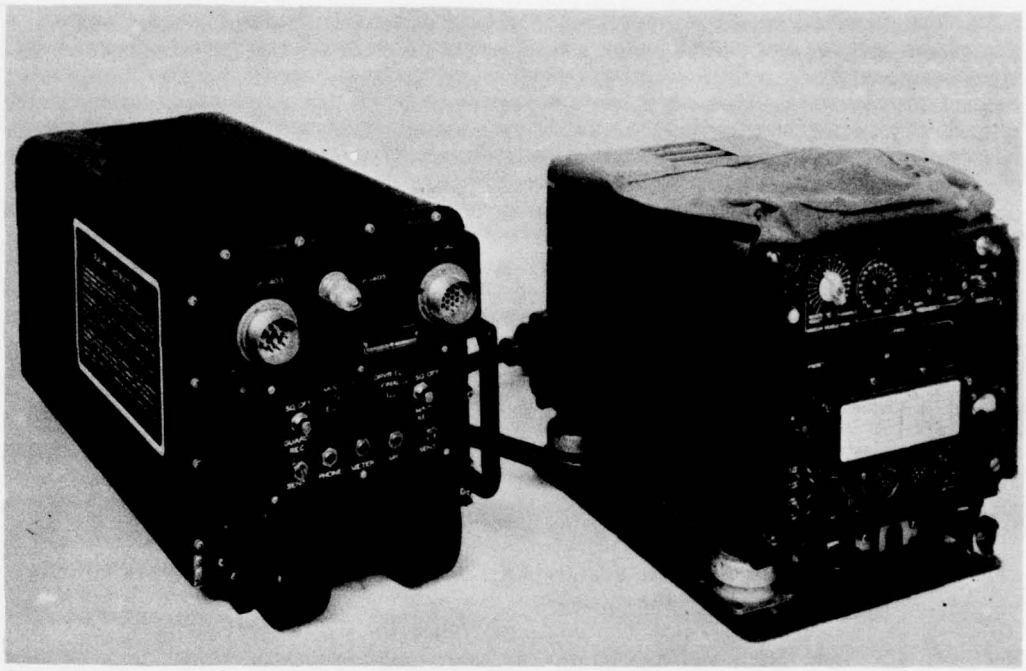

Figure 26. Comparison of Radio Set AN/ARC-27 with Radio Set AN/VRC-24.

As a replacement for the ground to air radio set AN/ARC-27 (Figure 26), we will have the AN/VRC-24. The AN/VRC-24 will have a voice range of 30 miles with aircraft at 1000 feet. It will cover the frequency range from 225.0 to 399.9 mc allowing 1750 channels of communication, any 20 of which may be preset.

All of these radios which I have discussed will have the capability of operating in a retransmission system; or from a remote position. They will employ plug in type circuits which are partially transistorized, and will be capable of operation for 5000 hours without a major repair job. It is anticipated that this new family of radios will be available for troop issue in 1960.

Much work is being done in the field of mobility for rapid displacement of CP's using electrical shelters in which equipment is installed for operation. This then will reduce the time lost in dismantling and installation. Our airborne divisions are conducting extensive experimentation in the field (Figure 27).

In the very near future, we expect to switch our radio calls in a manner similar to the way we switch our telephone calls today. This system is known as the AN/MRC-66 and was successfully tested at the Electronic Proving Ground last December. It will allow telephone type communication but utilizing radio link equipment, while the user is on the move.

In the current division of the present day field army, communications are furnished through the medium of radio nets, point-to-point radio relay, field cable and wire service. Since dispersion and a higher degree of mobility are considered a defense against atomic and mass destruction weapons, time is not available for installation of an adequate field cable and wire system. This leaves the radio nets to carry the bulk of the traffic. A radio net has the advantage

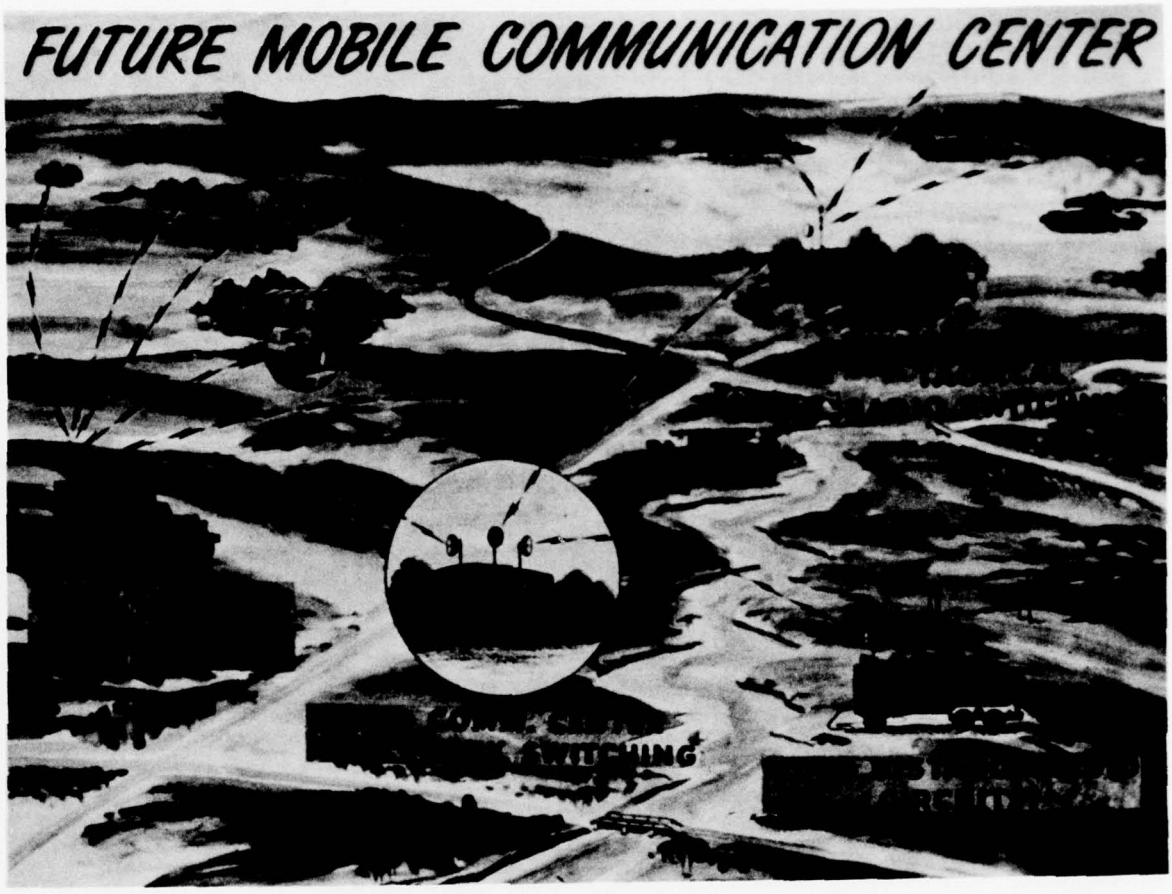

Figure 27. Electrical Shelters.

of passing information to a large number of users simultaneously, but has the disadvantage of low volume of traffic capability per user which decreases as the number of users increase. This increases the waiting time to gain access to the net. Since all users can hear all transmission, privacy of communications is lost.

An alternative to the radio nets and point-to-point radio is to bring a communication loop from each subscriber into a single location where the subscriber may be patched to communicate with other subscribers. This patching facility is called a CENTRAL. If the majority of the communication loops to the Central are via radio it would be called a RADIO CENTRAL. A possible solution to the division communications problem appears to be an extension of the original Radio Central concept. This concept consists of a combination of multichannel radio (relay) systems, capable of being switched to satisfy the "long lines" requirements. This leaves the problem of local distribution, distances of 1/4 to 5 or 10 miles, to radio and short haul wire. Thus having two kinds of radio centrals, compatible with each other, satisfies most of the communications problems and increases mobility of the division. A 3/4-Ton truck may have mounted in it the SB-86 switchboard and the radio relay equipment. This is the radio central (Figure 28).

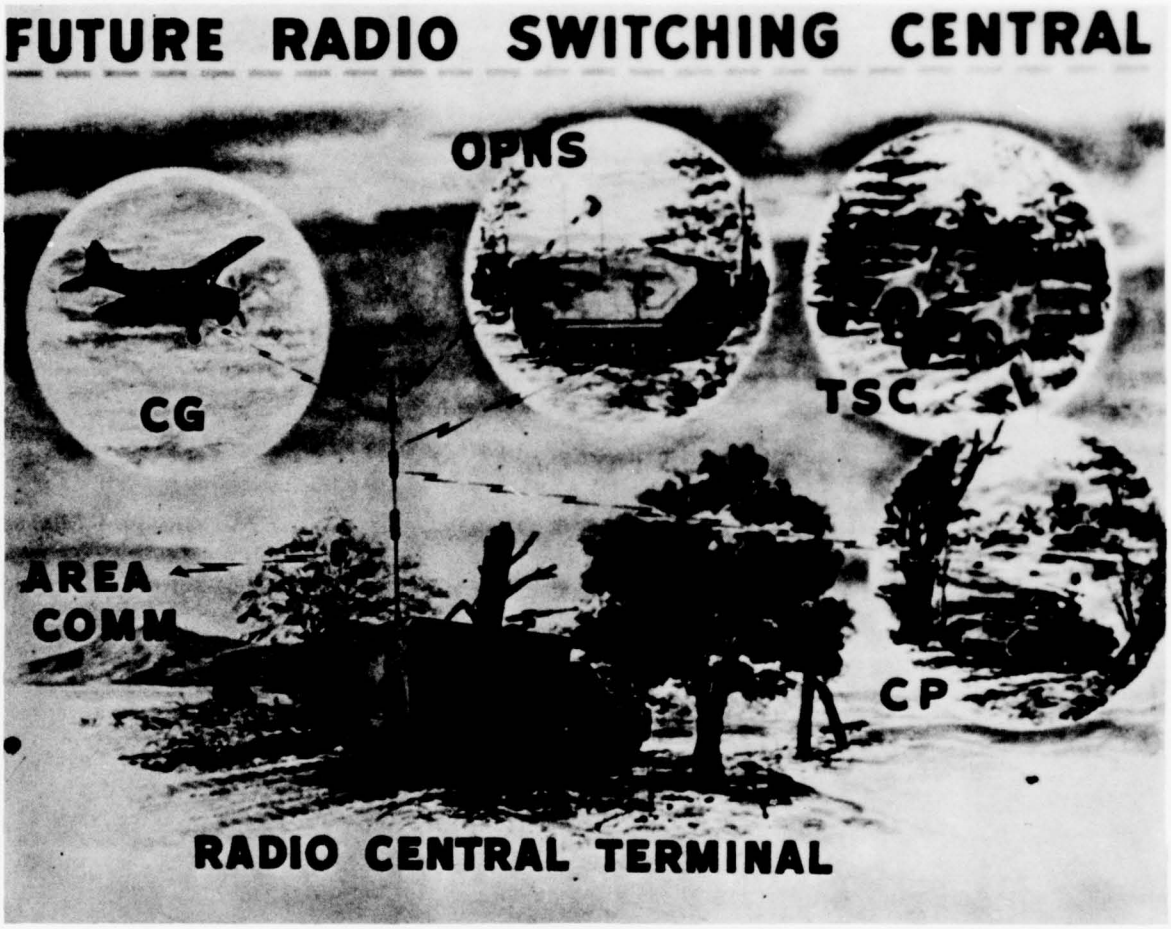

Figure 28. Radio Central.

The subscriber equipment will be mounted in this manner. The subscriber uses his equipment in a manner which is very similar to telephone operating practices. He has a regular telephone type handset which is normally placed in a hang-up switch located on the dashboard of the vehicle. He is able to communicate over two regular channels and a conference channel marked "Conf." Each channel has its own indicator light. In the event the Central station becomes inoperative, all subscribers could switch to the EMERGENCY NET position and communicate with each other on a "push-to-talk" basis.

When receiving a call, the subscriber is alerted by his buzzer. He then observes the control unit. The light associated with the channel on which he is being called will be flashing. He then positions his channel selector switch to the indicated channel, and answers the call. As he removes the handset from its hang-up switch, the channel light will change from flashing to steady.

When initiating a call, the subscriber observes his control unit and rotates his channel selector switch to a channel which has neither a flashing nor a steady light showing. He then proceeds in a manner similar to that of a wire subscriber.

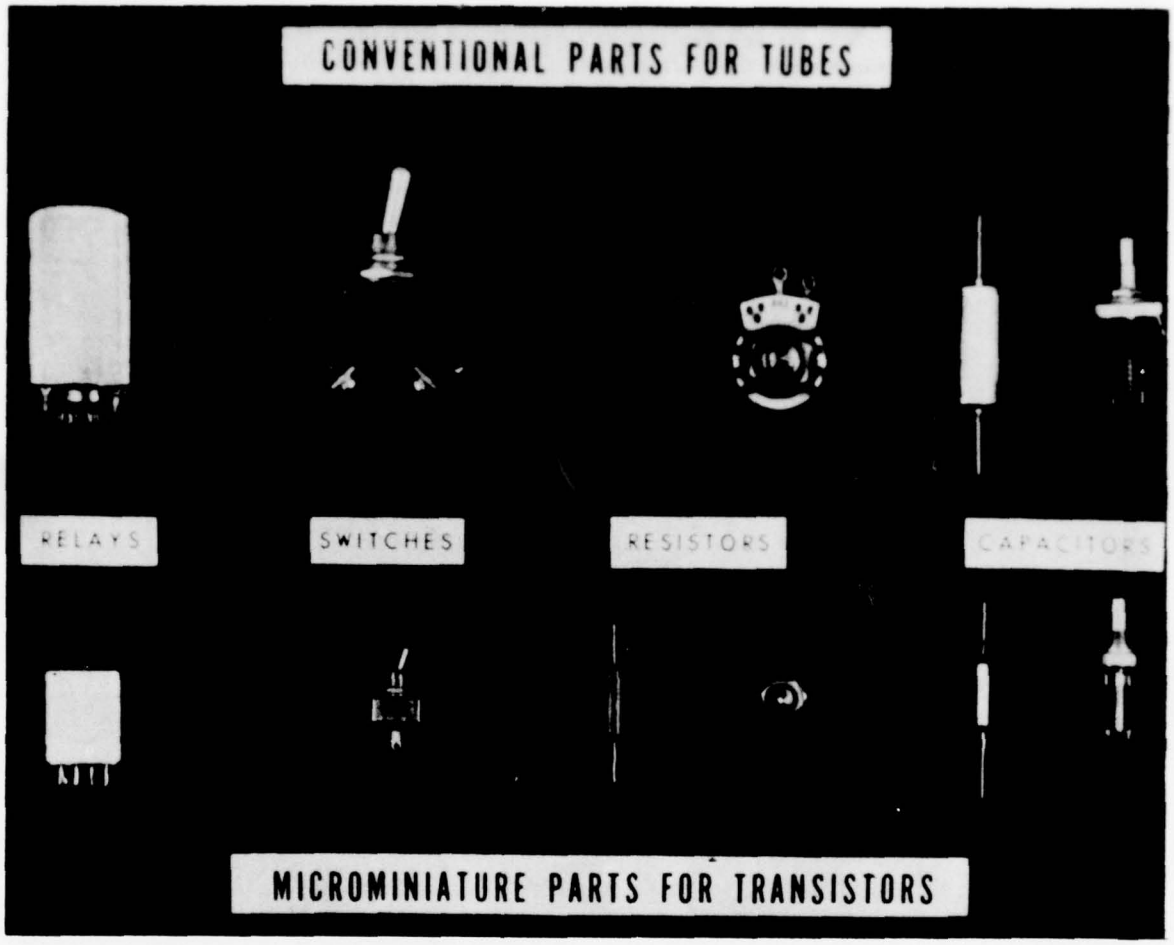

Figure 29. Comparison of Parts.

The entire system includes full duplex operation, conference capability controlled by the central station operator, emergency conventional netting in event the central station becomes inoperative, visual and audible signalling at the subscriber station from a conventional switchboard at the Central Station, eight full duplex voice channels available, with each subscriber having a choice of two channels, automatic power output control at subscriber station to prevent blocking or desensitization of the central station receiver when located close-in and, capability of operation while moving.

Coupled with radio switching is the idea of completely mobilizing our communication centers so that rapid displacement of units will no longer present a problem to the commander. It is anticipated that we will be able to perform all switching functions in a static position or while on the move.

Even though our new radio equipment will give us better ranges there will be isolated cases when we will need exceptionally long ranges from our voice equipment.

In the field of electronic parts and devices great improvements are being made daily. In the upper row of Figure 29, we see depicted the parts used with tube type equipment while in the lower row we see the size of the part used with transistor type equipment.

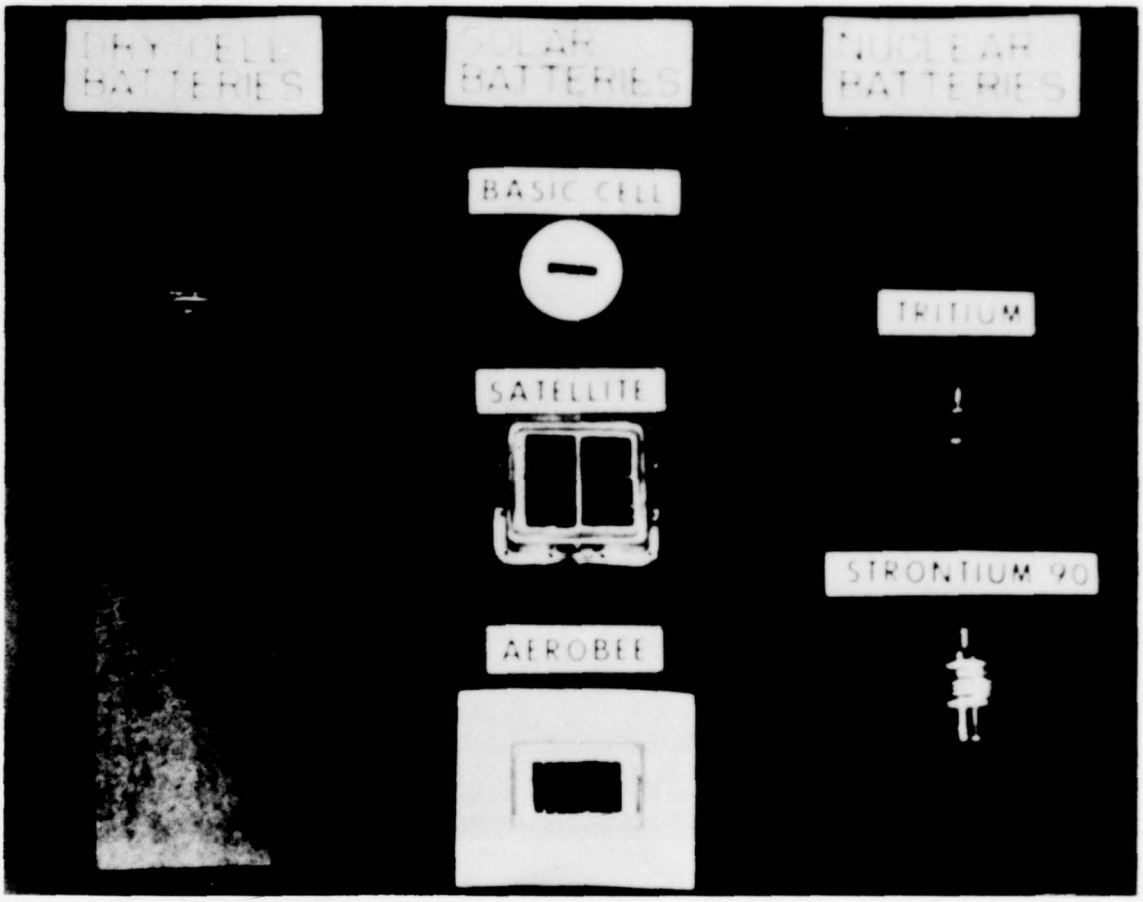

Figure 30. Batteries.

Figure 30 shows the progress being made in the field of batteries. In the upper left corner of the figure we see the Standard BA-30 flashlight type and its ultimate replacement the tritium battery shown in the right center.

The first application of practical miniaturization will be found in the helmet (Figure 31) and belt radios. These radios will employ plug-in type modules and transistor equipment.

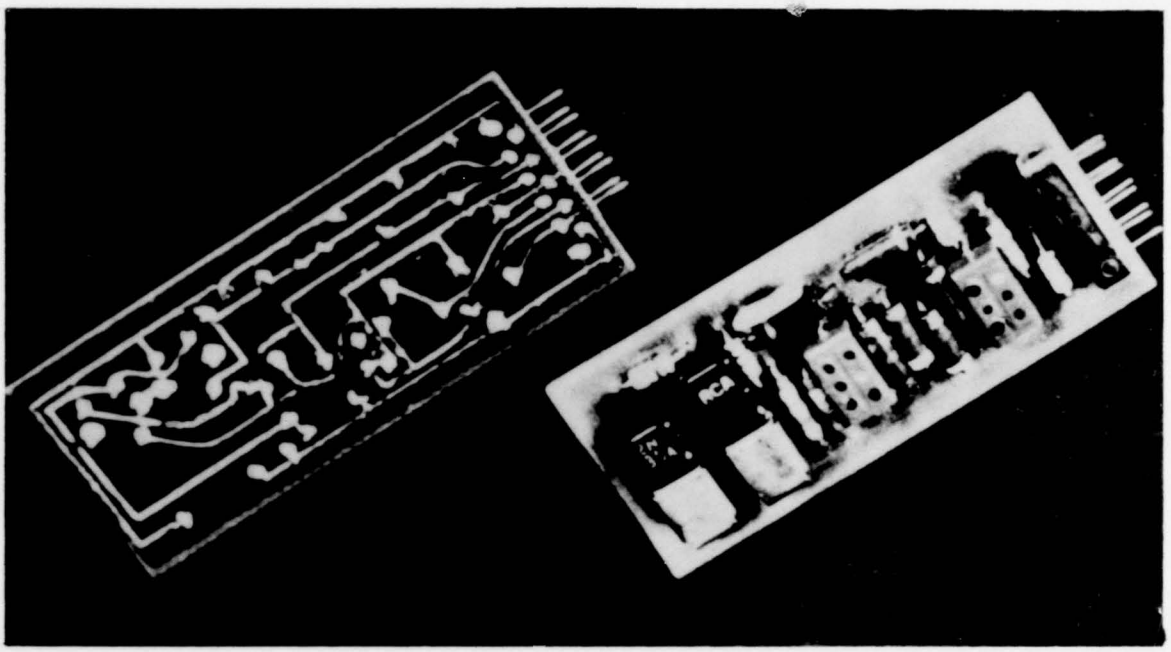

Figure 31. Comparison of Sets.

A more extensive use of the module can be seen in Figure 31 where we find that many modules are mounted on a printed circuit board and are used in the circuits of a teletypewriter. In addition to the reduction in size, bear in mind that there is also an appreciable reduction in weight plus a tremendous increase in dependability.

One field of concern today to us is in the security aspects of the data link from a drone type equipment to the control-data center. We now have the capability of operating TV, IR Photo and Radar from a drone platform (Figure 32). However, when the required data is transmitted from the drone to the data collection agency, there is a possibility that the data link can be jammed or altered electrically by the enemy. It is toward the security of this data link that we are pointing.

We find that much investigation is being done in the field of new type power supplies. We all realize that our potential enemy has the capability to detect the sound and heat that is emitted from our present noisy, hot, generator equipment. Therefore, in order to avoid detection it is absolutely essential that we find some type of power source that neither makes noise nor emits heat. We are looking for a silent power supply.

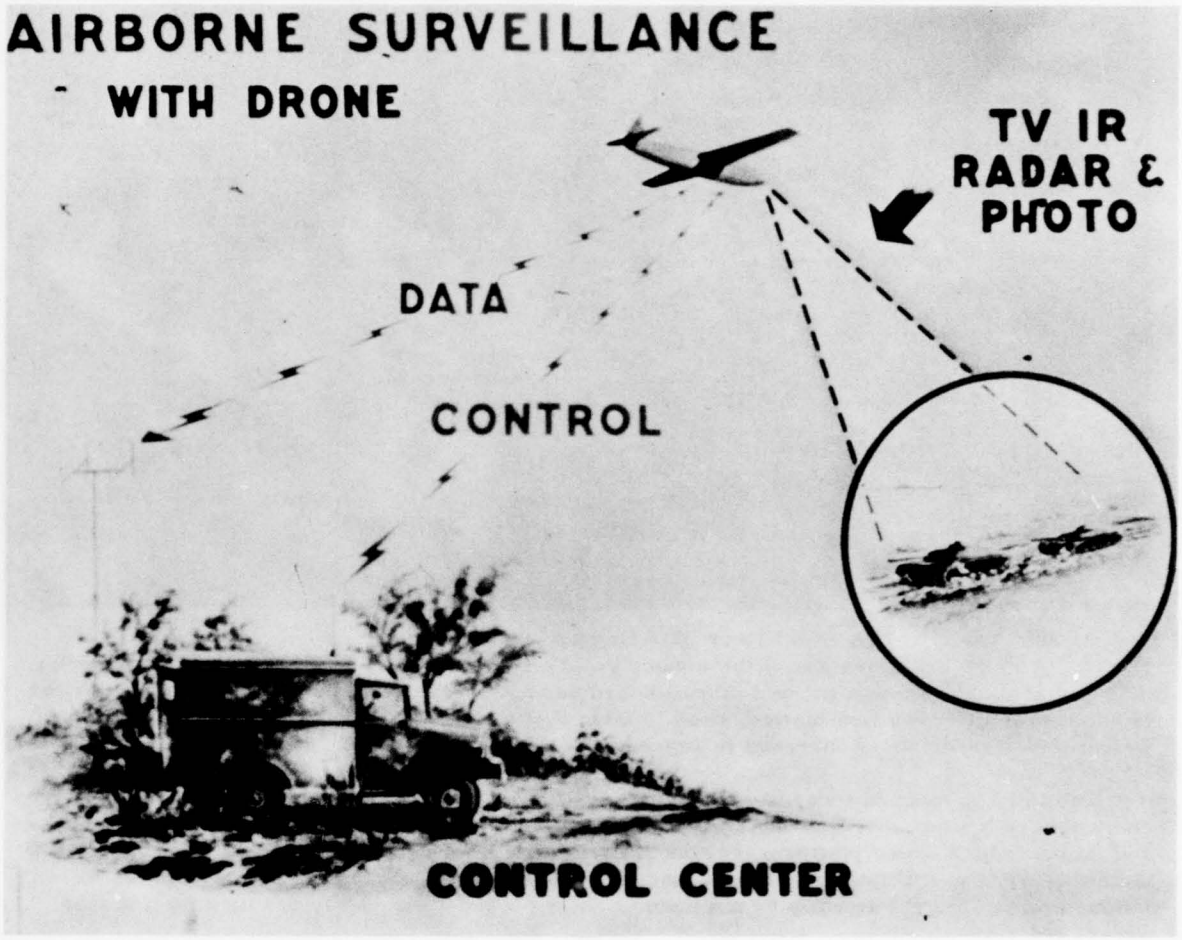

Figure 32. Airborne Surveillance.

The battle group commander and staff officers of tomorrow will have (Figure 33) automatic data processing facilities which will record, store, compute, and tabulate an unbelievable amount of information. Included will be intelligence information, patrol information, route reconnaissance data, logistical data, personnel records, ammunition requirements, yes; even weapons selection information. All at electronic speeds.

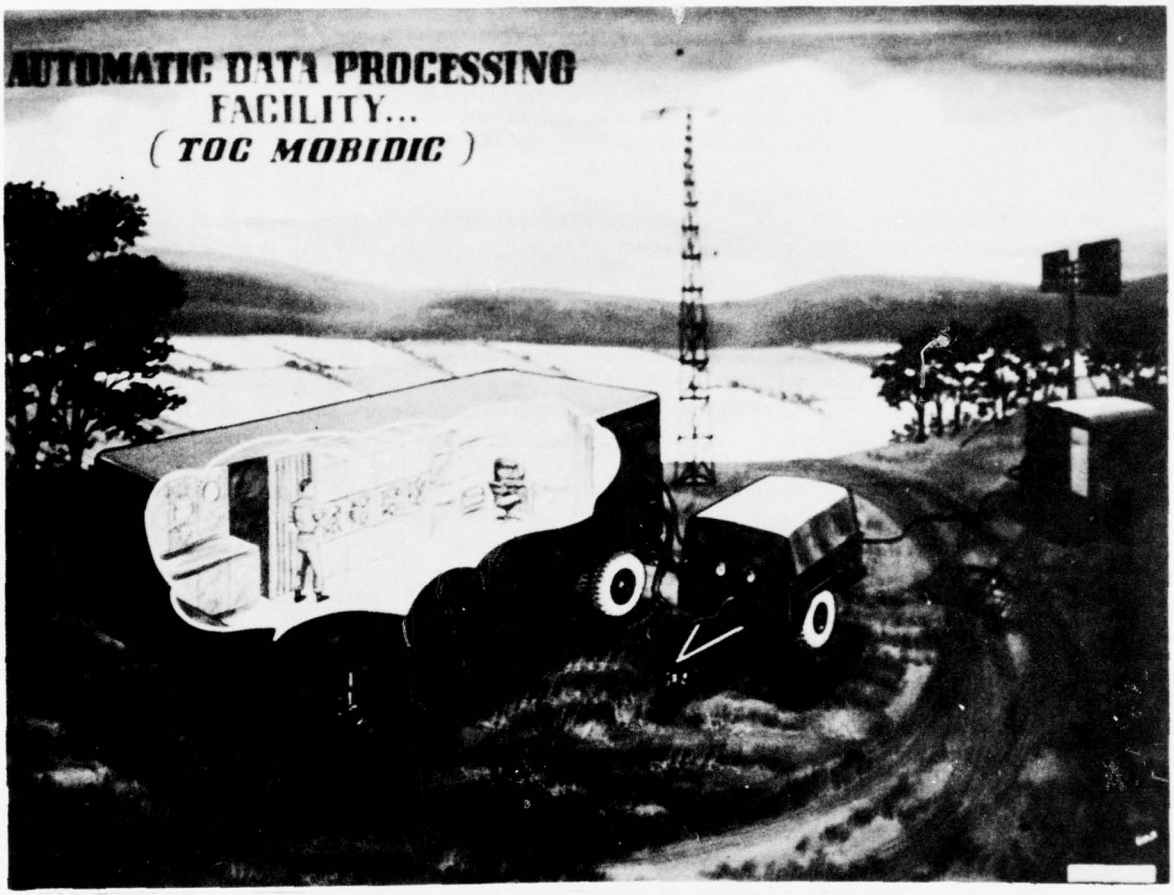

Figure 33. Auto-Processing Equipment.

CHAPTER 4
INFANTRY WEAPONS

Section I. INTRODUCTION

COLONEL MARCUS W. ADAMS

Deputy Director, Weapons Department

On behalf of Colonel Samuel T. McDowell, Director of the Weapons Department, I am pleased to welcome you to the Weapons Department portion of the Infantry Instructors' Conference.

This morning we shall present to you weapons subjects which we believe are timely and interesting. All are new. Some subjects include changes recently adopted by Department of Army while others represent only trends of thought and areas of study by the Weapons Department. We shall differentiate between established doctrine and developmental studies as we go along.

TRAINFIRE I ranges are in the process of construction. We have stopped construction long enough to show you these ranges however, since we want to demonstrate, at least in part, their manner of operation.

The first speaker this morning will be Captain Semmens who will discuss TRAINFIRE I.

Section II. TRAINFIRE I

CAPTAIN JAMES R. SEMMENS and CAPTAIN ALLAN A. BUERGIN

Instructors, Rifle Committee

CAPTAIN SEMMENS

Your first two hours will concern TRAINFIRE I, the newly adopted individual marksmanship course. You will have an opportunity to see each phase of the program in operation on actual TRAINFIRE I ranges.

But first, let us look at the events leading up to what is considered by many, one of the most radical changes in training techniques in some time.

Less than 100 years ago the American frontiersman was known around the world for his expert marksmanship and skilled woodsmanship. However, as the frontiers disappeared this national trait began to lose prominence also.

Recognizing the value of this disappearing art, efforts were made to train marksmen. Since the criterion for assignment to a sharpshooter regiment during the Civil War was placing 20 consecutive shots in a 10-inch circle at 200 yards, training was directed toward this objective, hence the familiar bull's-eye. Analyzed in the light of battlefield conditions, the bull's-eye, silhouetted on the butts at a known range, was not realistic. Transition firing with its 2 rounds and 30 seconds allowed for each clearly visible target did not develop a combat rifleman. In addition, the long hours of dry firing on PRI circles and target pulling in the pits tended to reduce the effectiveness of the training. Soldiers were not trained well enough in the use of their weapons, and in addition, since they lacked confidence in themselves and their weapons, they did not fire at all on many occasions in combat. Reports from World War II and Korea indicated that our marksmanship program left much to be desired.

The United States Army Infantry Human Research Unit at Fort Benning was directed to research the problem and come up with a new marksmanship course of instruction. This research consisted of the interviewing of thousands of combat veterans from World War II and Korea. In addition, after action reports from both conflicts were carefully studied.

This research resulted in the formulation of certain premises upon which the new course would be based. These premises described the battlefield and the targets thereon as they appear to the combat rifleman. These premises are:

That most battlefield targets consist of a number of men or objects linear in nature but irregularly spaced along tree lines, hedge rows or other objects which will provide cover and concealment.

That these targets would rarely be visible except in the close assault.

That normally, the range to a combat target will not exceed 300 meters.

That these targets can be detected by smoke, flash, dust, noise and movement and are usually seen only in a fleeting manner.

That these targets can be engaged by using a nearby object as a reference point.

That the selection of an accurate aiming point in elevation is difficult because of the low outline and obscurity of the target.

That this problem is further complicated by our present zeroing technique, that is, using a 6 o'clock hold to hit the center of the bull's-eye.

That battlefield conditions will rarely permit or require the use of a windage adjustment.

That the nature of the terrain, the target and the defensive requirement for digging in, often precludes the use of the prone position but favors such supported positions as the standing foxhole and the kneeling supported position.

With these premises in mind, the desired objectives of a new marksmanship course were apparent:

To instill in the individual soldier the will and confidence to destroy the enemy.

To develop the soldier's skill in detecting combat type targets.

To improve the soldier's skill in hitting these targets once they have been detected.

The TRAINFIRE I Marksmanship Course accomplishes this in 78 hours (Figure 34).

Two hours are devoted to an orientation period, four hours to mechanical training, and 26 hours are given to preparatory marksmanship training and 25 meter firing. You will notice that meters are used rather than yards or inches. This is consistent with a recent Department of Army directive changing all range distances to the metric system. Four hours are devoted to battlesight zeroing and 18 hours to field firing. Sixteen hours are given to target detection training and it requires eight hours to fire the record course. This is a savings in training time of eight hours over the Known Distance Marksmanship Course of 86 hours.

The two-hour orientation period is designed to motivate the soldier toward accomplishing the three objectives of the course. During this period he is oriented on the history and importance

TRAINFIRE I

RIFLE MARKSMANSHIP COURSE

SUBJECT	HOURS
ORIENTATION	2
MECHANICAL TNG	4
PREPARATORY MKMNSHIP TNG & 25M FIRING	26
BATTLESIGHT ZEROING	4
FIELD FIRING	18
TARGET DETECTION	16
RECORD COURSE	8
TOTAL	78

Figure 34. TRAINFIRE I Rifle Marksmanship Course.

of the rifleman. He is taught basic nomenclature, how to load, fire and unload his weapon, and he is shown two training films: "This is the Infantry," and "Infantry Weapons and Their Effects."

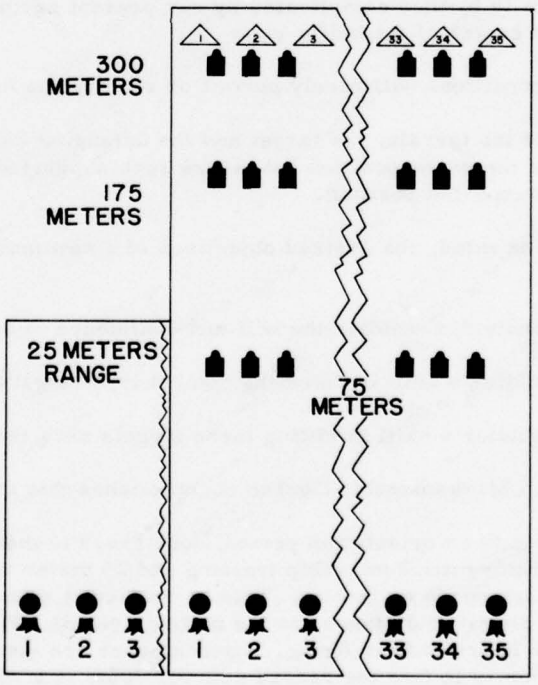

Figure 35. TRAINFIRE I 25-Meter Range.

Immediately following this orientation period, the soldier is taken to the 25-meter range (Figure 35) to begin his preparatory marksmanship training. During this four-hour period he will be required to fire an early firing exercise for familiarization. However, before going on the firing line he observes an antifear demonstration. Here a trained rifleman fires the rifle from the groin, stomach and chin. The purpose of this demonstration is to show the soldier that he has nothing to fear from the recoil of the weapon and can thus devote all his attention to proper sighting and aiming, trigger control, and a good steady position. After a brief explanation on sighting and aiming, trigger control and the prone position, he fires one 3-round shot group. He then observes the effective shooting of a trained rifleman. By comparing his ability with that of the trained rifleman, the soldier sees the need for training as well as its validity.

Following this early firing period the soldier returns to the classroom to receive his instruction in mechanical training. This four-hour block is essentially the same period of instruction as presented in the known distance marksmanship course. The major difference is in its sequence of presentation. It has been found that a soldier is more interested in learning the functioning and care and cleaning of his rifle, after he has fired it.

Following this period the soldier returns to the 25-meter range to continue with his preparatory marksmanship training. The 25-meter range is similar to the familiar 1000-inch range except that stumps and foxholes have been added to the firing line. This is to facilitate the instruction and practical work in firing from supported positions as well as unsupported positions. A supported position is one of standard positions as outlined in FM 23-5 adapted to some type of support such as a stump or a foxhole. Reports from combat indicated that most firing is done from some sort of supported position. Consequently 60% of all firing in TRAINFIRE I is supported firing. The soldier is taught to fire without a sling and he wears his combat pack and steel helmet throughout all preparatory marksmanship practice firing and on the record course.

The purpose of preparatory marksmanship is to have the trainee achieve a tight shot group in each position learned. To accomplish this, TRAINFIRE I utilizes the "whole" method of teaching. Instead of teaching the soldier all the steps of marksmanship separately and then having him attempt to combine these steps on the range, shooting is taught as an integrated act. The soldier fires from each position as soon as it has been explained and demonstrated. He is told that the integrated act of shooting is composed of two components, sighting and aiming and the steady hold.

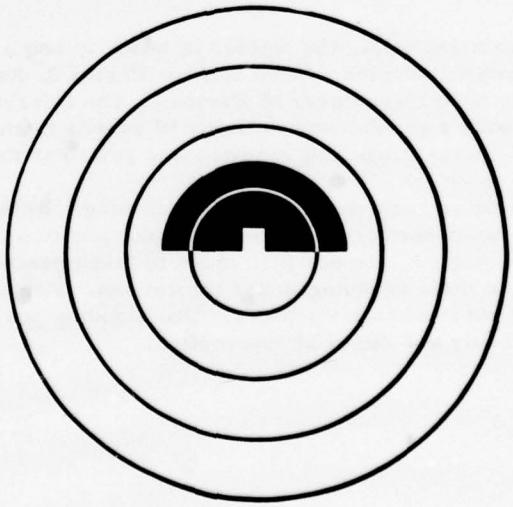

Figure 36. "One-Half Bull's-Eye" Target (TRAINFIRE I).

Let's take a closer look at these two components: Sighting and aiming procedures remain unchanged with one exception. In order to eliminate the 6 o'clock hold and thus have the point of aim and intended point of impact to coincide, the one-half bull's-eye target is used (Figure 36). The small cutout section is to prevent the edging of the front sight blade into the black and present a more accurate aiming point. The one-half bull's-eye target requires a revision in the sight picture model. This is easily accomplished by simply cutting the standard bull in half. Sight alignment remains the same and retains its importance. The sight picture is completed when the one-half bull's-eye is placed on top of the front sight blade. As before, the last focus of the eye is on the front sight blade and consequently the target becomes hazy. To give the soldier practice in sighting and aiming and to insure his understanding of the subject the 3d sighting and aiming exercise is utilized for practical work. In this exercise one soldier places himself behind the rifle and the other sits on the aiming box. Motioning with his hand the firer adjusts the target held by the marker. When the firer indicates that correct sight picture has been obtained, the marker inserts his pencil through the hole in the center of the bull and makes a dot. The exercise is repeated 3 times and the resulting dots should form a triangle which can be covered with the unsharpened end of a pencil.

In the second component, there are 8 factors which must be present in a firing position to produce a steady hold. These factors apply to all positions; however, the method in which they are achieved may differ slightly from position to position. Steady hold factors are listed below:

Left Arm and Hand
Butt of stock in pocket of shoulder
Grip of Right Hand
Spot Weld
Right Elbow
Breathing
Relaxation
Trigger Control.

The practical work for the steady hold is called the "tin disc exercise." This exercise precedes the live firing in each position. The firer gets into the prescribed position and closes his bolt on an empty chamber. The coach places a small tin disc on the barrel forward of the front sight. The firer then attempts to fire without dislodging the disc. An exceptionally strong hammer spring may cause the disc to fall but if the steady hold is applied correctly the disc should fall to the front.

Having completed the practical work, the soldier is ready to begin firing. Thus far he has completed 13 hours of instruction: Period 1, Orientation; Period 2, Early Firing; Period 3, Mechanical Training, and the first three hours of Period 4, The Integrated Act of Shooting. The remaining three hours of Period 4 are devoted to firing 18 rounds from the prone position. This firing is conducted on the 25-meter range and requires one point per two students.

In Periods 5 and 6 the soldier receives his position training. He spends eight hours firing from eight positions, two 3-round shot groups in each. Each position is explained and demonstrated before practical work begins. An effort is made to teach positions from a standpoint of their appropriate use based on their advantages and limitations. For example, the prone position gives maximum support but minimum visibility. The standing position is the least steady but offers the maximum visibility and speed of assumption.

There are five unsupported positions taught: the prone, sitting, squatting, kneeling and standing.

There are three supported positions taught: the prone, kneeling and foxhole. In each case the soldier tries for maximum support and cover and concealment; however, the rifle must not touch the support. To test the soldier's ability to obtain a tight shot group from each position he is given a progress test in Period 7 wherein he is required to fire eight 3-round shot groups, one from each position. These groups must meet with prescribed specifications: within a 3-centimeter circle for prone and standing supported, and within a 5-centimeter circle for the other positions. In the event he fails any shot group he is given an opportunity to refire the group.

Throughout all the 25-meter firing individual attention is administered where necessary by the corrective platoon. This is a group supervised by experienced coaches who are able to quickly detect and help the soldier to correct his difficulty. When the correction is completed, the soldier returns to his platoon to continue training with the rest of the company.

To aid corrective platoon instructors in analyzing difficulties and so that the soldier can see his day-to-day progress, he maintains all his 25-meter targets in a progress envelope which he carries with him at all times.

The corrective platoon and the progress envelope system are paramount features of the TRAINFIRE I Program. It is imperative that sufficient emphasis be placed on these two areas to insure effective training.

Once the soldier has demonstrated his ability to fire a tight shot group in each position he is then prepared to zero his rifle for a battlesight setting of 250 meters. He accomplishes this zero by aiming at the bottom center of a black paster 8.5 centimeters square mounted on an "E" type silhouette at a range of 75 meters. (Figure 37). He adjusts his sights so that the center of his shot group falls at the top center of the paster since the trajectory of the bullet drops approximately 8.5 centimeters between 75 and 250 meters. This is the sight setting used throughout the rest of the course. Such a method of zeroing will be useful knowledge in combat where 250 meters are rarely available for zeroing purposes.

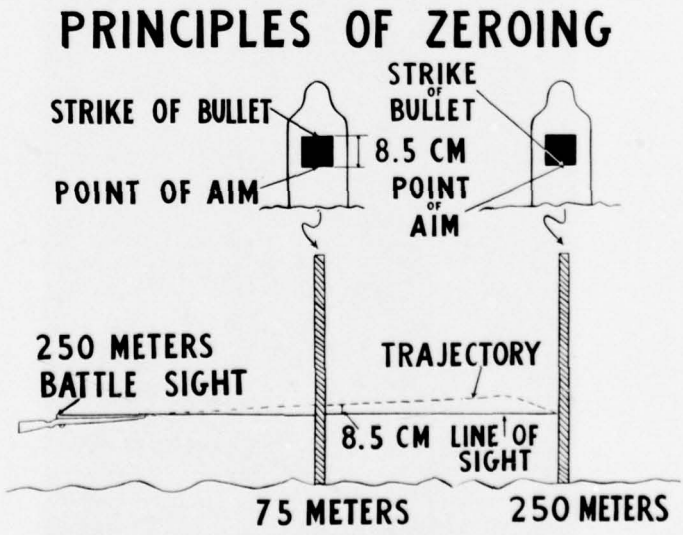

Figure 37. Principles of Zeroing (TRAINFIRE I).

This exercise may be conducted on the 25-meter range, if 75-meter depth is available; or the field firing range; or on both simultaneously. However, it is probable that some of the slower students will not be ready for zeroing yet and thus require at least a portion of the 25-meter facilities.

With his weapon zeroed properly the soldier is ready to begin his field firing training. This range (Figure 35) as you have noticed is located adjacent to the 25-meter range. This allows the continued work of the corrective platoon and also the conduct of three periods of field firing which present concurrent training on the 25-meter range reviewing and re-emphasizing the fundamentals of shooting.

Only half of the company reports to the field firing range at a given time. The remainder is on the 25-meter range and/or target detection ranges. Period 7, the progress check, divides the company into two groups according to their proficiency. To begin Period 9, the first period of field firing, the A group, or better shooters, report first. The B group or poorer shooters, report to the 25-meter range and target detection for 2 hours each while the A group spends 4 hours on the field firing range. This gives an additional two hours of preparatory marksmanship to the B group before reporting to the field firing range.

The field firing range (Figure 35) is similar to a KD range, and in fact it used to be just that. There are two major differences. Stumps and foxholes have been added to the firing line to facilitate supported firing, and replacing the familiar bull's-eye on the butts are silhouette targets at 75 meters, 175 meters, and 300 meters. F type silhouettes are used at ranges less than 100 meters and E type silhouettes are used beyond. These targets are operated electrically by a device run on either A.C. or D.C. (Figure 38). The target is wired from the target position to the control tower behind the firing line. In the tower a panel of up and down switches allow the targets to be raised or lowered at will.

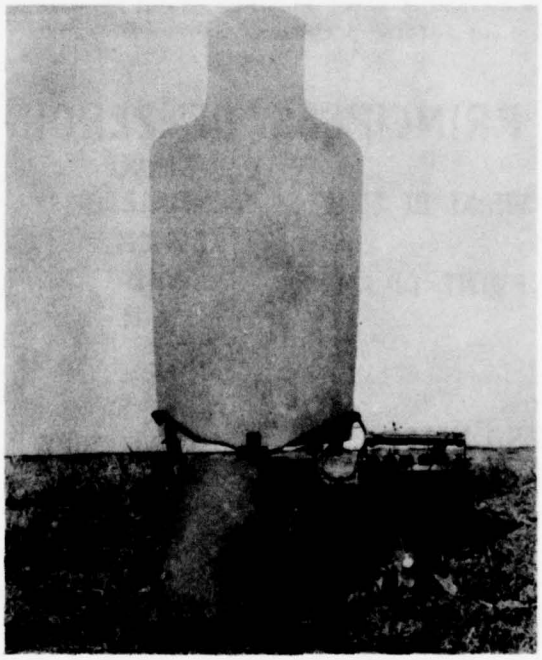

Figure 38. Automatic "Pop-up" Target.

The outstanding feature of this device is the fact that it presents a "killable" target; that is, when it is struck by a bullet, it automatically falls. This gives the soldier immediate knowledge of his firing results and of course eliminates the costly pit details common to the Known Distance Range.

It is on this range that the soldier learns the principle of hold off or "Kentucky windage." He finds he must aim lower on near targets and higher on more distant targets if he is to get a kill.

Initially he is given ample time for the accurate selection of these aiming points in elevation. However, as he progresses his time limits are reduced to 5 seconds for targets under 200 meters and 10 seconds for targets beyond that range. Bear in mind that this includes the time required to select and assume the firing position.

The 18 hours of Field Firing are divided into 8 periods with each period having specific teaching points.

Period 9, the first period on this range, is designed to familiarize the soldier with the range and the target. He fires 54 rounds from various positions and at targets at different ranges. Most of the firers develop "buck fever" initially but by the end of the period they begin to settle down and apply the lessons learned on the 25-meter range.

To demonstrate the operation of the range a portion of Period 9 will be fired at this time. Scoresheets follow the presentation sequence of targets and are marked with a hit or/miss by the scorer. These scoresheets are retained in the progress envelope. A great deal can be learned from observing the firing of others and thus the ready line may be referred to as an observer line. Changeovers occur frequently to maintain interest and avoid fatigue. There is no time limit imposed on the firer in Period 9.

In Period 10 the soldier fires at the advance of simulated enemy targets. Thirty-six rounds are fired in this period and a time limit of 10 seconds is imposed for the 175 and 300-meter targets and a 5-second limit for the 75-meter target. A whistle notifies the scorer that the time is up and the targets are being lowered by the tower. The firer loads a partial clip of four rounds to gain practice in reloading.

Period 11 is conducted similar to Period 10 except that the targets are surprise targets since their sequence of presentation is unknown to the trainee. Thirty-six rounds are fired; only 7 seconds are allowed for the 175-meter target. In both periods he fires from several different positions.

In Period 12 the soldier learns to assume prescribed positions rapidly and move with a loaded weapon. Exposure of the 175-meter target is now reduced to 5 seconds. Forty-two rounds are fired.

Period 13 is conducted the same as Period 12 except that the tower does not tell the firer the area from which he will fire, the position to be used, or which target will be raised. Thirty rounds are fired.

In Period 14 the soldier fires 45 rounds. The firing consists of 16 consecutive shots at the 175-meter targets, then 16 at the 300-meter targets and then 16 mixed. This is an excellent opportunity to thoroughly confirm aiming points for the distant targets. Concurrent with this period trainees are given an opportunity to confirm zeroes at the 75-meter range.

Periods 15 and 16 are very similar in that each firer is responsible for two lanes instead of just one. First the firers on odd points fire, then those on even points. In Period 15 he fires 32 rounds from the foxhole and in Period 16 he fires 24 rounds from a position of his choice as

he advances forward. In both periods the soldier has a dummy round in each clip to give him practice in applying immediate action. He is allowed 2 shots at each target and point values make the near targets more valuable.

CAPTAIN BUERGIN

In the interest of time economy, we will not move to a target detection range to discuss this phase of training. A target detection range is a sparsely vegetated area left primarily in its natural state (Figure 39). It has a depth of approximately 300 meters and a fan of observation of approximately 60 degrees. Down range are located lettered panels which serve two purposes: one is to limit the student's observation by defining sectors when he is attempting to locate a target and the other is to permit him to use these panels as reference points when marking a target's location. In place of a firing line, we have a 25-point observation line.

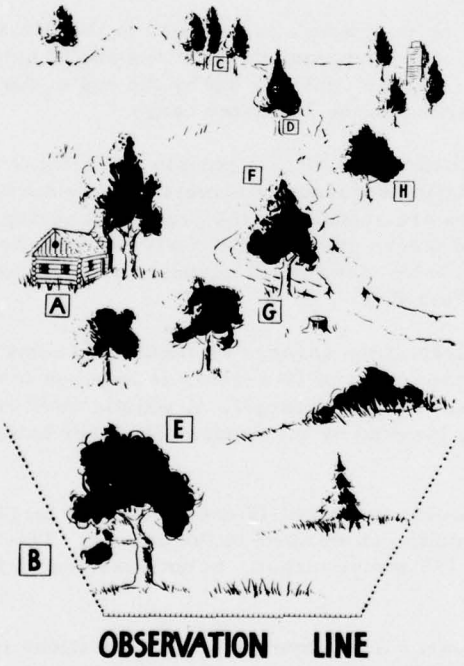

Figure 39. Target Detection Range.

The target detection range should be within a ten-minute movement time of the 25-meter and field firing ranges since target detection training is conducted concurrently with the firing on these ranges.

It is on the Target Detection Range that the rifleman achieves the second objective of the TRAINFIRE I program; that is, learning to detect realistic combat-type targets. Live target men, dressed in combat clothing and equipment, occupy positions down range.

Target Detection is a three-step process that involves locating a target, marking it with reference to a nearby object, and rapidly and accurately estimating the range to the target.

On this range the rifleman learns to detect single, stationary targets; single and multiple moving targets; and sound targets, by the indications of sound, movement and the improper use or lack of camouflage.

The first target detection instruction is presented in Period 5 concurrent with the firing on the 25-meter range. Here the student is introduced to the subject and learns the principles and techniques used in the detection of stationary targets. The target men located down range each have a target sheet which indicates to them the stake locations at which they will be positioned and the actions to be performed at these positions. These actions are termed a "trial" and each trial consists of four phases, the first three of which each last 30 seconds. As I discuss each of these phases I would like for you to attempt to locate a target man that we have placed down range at a range of less than 50 meters, who will perform these phases.

In the First Phase, the target is absolutely motionless but he is in such a position that he can observe the personnel on the observation line from the waist up. In the Second Phase he makes a slow, deliberate movement, slowly moving his head and shoulders so that he can see the observers from the ground up. This movement continues throughout a 30-second period. In Phase 3 he repeats Phase 2 in a rapid, jerky, incorrect manner. And in Phase Four he fires one or two blank rounds depending on how far he is from the observation line.

How many were able to detect our target man? We'll have the target man stand and disappear. Again, we'll review the actions in each phase. Phase 1, absolutely motionless; Phase 2, slow deliberate movement; Phase 3, rapid, jerky movement; and Phase 4, he fires one or two blank rounds.

Before each trial begins, the students are told to face to the rear so that the target men can assume their positions without being observed.

Then they face down range and are told the sector in which the target is located. This sector is defined by the lettered panels, the ranges to which are given to the student.

The command is given: "Trial one, Phase one, Observe." If, during the 30 seconds the phase lasts the student feels that he has detected the target, he steps 3 paces to the rear and makes an entry on his scoresheet. This entry includes the nearest panel to the target and the range to the target, for which he is allowed a 10 percent error. This estimate is immediately checked by an assistant instructor. Whether correct or incorrect, the student returns to the observation line for the remaining phases. At the end of the phase, the students are again told to face to the rear. The command is given: "Trial one, Phase one, Record." At that time, if the student had not yet correctly detected the target, he places a zero in the box for that phase. If he had correctly detected the target and his answer had been verified by an assistant instructor, a check mark is placed in the box. The student again is told to face down range and remaining phases are conducted in the same manner.

The detection of stationary targets is continued in Period 6; the only difference is that it is conducted on a different range.

In Period 9 the trainee receives instruction and practical work in the detection of single moving targets. Here, he is faced with the problem of deciding when to fire at a moving target - while it is moving, after it disappears, or after it rises and before it begins to run. Factors which would affect his decision are explained and demonstrated to him during the conduct of 10 trials when he actually simulates firing at these targets using a rifle without a firing pin. These factors are: the firer's reaction time, the cover available to the target, whether or not the target rolls or crawls to a new position after disappearing, the range to the target, and the direction of movement, laterally or toward him.

Multiple moving targets are presented in Period 10. The trainee is tested on his ability to mark the points of disappearance of more than one target. He does so by using an aiming device which contains movable, pistol-shaped pipes (Figure 40).

The trials are conducted in the following manner: Initially, the targets are told to stand, then to disappear and make their first move. During this move, the student must watch as

Figure 40. Target Detection Aiming Device.

many of the targets as possible and mark their points of disappearance by aiming at them with the device. Then, the targets stand and the alinement of the bars is checked by the observer's partner, who becomes the observer for the next movement. This process is continued until after 3 or 4 rushes, at which time the targets finally stop and fire a blank round from their last positions.

During the conduct of this period the student must react to the following situations: few targets and many targets, varied exposure times, targets close together and far apart, targets disappearing at good and poor aiming points, and near and far targets.

The detection of targets by sound alone is discussed in Period 11. The trainees are required to make a range card on the back of their scoresheets, on which they indicate the 14 most likely target areas. After a few of the student solutions are discussed, then the "school solution" is shown and numbered panels are raised at these locations. This is followed by the practical work which consists of the firing of a blank round from one or two of the positions and the trainees attempting to determine from which positions they were fired.

The subjects of individual camouflage and movement are covered in great detail in Period 13. Here the student learns the techniques and methods used in individual camouflage along with the types of movement he will make such as rushing, low crawl, high crawl and bound. The students are organized into their squads, and using existing vegetation and camouflage paint, they camouflage themselves. In the last part of the period, two squads occupy positions down range and perform stationary target trials like those they witnessed in Periods 5 and 6, plus the types of movement they have learned while the other two squads on the observation line attempt to detect them. Then the situation is reversed.

Trials involving a combination of sound and multiple moving targets are presented in Period 15. Here the trainee is subjected to situations where target men advance toward him by rushes while being supported by other target men firing blanks from a stationary position. Again using the aiming device, he attempts to mark the locations of these targets. In this period, scoresheets are again used and the trainee receives 1 point credit for each target correctly aimed at with the device.

Period 16 is a review of the detection of stationary targets, single and multiple moving targets, and sound targets. This is the last target detection period before the target detection tests, which are conducted concurrently with record firing in Periods 17 and 18. The scores obtained on the detection tests have no bearing on the student's qualification. This is determined solely by his record firing.

Period 17 is a test of stationary targets. The trainee receives 4 points credit for each target detected in the 1st Phase, 3 points credit for the 2d, 2 points credit for the 3d, and 1 point credit for the Fourth Phase.

There are two tests conducted in Period 18. One is a test in the detection of sound targets, where the trainee receives 1 point credit for correctly locating the targets in each trial. The other is a test of moving targets and the trainee receives 1 point credit for each target correctly aimed at with the device. This concludes the target detection training and tests conducted in the Standard 78-hour TRAINFIRE I program.

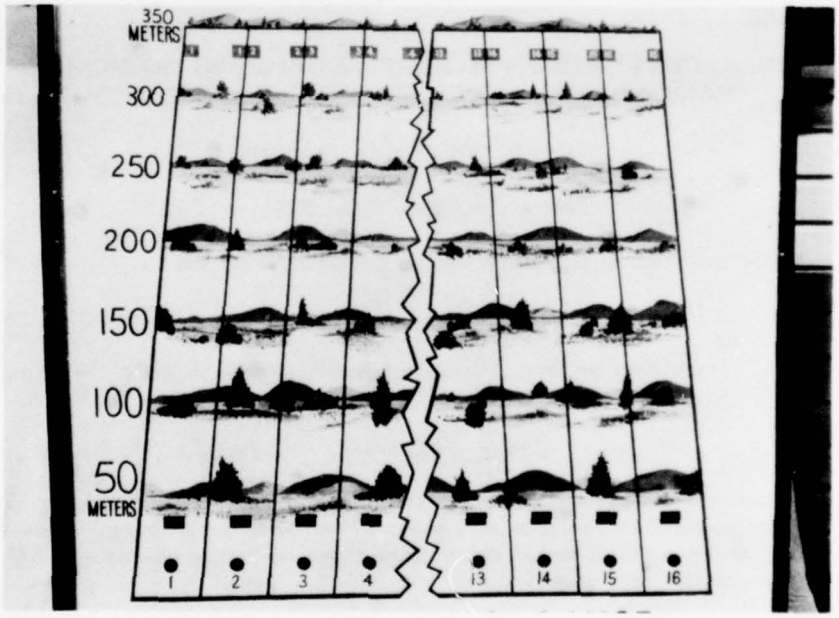

Figure 41. TRAINFIRE I Record Range.

Like the Target Detection Range, the Record Firing Range, that you see before you, is a sparsely vegetated area. It consists of 16 firing lanes, each approximately 25 meters wide and each equipped with a foxhole position (Figure 41). Seven camouflaged and concealed silhouette targets are placed in each lane from 50 to 350 meters. The small F-Type silhouette is used at 50 meters and 100 meters and the larger E-Type silhouette is used at the greater ranges. Targets from 50 to 200 meters are exposed for 5 seconds; those at greater ranges, 10 seconds. Record firing is conducted in two phases, Supported and Unsupported. During the Supported Phase the student moves to a foxhole position and loads his rifle with a full clip of 8 rounds.

Upon command from the tower, one target will be raised in his lane. He does not know at what range the target will be located. Within the allotted time of 5 or 10 seconds he must detect and engage the target. Then, without further command, seven additional targets are raised in his lane which he must also detect and engage within the allotted time.

The same exercise is performed from a second, third, and fourth lane. This completes the Supported Phase, a total of 32 rounds.

The rifleman then returns to his first lane, and this time, while moving forward toward the 50-meter line of targets, he engages 8 targets from an unsupported position of his own choice. This exercise is performed from a 2d and 3d lane. This completes the Unsupported Phase, a total of 24 rounds.

Because of the tremendous training value found in firing the Record Course, the student fires it twice, a total of 112 rounds for a possible 112 points. Qualification scores are: Marksman, 36; Sharpshooter, 54; Expert, 68.

TRAINFIRE I was troop tested by 12,000 trainees at Fort Jackson, S. C., and Fort Carson, Colorado, from August 1955 to October 1956. The results of these tests were so overwhelmingly in favor of TRAINFIRE I to replace the conventional system that its implementation was directed.

This implementation is to take place in three phases. In the 1st Phase Fort Jackson, Fort Carson, and Fort Benning will implement as soon as possible. Phase II pertains to all other active Army units, world wide. Phase III includes ROTC, National Guard, and Reserve Components. It is planned that implementation will be completed by the end of Fiscal Year 1962.

Section III. RECENT CHANGES TO RESERVE OFFICERS TRAINING CORPS MANUAL 130-45; SNIPER DOCTRINE; TRAINFIRE III AND IV

CAPTAIN WILBUR G. JENKINS

Instructor, Rifle Committee

We will spend the next few minutes discussing three different topics:

The revised edition of ROTCM 130-45
Sniper Doctrine
TRAINFIRE I principles as they are applied to the automatic rifle. We refer to this as AUTOFIRE.

ROTC MANUAL

The ROTC Manual 130-45 has been revised to reflect TRAINFIRE I Marksmanship principles. However, we have retained the conventional system for small bore training. We feel that the manual is complete in every detail and is not dependent on any other marksmanship publication; it should be published in the very near future.

Chapter 11 of the manual will deal with small bore marksmanship and will cover the five elements of marksmanship:

Aiming
Sighting
Trigger Squeeze
Rapid Fire
Sight Adjustment.

Aiming: We have retained the conventional 6 o'clock hold. Four pictures will cover sight alinement and sight picture for the small bore rifle. Three aiming exercises are presented in detail.

Position: The adjustment of the loop and hasty sling as applied to the conventional Prone, Sitting, Squatting, Kneeling and Standing are discussed.

Trigger Squeeze: Trigger squeeze has been modified for the single and two stage triggers of the small bore rifle.

Rapid Fire: Rapid fire will stress bolt manipulation, bolt manipulation exercises, and rapid fire exercises.

Sight Adjustment: Sight adjustment is designed for the standard 50-foot small bore range. The code word BRASS is explained in detail along with "calling the shot."

Technique of coaching, safety precautions, instruction fire, and record fire are developed in great detail.

SNIPER DOCTRINE AND TRAINFIRE III AND IV

Before beginning a discussion of sniper doctrine it must be pointed out that the views expressed are not necessarily those of the United States Army Infantry School. The discussion outlines Weapons Department thoughts and describes developments that are being studied in order to make the U. S. Sniper more effective.

The term "sniper" has various meanings. The connotation varies from country to country and individual to individual -- always adapting itself to the tactical doctrine of the army or armed service in which the sniper is employed.

The armies of most nations have used expert marksmen or snipers of some form. Our own Army has used men known as "sharpshooters" since the days of the American Revolution. In the Civil War expert riflemen, known as "The Sharpshooters" reached a peak of perfection under the leadership of General Hiram Berdan.

The only nation known to have devoted any time to the techniques of sniping after World War I was Russia. The Soviets began the training and equipping of snipers in 1930. By the time of World War II, they had carefully integrated sniping tactics into all of their tactical doctrine. The Russian sniper took a heavy toll of key German personnel in that conflict.

The Japanese also produced a type of sniper, but their product lacked many of the characteristics traditionally associated with snipers. Experts at camouflage, they frequently took up positions in trees and waited for targets to appear. Luckily for us, they were poor shots. At the short ranges of jungle fighting, they averaged only one hit in 20 to 30 shots.

Today, our mobile concepts, the requirement for increased dispersion and the covering of gaps between units, enhance the value of expert riflemen. Individual, long-range targets can be expected to appear more frequently and infiltration by enemy snipers and small units may be common. This will present unlimited possibilities for the use of snipers. Under the present Tables of Organization each rifle squad has a sniper who should be able to employ his rifle more effectively than the average rifleman by virtue of his superior ability and more advanced equipment. However, we believe that this individual should be called by some other name such as "senior marksman," since his duties are not those of a true sniper. We feel that this rifleman

should always be employed as a member of his squad. His primary duty should be to extend the effective range of his squad to 500 or 600 meters.

While Trainfire assumes that battlefield targets will rarely exceed 300 meters, it is still important that all members of the rifle squad be able to deal effectively with targets of significance which appear at longer ranges. All Infantrymen, therefore, should be able to perform this "long-range" mission when the occasion demands. But the Senior Marksman would be the specialist for this mission and should have first round hits at ranges up to 600 meters.

The Infantry soldier is a rifle specialist. He should have additional marksmanship instruction in the advanced individual phase of training. CONARC has directed that 20 hours of advanced marksmanship training be included in the next revision of Army Training Program 7-17. The scope of this instruction will be outlined in the near future by CONARC and will include firing at 300 meters and 500 meters. Following this thought a little further, the next logical step is to select the best shots developed in advanced marksmanship training, and further prepare them as squad snipers, or, as we prefer them to be called, Senior Marksmen. But there is a requirement for a more advanced rifleman whom we shall call the "specialist sniper." This man will require skills, training, and equipment beyond those of the unit or senior marksman. To meet this requirement the two functions should be separated with the development and implementation of a training program for each. TRAINFIRE III would develop senior marksmen and TRAINFIRE IV would train the specialist sniper.

While the Infantry Rifle squad now has a sniper, no provision has been made for the true or specialist sniper. The logical place for this expert is at battle group level, where he should be under the operational control of the S2 or S3. It is visualized that a sniper section, composed of four teams and headed by a master sergeant, could be provided in this unit. Each team would contain two men, a specialist second class and a specialist third class.

It is generally desirable to employ snipers in pairs so they can operate effectively for prolonged periods of time. The observer-shooter team is a proven and effective means of employment. However, in some cases, where a target must be sought out or stalked, it might be necessary for the individual sniper to work alone.

Snipers, like weapons, must be integrated in the fire plan. If this does not happen, their effectiveness is lost.

In the attack, snipers should be used to engage specific targets which may hold up the advance. By operating in the rear or flanks of the assault platoons, they can position themselves to engage such targets.

Snipers can be used to infiltrate, prior to the attack, to concentrate on automatic or crew-served weapons. However, when this is done, it is of utmost importance to effect close coordination with the attacking forces.

During the reorganization phase of the attack, snipers can be positioned on the approaches leading into the captured objective to provide security and to kill key enemy personnel leading the counterattack.

In the defense, snipers normally would occupy prepared, camouflaged positions and operate in pairs as stationary observer-shooter teams. However, if observation is restricted or large areas of responsibility are assigned, it might be necessary for them to operate as mobile sniper teams.

Snipers can be employed also to prevent the removal of obstacles in front of the battle position. They can deny the enemy the use of certain areas, disrupt communications, or act as observers. Generally, they would be assigned definite sectors of responsibility, particularly along dangerous avenues of approach.

Snipers can be profitably employed with the general and combat outposts where they will help delay and disorganize the advance of the enemy. In static situations, they may be placed in front of the forward edge of the battle position. Employed in depth, they can protect rear area installations from infiltrating enemy.

When enemy snipers are active, our own snipers should be used in a countersniping role, operating either singly, in pairs or in conjunction with patrols.

In general, the sniper concentrates on enemy leaders. By eliminating key personnel and harassing troops, he weakens enemy morale. The sniper is an expert. If put to proper use as a weapon he is effective in any tactical situation.

The sniper's primary mission is to: first, Kill key enemy personnel and by so doing, weaken the enemy's morale; second, Assist intelligence agencies by timely reports of enemy activities.

The next speaker will be Captain Shelton who will discuss AUTOFIRE.

Section IV. AUTOFIRE

CAPTAIN MARVIN C. SHELTON, JR.

Instructor, Rifle Committee

The Browning Automatic Rifle has been used with excellent effectiveness in both World Wars and in the Korean conflict. These rifles furnish the base for all other firepower in the Infantry Rifle Company.

Therefore, when the United States Army Infantry School recommended to CONARC that TRAINFIRE I be adopted, it was pointed out that comparable training with the automatic rifle had not been considered. In January 1957, CONARC directed that the Infantry School study the situation and submit a proposed course of instruction, using TRAINFIRE I principles as a guide to replace the present course for the automatic rifle as prescribed in FM 23-15. The course of instruction that was developed by the Weapons Department is called AUTOFIRE.

AUTOFIRE is the new concept of training the automatic rifleman using TRAINFIRE I principles with some exceptions. I will cover only the differences.

Premises. The first four AUTOFIRE premises are the same as in TRAINFIRE I except that combat targets for the automatic rifle will include foxhole and bunker emplacements.

We do not contradict the premise for TRAINFIRE I that most combat targets for the rifleman will not exceed 300 meters; however, with the automatic rifle combat targets may be engaged at greater ranges. Due to the inherent stability of the weapon on bipod, the automatic capability, and dispersion of the cone of fire, area type targets may be effectively engaged out to 500 meters.

The nature of the target, terrain on which it appears, and the tactical employment of the weapon favors the use of positions with the weapon on bipod, such as the prone or standing foxhole positions, and the hip-firing position in the assault.

Combat targets, 500 meters or less in range, will normally be engaged using a battle sight setting and hold-off. After firing a burst, frequent observation and adjustment of fire is necessary.

Conditions of combat complicate the detection and engagement of targets exceeding 500

meters; therefore, the squad leader, or some member of the squad must assist the automatic rifleman to detect targets and adjust fire.

Tie-In With TRAINFIRE I and II. We have assumed that all personnel have previously received TRAINFIRE I instruction. The present practice in ATP 21-114 and TRAINFIRE II of arming a trainee with the M1 rifle and designating him as automatic rifleman, is considered to be extremely unrealistic. It is highly desirable that all basic trainees regardless of subsequent branch assignment, receive AUTOFIRE early in the Army Training Program. We recommend the following sequence of instruction: TRAINFIKE I, AUTOFIRE, and TRAINFIRE II, with a minimum time lapse between TRAINFIRE I and AUTOFIRE.

Objective. The objective of AUTOFIRE is to develop in a minimum time an automatic rifleman who can detect and engage single, multiple, and area combat targets effectively up to a range of 500 meters. To accomplish that objective the following course has been developed:

BREAKDOWN OF HOURS

SUBJECT	HOURS
Orientation	2
(Early Firing Period)	(2)
Maintenance	4
Preparatory Marksmanship and 25 Meter Firing	16*
Battle Sight Zero at 75 Meters	4
Field Firing	14
Record Firing	8
TOTAL HOURS	48

*Includes Early Firing Period.

The AUTOFIRE program will be allotted 48 hours. This is a time saving of 8 hours over the present Army Training Program. However, the adoption of the lightweight system (M-14 and M-15), to replace the M-1 and BAR, will result in an additional time saving of approximately 4 hours, since the mechanical training, functioning, and maintenance of the two new weapons is identical.

Orientation. In this two hour period the soldier learns the scope of AUTOFIRE, its tie-in with TRAINFIRE I and II, and its importance, so as to motivate him for further instruction. He also is taught the history, characteristics, capabilities and limitations of the automatic rifle and is shown how the weapon operates in preparation for early firing, when he fires several shot groups. The early firing period will help the soldier realize his shortcomings, make him more capable of understanding how the weapon functions, and motivate him to learn mechanical training.

Maintenance. This four hour period is presented after the orientation and the early firing period. It is not desired that the automatic rifleman have a detailed technical knowledge of functioning, but rather that he know how to take care of his weapon and keep it in operation.

Preparatory Marksmanship and 25 Meter Firing. All of the preparatory marksmanship training in AUTOFIRE can be conducted on a TRAINFIRE I 25 Meter Range (Figure 35). The soldier has already received two hours instruction in the early firing period. In the fourteen remaining hours, emphasis is placed upon aiming, positions, and trigger control which together make up the integrated act of shooting. This is done largely through the dry firing exercises, with some wet firing in 25 meter zeroing and grouping exercises. Sight setting, magazine changing, shift of position to engage targets in width and depth, trajectory, and hold-off will also be taught. The prone, standing-foxhole, and hip-firing positions are the only positions taught. We are recommending the target shown in Figure 42 for all 25 meter firing.

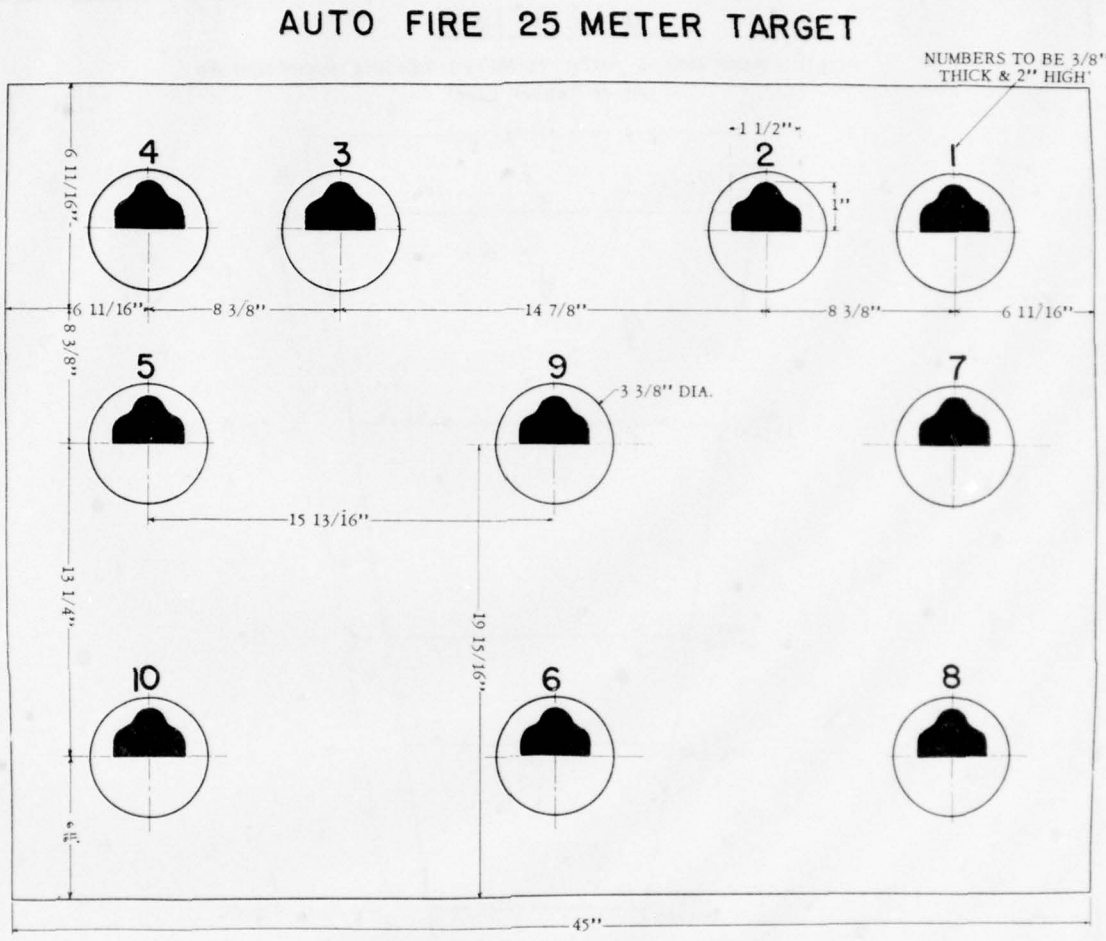

Figure 42. AUTOFIRE 25 Meter Target.

Each paster on this target has a half silhouette for an aiming point and has a scoring ring. This aiming point helps the soldier in his transition to field firing. Numbers 1, 2, 3, and 4 will be used for zeroing, grouping exercises, and trigger control exercises. Numbers 5 through 10 will be used for an automatic fire exercise for practice in magazine changing and in engaging targets in width and depth by shifting the body. The last two hours of 25 meter firing are devoted to a scored automatic fire exercise. The rifleman's score will indicate his readiness for training on the Field Firing Range.

Battle Sight Zero At 75 Meters. This zeroing exercise is conducted on a Field Firing Range (Figure 43) and once a soldier has zeroed a weapon he will use that same weapon for all firing during the remainder of the course, including record firing. There is a battle sight setting "A" for ranges up to 300 meters and a battle sight setting "B" for ranges from 300 to 500 meters. Battle sight settings are obtained at 75 meters in the following manner:

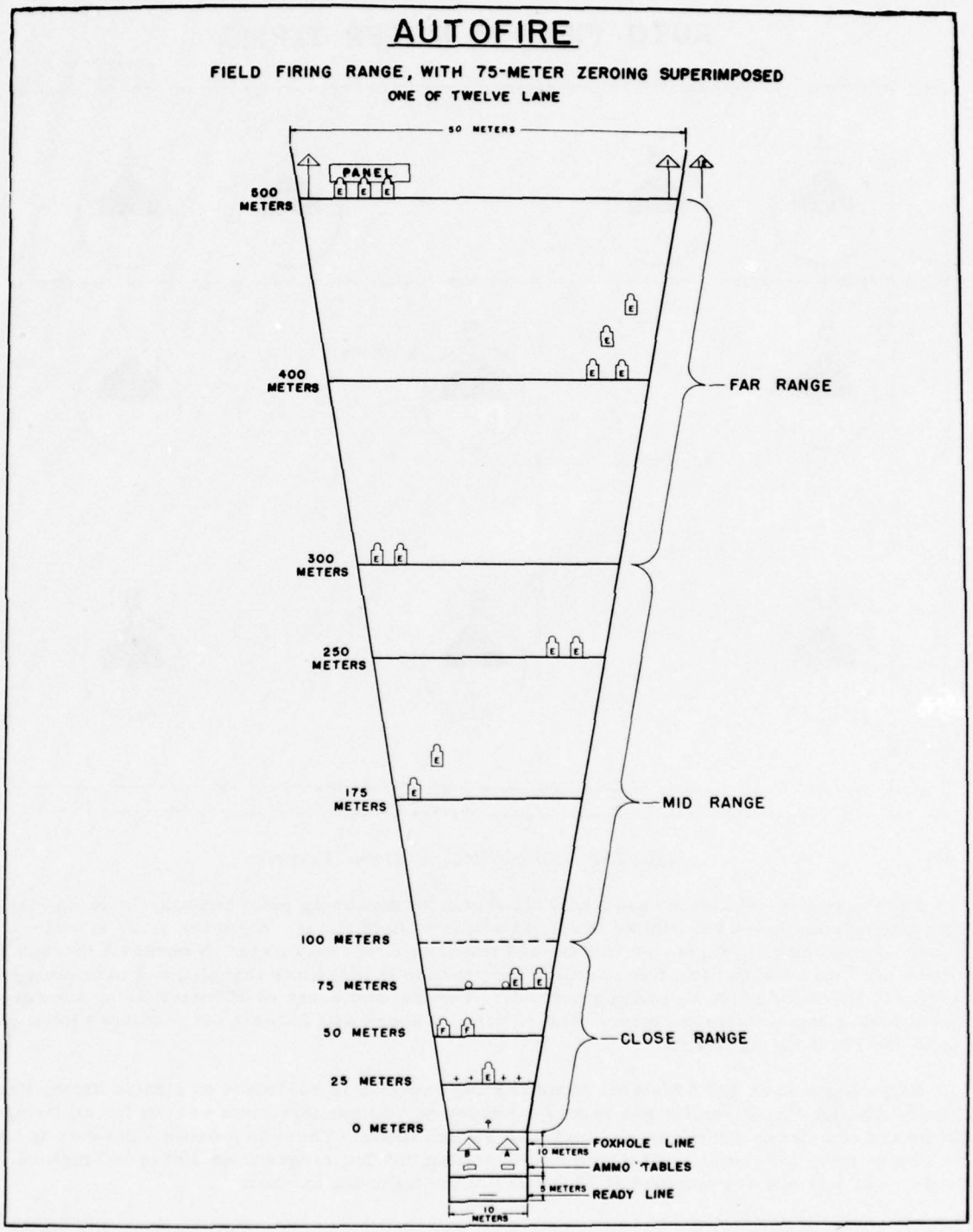

Figure 43. AUTOFIRE Field Range Firing.

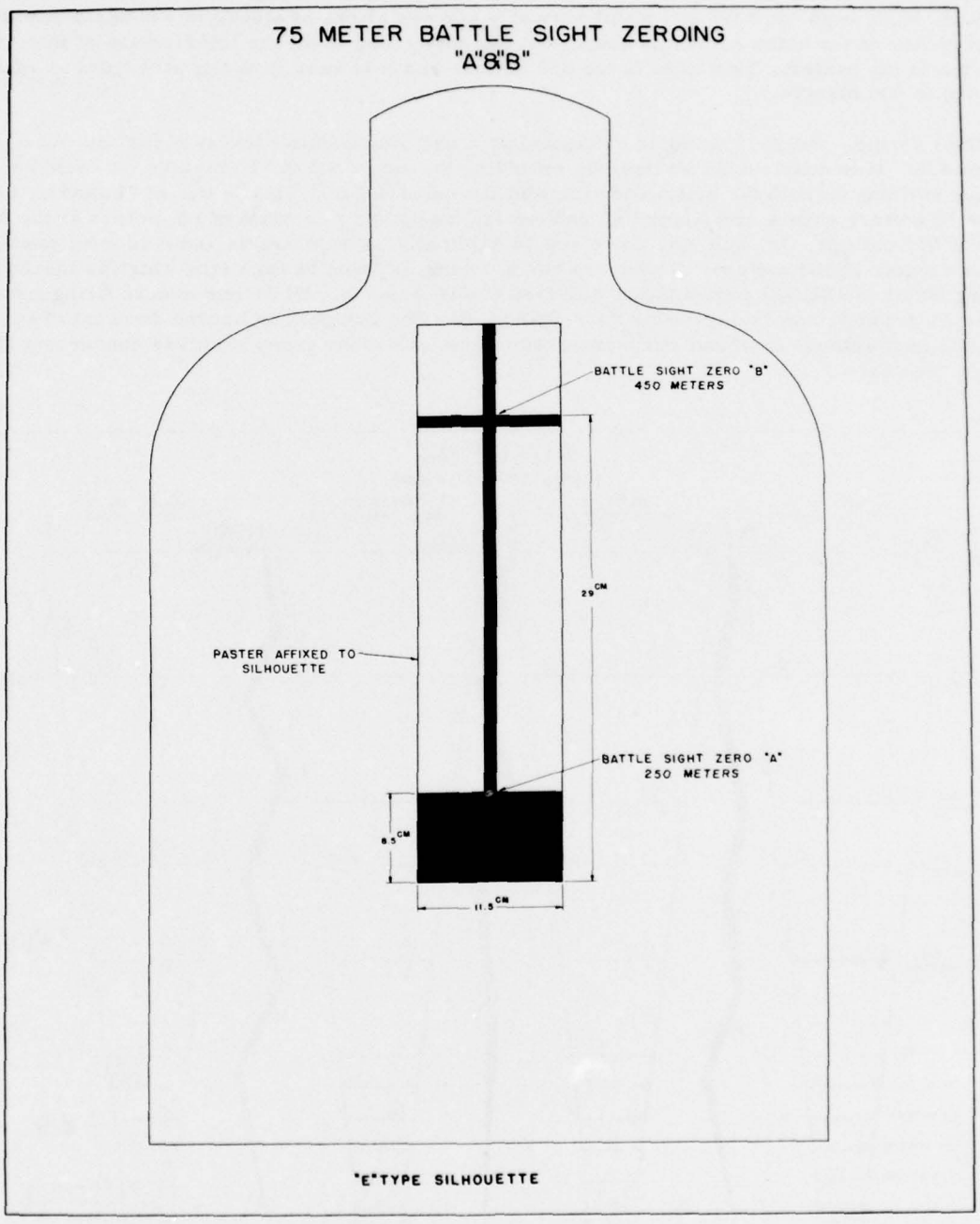

Figure 44. AUTOFIRE Zeroing Target.

The firer will aim at the bottom center of the black rectangle (Figure 44) and adjust the shot group to hit the top center of the rectangle. That will give him the battle sight zero "A" which is a 250 meter zero. It is used in firing at targets up to a range of 300 meters. To obtain battle sight zero "B," the firer will normally add two clicks of elevation and again aim at the bottom center of the black rectangle and adjust the shot group to hit the intersection of the cross at the top of the paster. This zero is for 450 meters and it is used in firing at targets at ranges from 300 to 500 meters.

Field Firing. All field firing is conducted on a new range which serves a dual purpose (Figure 43). It is constructed so that, by extending the range out to 750 meters, it could be used for training on both the automatic rifle and the machinegun. This is one of 12 lanes. Each lane is 10 meters wide at the firing line and the fan increases to a width of 50 meters at the far range of 500 meters. In each lane there are 18 automatic pop-up targets and a scoring panel, for an area target, at 500 meters. There are two standing foxholes in each lane which is ideal for training under the ROCID organization with fire teams A and B. While one man is firing from foxhole A, another man is dry-firing from foxhole B. The company is broken down into two groups of two platoons each and while one group fires, the other group receives concurrent training in a rear area.

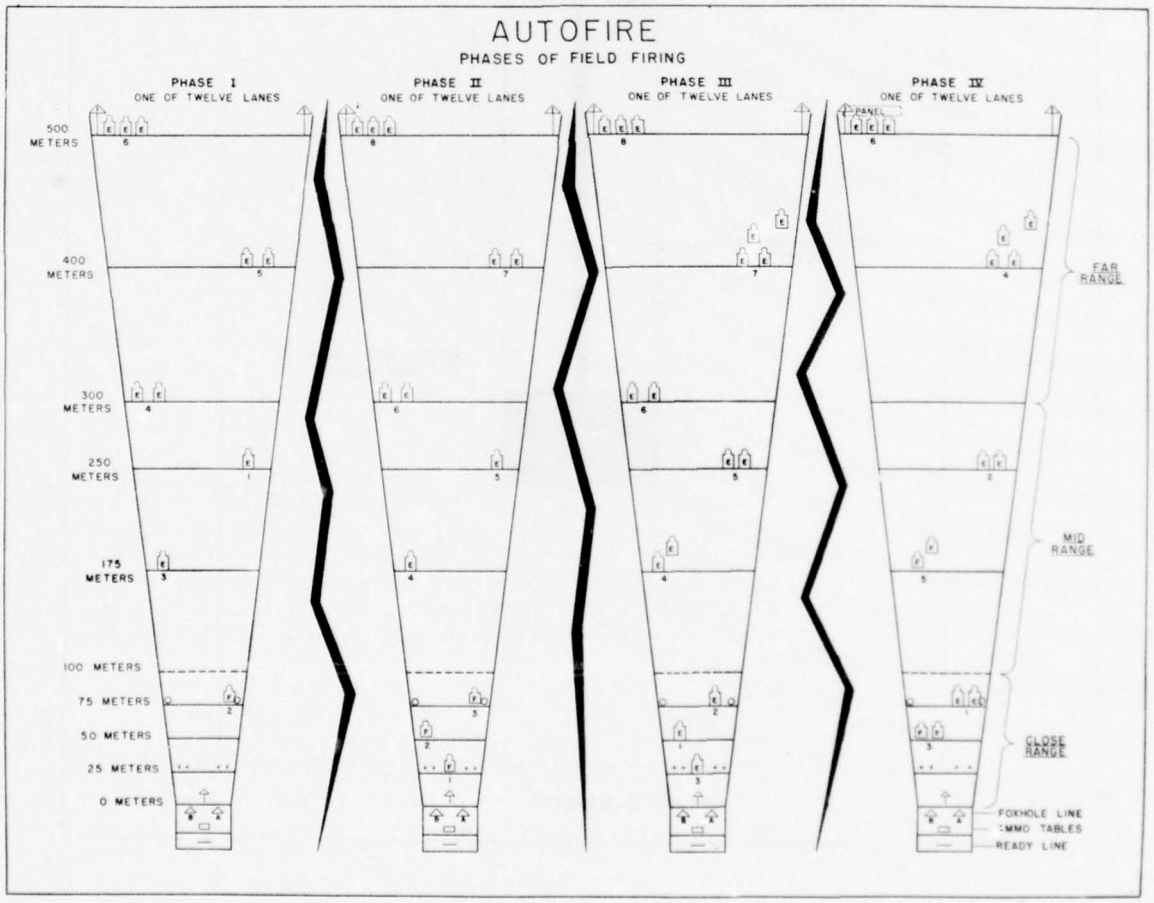

Figure 45. Phases of Field Firing.

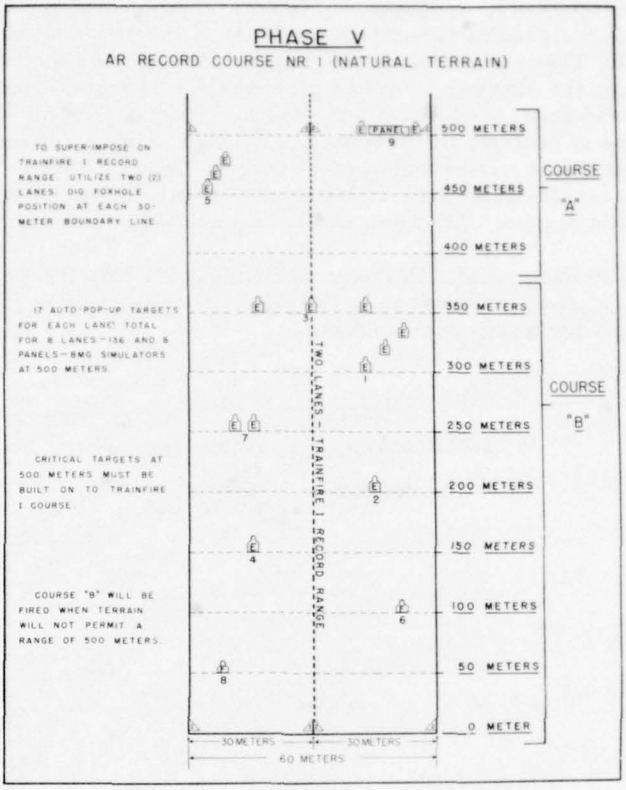

Figure 46. AUTOFIRE Record Course #1.

Phases of Field Firing. The 14 hours of field firing will be conducted in four-hour blocks and may be scheduled with a time lapse between blocks. In each four-hour block the soldier fires a different phase of field firing. Figure 45 shows the different phases of field firing, each of which can be fired on any of the twelve lanes by using different combinations of targets. During Phase I, the battle sight zeroes will be confirmed and targets will be engaged at varying ranges from the prone position in timed exercises. In Phase II, the soldier will engage surprise targets at varying ranges from the prone and standing foxhole positions in timed exercises. In Phase III, a series of close-in surprise targets will be engaged in rapid succession from the hip-firing position and multiple targets will be engaged in width and depth from the prone position, in timed exercises. In Phase IV, the soldier will engage close-in targets from the hip-firing position and then move rapidly into the prone position to engage targets at far ranges in a timed exercise. A scoring panel is hidden at 500 meters and its location will be indicated by smoke or noise. That area target will be detected and engaged with a series of long bursts from the prone position.

Record Firing. There are two record courses in AUTOFIRE. Record Course #1, (Figure 46), or Phase V can be superimposed on a TRAINFIRE I record course by extending the range out to 500 meters, adding targets in width and depth, and area targets with scoring panels. Two TRAINFIRE lanes are utilized for one AUTOFIRE lane and a standing foxhole must be constructed in the center of each AUTOFIRE lane. There are 8 AUTOFIRE lanes, 60 meters in width, with 17 automatic pop-up targets in each lane. If the terrain does not permit a range out to 500 meters, Course "B" can be fired which extends only to 350 meters. All firing is from the prone and standing foxhole positions.

Record Course #2 (Figure 47), or Phase VI, is an assault course run concurrently with Record Course #1. It is designed to simulate the actions of the rifleman in the attack although no tactics will be taught. There are 4 lanes, 30 meters wide and 400 meters in range. The automatic rifleman leaves the starting point and advances for 65 meters under the supervision of an assistant instructor and engages close-in surprise targets from the hip-firing position. When he reaches the phase line of control, the assistant instructor straightens the line, if necessary. The soldier then assaults the objective and engages targets thereon. When he reaches the crest of the hill, he will sight targets at a range of 300 meters which represent fleeing enemy. The firer moves quickly into a position of his own choice and engages those targets.

Scoring. A simple scoring system has been worked out for both the field firing and record courses. Emphasis is on placing a burst on each target but full credit is given for each silhouette "killed" and no credit for unexpended rounds.

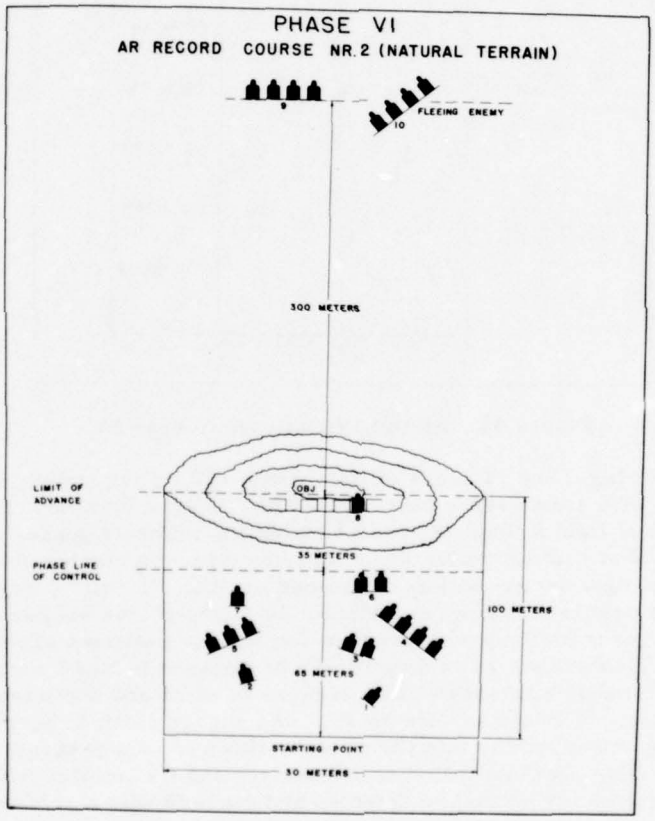

Figure 47. AUTOFIRE Record Course #2.

We have recommended that 132 men in the ROCID rifle company receive AUTOFIRE training; this would be the rifle company less the weapons platoon and the weapons squad of the rifle platoons. The unit commander will have an opportunity to observe the training and select the best qualified men for assignment as automatic riflemen; however, all riflemen in the company will be capable of assuming that important role.

In May 1957, this proposed course was submitted to CONARC for consideration.

CONARC then directed the Infantry School to submit detailed requirements for conducting a pilot test. That report was submitted with a recommendation that a pilot test on AUTOFIRE be conducted using two groups of 132 men each from units at Fort Benning. In January 1958, CONARC approved our recommendations for the pilot course and final details are now being formulated.

Section V. TRAINFIRE II

CAPTAIN KARL T. RETTSTATT

Instructor, Technique of Rifle Fire Committee

Earlier this morning you received a briefing on TRAINFIRE I which is designed to teach the individual soldier how to fire his basic weapon. For the next few minutes we will discuss TRAINFIRE II which is designed to train the individual soldier to become an effective member of the fire unit we call the rifle squad. TRAINFIRE II reproduces in training the problems a squad will encounter in combat. TRAINFIRE II replaces the 12 hours of technique of fire and 20 hours of squad tactical training now prescribed for the first eight weeks of basic training. The primary advantage of the TRAINFIRE II program as compared to present training, is the integration of technique of fire and squad tactics culminating in live firing attack and defense exercises.

The program is further characterized by:

Extensive training in Standing Operating Procedures (SOP's). Some examples of these SOP's are:

An SOP for occupation of a defensive position
Battle Drill
A squad SOP for security
A search-fire-check SOP

The fire-team system of two fire teams, employed within the squad, is stressed in both tactics and application of fires. This training provides effective and flexible control in fire and maneuver situations as well as under conditions requiring a division of firepower.

The program introduces additional hand-and-arm and whistle signals to supplement verbal communication.

Realistic targets at combat ranges and under field conditions are used. The "pop-up" target provides a "killable" indication of enemy movement and location.

Simulation of the sights and sounds of the enemy on the battlefield are reproduced by small-arms simulators, demolition, smoke, flash, and sound.

The live firing exercises are scored objectively so that immediate evaluation of the squad's performance can be obtained. Hits and fire distribution on camouflaged panel targets are recorded on an electronic hit-recorder device.

Throughout the program, conferences and demonstrations are followed by practical exercises. Related concurrent subjects utilize training time to the maximum. Tactics of the individual soldier and other subjects concerned with the movement of the individual are stressed and concurrent.

TRAINFIRE II ranges stress the use of realistic target cues or indications to depict the location and actions of the enemy in the attack or defense. Targets require the trainee to use

TRAINFIRE II

BREAKDOWN OF HOURS

PERIOD	SUBJECT	HOURS
1	ORIENTATION, FORMATIONS AND CONTROL	2
2	TACTICAL TRAINING FOR SQUAD IN DEFENSE; TECHNIQUE OF RIFLE FIRE, PART I	4
3	TACTICAL TRAINING FOR SQUAD IN ATTACK; TECHNIQUE OF RIFLE FIRE, PART II	4
4	LIVE-FIRING EXERCISE, SQUAD IN DEFENSE: TARGET DETECTION; PRACTICAL EXERCISE IN REORGANIZATION AND CONSOLIDATION; TECHNIQUE:ASSAULT FIRE	8
5	LIVE-FIRING EXERCISE, SQUAD IN ATTACK; TARGET DETECTION; TACTICAL TRAINING FOR SQUAD IN SEMI-INDEPENDENT ACTION	8
6	BLANK-FIRING EXERCISE; SQUAD IN SEMI-INDEPENDENT ACTION	4
	TOTAL	30

Figure 48. TRAINFIRE II Instructional Hours.

detection techniques, clear designation, and effective application of team fires. The sequence and breakdown of instruction in TRAINFIRE II is shown on this chart (Figure 48).

Prior to arrival at the training site the trainees are placed in eight man trainee squads and the over-all company divided into Group I and Group II. This organization is maintained throughout the TRAINFIRE II program. Cadremen are used as squad leaders and fire team leaders.

Period I. The entire company receives a brief orientation on the role of the rifle squad, its organization and concept of employment and a brief outline of the course. The company then moves out with Group I receiving Formation, and Group II, Means of Control. At the end of the first hour they change over.

Period II. Group I receives tactical training for squad in the defense; Group II Technique of Rifle Fire, Part I. In the tactical training for squad in the defense the trainee learns the things he should know about the defense, i.e., defense terminology, how the squad fits into the defense picture and formulation of the defense SOP's. In TRF, Part I, the trainee learns how to apply his fire to the various types of targets with emphasis on the linear target. At the end of two hours the groups change over.

Period III. Group I receives tactical training for squad in the attack. Group II receives Technique of Rifle Fire, Part II. In the tactical training the trainee learns about the attack, attack terminology, SOP's, and again how his squad fits in. Technique of Rifle Fire, Part II, is more advanced training in how to apply and distribute fire on the various types of targets.

Period IV. Here the squad applies what it has learned by participating in a live fire defensive exercise. Group I receives the defensive training while Group II undergoes training in

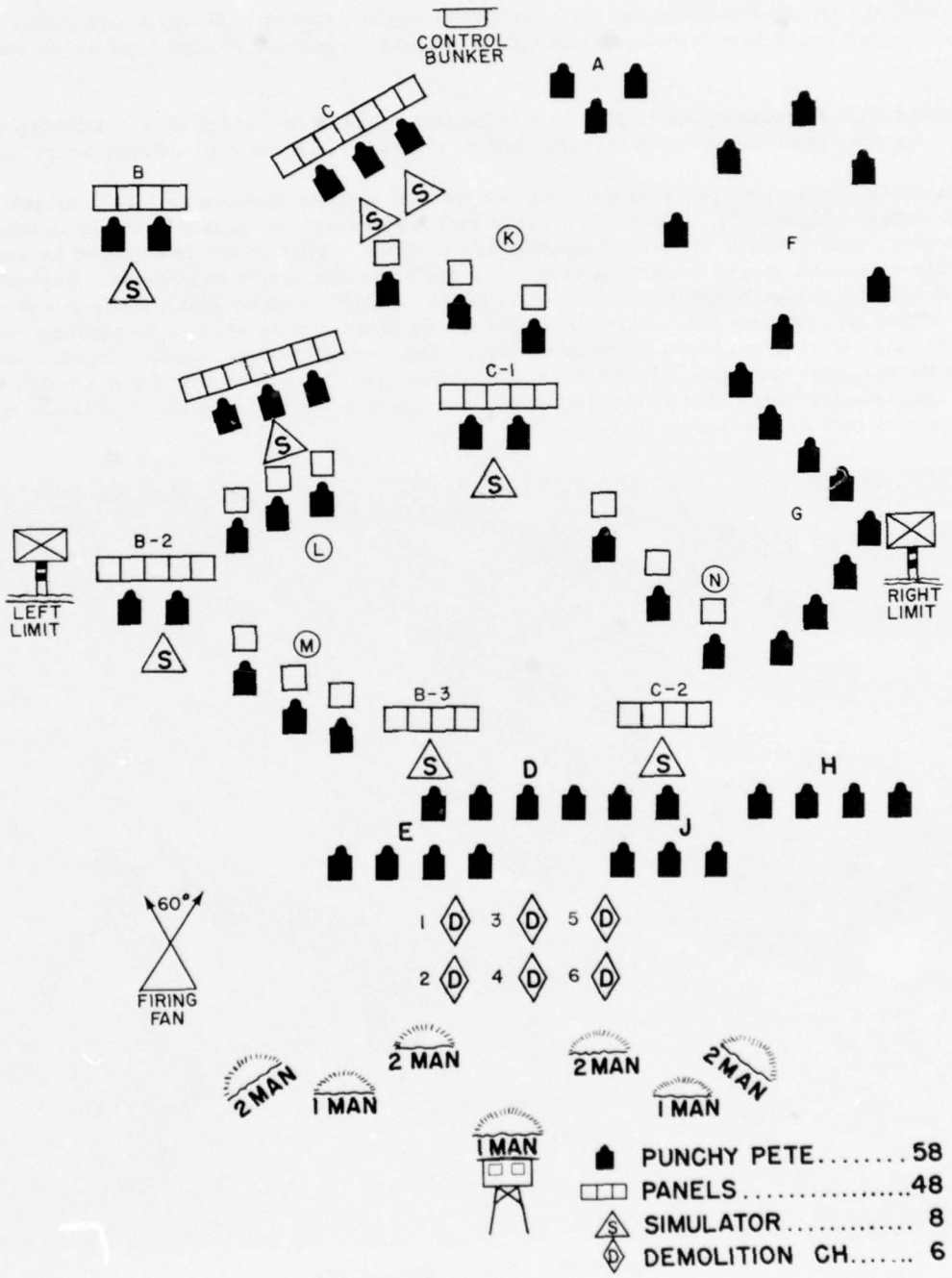

Figure 49. TRAINFIRE II Defense Range.

reorganization and consolidation and technique of assault fire. The groups change over at the end of four hours.

Period V. Group I participates in a live firing attack problem. Group II undergoes tactical training for squad in semiindependent action. Again the groups change over at the end of four hours.

Period VI. All squads participate in a blank firing exercise for squad in semiindependent action. As the result of the troop test this period may also become a live firing exercise.

To better familiarize you with the program we will discuss in more detail the attack and defense ranges (Figure 49). After selection of suitable terrain the squads position is selected and a logical enemy attack is planned against this position. This attack is depicted by simulation. The automatic target is used as target cue and to depict enemy movement. Bush wigglers also are used as target indicators. Enemy weapons are simulated by small arms gun fire simulators of this type (Figure 50). This simulator can be fired at a slow rate, simulating rifle fire or a fast rate simulating automatic weapons fire. The device produces flash, sound, smoke and dust to aid in target detection. It operates in this manner. This device will fire 21,000 rounds for an approximate cost of $3.50 for the oxygen and acetylene to operate it. The latest model of this device is now in production.

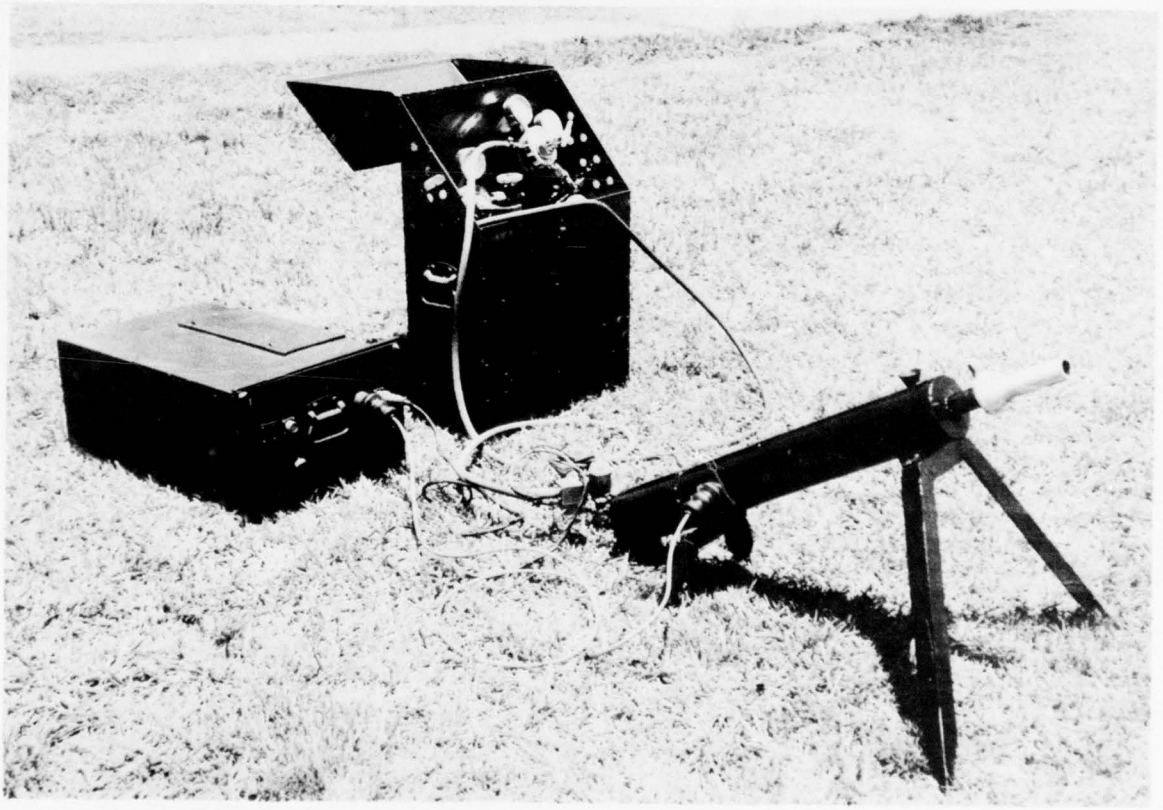

Figure 50. Gunfire Simulator.

Scoring on the defense range is accomplished on a hit recorder device and visually by observing the killable targets. Camouflaged scoring panels behind the target indicate automatically, hits as well as distribution of fire. This permits immediate evaluation of the squads performance.

Like the defense range, selection of terrain is important for the attack range (Figure 51). The squad starts in the assembly area, moves forward through the attack position across the LD in the appropriate formation, and receives fire from the aggressor security. By fire and maneuver the squad reduces the security and moves forward to the assault line, and assaults the enemy's position. The squad moves over the objective into the reorganization phase. Again simulation indicates enemy activity and scoring panels record the hits.

Troop tests for TRAINFIRE II have been completed at Fort Carson, Colorado, and are now going on at Fort Jackson, South Carolina. In the troop test a comparison of conventional training in Technique of Rifle Fire and Squad Tactical Training is being made to TRAINFIRE II. Designated trainee units, conducting the troop test are divided into conventional-trained units and experimental-trained units. Following their training conventional and experimental units are tested on proficiency ranges designed for the troop tests to provide a basis for Army-wide evaluation of the TRAINFIRE II Program.

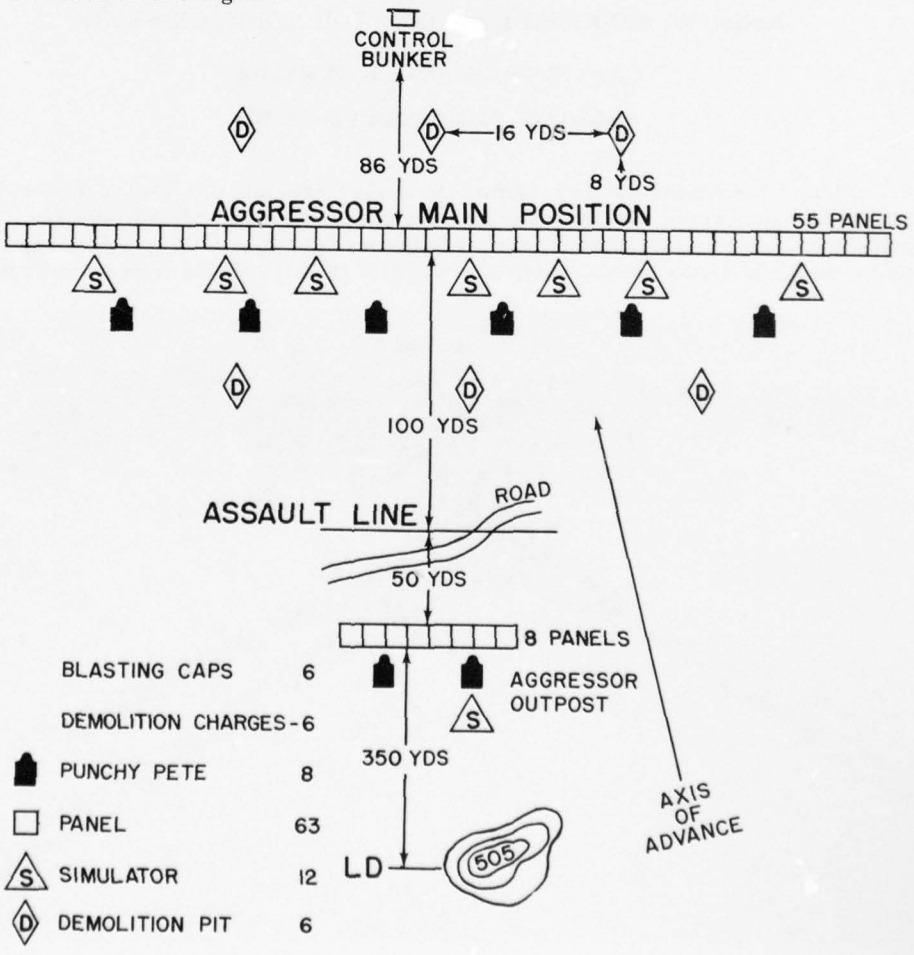

Figure 51. TRAINFIRE II Attack Range.

A comparison of significant factors between TRAINFIRE II and present training can be summarized as:

Squad tactical training and technique of fire training are integrated, and culminate in live fire attack and defense exercises in TRAINFIRE II. These subjects are not integrated in conventional training.

The trainee in TRAINFIRE II fires 256 live rounds. In present training he fires 56 live rounds.

Realistic actions of the enemy are simulated on all live-firing ranges and require the squad to look for and find the enemy, to destroy him by application of team fires, to maneuver supported by fire, and to use all techniques and procedures presented to him in the TRAINFIRE II Program. Field target firing without a tactical application is the only live-firing used in conventional training.

Standardized techniques and SOP's in TRAINFIRE II minimize the need for leader control on the battlefield. These are not emphasized in conventional training.

Section VI. MODIFIED M2 MOUNT FOR M60 MACHINEGUN

CAPTAIN BENJAMIN F. IVEY, JR.

Instructor, Machinegun Committee

The adoption of the Machinegun, 7.62mm, M60, has provided the United States Army with a lightweight machinegun which will meet the requirements of the atomic battlefield. The new M60 machinegun meets these requirements; however, the mount appears to be too heavy for this role. The present mount which has been adopted for use with the M60 is the tripod mount M91.

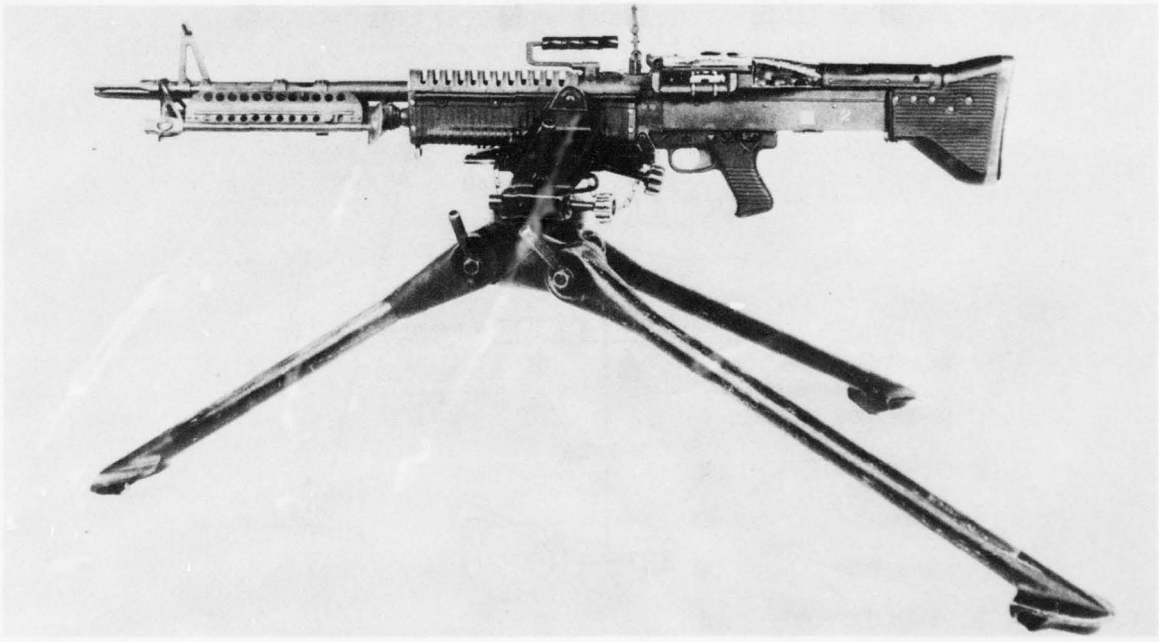

Figure 52. M60 Machinegun on M91 Tripod.

The M91 is made largely of aluminum alloy, incorporates a recoil-isolation system and weighs 25 pounds. When the 23-pound M60 is mounted on the tripod it makes a total weight of 48 pounds (Figure 52).

The M91 mount was designed solely for the M60 machinegun and is not a "universal" mount as we had with the old M74 tripod.

The M91 mount seems to us in the Weapons Department to be excessively heavy and unnecessarily complicated. Our position relative to the M91 mount is that it is more mount than is needed in the Infantry rifle platoon.

The development of the M91 mount began simultaneously with the M60, shortly after World War II. Initially it was designed to fulfill the requirements of the mount used with both the heavy and light machinegun found in the triangularly organized units.

When the Army began reorganizing under the ROCID concept the heavy machinegun was deleted. Today, machineguns will be employed well forward with the rifle platoon of the Infantry battle groups. This means that the gun and its allied equipment must be light, simple to operate, simple to maintain, easy to displace,and it must be durable.

In place of the long range, overhead supporting fire role, as we knew it during World War II, we now have a requirement for a gun and mount which can keep pace with the attacking rifle squads. The Machinegun, M60, meets these requirements, but the Tripod Mount, M91, does not.

There still exists a requirement for a mount which will serve us during periods when the action has become stable such as during the defense. Based on this and guided by the contemplated use of such a mount, we have established some desirable features which we feel are needed in an Infantry machinegun mount.

First of all, the mount should be light. The weight of the mount should not exceed 12 pounds. It must be simple to place into position and easy to operate and maintain. The mount should also present a low silhouette. When we take a close look at the M91 mount we see that it does not meet these requirements. It weighs 25 pounds and is too heavy and bulky for use within the rifle platoon. The various clamps, mounting pins, dials, scales and knobs makes it too complicated and too difficult to place into position and operate. Maintenance of the M91 has proven to be a problem of no small magnitude. The gunner is normally required to use the sitting position when firing which makes camouflage and concealment more difficult.

Based on these considerations we have recommended that research and development agencies begin an immediate study and provide us with a mount which is more in keeping with the requirements of the rifle platoon.

We submitted the tripod mount M2, which is the standard mount for our present caliber .30 machineguns, as the "type" mount that is needed. To support this, we, in conjunction with Post Ordnance personnel, have fabricated some adapters which permit us to mount the M60 on the M2 mount. We refer to this mount as the modified M2 mount (Figure 53).

The modified M2 mount consists of a standard tripod mount M2 complete with traversing and elevating mechanism and pintle with bolt. To this we must add a mounting platform and a rear mounting adapter. With the exception of the mounting platform and the rear mounting adapter all items are standard items of issue for the caliber .30 M1919A6 machinegun (Figure 54).

The manufacture of the mounting platform and the rear adapter can be done at Post Ordnance level for an estimated cost of six dollars per gun. The total weight of the Modified M2 is 17 3/4

pounds. We admit this to be more than we desire, but it will serve as an interim mount and still it reduces the weight approximately seven pounds when compared to the M91 mount.

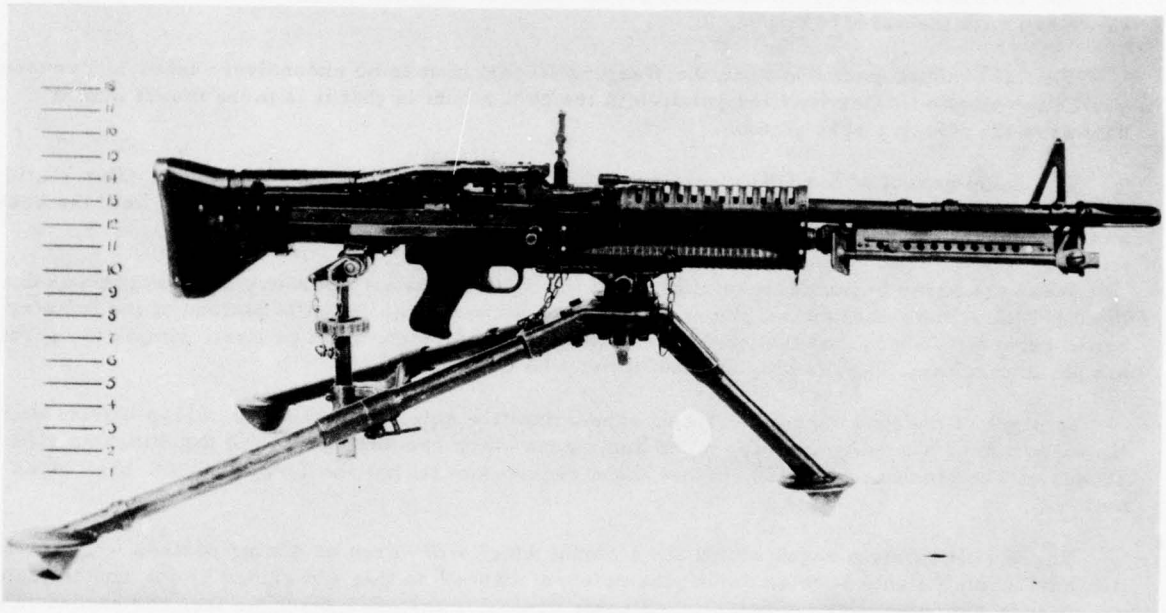

Figure 53. M60 Machinegun on Modified M2 Mount.

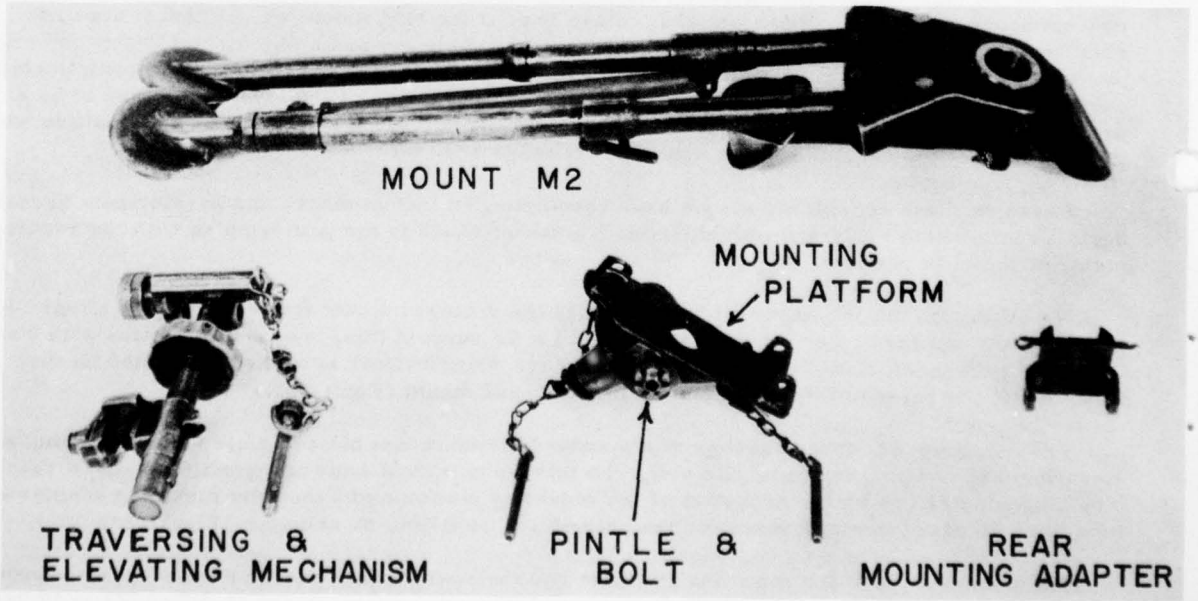

Figure 54. Modified M2 Machinegun Mount.

The mounting platform is fixed to the pintle by the pintle bolt. The unit is fixed to the mount by inserting the pintle into the pintle bushing of the tripod head and locking it into position in a manner identical to the caliber .30 machinegun.

The rear mounting adapter is positioned on the coarse stud located on the receiver floor plate. The traversing and elevating mechanism is then attached in a normal manner except for the fact that the traversing bar slide must be reversed.

The adapters do not eliminate or interfere with the controlled traverse and elevation of the mount. The amount does not equal that of the M91 but it does equal that of the present Browning guns and is considered adequate during the interim period. The modified M2 mount permits the employment of the M60 in the predetermined fire role. The M60 mounted on the modified M2 can deliver accurate, effective fire upon preselected targets which fall within a sector of approximately 800 mils in width.

The recommendations made were not made in haste. The United States Army Infantry Board conducted a service test to determine if the modified M2 mount could serve as an interim mount. These tests show that with minor changes the modified M2 mount can serve as a satisfactory "interim" mount for the M60 machinegun.

The 101st Airborne Division is presently conducting a troop test with the M60 machinegun. This test will include an evaluation of the modified M2. Interim reports from the 101st Airborne Division state that the modified mount is serving satisfactorily and because of the reduction in size and weight is generally preferred.

The army has issued a contract for a limited number of M60 machineguns to be produced at Springfield Armory. We can expect the initial guns to come off the production line during the latter part of this calendar year. It is anticipated that another contract will be issued some time this year which will call for a much larger number to be delivered next year.

The modified M2 mount is only a recommended interim mount for the M60; however, the final result should be similar in performance.

We in the Infantry are proud of the M60, but we need a mount that is compatible with the M60 in simplicity, ease of operation and weight.

Section VII. M56 AS A MULTIPLE CARRIER

CAPTAIN RAYMOND J. GROVE

Instructor, Tank-Recoilless Weapons Committee

The present concept of the battlefield envisions hard-hitting, mobile units capable of rapid concentration and dispersion in all types of terrain. In order to do this, the Infantry units must be equipped with vehicles with a high degree of cross-country mobility.

At the present time there is only one standard Infantry weapons carrier that meets the requirements - The M56 Scorpion (Figure 55).

The Scorpion is a highly maneuverable antitank weapon which can be air-lifted and dropped by parachute. It mounts the 90mm gun which is basically the same as the M48 medium tank weapon and uses the same types of ammunition. This vehicle weighs 15,600 pounds and has a ground pressure of 4 1/2 pounds per square inch. This low ground pressure allows it to traverse areas which wheeled or armored vehicles cannot negotiate. The M56 chassis presents a low battlefield silhouette and can be adapted to many tasks besides mounting the 90mm gun. By removing the weapon and its mount, the ground pressure is reduced to 2 1/2 pounds per square inch, and the total weight to 8,250 pounds.

Tests have been conducted here at Fort Benning using the M56 chassis in a variety of roles.

The M56 may be used to mount the quad .50 cal machinegun. This is an unsurpassed ground support weapon which in the past has been tied to a clumsy, unreliable half-tracked carrier. On the M56 it presents fast moving firepower to go where the Infantry needs it.

We have the M56 with 106mm rifle (Figure 55). This weapon has been handicapped by an unsatisfactory wheeled carrier for five years. On the M56, the 106mm rifle is provided with great cross-country capabilities and, for the first time, an adequate supply of ammunition on the vehicle. These are obtained without modification of the weapon and with only minor modifications to the vehicle. The weight of this combination is 10,000 pounds with crew and ammunition which is within the lift capabilities of the H-37 Helicopter. It has a ground pressure of 2.7 psi which allows operation in mud, snow, and sand without modification.

The principal indirect fire support weapon of the Battle Group is the 4.2-inch mortar. It is presently transported in a 3/4-ton truck to which must be attached a heavily loaded 3/4-ton trailer. This does not meet the current requirements for fast emplacement and displacement and rapid cross-country movement.

To emphasize the versatility of the M56 as a general purpose weapons carrier we can remove the 106mm recoilless rifle adaptation kit, mount the 4.2-inch mortar (Figure 56).

There is an experimental model of a personnel carrier which has been tested for amphibious capabilities. This vehicle carries nine men and attains a speed of four mph in water. This vehicle weighs 13,500 pounds and uses a standard M56 chassis.

The M56 Scorpion has undergone considerable testing. Each of three test vehicles operated 17,000, 9,000 and 4,000 miles respectively without major difficulty. Maintenance has been less than for a 1/4-ton truck and only minor corrections have been made as a result of the tests.

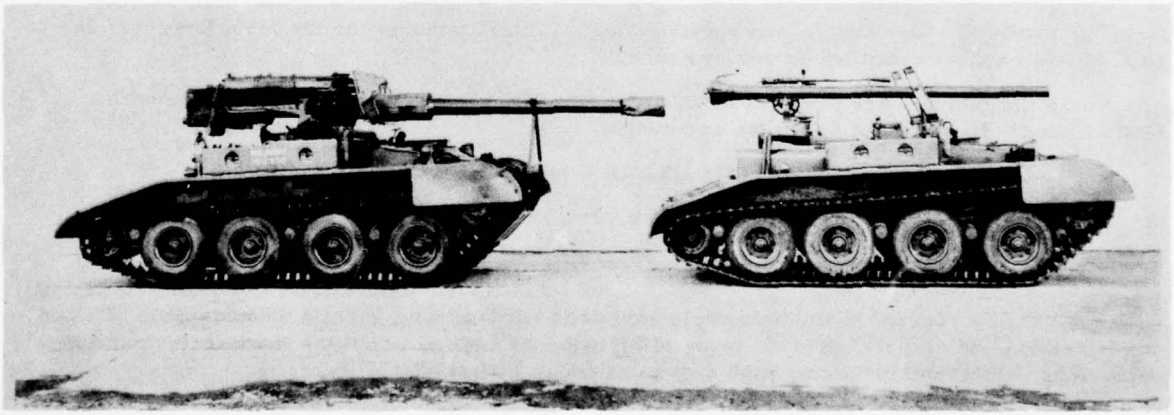

Figure 55. "Scorpion" (Left) and M56 Carrier with 106mm Recoilless Rifle (Right).

In January, 1958, the first production models were produced and additional vehicles, using this chassis, can be integrated into this production schedule with the following advantages:

The production rate can be greatly increased without further tooling cost because this has been paid for in the price of the first production contract vehicles.

Increased production will result in a lower unit cost.

Provide a dependable, fast moving carrier for all types of heavy Infantry weapons.

If adopted, there would be one vehicle for the 90mm gun, quad cal .50 machinegun, 106mm recoilless rifle, 4.2-inch mortar and Infantry personnel carrier, where we now have M56, half-track, 1/4-ton, 3/4-ton truck and the M59 personnel carrier. This would simplify the battle group commander's job of support and maintenance.

A vehicle such as this would be of great value in many other roles such as resupply, casualty removal, reconnaissance, command, and missile and rocket launcher carrier.

All that is needed to make the Infantryman as mobile as his doctrine is to adapt the M56 to his needs.

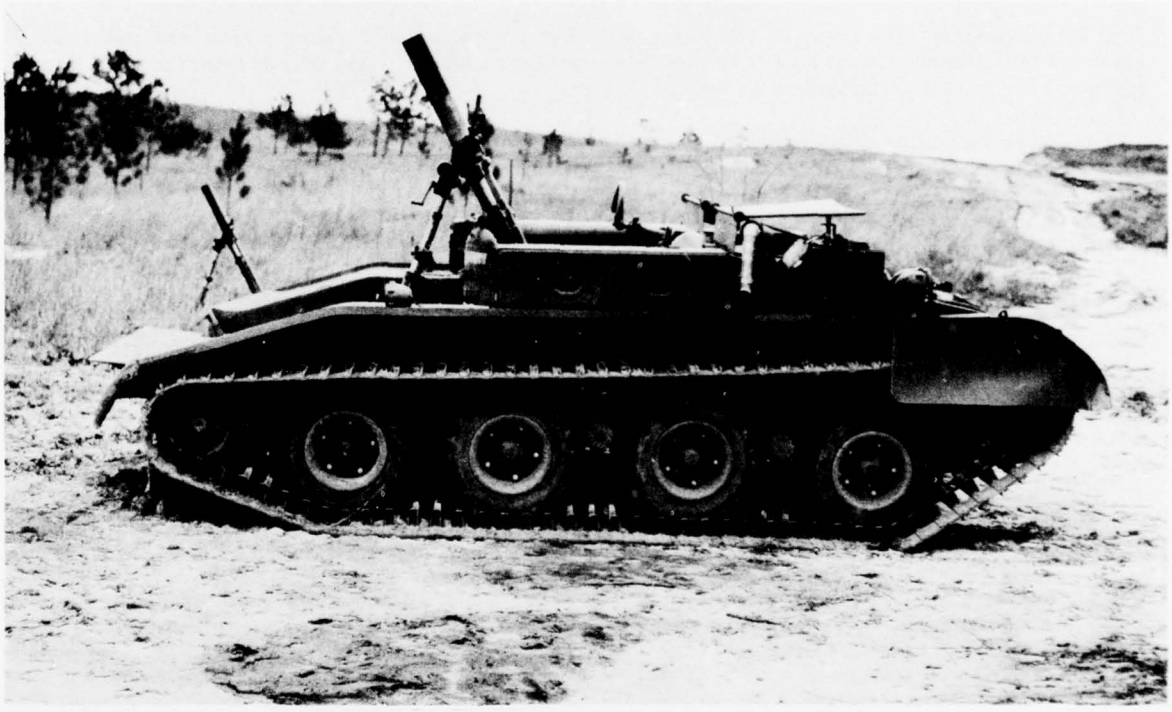

Figure 56. 4.2-inch Mortar Mounted on M56 Carrier.

CHAPTER 5
INFANTRY MAGAZINE

COLONEL GUS S. PETERS
- Chief, Editorial and Pictorial Office

Good morning gentlemen, I am the Chief of the Editorial and Pictorial Office, an academic staff office of the Infantry School. I am here this morning for a two-fold purpose - to acquaint you with Infantry, the journal for Infantrymen - and to solicit your assistance as key representatives and salesmen for the Infantry.

To begin with, how many of you are subscribers to Infantry? Those of you who are subscribers will attest to what I have to say this morning, and for those of you who are not, it is my pleasure to tell you about Infantry.

Infantry magazine is an official, nonprofit, quarterly publication of the Infantry School.. Since the transfer and union of the Infantry Association, along with the association's publication - The Infantry Journal, to the Army Association, Infantry has undertaken the additional role of spokesman for the Infantry and for those who work with Infantry. This magazine is your professional journal - written by, for and about Infantrymen.

The purpose of Infantry, as with any professional journal, is to keep Infantrymen up to date on the latest trends, developments and thinking in Infantry organization, tactics, weapons, communications, transportation and staff procedures, including Airborne and Ranger. Its articles bridge the gap between the development of new doctrine or techniques for atomic or nonatomic warfare and their publication in field manuals or other training literature for Army-wide distribution. Infantry magazine bridges this gap of time, which averages 12-18 months, and presents four times each year the latest official information and new concepts for Infantrymen.

As an example, since April of last year, encompassing five issues of the publication, over 200 pages of material on the new ROCID division have been published in Infantry as contrasted to only one manual, FM 7-21, Headquarters and Headquarters Company, Infantry Division Battle Group, having been published and distributed over the same period. FM 7-40, Infantry Division Battle Group, and FM 7-10, Airborne and Infantry Rifle Company, are scheduled to be completed and distributed by the end of the year.

Infantry has also examined the new M60 machinegun and the new rifle, covering pertinent details of mechanical training, functioning, maintenance and marksmanship with these new weapons. In addition, Infantry has published informative articles on Russian weapons and tactics, evasion and escape training, leadership techniques, helicopter-borne operations, parachuting from Army aircraft and many other areas of interest and importance to Infantrymen. I must repeat that this material appeared in Infantry magazine far in advance of field manuals and other training literature.

Bear in mind gentlemen, that Infantry can help the Infantryman further his professional competence. In this day of selectivity among officer and noncommissioned officer ranks, it is incumbent on all of us - officers and NCO's alike - to expand our knowledge and to keep abreast and even ahead of changes and new viewpoints in our profession if we are to achieve "Best Qualified" status, proficiency pay and promotion to higher grades.

We receive many letters from instructors throughout the active Army and the civilian components who write that Infantry magazine is an essential aid in presenting instruction and that they have used articles in Infantry as complete lesson plans in their instructional duties.

INFANTRY MAGAZINE

The Infantryman In the Atomic Age	Lt General Powell
Tips for the Newly Commissioned ROTC Officers	Lt Agnelli
New Basic Weapon for the Infantry (M14 & M15 Rifle)	Maj Oestreich
The M60 Machinegun	Maj Landis
The Creating of Superior Units	Lt Gen Clarke
Noncommissioned Officer	MSgt Nicolas
Easing the Load on the Infantryman's Back (New Pack)	Maj Hudson
Invitation to Think	Gen Wyman
Helicopterborne Operations	Capt Wintersteen
Ride to Work (M59 Carrier)	Capt Mueller
More About Trainfire!	Infantry Staff
Evasion & Escape	MSgt Quinn
Survival	Mr Gause & Capt Kayner
SERIALS:	
Checklists for Infantry Leaders	6 issues
Small Unit Task Forces (Pl, Co & Bn Size)	3 issues
Pentomic Tactics (Co & BG)	4 issues
ROCID Package:	Over 200 pages in 5 issues
Organization * Tactics * Firepower * Communications * Mobility * Logistical Support * Medical Support * Staff Procedures * Brigade * Pentomic Terminology	

Figure 57. Typical INFANTRY Magazine Articles.

Let us examine the makeup of this journal. This chart (Figure 57) will give you an idea of the type articles as well as indicate the professional caliber and reputation of some of the authors. This does not mean that only high ranking officers or accomplished authors can write for Infantry. You, or any Infantryman, can write. Don't worry too much about format and grammatical construction; our editors can take care of that. It's the meat of the article we are after, and the field of articles can be as diversified as the assignments and duties in our service, ranging from the rifle squad through division and higher levels. If you have something to say, put it in writing and send it to us. We pay a nominal sum of 1-2 cents a word for articles we print and return those we can't use or develop.

This next chart (Figure 58) lists additional features of the magazine to inclue "Letters to the Editor," the "Quarterly Quiz," "What's New for Infantrymen," and a small section which lists the current status of new field manuals and training films. It also lists published instructional material available for purchase through the Book Department of the Infantry School.

INFANTRY MAGAZINE

Letters to the Editor

Quarterly Quiz

What's New for Infantrymen
- New developments in organization, weapons, equipment
- Newsworthy items
- Status of Field Manuals, Training Films, etc.
- Instructional materials available

Special Features
- Esprit items
- Promote Infantry items

Quotes

Figure 58. INFANTRY Magazine Features.

Beginning with the next quarter's publication, to be issued in July, the size of Infantry will be increased to permit the publication of more articles and allow more flexibility in the use of photos, maps, illustrations and general makeup of the magazine. This is being done without an increase in subscription rates. Incidentally, we have also modernized our circulation methods to include guaranteed delivery through the mails, both in the ZI and overseas; reminder and follow-up letters on renewal subscriptions and a "subscribe now - pay later" policy in keeping with standard civilian practices. We also have established a permanent subscription plan whereby the subscriber may cancel at any time but otherwise is billed annually at the rate of $2.25.

Now, gentlemen, I've told you about the magazine and have arrived at my second purpose. Each of you is in a key and responsible assignment as an Infantry instructor. As such, you are not only selected representatives of our branch but function as the field extension of the Infantry School. I propose that each of you take the time and expend some effort to promote, publicize, and encourage the sale of Infantry to all officers and NCO's with whom you come in contact, whether they be Infantrymen or of the branches that work with Infantry.

The Infantry School needs your assistance to further the publication of its official magazine. Infantry is not published from appropriated funds but relies solely on subscription sales for its continuance. The sum of $2.25 per year is surely a small price to pay for a first-class professional journal.

In the envelopes before you we have issued one copy of the current Infantry and have included a number of subscription blanks and fact sheets which will serve to refresh your memory or help you in your sales endeavors. The copies are gratis, which in itself has never been done before, but we believe will be returned a hundred fold through your efforts. When you run out of subscription blanks, we will mail you more.

In conclusion, gentlemen, Infantry is your professional journal. It has tremendous value for all Infantrymen. It will keep you abreast of the rapid changes in doctrine, tactics and techniques and it will bring to you four times a year the latest, most complete, factual information of the Infantry School and about Infantry.

Remember - a subscription to Infantry is a measure of your professional interest!

Thank you.

CHAPTER 6

SPECIAL SUBJECTS

Section I. TRAINLEAD FILM PROGRAM

LIEUTENANT COLONEL LEONARD LOWRY
Instructor, Leadership Committee

The first fifteen minutes this morning will be an orientation on the Trainlead Film Program, Phase II. Trainlead is a series of short situational type films of about three to eight minutes duration. The purpose of these films, is to afford leadership instructors additional means of presenting practical exercises, and provoke student discussion. Each of the films develops a problem which confronts a central figure. The student will be able to identify himself with this figure and will be required to present his personal solution to the problem, during a discussion period, which follows the viewing of the film. The advantages of using the two physical senses, sight and hearing, will stimulate student interest and free discussion.

The US Army Infantry School has been charged with the responsibility of producing this particular series. The initial requirement is for 25 films, which will be suitable for leadership instruction throughout the Army. Of these 25 films, 14 are designed for instruction at the precommissioned level and the remaining 11 will focus attention on problems arising at a higher level. Thus far we have developed the 14 precommissioned films to the answer print stage, which means they have been boarded here at the US Army Infantry School and have been forwarded to the US Continental Army Command for approval. The remaining (postcommissioned) films have been produced and are being edited. We expect to have these answer prints sometime next month.

During the review we discovered that many of the precommissioned films are appropriate for presentation to the commissioned level. Also, while each film is designed to develop a specific teaching point, it may well bring out leadership problems in other areas. For example; a film in the proper senior-subordinate relationships may well involve other areas, such as assumption of command, and developing a positive attitude in subordinates. These films emphasize the fact that many leadership problems are interrelated and difficult to isolate. We feel this is advantageous, because it will afford the instructor greater flexibility and latitude in his instruction.

To assist the instructor in his presentation of the films, there will be an Instructor's Film Reference. This will include the purpose of the film, a synopsis of the problem and additional references and recommended questions, which he may use to initiate discussion.

The initial series consists of problems in such areas as:

- Assumption of command
- Senior-subordinate relationships
- Developing a positive attitude in subordinates
- Chain of command
- Physical leadership in combat

There will be three films in each area. This will give the instructor some selection in his choice of situations. It will preclude repetition and give greater emphasis to specific teaching points.

Since these films are for army wide consumption in leadership instruction, we have attempted to avoid branch distinction wherever possible. In connection with this we held a conference here last July, prior to writing the shooting scripts. This conference was attended by repre-

sentatives from most of the other army schools and other interested parties. The purpose of the conference was to explain the Trainlead Program, indicate our progress, obtain their concurrence, recommendations and comments. The conference was successful and the project was indorsed one hundred percent.

At this time we will show one of these films, dealing with the proper senior-subordinate relationships. As the problem develops, determine for yourself whether or not the film is thought provoking.

(Show Senior-Subordinate Relations Film #2)

As you see, this film could be used in such other areas as assumption of command and instilling a positive attitude in subordinates. I might add, that the question to start the discussion has already been posed in the film.

USCONARC was so impressed by the initial film treatments that they have directed all major service schools to submit 15 additional treatments on decision-making in combat situations. This we have done and our situations are appropriate to Infantry. They deal in such areas as:

Utilizing firepower
Maintaining momentum in the attack
Controlling fear, rumor and panic
Restoration of combat effectiveness
Conduct of an isolated unit
And other combat situations.

The latest information indicates that there are some eighty odd such situations awaiting production approval at CONARC. So you see this program will be a continuing thing.

It is believed that the first 14 films will be available to the instructors sometime during this coming fall. We feel that these films are going to prove beneficial and will greatly assist all instructors in the vital field of teaching military leadership.

Section II. NEW DEVELOPMENTS IN NUCLEAR WEAPONS

LIEUTENANT COLONEL RICHARD W. HEALY

Chairman, Atomics Committee

The purpose of this presentation is to acquaint you with some of the most significant new developments in the field of nuclear weapons and their employment as they affect us - Infantry instructors. We have chosen to emphasize not only new weapons themselves, but also instructional material and training devices.

First - in the area of instructional material - it is significant that beginning in January of this year, the USAIS has been providing a course of instruction to qualify selected officers of the advanced and associate advanced classes as nuclear weapons employment officers with an MOS Prefix Digit 5. As Col Edwards, the Director of Instruction, told you in his introductory remarks, experience to date indicates that we will qualify approximately 65% of the students in regular advanced classes and between 30 and 50% of those in associate advanced classes.

A logical question in this regard is, "How many nuclear weapons employment officers are required and where are they normally assigned?" USCONARC published a Memorandum 16 on 7 April 1958 that is a policy directive on this matter and specifies a minimum of 17 in various staff assignments at Army, 11 at Corps, 9 at Division and 3 at Battle Group. The recommended number at battle group was increased to three on the recommendation of USAIS. The three prefix 5 officers at battle group are located in the S3 section, the S2 section and the mortar battery.

USAIS nuclear weapons instruction to advanced classes consists of 133 hours. In addition, two hours are provided for "in and out" processing of classified material. It is of importance to note that although the Atomic Damage Template System for damage estimation is emphasized, we do devote 12 hours to the numerical system of damage estimation. All U.S. students in the regular advanced classes receive this entire block of instruction.

We were directed by USCONARC to parallel the Leavenworth nuclear weapons officer employment course where students in the regular course at USCGSC stay to complete a 3 1/2 week supplemental course for Prefix 5 designates.

Our associate advanced course differs from the regular advanced course as shown here. The USAIS associate advanced students receive 77 hours of nuclear weapons instruction during their normal 18-week course. Then certain selected students attend a 60 hour supplemental course at the conclusion of their normal course of instruction. Satisfactory completion of this supplemental course qualifies these students for a prefix 5 to their MOS.

We feel that the quality of the nuclear weapons employment officers produced at USAIS will compete well with those produced at other service schools - particularly if commanders will use them in this capacity in order to complete their training with experience.

Secondly - in the area of instructional material it is significant that almost all of our basic reference material has either been rewritten during the past year or is in the process of being rewritten. The causes for this rewrite are primarily threefold:

The development of new weapons whose effects are somewhat different than older type weapons.

Continued tests in Nevada and the Pacific have shown a requirement for revision of previous data.

Continued efforts to reduce the time required to detect a target and deliver a weapon over the target have resulted in a few time saving analysis techniques.

The following revised manuals have been or will be distributed as follows:

TM 23-200 - The AFSWP atomic weapons manual has recently been distributed. It is important to note that its classification has been changed from Secret to Confidential and the Atomic Energy Act Restricted Data protective marking has been removed.

DA Pamphlet 39-1 - Unclassified employment manual is scheduled for publication early in 1959. This manual is being extensively revised to as nearly as possible duplicate the procedures, techniques and format of the classified Army employment manual FM 101-31 and FM 101-31A which will be republished by September 1959. Pending revision of FM 101-31, a Change 3 to the current manual is currently in the process of being printed and distributed.

USCGSC has recently completed a draft TC 101-( ) which is scheduled to be published by DA on an "as soon as possible" basis. This manual contains Army doctrine for a new Army system for predicting radiological fallout. As you will recall, the current AFSWP system for fallout prediction is based on idealized intensity contours around an average of wind speeds existing in 5000 ft. layers of atmosphere between ground zero and the top of the mushroom cloud. This average wind is called the scaling wind. The plot that results represents a pattern on the ground of intensities at H + 1.

Deficiencies associated with the system have always been recognized. Two major deficiencies are that it is idealized from an average scaling wind and secondly, that tactical commanders have started to accept this gross estimate as a fairly precise prediction. The new system overcomes these two deficiencies.

The new Army system is based on a plot of wind speeds at 6000 ft levels of atmosphere from ground zero to the top of the cloud. Wind heights are adjusted by appropriate factors; the size of the cloud is considered and a plot called a final envelope is produced. This plot is rotated through a desired angle to consider previous average wind variations. The intersecting blue lines indicate earliest arrival time of fallout. This plot covers an area in which militarily significant fallout can be expected to be encountered. There is no attempt in this system to predict intensities. Specific intensities must be determined by radiological survey.

During the past year the Signal Corps, in conjunction with the Chemical Corps, has produced a valuable training device for training units in radiological survey procedures. The device is called a Radiation Survey Training Set - Device 48E1A. Each set consists of one transmitter and ten receivers. The transmitters of several sets can be used in series. Transmitters operate between 3155 and 3400 KC's at low wattage. If they are used in series, they can be arranged to reinforce the transmissions of other sets and thereby represent by intensity of radio signal a variety of intensities of fallout or induced radiation. By revising the procedure fallout decay can be played. The radio receivers are shaped exactly like ironization chambers. They register the radio signals as radiation intensities on dials which register from 0 to 500r. Radiological survey personnel use these receivers as they would radiation counters and report intensities of located radiation.

This device was to be tested in Exercise Indian River by the 4th Infantry Division last May. A partial test was conducted. However, the sets were not received by the 4th Division in time to properly train the personnel in their use and therefore, the equipment test was somewhat hampered. The test was successful in isolating certain deficiencies in the training sets which will be corrected prior to this year's production.

CHAPTER 7

RESULTS OF INTELLIGENCE SEMINAR

LIEUTENANT COLONEL HAROLD R. KENT

Executive Officer, Fundamentals, Research and Development Section,

Command and Staff Department

The purpose of this presentation is to inform you of the results of the Intelligence Seminar which was conducted by the Infantry School last month.

Keep in mind two points during this presentation:

First, the results of the seminar have not yet been reviewed and evaluated by the Infantry School. The recommendations which will be presented are solely those which the various panels, composed of from 8 to 12 officers each, arrived at in their study of the problems, and hence do not necessarily reflect the views of all conferees or the position or teachings of the Infantry School. The Infantry School is, of course studying each recommendation for possible incorporation into existing teaching and will make appropriate recommendation to higher headquarters, if indicated.

Second, the distribution of the complete written report of the seminar will include service schools and it will not be necessary to take notes here. It will be available to you for further reference at your home station.

A question may arise in your mind at this time as to why this presentation has been cluded in the agenda for the conference this year. There are two good reasons why Infantry instructors should have this information:

First, it informs you what the Infantry School considers as the principal intelligence problem areas in the ROCID battle group. Knowing that problem areas do exist and what they are gives us a broader understanding of intelligence and its role in Infantry tactical operations.

Second, it gives you the trend of thinking in these problem areas. The trend is the result basically of experience with the ROCID organization in the field and is an indicator of what the future changes and improvements in the battle group intelligence system may be.

This presentation will cover the highlights of the seminar, to include:

Reason for the seminar. This will be expressed in the form of an analysis of the present battle group intelligence capability vis-a-vis the requirement.
Purpose and scope of the seminar
Commands and agencies that were represented
Organization
Panel recommendations. These recommendations are the basis of this presentation, although I reiterate that they do not necessarily reflect the position of the Infantry School.

REASON FOR THE SEMINAR

The reason why the Infantry School conducted the seminar is very clearly explained by a comparison of the battle group commander's requirement for intelligence on the atomic battlefield with the capability of the battle group to obtain that intelligence. Requirement-wise, because of greater dispersion, larger tactical zones, reduced troop density, and use of atomic weapons, one of the battle group commander's major needs is for timely and thorough recon-

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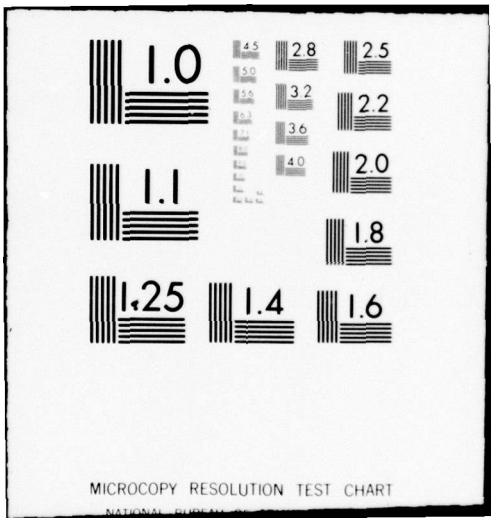
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MICROCOPY RESOLUTION TEST CHART

naissance, surveillance, and target acquisition. Capability-wise, the organic means of the battle group to satisfy these major requirements are limited.

The two principal means that the battle group commander has for accomplishing his tactical mission--his rifle units and his supporting fires, particularly atomic fires--depend to a very great extent on knowing where the enemy is at the very moment or even before the enemy gets there. Conversely, the battle group commander must keep such information, as pertains to his own battle group, from the enemy. With the advent of tactical atomic weapons and the change-over to ROCID, the following intelligence requirements and activities of the ROCID battle group have assumed greater significance and importance:

Radiological monitoring and survey. This is a relatively new task facing the battle group and is a staff responsibility of the S2.

Use of surveillance equipment. Greater reliance is being placed on the use of electronic and other sensory devices for surveillance and detection. However, much of this equipment is not fully developed and has not been issued to units.

Reconnaissance and observation. This includes the necessity for deeper reconnaissance and 360° observation.

Deception planning. Greater emphasis is being placed on deceptive operations in the battle group to give it flexibility for its own operations and protection and security against the enemy's atomic capability.

Company level intelligence. Companies will need intelligence to a greater degree and will be able to contribute more in the collection and reporting phases.

Now, what is the capability of the battle group to satisfy these increased requirements for intelligence and counterintelligence? For ease of understanding, and not for implying similarity of organization, let's compare the organic intelligence capability of the ROCID battle group with that of the regiment.

The battle group does not have the intelligence and reconnaissance platoon, three 8-man battalion intelligence sections, the three counterfire squads, and the organic air section which were in the regiment. The battle group gained a reconnaissance platoon and an S2 Air which were not in the regiment and retained one counterfire squad. New surveillance devices, when made available, will increase the collection capability of the battle group, but as yet they have not been issued. As partial compensation, the ROCID division with its cavalry squadron and aviation company has an increased reconnaissance and surveillance capability over that of the triangular division which will help fill the gaps in the battle group's intelligence effort.

The net result is that the organic battle group intelligence capability has not kept pace with the increased intelligence requirements of the atomic battlefield. This deficiency is the root of the problem areas which formed the basis for the seminar.

PURPOSE AND SCOPE

The Commandant, United States Army Infantry School, in recognition of these problem areas and the necessity to do something about them, directed that the seminar be held. The purpose was to examine and recommend on the problem areas. The scope pertained to the ROCID battle group level--the seminar limited itself to the current organization and did not become involved in the "Army of the Future."

PRESENTATION

The commands which were represented were Army-wide and included Infantry and airborne divisions; Assistant Chief of Staff, Intelligence; US Continental Army Command; Combat Surveillance Agency; Electronic Proving Grounds; Army Intelligence Center; and the service schools.

A total of 75 conferees were present, which included 25 USAIS conferees. This Army-wide representation permitted a pooling of experience and knowledge which covered all aspects of the subjects under discussion. The seminar is believed to be the first Army-wide seminar on battle group intelligence that has been held.

ORGANIZATION

The seminar consisted primarily of a series of formal presentations followed by panel discussions. The formal presentations provided the conferees with the latest information on intelligence developments and set the stage for the panel discussions.

The seminar was organized into one steering committee and seven panels. The steering committee monitored and coordinated the seminar proceedings. The seven panels, each composed of 8 to 12 conferees, discussed assigned problem areas and made recommendations. These panel discussions were the heart of the seminar. During these discussions, there was a free expression of opinion--no one attempted to direct the comments toward any preconceived solution. This means of discussion made it possible to come up with realistic and unprejudiced recommendations and ideas.

The problem areas examined were:

S2's major responsibilities
Staff organization
Collection and surveillance
Sources and agencies
Reconnaissance and observation
Techniques
Counterintelligence, training

Each of these areas was assigned to one of the seven panels. Each area was further broken down into specific questions on which the panels were required to submit recommendations. For example, under Panel 5, one of the questions was, "Is the reconnaissance platoon adequate for carrying out its reconnaissance mission? If not, what changes are indicated?"

PANEL RECOMMENDATIONS

I will summarize the principal recommendations reached at the seminar, along with highlights of the discussion which led to the recommendations. I will add a comment after each recommendation to summarize points brought out during the open forum and to indicate opposing views or possible alternate solutions.

Problem: Radiological Survey

As you know, the S2 has staff responsibility for coordination of radiological monitoring and survey operations. This responsibility involves the measuring, posting, and disseminating of information pertaining to radiation or contaminated areas. In a war involving extensive use of atomic weapons and deliberate fallout, the accomplishment of this function is extremely important. Accurate fallout information is vital both to maneuver and for protection of our own troops. There is no chemical officer in the battle group, as there is in division, although the Executive Officer, Headquarters and Headquarters Company, is a CBR officer in addition to his other duties. He is expected to be of little assistance to the S2. Survey teams will collect and report the information to the battle group S2. Battle group will also receive assistance from division in this field, in the nature of predicted fallout from enemy weapons and reports from survey teams. The S2 records and studies the information, and disseminates it to higher headquarters and within his own battle group. The location and amount of radiation in the fallout area will affect the decision of the commander--for example, Do I bypass it? Can I cross it? How much protection is required?

Conclusion: The panel which studied this problem concluded that the S2 is presently not capable of carrying out his radiological monitoring and survey functions under conditions of extensive use of atomic weapons and deliberate fallout, because of inadequate communications and insufficient personnel to record and disseminate the data.

Recommendation: That the matter be studied further to determine additional personnel and communication facilities required for the S2 to perform this function adequately.

Comment: Other conferees expressed an opinion during the open forum that this problem could possibly be solved by proper reporting discipline so as not to overload the communications; adequate SOP's and published techniques; and training personnel in proper methods of surveying, recording and disseminating this information.

Problem: Reconnaissance Platoon

The principal ground reconnaissance means in the battle group is the reconnaissance platoon, consisting of one officer and 38 enlisted men, organized with two tanks, two Infantry personnel carriers, and five 1/4-ton vehicles. It replaced the old intelligence and reconnaissance platoon, which was mounted in 1/4-ton vehicles and primarily designed for missions of reconnaissance by stealth. The primary missions of the reconnaissance platoon are reconnaissance and security. It is capable of operating on one flank or axis of advance, of operating battle group observation posts, and of providing rear security, but not simultaneously. It is designed to be operated as a platoon.

Conclusions: The panel which studied this problem concluded that the reconnaissance platoon can operate, singularly, on one axis of advance, one flank, or one rear security mission, and that on offense, the battle group commander needs a reconnaissance capability of operating on two flanks or axes of advance simultaneously, and that, on defense, an OP capability simultaneous with a rear security capability is required.

Recommendation: That one surveillance section of 12 men mounted in 1/4-ton vehicles and equipped principally with telescopes and radios, be added to the current reconnaissance platoon. This additional section would permit the platoon to operate over two axes of advance or on two flanks during the advance to contact and after contact has been made; in defense, the platoon would be capable of operating OP's and surveillance equipment simultaneously with rear security or special reconnaissance tasks.

Comment: Alternate solutions pointed out during the open forum which would not require an increase of TOE personnel are: to supplement the present reconnaissance platoon effort with mounted personnel from the rifle companies for flank security and route reconnaissance, and also to use personnel from the rifle companies to operate OP's.

Problem: Surveillance and Observation

The panel considered that the battle group should have an intelligence collection capability commensurate with its area of influence--the zone or sector which the battle group commander influences by maneuver or firepower, organic or under his control. The panel further considered a 10,000 meter range as being the battle group area of influence. Surveillance, of course, can be accomplished by the human eye, for example, observation posts, or by equipment such as radar sets. It is in the field of surveillance equipment that the panel felt the battle group was weak, since none of this equipment, except the counterfire squad equipment, has been issued to units.

Conclusion: The panel concluded that the surveillance and collection capability of the ROCID battle group as currently organized and equipped will not satisfy the requirements of the battle group on a widely dispersed atomic battlefield. In other words, it is inadequate.

Recommendation: The panel recommended that an interim capability be provided the battle group without delay, based on the following plan:

Item	Echelon	Quantity	Added Personnel
Short-Range Ground Radar (AN/PPS-4)	Rifle Co	1 each	2 each
	Recon Plat	1 each	None
Medium-Range Ground Radar (AN/TPS-21)	Hq & Hq Co	2 each	2 each

To be pooled at higher headquarters includes:

Long-Range Ground Radar Set (AN/TPS-25) . . . 2
Airborne Radar Set (AN/APS-85) 1
Airborne Radar Set (AN/APQ-55) 1
Airborne Infrared Detecting Set (AN/AAS-5) . . . 1

Manned aircraft day and night photo system--1 per aircraft:

Drone photo. 1
Airborne Target Location System 2
Tracking Radars 2
Photo Laboratories 2

Comment: This is a very difficult problem. Obtaining interim equipment which is suitable is principally a research and development problem, but the unit representatives at the seminar agreed that the battle group and divisions need this surveillance equipment without delay. One knowledgeable conferee did state that the Army is seriously considering obtaining and issuing interim equipment.

Problem: Company Intelligence NCO

It is expected that the rifle company, under atomic warfare, will be a primary collection agency of intelligence information, due to dispersion, rapidly changing situations, and greater need for self-reliance within smaller units. The company will also be a greater user of intelligence, due to the same factors. Some of the principal intelligence functions to be carried out at company level include intelligence indoctrination and training, briefing and debriefing patrols, processing POW's, processing captured documents and material, counterintelligence matters, CBR activities, supervision of the operation of surveillance devices and OP's, and processing and disseminating intelligence information.

Conclusion: The panel concluded that the aforementioned intelligence tasks justified the addition of an intelligence NCO to the rifle company, appropriately trained for these specific duties.

Recommendation: The panel recommended that an Intelligence NCO, Sergeant First Class, be added to the rifle company. There was a minority report rendered which recommended that a combined intelligence/operations NCO be added.

Comment: Several unofficial comments from units in the field have been received here at the Infantry School on whether the rifle company should have an intelligence NCO. These field comments are about evenly divided between those for and those against the need for an intelligence NCO in the company.

Problem: Deception Planning

Emphasis is being placed on deception planning, to deceive or mislead the enemy as to the over-all tactical operation. The S3 presently has staff responsibility for the deception plan, supported by the S2 who provides the intelligence and counterintelligence aspects.

The question considered at the seminar was whether the S2 or the S3 should have the responsibility. The question was included merely to obtain ideas; the Infantry School was not suggesting that the responsibility be transferred to the S2. Many S2's feel that the S2 should take over the task since deceptive operations in the battle group consist principally of counterintelligence activities rather than tactical missions.

Conclusion: The panel concluded that the S2, not the S3, should have the over-all staff responsibility and that pertinent field manuals be changed accordingly.

Recommendation: The panel recommended that the S2 be assigned this responsibility and that pertinent field manuals be changed accordingly.

Comment: During the open forum which followed the presentation of this panel recommendation, the discussion from the floor indicated a strong disagreement with this recommendation by the panel, that is, many conferees saw no justification for changing the staff responsibility for deception planning.

The five problems given above are only a portion of those discussed at the seminar. While all problems considered are important, the preceding five are possibly the more critical ones and perhaps are the most controversial.

I will now indicate other problems considered by giving you the panel recommendation, followed by a brief statement to point out opposing views or the basis for the recommendation. Those recommendations involving no changes to organization or doctrine will be given first, followed by those involving changes. Those involving no changes are:

C-O-C-O-A remains valid as a means for the S2 to analyze the influence of weather and terrain on operations, amplified to include the effect on surveillance means and the use of atomic weapons. This question stems from the feeling of many officers that terrain is no longer critical since the destructiveness of atomic weapons renders the holding of terrain unnecessary and disadvantageous.

The battle group S2 will have the normal higher-lower headquarters relationship with the brigade S2, when the battle group is attached to or under the operational control of brigade. The basis for this problem here was whether brigade S2 would be in the "information" or "action" channel between division and battle group, considering the need for communications, the desirability of continuous staff relationships, and the intelligence means which are controlled at division level.

The S2 section not be combined into the S3 section but remain a separate staff section as at present. The feasibility of combining the two sections was triggered by the accepted idea that the S2 and S3 must be a team, and, at battle group level, are prepared to perform each other's duties.

The S2 continue to be charged with staff responsibility for target acquisition. This recommendation, in effect, states that target acquisition is a command responsibility, delegated staff-wise to the S2 as a facet of collection of intelligence information; and that all combat arms have a primary interest in and must participate in developments of target acquisition devices.

The S2 use overlays to existing situation maps to post atomic information, and that the Automatic Data Processing System be integrated into battle group at the earliest practicable date. This recommendation may answer the question as to whether the present means the S2 uses to record intelligence information is outdated.

That increased emphasis be placed on:

Training individual soldiers to collect and report information
Training units to process and evacuate POW's
Use of dismounted patrols

This involved a basic question as to whether standard sources and agencies--foot patrols, POW's, and the individual soldier--will still be effective in the fast-moving situations of atomic warfare. The panel recommendation answers, in effect, "yes."

EEI (Essential Elements of Information) continue to be used at battle group level. A minority report stated that EEI should be replaced by a more accurate term such as "Commander's Intelligence Priorities."

The "use" step in the intelligence cycle remain in the intelligence cycle. "Use" is now included in the cycle for the production of intelligence but was examined to see if it should be placed in the sequence of command and staff action, where intelligence is primarily used.

Those involving changes are:

The S2 section be increased by one clerk-typist, but not with officer or NCO personnel. This recommendation must be reconciled with the reports of other panels, which could possibly require additional personnel, for example, the radiological survey task. It was questioned during the open forum whether the addition of one clerk-typist to the S2 section would be of much help to the intelligence capability of the battle group.

The S2, in coordination with the S3, prepares graphically a Patrol and Surveillance Plan, to insure proper coverage of the area and effective employment of all surveillance means. This subject was examined to find out an effective method of tying in all of the surveillance efforts of the battle group to insure 360° coverage and no gaps.

Add additional IPW (Interrogation of Prisoner of War) and counterintelligence specialists to division, so that each battle group will habitually have an IPW team and two counterintelligence specialists in support. Time and space factors on the atomic battlefield, plus the expected numbers of POW's to be captured and the expected infiltration of enemy agents, instigated a question as to whether the present MI Detachment of division could adequately support each battle group.

Helicopterborne patrols be considered as normal, not special, patrols by battle group. However, there was a divergent feeling during the open forum as to whether at battle group level helicopterborne reconnaissance patrols are feasible in view of the training, equipment, and planning time required.

The battle group S2 receive all of the necessary weather forecasts required for use of atomic weapons. There has been some doubt as to whether battle group needs the detailed weather information required for use of atomic weapons, or whether battle group could get by with the standard "weather forecast."

Better means be developed for exchange of target information between battle group and the artillery. The present method for the battle group and supporting artillery to exchange information is through the mortar battery. This method was not considered by the panel to be rapid enough for the quick reaction time required on the battlefield.

The reconnaissance platoon include ranger-trained personnel. In view of the current thinking that deeper patrolling will be required, the basic question was whether a special ranger and airborne unit be included in the battle group. The panel concluded that no such unit is required but that ranger training is sufficient.

In considering enemy strengths, the term "units in contact" be replaced by the term "forces available", which would include any enemy units which can be employed against the battle group without delay. The "forces locally available--reinforcement" method included in present textbooks did not appear suitable for a flexible battle area where situations will change quite rapidly.

The current message form be replaced by one more suitable for intelligence purposes, after proper field trials. This was an effort to devise some form which would automatically include the "What-When-Where" essentials of reporting by the individual soldier.

SUMMARY

You can readily recognize that many of the recommendations confirm existing doctrine and procedures while others involve new ideas or extensive study. Those recommendations which will require major study include increasing the size of the reconnaissance platoon, increasing the surveillance capability, insuring the required radiological survey capability and adding an intelligence NCO to the rifle company. Principal areas of disagreement among the seminar conferees included whether S2 or S3 should have staff responsibility for combat deception planning, whether long-range helicopterborne reconnaissance patrols are feasible, and whether EEI are suitable for use at battle group level in that they do, or do not, state specific priorities.

The results of the seminar have given us a first-hand knowledge of how our Infantry units feel about these intelligence problem areas, and will consequently be more useful in improving our intelligence doctrine and teaching. We are studying all recommendations with that purpose in mind. The final report represents a source of information which will not be overlooked by the faculty here when studying the battle group intelligence system.

CHAPTER 8

AIR-MOBILITY

Section I. INTRODUCTION

COLONEL WILLIAM E. EKMAN

Director, Airborne-Air Mobility Department

During the past decade, science has developed a family of military weapons which, in turn, have required the development of entirely new concepts of land warfare. Military definitions of firepower, flexibility, dispersion and mobility have taken on new meanings.

While superior mobility has always been one of the primary requisites for success in battle, under the new concepts, the mobility factor becomes even more important than ever before. It directly influences the achievement of flexibility, dispersion and speedy concentration of firepower which will be required for victory on the battlefields of the future.

The essence of military mobility is the ability to shift combat power rapidly without loss of effectiveness or control and still retain the capability of logistically supporting the combat elements. This applies whether it be in tactical application to the local battle area or in world-wide grand strategy.

As you already know, the Department of the Army has taken positive steps to change the organization, weapons, tactics and training of all of its combat units. This program is pointed toward the development of powerful forces which are truly air mobile and ready to react swiftly to suppress aggression anywhere in the world in support of our national objectives. In support of this program we, here at USAIS, are constantly studying, testing and evaluating the impact of new developments on Army organization, tactics and doctrine, and submitting appropriate recommendations to USCONARC.

The presentation which will be given this afternoon by the Airborne-Air Mobility Department will give you a brief resume of some of the air-mobility aspects taught and being developed here at the US Army Infantry School.

Lt Colonel Allen will discuss organizational studies being conducted in the air-mobility fields. Captain Whitelaw will then conduct a demonstration and discussion of Army Pathfinders.

Section II. AIR MOBILITY

LIEUTENANT COLONEL RICHARD J. ALLEN

Chief, Air Mobility Group, Airborne-Air Mobility Department

Air-mobility in the Army today has something in common with the weather in the famous saying by Mark Twain, in that everybody is talking about air mobility. Certainly the second half of the saying is not applicable because, in fact, a great deal is being done about air mobility throughout the Army. Commanders and staff officers alike right down the line are aware of the pressing need for the development of air mobility which is commensurate with the tremendous firepower that is now available.

The Air Mobility Group of the Airborne-Air Mobility Department, which I am representing this afternoon, was organized as a study group to explore the problems and possibilities of air mobility. In your previous visits here, we have discussed the new air vehicles which are coming off the drawing boards. The over-all picture on aircraft is relatively unchanged since last

year - we have great hopes for some of the new proposals - and we are aware of the shortcomings of the helicopter.

Today I would like to devote this period to some discussion and even speculation on organizational problems pertaining to air mobility. I am sure that you have heard of most of the organizational concepts under such names as Sky Cavalry, Aero-Infantry, Aerial Infantry, and Airphibious Infantry. Most of these concepts, however, have been set forth in the very broadest of terms and there has been little exploration of the fundamental problems of organization. There is probably a very good reason for this - it is much more interesting to speculate on exotic air vehicles such as the aerial jeep than it is to plow through the many details of the organizational aspect. Nevertheless, organization for air mobility is just as important a requirement as the development of new aircraft if we are to be ready to properly utilize new aircraft, as well as the aircraft now in the Army inventory.

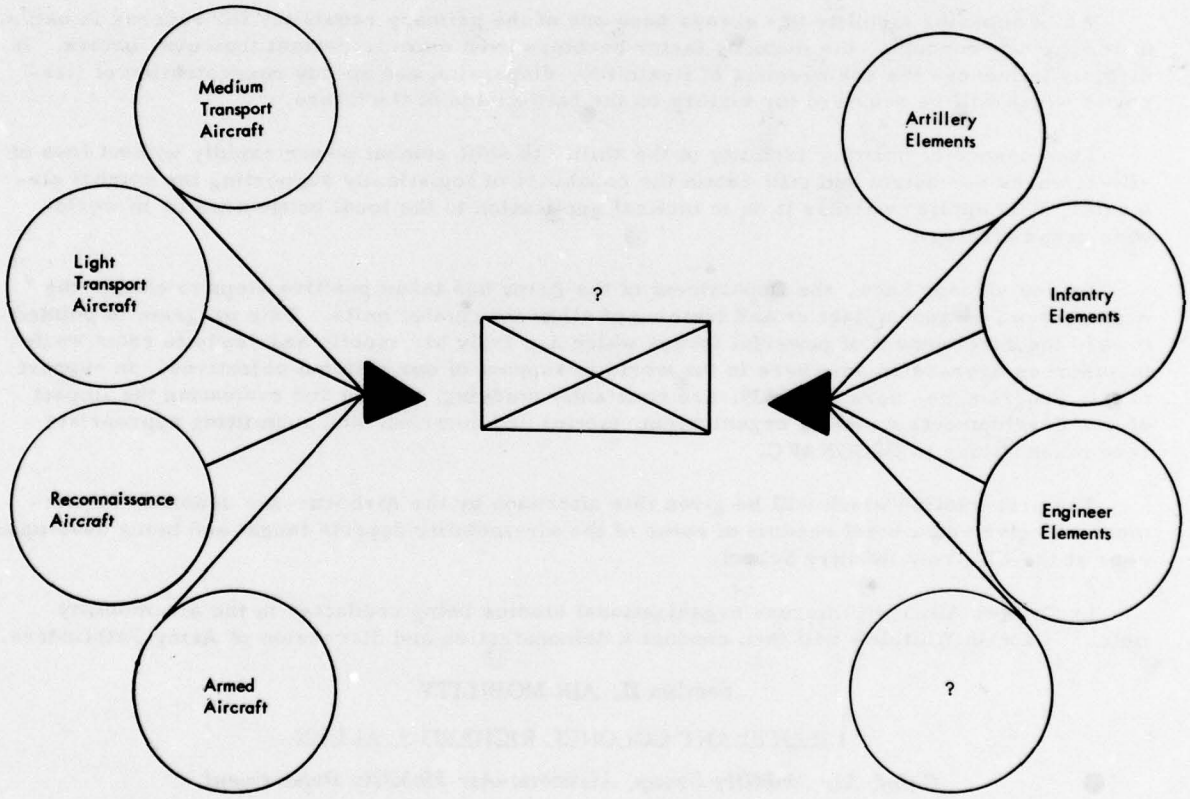


Figure 59. Components of the Air Mobile Unit.

On this chart (Figure 59) we have some of the possible components of an integrated air transported ground combat force. On the left are the possible air elements and on the right are some of the possible ground elements. Our attention at this time is focused on the integrated air-ground unit because this is the area in which there is the greatest void in knowledge and experience. For example, on the aircraft side of the chart we know that medium transport aircraft can be organized into units and used to perform a primary function of logistical support at the field Army level and higher. There will be no particular organizational problem inasmuch

as the function would be essentially pure transport. Next, we know that light transport aircraft could be organized into units for use at corps and division level to perform the primary function of combat support. While there is still a great deal of work to be done on techniques for the support of tactical movements by this type aircraft, the organizational problems are not a primary consideration. Next, in the area of reconnaissance aircraft we know that aircraft can be organized into reconnaissance units and that there would be little difficulty in exploiting well developed visual and photo reconnaissance techniques and operational procedures which have been used for a number of years by the Air Force. Finally, we come to the question of armed aircraft. This, of course, is a highly speculative area at present - involving Army and Air Force roles and missions. However, we could utilize aircraft specifically designed for close support and interdiction in the Army combat zone organized into units similar to and employing the same general techniques of the Air Force fighter or light bomber squadron. In addition, Army transport and reconnaissance aircraft can be armed to provide limited supporting or suppressive fires. You are probably familiar with the experiments that have been conducted in arming these aircraft with machineguns and rockets.

The major organizational problem, then, is not in the area of the employment of each of these types of aircraft in the role for which it was designed - the problem is to determine what organizations are needed, if any, which would combine aircraft with ground elements.

In examining the possibilities of the integrated unit, we have come up, at this point of our study, with a few considerations which we believe to be fundamental:

First, the area of reconnaissance - as you know, a great many of the new organizational concepts have proposed the development of an integrated reconnaissance unit. We find, however, in our investigation that there are very few deep reconnaissance missions - 5 to 25 miles - on which a commander would want to send in a ground element. Here I am talking about pure reconnaissance, the collection of information. The reason for this is that a ground element, either on foot or motorized, cannot possibly compete with reconnaissance aircraft. Excellent photo and visual air reconnaissance coverage can be made of 50 square miles in less time than it would take an Infantry platoon to fly to a target area, dismount, and get oriented on the terrain. Certainly there will be reconnaissance type missions for ground elements such as screening and blocking but these missions are essentially combat missions. In other words, as we see it now, the primary mission of air transported ground units will be to get out on the ground and fight or be ready to fight.

Second, the question of armed aircraft - this point may seem too obvious to mention but we feel that it is important to keep in mind that all experience with aircraft has shown that the only way to get maximum efficiency in an aircraft is to design it from scratch to perform a particular mission. Of course we may be able to get some fire support from armed transport and reconnaissance aircraft but we will have to acknowledge in advance that this kind of fire support will be far less efficient than it would be if delivered by aircraft specifically designed for the purpose. It should also be noted that the arming of transport and reconnaissance aircraft reduces the capability for performing their primary mission.

Third, the question of the organization of the ground elements of an integrated unit - in this area, many new and unusual units have been proposed. At the moment, however, we are looking at the problem from this standpoint. If the Infantry component of such an integrated unit is to have the primary mission of fighting on the ground, why not use one of our standard Infantry units which are designed to fight on the ground?

Based on the foregoing analysis, we decided to take the ROCID rifle company and convert it into an integrated air transported unit, using presently available equipment only, the idea being that by developing such a unit we could explore the organizational problems as they appear in a known frame of reference, namely, the squad, platoon and company organization of the ROCID rifle company.

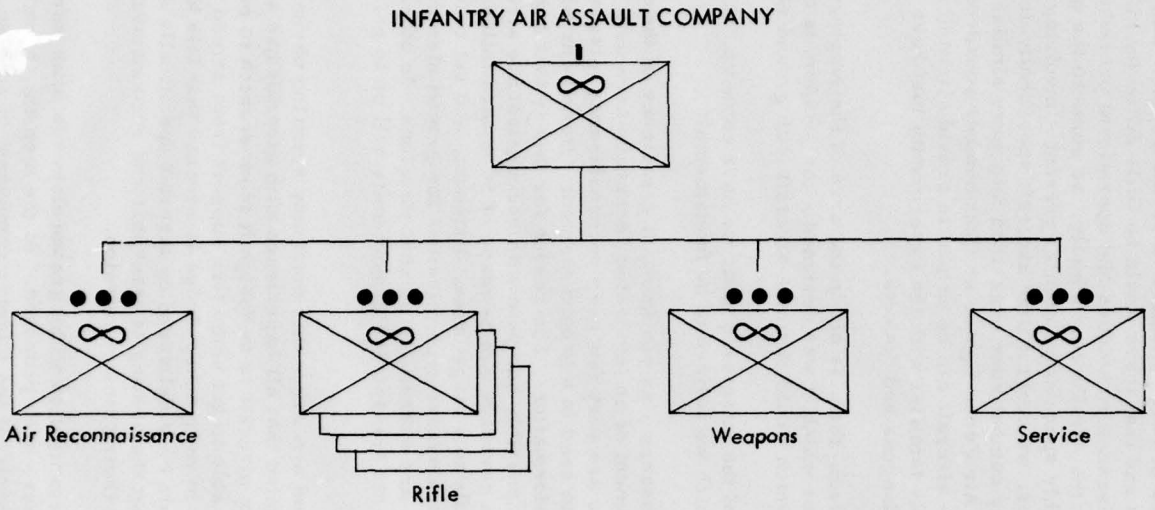


Figure 60. Infantry Air Assault Company.

On this chart (Figure 60) we have an outline of the results of our work to date. As a premise for the development of this study organization we stated that this company would be designed to perform any mission performed by the standard ROCID rifle company when provided equivalent fire support and logistical support.

Here are some of the things we have found:

First, we have added to the organization a service platoon and the air reconnaissance platoon. The reconnaissance platoon was considered necessary to provide this unit with all-around reconnaissance during any movement of the air column as well as continuous air reconnaissance during the execution of its ground combat mission. The service platoon was required to provide necessary supply, maintenance, messing and medical support.

In designing this unit as an integrated, self sustained organization we, of course, added aircraft, pilots, crew chiefs, and aircraft maintenance personnel as well as a minimum number of additional ground personnel to meet essential needs. What we came up with is an organization of 550 personnel including 85 officers with a total of 43 aircraft. As you can see, the unit includes the equivalent of a rifle company plus about two transport aviation companies. Therefore, it appears logical that this unit should be commanded by a field officer, probably a lieutenant colonel with captains as platoon leaders since there would be 8 to 10 officers in each platoon when the aircraft are integrated at platoon level. In further exploring the question of command relationships, we ran into the problem of deciding which officers would have to be qualified aviators. At the moment it appears to us that the only way to handle this problem is to have every officer in the company qualified as an aviator with the possible exception of the service platoon commander. The reason for this is that under any other arrangement it is difficult and clumsy to provide for proper command succession.

To take care of ground transportation requirements equivalent to the ROCID organization we provided each platoon with Army Mules in substitution for all other transportation.

In the communications field we had to increase the capability to take into consideration the distances and dispersion that might be involved and also to provide for the easy attachment of the platoons of this organization to a battle group when required.

In the field of weapons, the only change made was to provide the company with a total of four 106mm recoilless rifles and four 81mm mortars in order that one of each could be available to each rifle platoon in dispersed situations. This is an increase of two 106s and one 81mm mortar.

Gentlemen, this was a very brief resume of our study. We expect to continue along these lines to include consideration of artillery and engineer support. Based on the work done so far, I can summarize with the following tentative conclusions - and I emphasize "tentative" because we have not finished exploring:

The ground element of an integrated unit should be designed along the lines of the standard ground unit having a comparable mission.

The concept of combining air reconnaissance aircraft with ground elements into an integrated reconnaissance unit should be carefully evaluated because of the wide disparity in capability of the two elements, as well as the limited utility of the ground element in a deep reconnaissance role.

Integrated units capable of performing significant operations will be very large.

The utility of armed transport and reconnaissance aircraft must be carefully evaluated. If we expect a high order of fire support from Army aircraft, we must have aircraft designed for that purpose.

I would like to conclude by saying that the field is wide open for ideas in this problem of air mobility and we would very much like to hear anything you have to offer on the problem either while you are here or by means of a note after you return to your home station.

I will be followed by Captain Whitelaw of the Airborne Training Group.

Section III. PATHFINDERS

CAPTAIN ROBERT E. WHITELAW

Instructor, Air Movement and Aerial Delivery Committee,

Airborne-Air Mobility Department

Mobility, by foot, horse, or vehicle, has always been one of the primary factors for success on the battlefield. The combat elements of an army must be able to concentrate and disperse quickly, and be resupplied rapidly.

The expansion of Army aviation with its low performance fixed-wing aircraft and its transport helicopters gives a commander on the battlefield greater mobility and flexibility than ever before.

Our current tactical concept of battlefield mobility calls for the employment of Army airplanes in helicopterborne assault operations, parachute and airlanded resupply missions, and in the rapid movement of troops and supplies to the widely dispersed positions in the battle area.

Army pathfinders are employed to insure these operations can be successfully conducted under all conditions of weather and visibility. Pathfinders are specially trained parachutists who furnish navigational assistance to Army aircraft.

They were first employed in 1943 during the Allied invasion of Italy. Pathfinders landed by parachute near Salerno and furnished navigational assistance to 90 Air Force planes carrying the American parachutists in that invasion. This was the first time that specially trained personnel preceded an airborne assault to mark drop zones and to give navigational assistance to troop carriers. This was the beginning of Army pathfinders.

During the years following World War II, the Army continued to develop pathfinder techniques for use with Air Force troop carriers. Each airborne division in the Army was authorized a pathfinder platoon, assigned the mission of furnishing navigational assistance to these troop carrier aircraft.

In 1951, as a result of a joint agreement with the Air Force, the pathfinder responsibility was relinquished by the Army and assumed by the Air Force.

The science of pathfinding, until 1954, was concentrated on Air Force troop carriers. Plans for reorganization of Army units, new concepts of battlefield mobility, and increased numbers of airplanes in Army units presented a need for Army pathfinders within these units to assist Army aircraft in tactical employment. In 1954, the Army directed the Infantry School to once again train pathfinders.

Two distinct areas of pathfinder responsibility have thus evolved since the beginning in 1943.

The Air Force has pathfinders, which they call combat controllers, to assist Air Force troop carriers in tactical operations, and the Army now has its own pathfinders who give the same assistance to Army aircraft.

Figure 61. Pathfinder Capabilities.

Specifically, Army pathfinders support tactical operations by performing the following functions: (Figure 61)

Reconnaissance of the drop or landing zones and the proposed assembly areas. This reconnaissance will include a radiological survey of the area if atomic weapons have been used.

Establishment of navigational aids to direct Army aircraft to the proper areas.

Establishment of ground-to-air communications to control the inbound flights and all air traffic within the drop or landing zone.

Assist troop assembly by marking troop assembly areas.

A pathfinder team consists of 2 officers and 10 enlisted men. One team is currently authorized for each aviation battalion within a field Army.

Demonstration: Approaching from your left is a 12-man team carrying typical items of equipment pathfinders employ in tactical operations. Keep in mind that the number of each item necessary for an operation depends on the specific mission assigned the team.

The first two men in the team are carrying individual items of equipment common to most Infantry units. Pathfinders are armed with either the M1 rifle or the carbine. The team is equipped with binoculars, grenade launchers, and each man is equipped with a compass.

The next two men carry the pathfinder radio equipment. AN/PRC-10 radios are used for ground-to-air communication and for communication within a landing zone. AN/PRC-6 radios

are used for short range ground communication between installations of a landing zone. If a requirement exists for communication between the landing zone and the loading area, the AN/GRC-9 radio is employed.

These two men are carrying visual aids. Panels are used to identify landing zones and mark obstacles. The manner of displaying these panels and the color used must be coordinated during planning by the supported unit and the aviation unit prior to an operation. Smoke grenades, which come in a variety of colors, are the best long range visual navigational aids available to a pathfinder team. Again the color used must be prearranged. To determine the wind velocity and direction a pathfinder employs an anomometer.

For night operations, each team has rotating beacons with a range of approximately 10 miles. These beacons can be coded by arrangement of the beacon heads and can emit clear, colored, or infrared light.

The next two men also carry equipment used for night operations. Lanterns replace the panels used in daylight and identify landing zones, mark individual landing positions for aircraft, mark runways, and obstacles. These lanterns have interchangeable lenses giving a variety of colors that can be used.

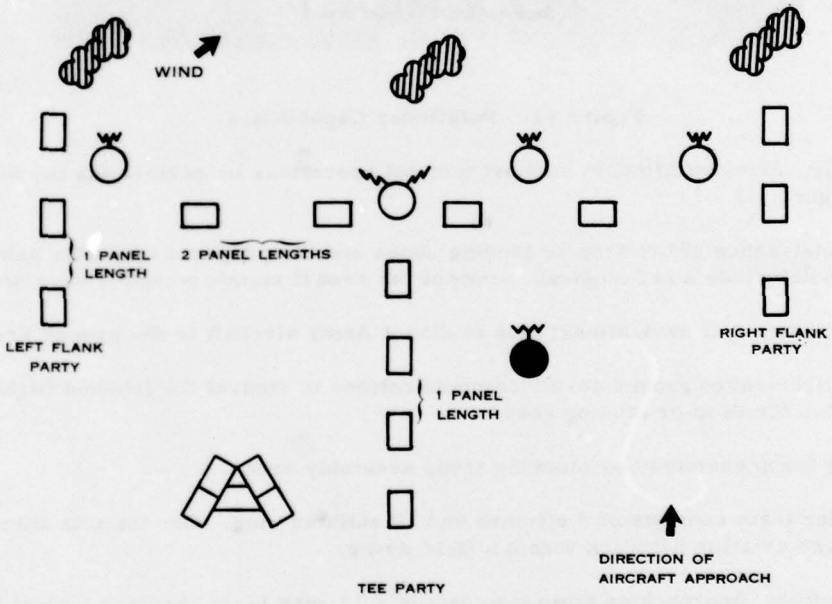


Figure 62. Day Drop Zone.

Baton flashlights are employed to give hand and arm signals when assisting helicopters to land and take off, or when parking Army aircraft.

The last three pathfinders carry special items of equipment. If there is danger of radiation in an area, the team will conduct its radiological survey using this radiac detector. The survey may be made in flight or on the ground. Demolition kits are available for minor demolition work within a landing zone. Landing sites may have to be cleared or obstacles removed. If a team is to continue operation of a landing zone for long periods of time sound-powered telephones and wire equipment are available to supplement the radios in the communication system.

Duplication of personnel and equipment within this team is a basic principle of organization. The team can operate as one unit or it can be divided into two teams, be reinforced with personnel from a supported unit, and operate as two independent pathfinder teams.

Pathfinders are trained in three types of operations, and can conduct each type during daylight or at night.

A drop zone is an area on the ground to which personnel or equipment are delivered by parachute (Figure 62). A pathfinder team will establish a drop zone by positioning panels to form a letter T. The purpose of this T is to properly align aircraft approaching for the drop and to show the pilots the point over which the pathfinder desires the drop to be made.

Flank panels are positioned 200 yards on each flank of the T to further assist pilots in maintaining alignment and to show when each plane is directly over the junction of the stem and crossbar.

If more than one drop zone is to be established in the immediate vicinity, a code letter is employed to identify each zone.

As a flight reaches a predetermined check point, communications are established between the team on the ground and the flight leader of the inbound flight. Any necessary navigational instructions are transmitted at this time. Smoke is employed at the T and on the flanks of the T as a long-range navigational aid. The pathfinder controls the direction of flight by giving the flight leader the commands to "Steer left" or "right," and "on course." As the flight approaches the T, the command "Stand by" is given, and as the lead aircraft flies over the junction of the stem and crossbar of the T, the command "Execute" is given.

Pathfinders are also trained to establish and operate landing zones for fixed-wing craft (Figure 63).

For this operation, the team is divided into two parties. One will operate the landing zone control center and the other the landing strip, taxiways, and parking areas.

The Landing Zone Control Center is established on the best available terrain which allows maximum observation of the landing strip and the air above it. The ground-to-air radio is established at the Landing Zone Control Center and all communication with aircraft using the landing zone is handled over this radio. Communication with the landing strip party is also maintained using AN/PRC-6 or AN/PRC-10 radios. If there is a communication requirement between the landing zone and loading area, the AN/GRC-9 radio is also positioned at the Landing Zone Control Center.

At the same time the control center party is establishing the Landing Zone Control Center, the parking party is reconnoitering the area to be used for the landing strip and parking areas.

The direction of wind, slope of the ground, condition of the soil, and obstacles to landing are factors that must be taken into consideration prior to selection of the landing strip. When

the parking party commander determines the direction of the strip, he marks it using panels. Panels are positioned along both sides, 100 yards apart. The number of panels staked out will indicate the total length of the strip. The approach end is indicated by positioning two panels perpendicular to the side panels in an open position. The take-off end is indicated by positioning two panels in a closed position.

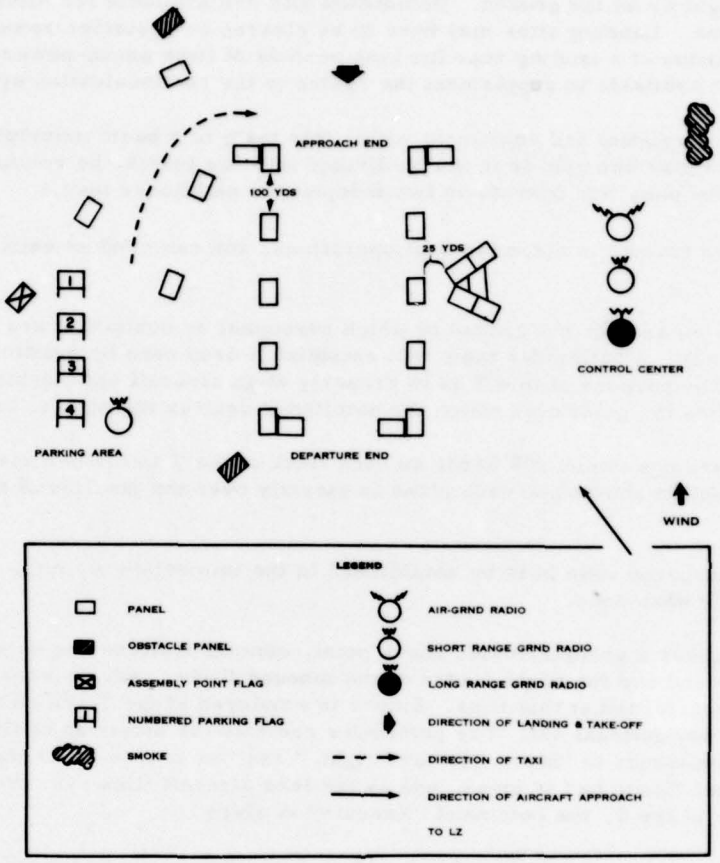


Figure 63. Fixed-Wing Landing Zone.

A parking area is then selected and individual aircraft parking points are marked with colored parking panels. If the taxiways from the strip to the parking area need to be marked, panels are used for that purpose also.

A code letter is formed and smoke is employed near the strip in the same manner as on a drop zone. Care must be exercised to insure that smoke does not cover any of the panels employed.

As each inbound flight reaches a predetermined check point, communications are established between the pathfinder team and the serial leader. Information concerning the direction and velocity of the wind, and landing instructions are transmitted at this time.

The flight will break into trail formation and land in trail using a normal left hand traffic pattern, unless otherwise instructed. As each plane touches down a member of the parking party takes over control of the aircraft, and any necessary taxi and parking instructions are given, using hand-and-arm signals.

Current tactical concepts of battlefield mobility envision frequent helicopter assaults (Figure 64). This is the third type of tactical mission that pathfinders must be able to support. In establishing a helicopter landing zone, a pathfinder team is divided into three parties. Each party will operate its respective installation within the landing zone.

The control center party establishes the landing zone control center where it can best control the air traffic which will use the zone. At the Landing Zone Control Center, we find the ground-to-air radio for communication with all inbound serial leaders, the pathfinder net control station, and the long-range ground radio.

The flight release point party marks the flight release point with visual navigational aids and the identification code letter. By requiring all inbound serials to pass over the flight release point, the pathfinder team leader can control all air traffic within the zone. Communication is established between the flight release point and the control center by using a PRC-6 or a PRC-10 radio.

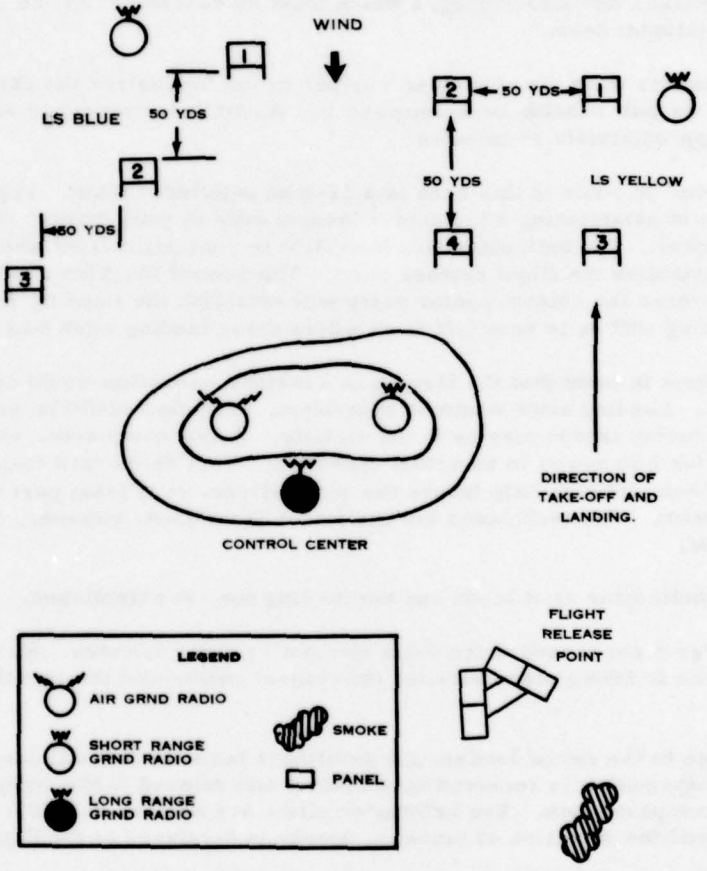


Figure 64. Helicopter Landing Zone.

The third basic party is the landing site party. There may be more than one landing site in a landing zone. The number of sites is determined by the unit commander and depends on the available terrain and number of helicopters he desires to land simultaneously. Each site operator marks the landing position with colored panels.

As in both the drop zone and fixed-wing operation, a serial leader initiates communications with the Landing Zone Control Center as he passes over the predetermined check point. Information concerning the enemy, terrain, and weather is given to the serial leader at this time.

The inbound serial continues to the flight release point. Smoke may be employed to assist in identification. As the serial passes over the flight release point, each flight within the serial vectors directly to its respective landing site. There must not be more flights within a serial than landing sites within the landing zone since it is desirable to land all aircraft at the same time.

At each landing site, a pathfinder is ready to receive the flight, assist aircraft landing by hand-and-arm signals and assist in troop assembly.

Pathfinders may be delivered to an objective area by fixed-wing aircraft or helicopter, they can parachute into the area, or they can infiltrate by foot or motorized patrol. Each method has obvious advantages and disadvantages which must be considered by the ground commander employing the pathfinder team.

A unit commander must also consider whether or not he desires the pathfinder team to precede the first assault echelon or accompany it. A pathfinder team can establish a drop or landing zone in approximately 15 minutes.

Demonstration: In route to this area is a 12-man pathfinder team. This team has been given the mission of establishing a helicopter landing zone to your front. This team is loaded in one H34 helicopter. The helicopter will land first to your right front where the flight release point party will establish the flight release point. The second touchdown will be made to your immediate front where the control center party will establish the Landing Zone Control Center, and the third landing will be to your left front where three landing sites will be established.

It should be kept in mind that the terrain in a tactical operation would not be so spacious as that to your front. Landing sites would be restricted, obstacles would be present, radiation might exist, and enemy troops may be in the vicinity. A unit commander would attach personnel to the pathfinder team to assist in an actual operation. This reinforced team would be delivered in more than one helicopter to help insure the safe delivery of at least part of the team to accomplish the mission. The techniques the pathfinder team uses, however, are the same as in this demonstration.

Observe the helicopter as it lands and the landing zone is established.

This pathfinder team preceded the main element by three minutes. By this time, an exchange of messages is taking place between the control center and the serial leader of the 1st serial.

In his message to the serial leader, the pathfinder team leader will describe the enemy situation. This information is received by all pilots and relayed to the troop commanders in the helicopter troop compartments. The helicopter pilots are advised as to the direction and velocity of the wind, and the direction of landing. Smoke is displayed at the flight release point to assist navigation.

Notice that each helicopter flight, represented today by one H37 helicopter, passes over the flight release point and then moves directly to its assigned landing site. Troops unload as quickly as possible and move to their assigned assembly areas.

The helicopter flights are released from the landing sites as soon as possible in order to clear the landing zone for succeeding helicopter serials. In departing, the flights will follow predesignated flight routes.

Observe the helicopters of the assault echelon.

You have just witnessed the landing of one Infantry platoon. If succeeding flights of 10 helicopters each were to continue into this area at 3-minute intervals, over 2000 troops could be delivered within a 30-minute period.

We have shown you how Army pathfinders establish drop zones and landing zones and how they furnish navigational assistance to Army aircraft. We have discussed the capability of a pathfinder team to conduct reconnaissance, which will include a radiological survey, establish navigational aids on drop zones and landing zones, maintain communications with Army aircraft, and assist troop assembly. The demonstrations you have just seen show how Army airplanes increase mobility in helicopter assault operations.

Within secured areas, navigational assistance is given both fixed and rotary wing planes by terminal guidance personnel.

Terminal guidance personnel are trained to select and mark individual landing sites for helicopters and landing strips for fixed-wing craft. They must be able to transmit instructions by radio and be able to give hand-and-arm signals.

The training in these fields parallels that of a pathfinder team. It is less extensive, however, since terminal guidance personnel will normally be working with individual or a small number of aircraft within a secured area.

Supply and medical personnel will be principally involved with terminal guidance. However, all personnel in the Army should be trained in marking landing sites, communications, and hand-and-arm signals. Thus, every soldier in the Army would have the capability of giving limited navigational assistance to Army planes anywhere in a combat zone.

The use of cargo slings attached to helicopters offers an excellent means of transporting equipment rapidly by air. Vehicles can be transported from one location to another over terrain impassable to ground movement.

The H34 helicopter called the "Choctaw" can carry 4000 lbs of cargo either internally or by cargo sling. There are 60 H34 helicopters in an aviation transport battalion giving a single cargo lift capability of 120 tons of supplies.

The H34 approaching from your right will deliver a 1/4-ton truck to landing site Yellow. Terminal guidance personnel are used for the release of this type load. A signalman on the ground will use hand-and-arm signals to direct the helicopter to the desired position on the ground. During night operations, these hand-and-arm signals would be given using baton flashlights.

Vehicles may be loaded internally into helicopters for delivery to a landing site. The H37 helicopter or "Mojave" has a cargo compartment comparable to that of the C47 aircraft, but has the advantage of clam shell doors allowing vehicles to be driven straight into the cargo compartment. This helicopter can carry a 3/4-ton truck, a 105mm howitzer, or 6000 lbs of cargo. There are 16 H37 helicopters in an aviation transport battalion giving a single lift capability of 48 tons of supplies.

The H37 helicopter approaching from your right is carrying a 3/4-ton truck in its cargo compartment. Again, terminal guidance personnel will be employed to assist the helicopter in arriving at the correct landing site and in landing safely.

Medical evacuation may be accomplished by helicopter by loading litter patients either externally or internally. The H19 helicopter is capable of carrying six litter patients. This heli-

copter was used extensively during the Korean conflict for medical evacuation. Two litters will be loaded into the H19 approaching from your right.

Supplies may be loaded both internally and externally in Army fixed-wing aircraft for parachute delivery to a drop zone. Both the L19 and L20 have shackles on each wing for parachute or free fall delivery.

The L19's approaching the drop zone are each carrying two 250 lbs aerial delivery containers; one fastened to each wing. The L19 aircraft in a division aviation company can carry a total of 4000 lbs in a single lift. To insure accurate delivery both visual and electronic navigational aids are employed by the terminal guidance personnel. Smoke and panels will identify the drop zone to the pilots and show them the desired point over which they are to release their containers. By using a ground-to-air radio, the flight can be controlled and the pilots told when to release their containers.

The L20 or "Beaver" is a fixed-wing airplane capable of carrying 500 lbs of cargo attached to each wing or 1300 lbs of cargo internally.

The L20 aircraft now approaching has two containers attached to each wing and in addition has three containers inside the cargo compartment. These containers will be dropped from an altitude of 300 feet at a speed of 85 knots.

During the first demonstration, you saw a pathfinder team delivered by helicopter. This team also has the capability of being able to be delivered by parachute. The U1A or "Otter" approaching is carrying five parachutists. Notice the first jumper who is carrying a general purpose equipment container. He will release the container approximately 200 feet above the ground. The advantage of this type container over the wing bundle or container ejected from inside the cargo compartment is that it remains attached to the man and recovery is assured. It is sometimes difficult, especially at night, to rapidly recover equipment containers dropped by parachute.

During this demonstration, we have shown you the role of Army pathfinders in tactical operations. They are trained to establish drop zones and landing zones, and to furnish navigational assistance to Army aircraft.

Within secured areas terminal guidance personnel furnish similar assistance to small numbers of airplanes, principally in logistical and medical evacuation missions. Each soldier in the Army should have some training in terminal guidance.

We have also shown you some of the capabilities of Army aircraft which increase the battlefield mobility of the Army. This mobility permits the rapid concentration and dispersal of combat elements which are so necessary for success on the battlefield of tomorrow.

CHAPTER 9
GROUND MOBILITY

Section I. INTRODUCTION

COLONEL JOHN J. PAVICK

Director, Ground Mobility Department

Good afternoon, gentlemen. Welcome to the Ground Mobility Department. We have a two-hour presentation for you this afternoon which will include a discussion of the factors involved in the attainment - or as we call it, production of mechanical ground mobility. We will also show you and discuss with you two of the latest Infantry vehicles, and lastly, we will present to you the problem of vehicle navigation - and a means by which it may be overcome.

But in all this, we will continually stress one point, and that is, Mobility is a responsibility of the Commander. To have that all-important element - Ground Mobility - every Infantry commander from the squad, platoon, company, battle group, and higher, must know the essentials of mobility, the equipment, the personnel, the organization, and most important of all, he must understand and be prepared to accept his responsibilities in attaining true mobility. On the commander's knowledge of this subject will hinge the fate of his men and his unit in battle.

Section II. ESSENTIALS OF GROUND MOBILITY

MAJOR BEN F. MARSHALL

Chairman, Command Supervision Committee

Throughout the long history of warfare a series of principles, axioms or formulas have developed which when applied at the right time, at the right place, would enhance success in battle. One such formula that will apply on the battlefield of the future, as it has in the past is:

$$M + FP + C = \text{THE SUPERIOR FORCE AT THE POINT OF DECISION}$$

Figure 65. Mobility and Firepower and Communications = The Superior Force at The Point of Decision.

MOBILITY, plus FIREPOWER, plus COMMUNICATIONS equals the Superior Force at the Point of Decision (Figure 65). But like any formula it is just so many words unless the leader has an intimate knowledge of the ingredients and how to apply them. The leader must be the catalyst who produces the desired reaction when this formula is applied in battle. The key ingredient in this formula is MOBILITY, for mobility allows the commander to exploit his firepower to the utmost, to move his combat power on the battlefield to the point of decision; without mobility, reaction to our commands would not be sufficiently rapid to effectively influence the battle in a war of movement. For our purpose we call it GROUND MOBILITY.

What is GROUND MOBILITY as it applies to the battlefield? It may be defined in many ways, but for simplicity we define it as the ability to move rapidly on the battlefield, from dispersed to concentrated formations, so as to be at the focal point of decision, yet capable of dispersing again to reduce vulnerability to enemy counteraction.

The subject of Ground Mobility is being discussed in military circles at all levels and causing some anxiety; the problem is what to do about it? We in the Ground Mobility Department have given the subject much consideration and thought we would like to present our views on the subject as this time.

The advent of mass destruction weapons with their inherent requirement for great dispersion and rapid movement leads to the further requirement for a higher and more dependable degree of ground mobility than ever before. How can it be achieved? By leaders, at all levels, thoroughly understanding the essentials involved in the production of ground mobility under all conditions confronting the Infantryman in the field.

The Infantry leader has long known that foot-marching alone will not produce the high degree of ground mobility that is so necessary for success on the battlefield. This is not to say that the Infantryman's classic role of fighting on foot, of seizing and holding ground is a thing of the past; it simply means that the Infantryman must be able to move long distances rapidly to the point of battle and still be in condition to close with the enemy, to seize and hold ground. In the past, supply vehicles - trucks, within their capabilities, have been used to provide the Infantryman with mobility other than foot-locomotion--in the truer sense, they provided him with transportation to the vicinity of the battlefield without any protection from small arms fire. Today we have the combat Infantry carrier to provide that protection. However, mobility must not be confused with transportability; it is more than vehicular equipment and organization. It is also a state of mind and will be reflected by the commander's ability to motivate his subordinates and to extract the maximum from what he has at his disposal. There are some commanders who have considered mobility as a relative thing and have summed it up by saying, that under a given set of circumstances the mobility of the Infantry is only as good as the minds of the commanders. That is true and more the reason that our Infantry leaders of today must think mobile; they must use all of their imagination, initiative and aggressiveness, together with strong leadership, to gain and maintain a high degree of ground mobility.

We say the Infantry leader must think mobile; then how are we going to teach our future leaders to think mobile? Should there be a formula; a set of rules? Today our Infantry leaders are well schooled in the estimate of the tactical situation and the estimate of the logistical situation. Why not teach him the estimate of the mobility situation, an estimate that would apply to commanders at all levels. The art of being mobile is not confined to the top commanders; even the squad leader must be concerned with the mobility of his squad, although he is not capable of providing anything more than foot-locomotion. He should be prepared to use any mechanical means of mobility to its maximum capability in leading his squad to assist in accomplishing the platoon mission. The same thing must be true with each echelon of command. The degree of battlefield ground mobility attainable by any given combat organization is in direct ratio to the ability of the smallest unit of that organization to gain and maintain ground mobility. That is to say that an Infantry battle group is as mobile as its rifle companies that comprise the assault elements. And how is it attained? By the battle group commander making a sound estimate of the mobility situation and employing to the maximum the essentials that produce ground mobility.

THE ESSENTIALS OF GROUND MOBILITY

MEANS AVAILABLE

CAPABILITIES AND LIMITATIONS OF THE MEANS

OPERATION OF THE MEANS

MAINTENANCE OF THE MEANS

Figure 66. Essentials of Ground Mobility.

What are the essentials involved in the production of ground mobility? (Figure 66.) The first is the Means Available. The means available include not only those organic to the battle group but also the means that will be provided by the division or higher headquarters. The second essential is a knowledge of the Capabilities and Limitations of the Means. Thirdly, the Operation of the Means, which ranges from the proper selection and training of drivers through control and navigation over unknown terrain at night and under periods of poor visibility. The fourth essential in the production of ground mobility is the Maintenance of the Means.

These are the essentials. Now let's see how they fit into the production of ground mobility. In making an estimate of the mobility situation, the commander, knowing his mission, must first consider his Means Available - what organic means he has and what supporting means will be provided by higher headquarters. He knows what organic vehicles he has and, in the case of the Infantry battle group, it is 122 wheel vehicles, 8 track vehicles and 99 trailers. A quick analysis of the vehicles assigned to the ROCID battle group will tell you that they are all identified with a specific purpose, such as command, ammunition, utility, and the like. There are only two combat Infantry carriers in the lot. Of the 1427 officers and men in the battle group, 583 ride on organic transportation and 844 walk. If the battle group must be 100% mobile to accomplish its mission and assuming that all organic vehicles are available, it will require that the division transportation battalion provide 76 M59 combat Infantry carriers, or 42 2 1/2-ton trucks. The commander must know his requirements and be prepared to gain his mobility with either track or wheel vehicles or a combination of both.

Just knowing the means of ground mobility available is not enough. The commander must have thorough knowledge of the capabilities and limitations of those means. The best vehicles available will mean little or nothing if the leader is not aware of what they can do and what they cannot do. No commander would enter combat not knowing the capabilities and limitations of his weapons, for he knows the results would be disastrous. No commander should enter combat without infinite knowledge and faith in his vehicles. He must know the capabilities and limitations of the means available to him under all conditions of weather and terrain. Unfortunately, all of the vehicles that become available to the commander do not have the same characteristics; some are track-laying, some are wheeled, some are large, some are small and each type has a different load-carrying capacity, thus compounding the problem. Still, if the leader is to make a sound estimate and is to fight and win with these combinations, he must be intimately familiar with them all.

After the commander knows what means are available and has considered the capabilities and limitations of the means, in all combinations, he then applies the estimate to the Operation of the Means. This essential in the production of ground mobility begins long before the battle is joined. It begins with the selection and training of drivers. This responsibility of the commander here cannot be over-emphasized, for the driver is the base upon which the Army system of maintenance is built. The leader who takes the soldier with two left feet and tries to make a tactical driver out of him is working against his own interests; likewise, if he fails to provide time for the driver training program to be accomplished. The manner in which driver maintenance is performed will determine the effectiveness of organizational maintenance. The degree of battlefield ground mobility and, in turn, the accomplishment of the mission may well depend upon skillful driving and diligent driver maintenance.

When the commander estimates the mobility situation, he has to consider more than driving and controlling his vehicles in the Operations of the Means - he has to consider the navigational aspects, or vehicle navigation. He must be sure that he knows how to get where he wants to go.

The subject of vehicle navigation will be given detailed coverage by Capt Williams in the following period. It is mentioned in this period only for the purpose of bringing out that vehicle

navigation will be a factor in the Operation of the Means as it applies to the production of ground mobility. No matter how good the mobility is it is useless if you cannot get to the right place at the right time.

So far we have dealt with the essentials of gaining ground mobility. We must now consider the essential involved in keeping or maintaining ground mobility - the Maintenance of the Means. The commander, in making his estimate of the mobility situation, must be familiar with the maintenance system and appraise his capabilities of maintaining his means of mobility. In appraising the organic capability to perform maintenance, the time required to make inoperative vehicles operational must be weighed against the requirements of the tactical mission. Then, the maintenance support available at the time must be considered. The commander must view his maintenance from the proper perspective. There is a tendency on the part of some commanders to think of maintenance as something apart from the training and leadership of men. This is not so. We must adjust our thinking to perceive the soldier and this equipment, the vehicle, as one integrated whole: the man - the machine - the team. The keystone to our maintenance system is preventive maintenance, and commanders cannot expect vehicles to remain operational without systematic preventive maintenance. Vehicle loss through enemy action is a calculated loss which we expect and for which we prepare, but the loss of a vehicle because of failure to perform preventive maintenance is an inexcusable tragedy. If the commander is to maintain this high degree of ground mobility which he will need on the battlefield of the future, he must take personal command action to see that maintenance of the means of mobility is performed to the highest degree.

A change to the preventive maintenance system that will aid the commander in the Maintenance of the Means and will go a long ways toward assisting the commander in his effort to get maximum utilization from his vehicles will become effective early in fiscal year 1959. This new system will reduce the required maintenance in half, having only the driver maintenance service and the quarterly service. The only scheduled service, the quarterly service, will be performed each 3 months or 3000 miles on wheeled vehicles or 750 miles on track vehicles. The "Q" service will consist of a road test - if the vehicle checks out on the road test, a few inspections are made and the vehicle is returned to the user. No adjustments or repairs made unless required. No longer will we have maintenance just for maintenance's sake, but instead maintenance as required.

Through the sound application of the essentials of ground mobility, the production of a high degree of battlefield ground mobility is within the capability of all commanders today. But, before the commander can make a sound estimate, he must know the means available, organic and supporting; have an infinite knowledge of the capabilities and limitations of all means available; show the courage of his convictions and establish strong driver selection procedures and effective training programs for the operation of the means; and keep his tools of mobility sharp through a sound and well supervised preventive maintenance program. We must never forget that ground mobility is more than vehicles and organization; it is also a state of mind. In order to be mobile, we must think mobile!

The remainder of this period will be spent in a discussion and demonstration of two of the newest means of mobility found in the Infantry - the M274, 1/2-ton Infantry Light Weapons Carrier, which will aid us in gaining ground mobility, and the M56, Assault Gun Carrier, which will aid the mobility of our firepower.

Section III. INFANTRY LIGHT WEAPONS CARRIER

FIRST LIEUTENANT MADISON E. MARYE
Instructor, Command Supervision Committee

This is the 1/2-ton Infantry Light Weapons Carrier, M274, appropriately nicknamed the "Mule." It is designed primarily as a cross-country vehicle. The carrier is essentially a platform mounted on two axles and four wheels with a four cylinder, four cycle, air-cooled, opposed-type, gasoline, 17 HP engine. The carrier has a constant four-wheel drive with three speeds forward and one in reverse in the transmission, and a high and low speed transfer case. A quick change device allows either two or four wheel steer. The four wheel steer permits turns of a smaller radius but makes the vehicle more vulnerable to tipping over on turns. (Figure 67)

Figure 67. M274 "Mechanical Mule."

It weighs 900 pounds and is easily air transportable. This light weight is achieved by the use of magnesium and aluminum throughout the vehicle's construction. The platform and wheels are made of magnesium while the motor and axle housing are made of cast aluminum. The seat and foot rest can be quickly detached and stowed under the platform for compactness in shipping. The steering wheel can also be removed allowing one mule to be inverted and placed on top of another. This space saving feature enhances the Mule's air transportability. This same fea-

ture enables us to turn the Mule on its side or completely over for the purpose of lubrication and maintenance, thus eliminating the need for grease racks. However, the oil in the air cleaner must be drained before hand.

It is capable of ascending grades of 60% and traversing slopes of 40% sideways with a 1000 pound payload. Incidently, the driver's weight counts as part of the payload. The steering wheel can be moved forward so that the Mule can be operated by a driver following on foot either in a crouched or upright position. When operating this vehicle on foot, caution must be exercised in the selection of gears; if a forward gear is selected through error, the operator will discover that this Mule has a kick every bit as bad as its namesake.

The vehicle can be forded up to a depth of 18 inches. This depth is limited by the vehicle's air intake. Avoid all fording operations involving salt water; the magnesium is affected by salt and when subjected to salt water will corrode and cause to deteriorate those parts made of magnesium.

These large tires are designed to absorb shock; however, do not expect an air cushioned ride since the vehicle has no suspension system. Because of this factor it will operate on three wheels; however, a shifting of the load may be necessary.

The pressurized fuel tank holds 8 gallons of gas, and at a speed of 5 mph on a highway the vehicle gets approximately 17 miles per gallon. When traveling at its maximum speed of 25 mph the gas mileage is cut to 12 miles per gallon. We don't have available the cross-country figures on gas mileage.

Many of our other vehicles have a large variety of OVM tools. Only one tool is issued with the M274; this is a combination crank and wrench.

The Mule is limited in some respects by its lack of an electrical system. Since a magneto provides the necessary electrical impulses for engine operation, the Mule is hindered in tactical and nontactical operations by a lack of lights, horn and blackout markers. In addition to this there is no pintle hook on the rear of the Mule. This is most essential for recovery purposes. Another possible limitation is that exhaust gases are directed toward the ground and when the Mule is operated in dusty terrain this may stir up additional dust. The Mule has no compartment in which manuals, accident reports, and trip tickets can be carried. This will really be a bonanza for the spot check inspection boys. Since the Mule has all wheel-drive, with a constant delivery of torque to all wheels, it is possible to wear out a set of tires very quickly driving it under its own power on hard surface roads. This characteristic very definitely limits its value in convoy operations and in garrison. However, the M274 is equipped with a tow bar enabling it to be towed, fully loaded, behind another type vehicle for short distances and cross-country. Thus, a loaded Mule could be towed to the battle area and when released from its prime mover it possesses the capability of delivering the supplies to a forward position under its own power.

At present the Mule is not organic to the Infantry division; they are authorized to airborne divisions on the basis of 16 per rifle company. This is the first vehicle of this type to be adopted by the Army and we in The Infantry School feel that there is a great potential in the future development of vehicles of this design.

Section IV. M56 ASSAULT GUN CARRIAGE

FIRST LIEUTENANT ANDREW E. PALENCHAR

Instructor, Vehicle Capabilities Committee

The M56 Assault Gun Carriage was developed to fulfill a need for a highly mobile, air-transportable, and air-droppable carriage. It is organic to the Infantry division and airborne division. (Figure 68)

Figure 68. M56 Assault Gun Carriage With 106mm Recoilless Rifle.

The M56 is highly maneuverable, capable of traversing muddy, marshy terrain, snow or sand. Its lightweight permits it to be air-lifted in assault cargo aircraft, and it is capable of being air-dropped.

The hull of the M56 is constructed of aluminum. The total weight of the carriage without weapons is 4 tons. It is capable of climbing a 60% slope; a vertical step of 2 1/2-feet; and can cross a 4-foot ditch.

It can ford 3 1/2 feet of water. With a deep water fording kit, it can negotiate 5 feet of water.

The minimum turning radius is 9 feet, and the ground pressure of the carriage is a low 2.2 pounds per square inch as compared to 11.2 pounds per square inch on the M48 90mm Gun Tank.

The M56 can be utilized to carry the 90mm Gun, as you see it here, or it can carry the 106mm Recoilless Rifle, 4.2-inch mortar, or quad .50 cal machinegun; with modifications it could be used as a cargo carrier, or as a 9 to 11 man personnel carrier. (Figure 69)

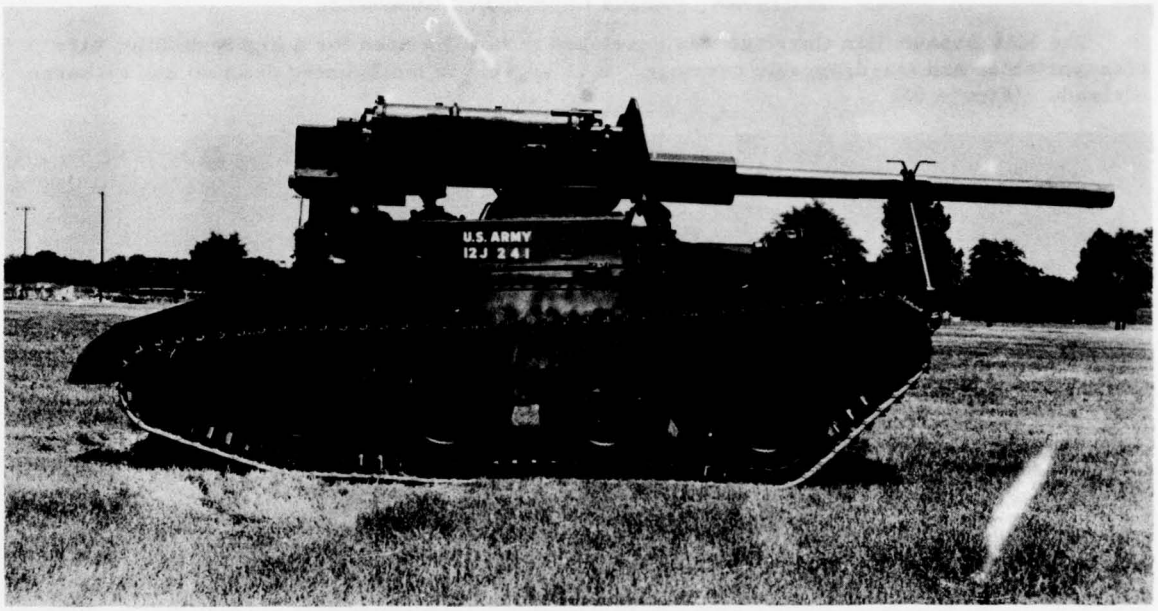


Figure 69. M56 Carrier with 90mm Gun.

Used as a cargo carrier, it is capable of transporting 10,000 pounds of fuel or an equivalent weight of ammunition or other ground support equipment. In addition, the cargo and personnel carrier versions are amphibious and able to navigate on any inland waterways while carrying a full payload.

It carries 50 gallons of gasoline which provides a cruising range of between 50 to 100 miles. It is capable of speeds up to 30 mph.

The M56 is powered by a 205 horsepower, six-cylinder, opposed, air-cooled, fuel injected engine. At the present time the M56 is the only vehicle in the battle group utilizing fuel injection.

The cross-drive transmission is bolted to the engine to form the power package. The entire unit can be removed for maintenance or replacement.

Quick disconnect couplings are provided to facilitate rapid removal or installation of the power package. The power package can be lifted vertically out of its compartment in the hull. The electrical system is the standard 24 volt with waterproof features.

Organizational maintenance is of the same general type as with other tracklaying vehicles. Track life expectancy is in excess of 4,000 miles as compared to 2,000 miles on the M59 Infantry personnel carrier.

All components of the suspension system are of sufficiently lightweight to lessen the requirements for heavy maintenance equipment. The present scope of organizational maintenance can be performed by vehicle crews and wheeled vehicle mechanics without further specialized training.

Its low vibration is due to the use of pneumatic tires as roadwheels and the bandtrack. These tires reduce vibration and consequently minimize the possibility of damage to sensitive equipment. The tire side walls are rigid enough to bring the vehicle home if the tires become punctured.

The responsibilities of each crew member have increased enormously. Engineering has endeavored to reduce the amount of check points required in lubrication and maintenance to facilitate servicing requirements. However, it cannot eliminate the necessity for continuous and complete daily crew maintenance.

The versatility of this vehicle will add tremendously to the mobility of the Infantry.

QUESTIONS AND ANSWERS

QUESTION: What is the adva..tage of magnesium over aluminum in the construction of the M274 Mule?

ANSWER: Strength.

QUESTION: Who does turret maintenance on M48 tanks of the battle group?

ANSWER: The direct support platoon of ordnance forward support company which has one turret artillery repairman (MOS 424. 1) assigned to do this work.

QUESTION: What are some of the advantages of the Mule over the Jeep?

ANSWER: Increased terrain negotiability, lower silhouette and less weight are some of the advantages.

QUESTION: Will trucks be furnished to carry the Mules during highway operations?

ANSWER: They can be towed for short distances. There are no vehicles assigned to the airborne division for the specific purpose of carrying the M274 Mule.

Section V. VEHICLE NAVIGATION

CAPTAIN DAVANT T. WILLIAMS

Chairman, Movements Committee

The ability to NAVIGATE is an essential element of MOBILITY! Navigation in its most basic definition simply means "to direct one's course." This may be done in the air, on the sea, or upon the land surfaces of the earth. Historically, the art of navigation goes back to the earliest times. Ancient man is said to have directed his course across barren land surfaces by reference to the stars. The early Greeks are said to have theorized that the earth was round and that a person could determine his position in terms of latitude and longitude. However, navigation as a modern science did not have its true beginning until the invention of the compass in about 1000 A. D. Before this time the seafaring man had limited himself mainly to operating along the coast within sight of land. However, with the invention of the compass the mariner was then able to begin his long voyages of exploration which led to the development of the western hemisphere. In fact, the development of navigation as a modern science paralleled the exploration of the western hemisphere. In a similar fashion, the development of the science of navigation has paralleled the evolution of warfare. It is difficult to think of a modern navy operating without equally modern navigational equipment. The Air Force has long put a

premium on the science of air navigation. The effectiveness of the Strategic Air Command is largely due to its navigational capabilities. The Air Force has for years stressed the training of officers as navigators - specialists in their field. In fact, graduates of the Air Force Academy are commissioned as navigators and are then given a chance to go into pilot training. You might almost say that the Air Force trains its regular officers to be navigators first and pilots second. Now, think of the science of navigation in relationship to the development of the Army, and one almost draws a blank! Navigation just hasn't played the part in the evolution of the Army that it has in the other services. The reasons for this are fairly obvious when you think about it. Our pioneer soldiers had no great navigational difficulties. They followed Indian trails, rivers, streams, and used mountains for reference. The Army of the early west even hired Indian scouts to do its navigating. We probably didn't realize the significance of navigation until we came face to face with the problem in North Africa during World War II, when Infantry battalions had to borrow naval officers to do their navigating for them. But at the same time we found captured German tanks with gyro compasses mounted in them. Even today we don't have a direction-finding device in a combat vehicle. Our navigation seems to be limited to pilot training and specialized training at the arctic and jungle schools, plus simple map reading.

And so the basic question is "What do we as Infantrymen know about the science of navigation? What do we know about navigating an M59 Infantry personnel carrier great distances, cross-country over poorly-defined terrain under conditions of reduced visibility?" The answer is that we don't know nearly enough! But the sudden requirement for this knowledge and skill does exist, resulting from new concepts of mobility, organization, and operation over the wide and deep battlefield.

During this period we will discuss the requirement for a system of vehicle navigation, techniques of land navigation, and developmental trends of navigational aids.

In analyzing just what is required in a system of vehicle navigation, there are many things that must be considered. We must first of all consider the mission and insure that our system of vehicle navigation will support present and future missions. We must keep in mind that organizational concepts of the 1960's visualize mobile Infantry in highly mobile vehicles. Emphasis will be on cross-country operations, deep objectives, and broad reconnaissance. Wide fronts and dispersion will be normal. We must be able to navigate under any condition of visibility. Darkness, smoke, fog, or being "buttoned-up" must not limit our ability to navigate. We must be able to navigate under any condition of weather. The Air Force has traditionally been hampered by bad weather. However, our system of Infantry navigation must be an all-weather one. Another consideration is the availability of maps. Many areas of the world are even today poorly mapped and in some cases not mapped at all. We must, therefore, have a navigational system that does not depend upon the availability of accurate maps. Roads have played a classic role in warfare, but modern techniques of surveillance may preclude their use in future operations. We must be prepared to navigate cross-country without reference to road nets. A final consideration is the capability of navigating in areas of poorly defined terrain features. The possibilities of operating in such areas as desert, jungle or arctic are by no means remote.

It can, therefore, be concluded that our system of vehicle navigation must give us the capability of directing the course of our vehicle under any condition of visibility, under any condition of weather, with or without maps, with or without roads, and with or without reference to natural terrain features.

Ground Navigation + Land Navigation = Vehicle Navigation

This sounds like a pretty big order, but, as in many aspects of modern warfare the solution lies in a formula. In this case the formula is GN + LN = VN. GN stands for ground navigation

and is a technique of directing one's course as taught by the Map Reading Committee of USAIS. It is based on orientation by constant reference to natural terrain features. It is often described by students as "reading the contour lines on the ground." On the other hand LN or land navigation is the technique of directing one's course through the use of direction-finding and control instruments. A combination of both techniques is required in order to accurately navigate a vehicle.

Ground navigation is basic to any system of vehicle navigation. It is ideal for cross-country operations since it does not depend upon orientation in relation to man-made features. However, it does have certain limitations which must be recognized. It takes time, it requires accurate maps, it requires reference to natural features, and it requires visual contact with the terrain.

Land navigational techniques become increasingly important when speed is essential, when adequate maps are not available, when terrain is poorly defined, when visibility is limited, and when the vehicle commander must have constant nuclear orientation. This simply means that the vehicle commander must know his exact location at all times in relation to the use of tactical atomic weapons. If we are to use a special weapon, the vehicle commander must be able to report his exact position so that the analyst can plot it in relation to buffer zones and safety arcs. On the other hand, if the vehicle commander observes the use of an enemy weapon, he must know his own position in order to accurately report the location of that weapon.

There are several concepts of how land navigational techniques might be employed. One concept is that of attaching a navigational specialist to the Infantry unit, but this is not appropriate. Another concept is that of attaching a navigational team, but neither is this appropriate at Infantry level. The Infantry concept is based on the individual vehicle commander knowing his exact position at all times, and of having an easy method of reaching a given objective. And just who is this vehicle commander? He might be a company commander, the reconnaissance platoon leader, the leader of an Infantry squad being transported in an M59, or if operating alone, it would be the driver himself.

What techniques of land navigation will we employ? One possibility is celestial navigation, but it does not have an all-weather capability. Another possibility is radio navigation, but it is subject to detection and to jamming by the enemy or the weather. Dead-reckoning navigation is the solution since it never completely fails or temporarily fails. Dead-reckoning is the determination of present position by application of distance and direction travelled to the last known position. Vehicular dead-reckoning involves the determination of distance by use of odometer, and azimuth by use of some type of compass. Plotting can be accomplished by use of a protractor with map, graph, or blank paper. Even the M10 Plotting Board can be used as an expedient plotting device.

Determination of direction from inside a combat vehicle and the plotting of data while bouncing along cross-country are definite problems, but fortunately there is a navigational system under development which can solve these problems. The Engineer Research and Development Laboratories at Fort Belvoir have for several years been working on a navigational aids developmental program. The result of this program to date has been the development of a navigational system called a Vehicle Direction and Position Indicator. Basic components of this system are a gyro compass and a position indicating computer.

The gyro compass is called a Subminiature Gyroscopic Compass and is designed to be mounted in a combat vehicle, either tracked or wheeled (Figure 70). Weight is about 33 pounds and its dimensions do not exceed 10 1/2 inches in any direction. It is a north-seeking gyro and is completely divorced from the effects of magnetic fields. This compass is currently being service tested. The first position indicating computer tested was the R-Theta developed by

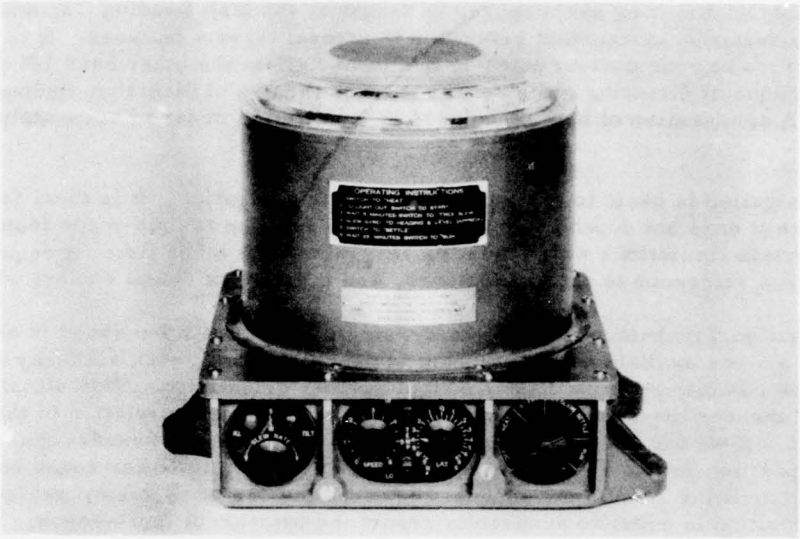


Figure 70. Arma Subminiature Gyro Compass.

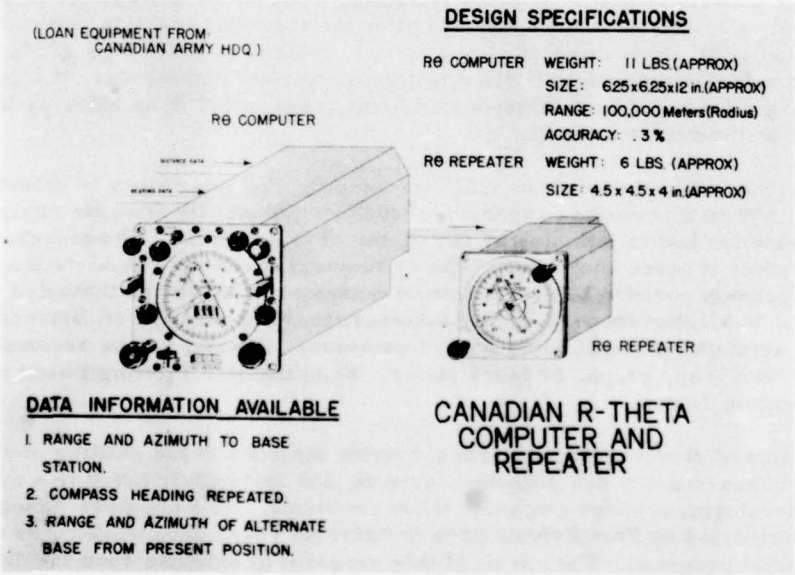


Figure 71. R-Theta.

the Canadian Air Force. It is an automatic dead-reckoning computer, and it operates on the principle of the right triangle (Figure 71). By aligning its heading and destination pointers the vehicle could be maintained on course for a preselected objective. It provided straightline distance to the objective at any given moment. By providing, in essence, polar coordinates, present position could be easily calculated. However, two more advanced type computers are currently being service tested. The Arma computer, in addition to providing the data that the

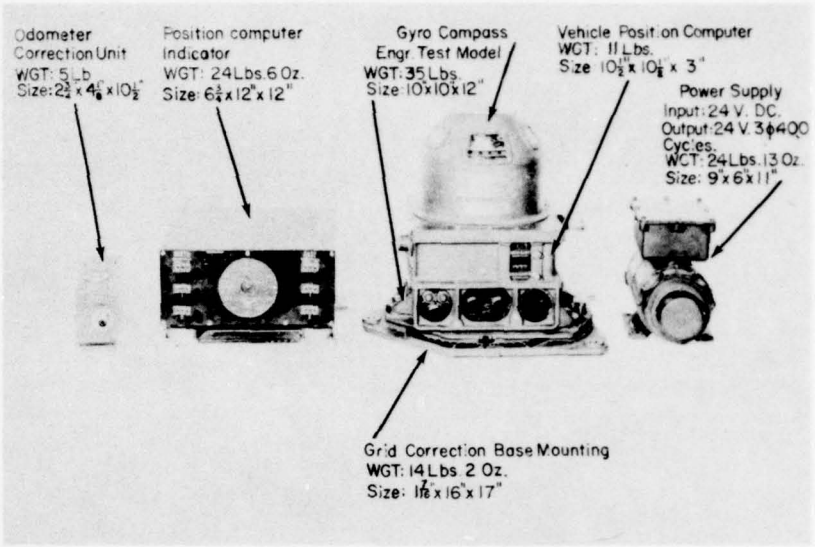


Figure 72. Vehicle Direction and Position Indicator.

R-Theta provided, also gives present position at any time in rectangular coordinates to the nearest 100 meters (Figure 72). The Ford computer provides the same data in slightly different

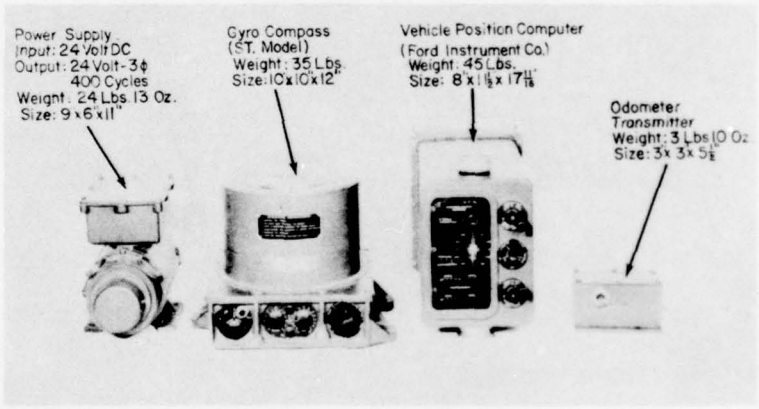
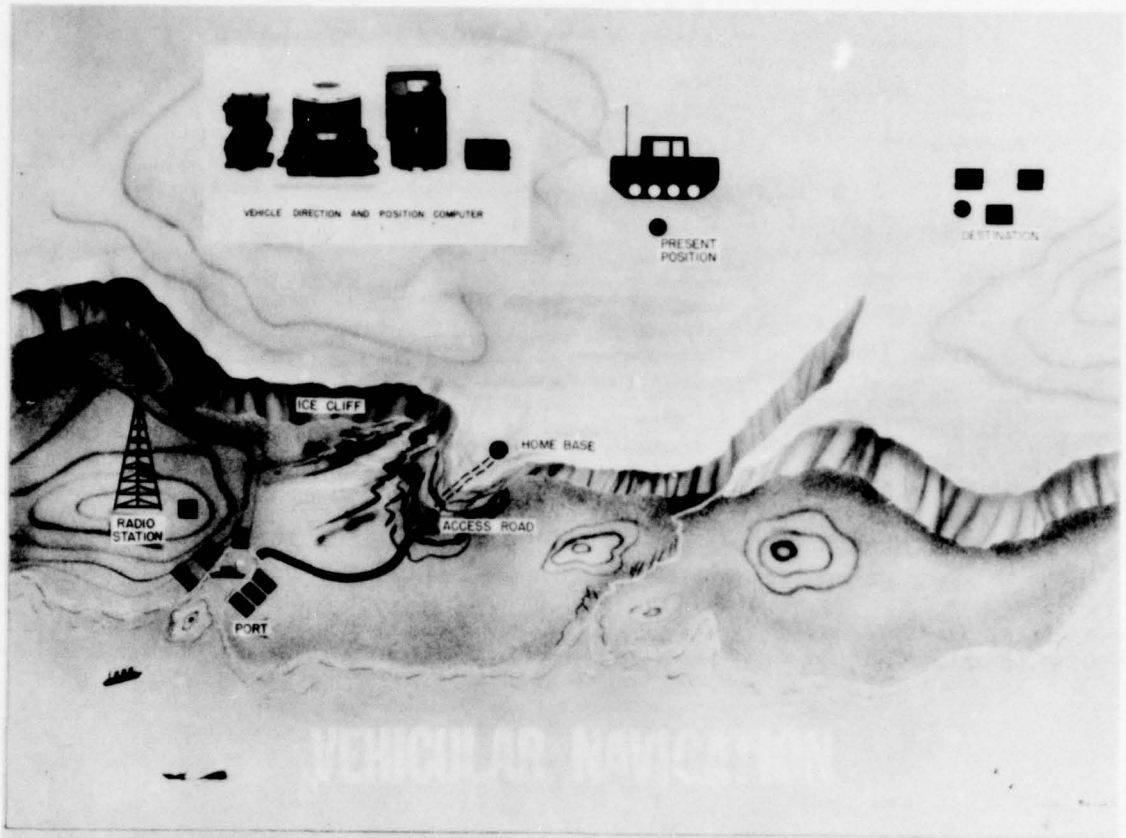


Figure 73. Ford Computer

form. The system also provides for the use of a correction factor to compensate for errors resulting from track wear, tire slippage, and different types of terrain (Figure 73). The use of equipment such as this gives the vehicle commander the capability of knowing exactly where he is at any given time, and of directing his course to a given objective by a simple technique - simply line up the pointers (Figure 74).

And so vehicle navigation is the capability of directing the course of a vehicle under any condition of visibility, under any condition of weather, with or without maps, with or without roads, and with or without reference to natural terrain features (Figure 74). It involves the use of standard techniques of ground navigation supplemented by the technique of land navigation through the use of direction-finding and control instruments. The navigational aids developmental program is designed to provide us with these instruments.



BASIC COMPONENTS

1. GYRO COMPASS
   PROVIDES TRUE NORTH AZIMUTH REFERENCE.

2. VEHICLE ODOMETER – PROVIDES DISTANCE DATA.

3. COMPUTER – COMPUTES AND DISPLAYS VEHICLE POSITION INFORMATION.

4. POWER SUPPLY – CONVERTS VEHICLE D.C. POWER INTO A.C. POWER.

PERFORMANCE

THE SYSTEM PROVIDES:

1. VEHICLE HEADING AT ALL TIMES (±1/2°)
2. PRESENT POSITION OF VEHICLE IN MAP COORDINATES AT ALL TIMES.
3. DIRECTION AND DISTANCE TO HOMEBASE ON DEMAND.
4. DIRECTION AND DISTANCE TO DESTINATION ON DEMAND.
5. OVERALL ACCURACY - ONE PART IN 200 (1/2 %)
6. COMPUTER RANGE – 100 KM (62 MILES) WITHOUT RESETTING.

Figure 74. Vehicular Navigation.

Our purpose today has been to familiarize you with the requirement that does exist for a system of vehicle navigation, and to acquaint you with the current status of the art and the equipment.

In its most basic terms, vehicle navigation means that the individual Infantry vehicle commander must know where he is and where he's going at all times. Only with this capability can the Infantry commander fully exploit his battlefield ground mobility.

QUESTIONS AND ANSWERS

QUESTION: How much physical space will the computer and compass take up in the jeep?

ANSWER: Computer - 1 1/2 cubic feet,
Compass - 1 cubic foot.

QUESTION: Does the prediction device work effectively?

ANSWER: Yes. However, it's still in the experimental stage.

CHAPTER 10
INSTRUCTOR TRAINING COURSE

Section I. INTRODUCTION

LIEUTENANT COLONEL JAY B. MOWBRAY

Chief, Instructor Training Section

This morning we are going to teach you the secret of presenting the quality of instruction that we maintain at the Infantry School. The secret is twofold; first, careful organization of instructional material, and second, training our instructors. It is important that you know how we operate at Fort Benning because you may be able to use the same techniques in training your instructors and organizing your lesson materials. Our primary job in the ITS is operating the Instructor Training Course - a 3 1/2 week course which is given to all new instructors at the Infantry School.

We also have some other missions. We develop and improve instructional aids and techniques for use in the Infantry School. We assist instructional departments by providing inspection of instructional procedures and, when necessary, retrain instructors. Of course our primary job is operating the Instructor Training Course. In this course we train the officers and selected NCOs who are assigned as instructors at the Infantry School. What do we teach? Primarily, we build upon their backgrounds. All of our instructors come to us with military experience and with civilian schooling experience. They are not new to the instruction game. Upon this background we add the content of our ITC. We have thorough instruction in speech techniques, instructional methods, evaluation and testing, and related subjects. These related subjects have to do with the facilities available at Fort Benning and the Commandant's and Assistant Commandant's policies. Scattered throughout the periods of formal instruction we have periods of practice teaching which prepare the student to step onto the platform and take over instructional duties here at the School. Upon graduation he goes back to his committee for further supervision and in-service training to learn the problems that he will give at the Infantry School.

This morning we are going to give you some of the highlights of the ITC. I will be followed by Captain Burns who will discuss lesson organization and how organization material is presented to the School. Following that, Major Glaser will discuss practice teaching and our methods of training new instructors.

Section II. LESSON PREPARATION AND CONTROL OF INTEREST

CAPTAIN JAMES R. BURNS

Instructor, Instructor Training Section

Let me preface my remarks by saying that the manuals, the references which are used at the Infantry School for methods of instruction, are the manuals which most schools use. We use FM 21-6 as our basic reference and we have certain civilian texts which we use for other areas such as evaluation. But, basically, FM 21-6 is the manual which we use. We have taken certain parts of FM 21-6 and modified them slightly as you will see as we go through this discussion. Every problem presented at the Infantry School and as taught in the ITC is organized the same way. Each problem has three distinct parts or phases. These phases are the introduction, the body, and the conclusion. Into these three phases or parts we incorporate the stages of instruction as outlined in FM 21-6; we use the five stages of instruction and we place them in our lesson planning and in our presentations at the point where they would logically come.

Within these three parts we will have preparation, presentation, application, examination (when appropriate) and the discussion or critique.

The first part, as I mentioned, is the introduction. We have two distinct reasons and requirements for giving the introduction, and in our lesson planning, in our lesson preparation, each instructor organizes his lesson or his introduction in the following manner: He organizes his lesson in such a way as to have a distinct attention gaining step, and secondly, he has an orientation. These two parts of the introduction are always present. We have recognized the fact that we cannot hope to orient our students unless first we are sure that what we are going to say in the orientation is being heard. For this reason, we gain attention. We can do this in any one of a number of ways, from the instructor moving out and just beginning his talk, or by welcoming the class once in the morning, and once in the afternoon, or by having a starting statement pertaining to their lessons. By telling a story related to the lesson which has not as its purpose to teach but has solely as its purpose to gain attention. Rhetorical questions can be used to gain attention. The use of testimony, skits, and illustrations - historical or otherwise. These are some of the ways by which we gain attention at the Infantry School. The point is at the beginning of every problem (not the beginning of every period but the beginning of every problem) we do something to gain attention. And we at the Infantry School plan this, put it in the lesson plan and it becomes a part of the vault file.

The second part of the introduction is the orientation. In the presentation stage of instruction in the introduction of the presentation there are normally two requirements; i.e., stating your objectives and your reasons or motivation. We have gone just a bit beyond that and in our orientation we have three mandatory requirements and two bonus requirements which we use when they are applicable. The first part of the orientation is the lesson tie-in. We organize our instruction and present it so that the students understand where, in relation to the over-all block of instruction or the over-all program of instruction, this particular material fits. This is good because students can be informed and will know at the beginning of a problem that this is the first of 12 or that this is the last of 4 problems. They also know that this instruction, e.g., logistical instruction, fits into the over-all block of subjects presented by the Command and Staff Department. Many of our committees have adopted as a lesson tie-in the process of preparing a big chart. On this chart they list the total hours or problems that each class will receive from this committee and as each class or problem is started they place a red spotter by the problem being presented so that the students know that they have three or four to go.

Our second mandatory step in the orientation - by the way these do not necessarily come in the order we have listed them but in the order that is most logical - is the motivation. Why is this important? This is the same as FM 21-6 - they mention reasons; we say motivation. Not why is this important as far as their future is concerned, that is, "if you don't know this you'll not do your job well in combat," but why is it necessary now? Why do they need to know this and why are they receiving it at the Infantry School? At the Infantry School, as in other schools, a class is not presented unless there is a need for it. But what is the need? Here we tell them what that need is. Why they need to know this, why they are receiving it at this time, and we spend as much time in motivating or explaining why the material is being taught as we do with any other step in the orientation.

In the third requirement, the scope or the statement of the objective - what will be discussed or accomplished during this period - the lesson "objectives." This is different from the over-all lesson objectives as found in the POI. Here we state specifically what we are going to cover during this period, not just that during this period we are going to discuss lesson organization as presented at the Infantry School, but that during this period we are going to discuss lesson organization as presented at the Infantry School to include the preparation of the introduction, the body, the conclusion, and the use of teaching points. Our students receive in the first week of training here, a class which shows them how Infantry School instruction is organized, and they are encouraged to take notes on what the instructor says in the orientation. In taking notes on the scope, the student can make a mental check on his notes saying, "This has been done."

These three are mandatory requirements for the orientation. In addition to these, when it is appropriate, the instructor will plan to present the methods used to tell the students what type of instruction they will be receiving for the rest of the morning or the rest of the problem. This is especially beneficial when we are presenting multiple methods, i.e., when you are going to have a discussion or conference now and this afternoon you are going to move out into the field and actually do it, or we are going to have a one hour lecture now and then we will have a demonstration later. And finally we say we can point out application. When will this material be used? Not "You'll need this as future battle group commanders and staff officers," but when specifically will they need it? Three days from now we will go to the field and conduct this air landed operation, or four days from now we will have a CPX on this material. So these five requirements then are designed solely to orient, solely to let the student know what is coming, why it is coming, and where it fits in. This then is the orientation, the second part of the introduction. Gain attention and orient the student.

After this has been accomplished in the planning of our problems, we next prepare and present the body. In planning the explanation, or the presentation stage of instruction in the past, we have read, heard, and perhaps used main ideas, main elements of discussion, primary areas of discussion, student outcome of learning, and principal points of the lesson. All of these we've heard. We do the same thing, and we put these in the body, only we call them teaching points. After the preparing instructor has determined his lesson objective, which comes from either the POI or the lesson directive written by CONARC or by the Infantry School, he sits down and says, "O. K. how many main or principal areas of discussion do I have in this problem?" And for each one of these main elements, or statements of fact, we prepare what we call a teaching point. A teaching point is a principal part of a lesson. It's a logical bit of information that the student can understand, and when all of these teaching points are taught or understood, the over-all lesson objective will be accomplished. Specifically and technically, the definition for a teaching point is this: A teaching point is a statement in complete sentence form of a specific and significant principle, doctrine, technique, skill, or element of knowledge that students should understand and/or apply as a result of this period of instruction. That is the definition. Purely and simply, it is a principal area of discussion, and we organize our instruction by deciding whether we have four or five main ideas or main elements or main facts. I put these in sentence form and then I start teaching. You came in contact with teaching points on Tuesday morning with Captain Arter from the NRI Department when he showed you the nonresident material that went out using teaching points. These are the same that we use here. Certainly we cannot, just in our planning in the body, prepare four or five teaching points for a four-hour period, put it there, and let it ride. We have to do something to teach these teaching points and we do this by supporting material. After we have decided upon a teaching point, then we go about making the student understand. This is what we call supporting material. What is it? It can be just what I am doing now, explaining. It can be a discussion, where the instructor asks questions and gets answers from the students and guides the discussion to an understanding of the teaching point. It can be the use of training aids. It can be a demonstration or a skit. It can even be an examination or a practical exercise, a field exercise, or a map and terrain exercise. Anything that is done from a platform in planning, anything that is done in planning to teach the teaching point is supporting material. Here is where we start incorporating the stages of instruction into their logical place. If we find that by application we can best teach, then we will have the application stage of instruction under a specific teaching point. If we find we can best teach by an examination, and we certainly can, then we'll have an examination under a teaching point. So these are the types of supporting material which we use, teaching point by teaching point, to accomplish our lesson objective. As the instructor plans his teaching points, as the instructor prepares the main elements of discussion in the problem, he concerns himself with the relationship of one teaching point to another. He concerns himself with how can I most logically arrange these teaching points so that one will follow the other. By known to the unknown and simple to the complex. As he does this, he plans the use of transitions. You and I have been using transitions for a long time, a method whereby we move from one point to another. But we have found that transitions, that is a movement from one teaching point to another showing the relationship or showing the logical organization of this problem, is so important that we plan it and actually

put it in the lesson plan, and the questions that the instructors ask or the subsummary he uses, or the teaching vehicle which is used to move from one point to another, is planned and put in the lesson plan under transitions. So these also are in the body. That then is the body. What it contains, teaching points, material supporting teaching points in the way of questions, explanations, discussions, skits, etc., and transitions. And from that the instructor plans and presents the conclusion.

Our conclusions have four mandatory requirements. They are, first, to maintain attention. I think if we were to be asked, which part of any period of instruction is the least important, probably you and I would say the conclusion is the least important, because this is the part of instruction that receives probably the least concern or the least preparation. This should not be so, because in the conclusion you are going to point out the main part of the problem. In the conclusion you are either going to leave the student with a good taste in his mouth or you are going to leave him feeling cold. We have four distinct requirements in our conclusion. An attention maintainer, a step designed to insure that we have the student's attention, so that we can proceed with our conclusion. This may be a smooth transition from the body into the conclusion. It may be a demonstration, it may be a skit, it may even be a joke. But something is done so that the instructor can be sure that the students are still listening as he goes into the conclusion.

Two parts in summary. We restate the lesson objective: "During this period we have discussed lesson planning and preparation as used at the Infantry School." And then we summarize teaching points: "Specifically, gentlemen, we have learned this, this, and this." So that as in the introduction, as stated in our objective, our summary in the conclusion is specific. We point out the practical application. We could do this in the orientation, as I said, but we must do it at the conclusion. Show them where this material will be used, when it will be applied here at the School or in the field. Finally, a strong closing statement. We say that this stimulates the action - at least it further emphasizes the importance of the problem. These are the four mandatory parts of the conclusion.

These then are the three parts of any lesson, regardless of the type lesson, regardless of the class that receives them. The introduction, the body, and the conclusion. This assures the instructor that he had properly organized the lesson.

Speaking of organization of the lesson, I want to tell you a very brief story about what happened to a friend of mine not too long ago at the Dismounted Drill Committee here at the School. This man had been assigned to the committee and had been presenting classes on right face, left face and steps in marching, to BIOCs and OC classes for two years. He had these classes down pretty well and he was quite an accomplished instructor. One day at about 4 o'clock in the afternoon he happened to look at the next days schedule and he saw that he was going to present a class in the facing movements to an OC class. Well, this was fine. He got out his lesson plan, started checking his training aids to see that everything was set. And as part of his instructor check, he happened to see who was going to demonstrate for him the next day. Well, Sergeant Smith normally demonstrated. He turned to the principal enlisted assistant instructor and he said, "Who is going to demonstrate for me tomorrow?," and the man said, "Sir, Sergeant Smith normally does, but he is on leave." "Well, how about Sergeant Brown?" "Sir, he has athletes foot and is not going to be able to make it." So the man said, "Sergeant, how about you?" And he said, "Sir, I am going to be sick tomorrow. You're without a demonstrator." Well, this concerned him but he still had time. So he picked up the phone and he called the Department and he said, "Look, I have a class going tomorrow to an OC class and I need a demonstrator to demonstrate the facing movements." They said, "You are in luck, young man, we just had a very senior NCO report in. We will send him right over." The man said, "Good, if he is a senior, he has been around a while. Whip him down." In the meantime, the instructor went on to check out the uniform and to see that virtually everything was sound and the area had been laid on so that his instruction would, as always, go on flawlessly. After he had done that, in walks the NCO. "Sergeant _____, my name is Captain Burns. Look, I've got a class in the morning at 8 o'clock on the facing movements to an OC class and I need a demonstrator.

The demonstrators we usually use are gone. Now you know how to do right face, left face, and flank, do you not? How long have you been in the Army?" "Fourteen years." "You should know it well enough. O. K., now look, the uniform you are in now is the uniform for tomorrow. So if you will show up at 7:30 in the morning, we will get the class set up and I will explain what to do at that time." So the man took off and, sure enough, the next morning he appeared bright-eyed and in his proper uniform. So the instructor, in setting up his class, told him that when it came time, all he would do would be to demonstrate; he would tell him to come out and post and he would do the movements as he had explained. Then the NCO agreed. Everything was set, the class arrived and they got started on time. The instructor went through his presentation explaining each item very carefully following the three parts of the lesson as we use at the Infantry School. It came time for him, as supporting material for one teaching point, to demonstrate the facing movements and the steps in marching. So he said, "O. K., gentlemen, I've explained it, now I am going to demonstrate it." (Demonstrator executes facing commands.) "How long did you say you have been in the Army?" "Fourteen years." "Where have you been for 14 years?" "I was in the post stockade." This actually didn't happen, but it could have. It won't, because of our lesson planning and preparation as we use it.

You have seen a demonstration. A demonstration is one of four methods of instruction which are used at the Infantry School today. Only four, or a combination of these four, are used. The first method of instruction which we teach at the ITS and which is used at the Infantry School is the lecture. The pure lecture where the instructor stands and for 50 minutes or for two hours gives the presentation and receives nothing from the students. There are very few lectures, as such, presented at the Infantry School. Why? Because we do not feel that this method will accomplish the most learning. So for this reason, normally, we use one or a combination of two others.

The second method is the conference, the exchange of ideas, if you will. Call it a discussion, call it a guided discussion. In a discussion the instructor asks questions, and by his asking of questions and controlling student answers, and by further questioning the students, the students arrive at certain preestablished objectives, from which they acquire an understanding of teaching points. We familiarize our students or prepare them for this discussion or conference by the use of home study assignments, so that when they come to class they are prepared to discuss the lesson. By a discussion, and by the instructors summing up and furthering of the discussion, they are prepared to arrive at these preplanned teaching points or objectives. That is the conference method.

The third method of instruction is the demonstration which can be used any time for any subject, normally, as supporting material. The demonstration is primarily employed to teach. Therefore, if in the planning of a problem the instructor says this teaching point can best be taught or can at least assist in ITC teaching by a demonstration, it is conducted. By combining a demonstration with discussion in a conference, we do a little better; we have a little more interest. We accomplish a little more learning.

The fourth method of instruction which is used, and used predominately, is the problem method or the practical exercise - the situation-requirement whereby the students are placed in a role. They are given a situation and a requirement and, as a result of certain principles which have been established and understood through the discussion or conference, they arrive at solutions. The problem method. We feel that the combination of the conference or discussion and the problem method is the best method to use. Where we can have a discussion, let them arrive at certain facts, and then apply these facts as soon after as possible by the use of problems - we have the best, we have the optimum. These are methods which we teach and which are used primarily.

Additionally, in planning our lesson - after understanding the three parts of a lesson - there is one other item that the preparing instructor concerns himself with, and this is the interest and the control of interest. Certainly our students are, as at all service schools, captive

students. They come here as part of their professional training and they are charged then with the responsibility of learning. They may be charged with the responsibility of learning in the over-all course, but it is up to you and me to insure that they want to learn and are interested in each specific problem. We do this by the integration of certain interest factors into every problem. The interest span, that time which we can hold the interest of the student without it lessening or waning, has been written in some books as three minutes, others as five, and still others, as eight minutes. These are eight minutes that you could talk using one approach and have the students listen to you and be interested. We do not feel that the interest span, as such, is a distinct time. In preparing our instruction, we have had our instructors go through certain analyses or certain estimates. We consider the very nature of the subject that we are presenting. Is this normally a dry subject? What time of day does the class normally receive this problem--the first hour on Monday, the last hour on Friday, the first hour after lunch or during the middle of the afternoon? Certainly this will affect the amount of time students will be interested in any one approach. We consider what the class has had before, what they will have after this; are they going to be faced with a four hour examination, have they just come from a four hour examination? As a result of this estimate, we determine that we must integrate interest factors into our lesson every so many minutes, or here, here, and here. Some of these interest factors which we integrate are the same factors which we use to gain attention. We tell a story. We tell a joke. We use practical exercise, we ask a question, rhetorical or otherwise. But the point is that the instructor must realize after this analysis that there are certain things he must do throughout the problem to maintain interest. We do this by analyzing each interest span as it applies to each class.

Everything that we have said up to now deals with lesson planning and lesson presentation as a result of this planning. What do we feel needs to go into the person who presents this well-planned lesson? We recognize that there are certain factors which go into the over-all attitude of a good instructor. These factors are not new, but these are the factors which we concentrate on at the ITC. We feel that in order to be a good instructor there are four qualities which must be possessed. First, sincerity. There are two types of sincerity that instructors will learn to possess-one is that they sincerely believe in the subject they are teaching; and second, that they believe in their job of teaching. This can be learned. This sincerity can be acquired. It can be acquired by sincerity in the material that is presented; it can be acquired by knowing that the material that is presented is the most accurate; the sincerity by knowing it is the most effective because of thorough research. By knowing from experience what the need for this knowledge means, and what not having this knowledge can do. Secondly, by believing that only by good platform instruction can students learn and learn well; that by presenting material from the platform you can accomplish so much more than you can from the written word. Our instructors are trained to believe in these. And the belief in these two accomplish this factor of sincerity.

A second factor is confidence. Confidence again in two things: confidence in his ability to present instruction because he is prepared; confidence that he knows all the methods of instruction and all the instructional techniques needed to present good sound instruction. He gets this confidence by practice; he gets it by having someone listen to him, by being critiqued. Confidence in the material which he is presenting. Confidence that the Infantry School instruction is the ultimate, that it is flawless, because we have researched it, because we studied it, because we have revised it, because we are confident that we have what is the latest word. This is the second factor - confidence in his ability, confidence in his material.

And thirdly, enthusiasm. This is not to say we feel that every successful instructor or every good instructor should be the type of person who rants and raves and prances over the platform and jumps up and down. Enthusiasm can be learned. Enthusiasm can be expressed through practice. Some of the ways which we express enthusiasm are by our movements, by the use of our voice, by the rate with which we speak, by the attentiveness with which we present our instruction, and by the concern we give our students. Each of these through practice and through concern can be acquired. There is such a thing as acquired enthusiasm.

The fourth factor which goes into the over-all attitude is humor. Having a sense of humor. Knowing that it takes humor to make a class react favorably. You do not have to tell a joke every five minutes to have humor, but be alert to humorous situations. Some of the funniest things that ever happened at this School have happened because the class did something. If an instructor can take this situation and make it work for him by recognizing humor and by going along with humor, he will be that much more effective. It takes a class about two seconds to pick up a false instructor. It takes a class about that long to pick up an instructor who has no humor at all, and an otherwise well-planned and well-presented class can fall flat on its face because the instructor does not possess humor. These four factors then go into the over-all attitude of a good instructor - sincerity, confidence, enthusiasm, and humor.

This, gentlemen, is how we organize and present instruction at the Infantry School. We organize it into three parts - the introduction, body, and conclusion. Into these three parts we put the five stages of instruction as they apply, as they come. We recognize that there are four methods of instruction and that we feel that a combination of two of these - that is, the conference and the problem method or practical exercise - is the optimum. Interest span is something which is recognized and applied after a class analysis. Remember, a good instructor possesses four factors which make up a good attitude - sincerity, confidence, enthusiasm, and humor.

Section III. ORIENTATION ON THE INSTRUCTOR TRAINING COURSE

MAJOR ROBERT D. GLASER

Instructor, Instructor Training Section

Gentlemen, now that you have an understanding of fundamentals of proper lesson preparation as taught by the ITS, it shall be my goal to orient you as to how the course is actually conducted. The purpose of the course is to assist the individual student instructor in developing his ability to present effective instruction. Our classes will normally run from 50 to 60 individuals, both officers and NCOs. We take this group and break them down into smaller groups of eight, segregating the NCOs from the officers. We use the figure eight as the optimum, because we feel that this is the maximum number that we can handle effectively in the time allotted during the practical exercises which I will discuss in a moment. This number will vary. Occasionally we have groups of 9 or 10, and that, of course, is based on the strength of the classes we are conducting. Normally, we use groups of eight. Each of these groups is assigned an instructor from the ITS. This individual is known as "The Group Instructor." He is responsible for the training of these individuals during their practical exercises. It is largely through his effort and the manner in which he conducts himself throughout the 3 1/2 weeks that we are able to guide the individual in increasing his ability to present effective instruction. We make a very simple approach and progress to the more complex, from the known to the unknown, if you will. We do this through the method of distributed practice.

We start initially with a 2-minute personal history, i.e., the individual is called upon and he mounts the platform, and in two minutes presents a personal history discussion of the highlights of his particular life. The reason for this presentation is to allow the individual to get on the platform and to become familiar with it. This is the period in which we break the ice. It gives us an opportunity to see the peculiarities that we are going to work with in this given individual.

From the 2-minute we move directly into the 3-minute presentation. Again this is on a subject of his own choosing. Why? We feel that in this period by allowing the student to bring into the classroom a subject that he is interested in, we will have a very good chance of seeing whether he has sincerity, whether he can engender a little enthusiasm, and whether he can speak fluently. This is why we allow him to speak on a subject of his own choice. We make a tape recording during the 3-minute presentation, and at the conclusion of the presentation we

play it back to the student. This is designed to allow him to actually hear himself, and he has an opportunity here to conduct a self-analysis. In this light he will have a chance to see whether he is effective, whether his rate of speech is fast or slow, or whether he spoke in a coherent manner. These are all cited by listening to the tape that we allow him to hear after he has made his presentation.

From the 3-minute we go into two 5-minute periods. The first 5-minute period will be an expansion of the 3-minute presentation, only in this period we ask the student to interject a joke or humorous situation. He will speak on the same subject, but now we have a practical exercise in which he must work into his presentation a humorous situation; this allows the student to experience the difficulty of presenting a humorous situation. Moving from there the second 5-minute presentation will be a demonstration. Here we request the student to bring to the classroom an object, a training aid, if you will. We now allow him to gain the experience of presenting a period of instruction where in a part of the period is devoted to an object which must be explained. It gives him a practical approach to the difficulties that arise when he must maintain the interest of the class, but must devote attention to the object and the explanation he is making. This is the sole purpose of this particular period.

We have progressed from 2- to 3- to 5-minute periods, and now we go into the 10-minute lecture. Here for the first time we will require the student to present, prior to moving up to the platform to conduct his lesson, a lesson outline to his group instructor. Why must he do this? The purpose is to see whether or not the individual understands the principles of proper lesson preparation; and also, it allows us to determine whether or not, once he has been able to put it on paper or plan this lesson on paper, he has the ability to step up on this platform and present the period effectively, using the lesson plan as his outline. So we have a two-fold purpose: to see if he understands the principles and then, once having an understanding, whether he has the capability of effective presentation. Beginning with this period we allow the students to critique one another. Up until this time, the group instructor has handled all critiques. Why? We have found through experience that initially every individual who is assigned as an instructor needs a pat on the back to get him started. Therefore we have curtailed student critiquing until the ten minute period, allowing us, the group instructors, to critique him solely on his attributes, pointing out those things that he does possess that are outstanding. Through this method we begin to instill the confidence that is so vitally necessary that he have before he can become potentially as effective as we hope he will be when he graduates. Beginning with the 10-minute lecture the students begin to critique one another. Now, he gets a chance to listen to seven different people telling him what they think of the presentation. He can evaluate these remarks as he goes along.

Now from the 10-minute lecture we move into a 15- to 20-minute conference. The subject the individual spoke on during the 10-minute lecture will now be expanded into a 15 to 20-minute conference, i.e., during this period he will now teach using the conference method of presentation. At the conclusion of this period, the next practical exercise will be a repeat of the time, 15- to 20-minutes, but here again we have built in flexibility into the course. What do I mean by this? For example, if we find an individual who has done fairly well throughout the course, but has difficulty in presenting the conference, we may ask him to come back during the next practical exercise and speak on the same subject, or we may assign him an entirely new subject on which he will conduct his second 15- to 20-minute approach. Normally, this is the procedure that we follow. Why? We do this to give him another opportunity to present a new subject in 15- to 20-minutes. This necessitates additional research, planning, and rehearsal.

At the conclusion of the second 15- or 20-minute period, we then go into the 30- to 35-minute exercise. This again is an expansion of the same subject. He has spoken on this particular subject for 15- to 20-minutes using the conference as his method of presentation. He will now use this same subject and expand it to 30- to 35-minutes, continuing to use the con-

ference method of presentation. This is designed to give him additional practice in further researching, practice in flexibility of presentation, in timing, and in effectiveness for learning.

We have progressed at this time from 2, 3, 5, 10, 15, 20, up to 30 and 35-minutes. Now we are coming down the stretch. At this time we interject a three minute presentation on an impromptu subject. And why do we do this? In order to test the flexibility of the individual. Is he effective when speaking on a subject of which he has no knowledge? Just prior to getting on the platform we hand the individual his subject and we allow him a few minutes to collect his thoughts and then he will present a three minute lecture. At the conclusion of this period or this presentation, we then open the period up to questions at which time the individual now must defend his position by taking questions from the floor and answering them being as effective as he has been throughout his presentation and leaving the same objectives in the mind of the student when he is finished. I would also like to mention at this time that during this three minute impromptu presentation, we use subjects which we have given formally from the platform. For example, what are the principles of proper lesson preparation? What are the advantages of the conference over the lecture? How do we properly use training aids? Things of this kind. Based on these facts we are not only trying to observe his flexibility, but it affords us an opportunity to realize whether or not he has an understanding of the fundamentals that we have taught on a formal basis. At the conclusion of the three minutes impromptu exercise, we will go into the beginning of his final presentation.

Let's go back to when the officer or NCO was initially assigned, having been placed in a department and further assigned to a committee. The committee chairman, realizing that the individual must go through the ITC before he is allowed to formally present instruction from the platform, will designate a given problem within that committee that the individual will present during his final examination in the course. Throughout these practical exercises, the individual student instructor realizes that when it comes time for his final examination he will give this particular problem. All during this he has been working on his preparation for his final. You notice that we have two approaches. One is the rehearsal, and then, the final examination which is a performance exercise. We have the rehearsal for one reason. It allows us to critique him in the area, this being the first time we have heard him present fifty minutes of instruction based on a formal period as conducted here at the school. We judge him strictly on his effectiveness for learning. Did he communicate? Did he get these things across to his audience? On this critique we discuss the little things perhaps he hasn't considered during his presentation. Once armed with these facts, he will replan and modify where necessary and then the next presentation will be his final. Again there is just one thing we are looking for - the effectiveness of this individual to present effective instruction.

During each of the practical exercises that I have discussed, we evaluate the individual from the standpoint of his effectiveness, his speech techniques, his poise, his platform manner, things of this kind all the way along. After having given these nine exercises he has had a very good knowledge of the fundamentals of not only proper preparation, but proper presentation as well. Two-thirds of the time allotted to this course - is spent on conducting PE's. The other third is devoted to formal instruction conducted by an officer or NCO of the ITS to the class as a whole. This time is so divided as to immediately precede the practical application by the student. For example, just before he goes into his ten minute lecture presentation we will conduct a formal period of instruction on lesson planning and procedures used in planning the lecture and conduct of the lecture. Once armed with these facts he will then leave the classroom and begin to prepare his practical approach armed with those essentials that he must have in order to understand proper procedure. This is done throughout the course.

This course, as I said initially, is designed to increase the potential of the individual and to assist him in developing his ability. However, it also is designed to instill in the individual confidence which he must have. Further, it allows him to familiarize himself with the standards and the policies of the School and the Assistant Commandant. Lastly, he has ample opportunity throughout these various periods to evaluate himself in the light of his strengths and his weak-

nesses. We teach him to capitalize on those things that he has as his strengths. Through individual counseling conducted by the group instructor we will counsel the individual on means and ways by which he can overcome the weaknesses that he has a tendency to show. All of this is done to make him as effective as possible in formal presentation.

Section IV. NEW TRENDS IN USAIS INSTRUCTION

LIEUTENANT COLONEL JAY B. MOWBRAY

Chief, Instructor Training Section

Since the beginning of this presentation we have been talking about the things as they are at the Infantry School - our method of organization of material and our ITC. We want to spend some time now in looking to the future and considering some of the trends in Infantry School instruction, for this will help you in evaluating some of the training literature and materials you may get from the School from time to time. Let's look at some of the trends as we see them now. They are: integration of subject areas, greater student responsibility, shorter academic day, smaller class size, and better training aids.

Now let's consider these one at a time. On April 1 of this year the Tactical Department, and the Staff Department were consolidated into a Command and Staff Department. One purpose of this was to provide more integration of subject matter areas. At one time, almost all subjects at the Infantry School were taught as separate areas. We taught communications, automotive, and staff subjects as separate items. Now we are trying to teach the basic principles in these areas as separate subjects but all application of this knowledge is in the context of a military situation. You will see more and more requirements for solving logistical problems, personnel problems, intelligence problems, etc., in the context of an over-all tactical situation.

A second area is the trend toward greater student responsibility. At one time it was a policy of the School that a student could not be tested on any subject that had not been covered from the platform. This, of course, led to recognition on the part of the student that it was not necessary for them to do outside work in order to pass the course. Now we require the student to be responsible for his home assignment. An instructor begins his class with the knowledge that the student has studied the fundamentals of the subject.

Along with greater student responsibility goes the third area - a shorter academic day. If we are going to require the student to take more responsibility for his professional development, to be responsible for study assignments, we must give him more time to do this. At the present time, the classes at the School are organized into eight forty-minute periods. As of 1 July we intend to go back to a 50-minute period - with the idea of having not more than six classroom periods a day. Another trend is toward smaller class size. We recognize that in order to have satisfactory conferences and discussions it is preferable to have smaller classes. We are experimenting with breaking down our advanced classes into four 50-man groups rather than the 200 man class for some periods, and we are experimenting with holding more seminar type classes, where the class is broken into discussion groups.

Another trend is toward better training aids and I want to discuss this at some length. This vu-graph which we have been using is best used where the instructor has control of the vu-graph. It is wasteful of personnel to have an assistant instructor sitting here all the time for possibly a few minutes use during the period. The instructor has better control of his class if he can flip his charts as he wishes. These transparencies will become more and more used, we believe, and we are experimenting with two ways in which the instructor can operate the vu-graph. One is by a mirror and a translucent screen. The vu-graph is placed on the platform, shines onto the mirror which angles it onto a translucent screen. Recent developments in screening material make this a highly satisfactory method of projecting transparencies. A second way is by

attaching the vu-graph to the podium and having it projected to an angled elevated screen above the platform. This is a good method. It requires, however, that the podium be permanently fixed because the angle of projection must be determined by experimentation. In addition to the use of the vu-graphs, there are additional developments in the field of transparencies. First, I want to discuss some of the projectors. You have seen the automatic slide projector used in this conference. It is a 35mm slide projector which is changed by the use of a button held by the instructor. This particular one only advances the slides. You can now obtain them with a remote control unit which has two buttons - one for forward movement and one for backward movement. You can use colored pictures or black and white charts; and you can leave them on as long as you want. It can be used as a chart and turned quickly to another subject without the use of an Assistant Instructor. Another device in the field of projection is a rather expensive piece of equipment called the perceptoscope. By use of this remote control panel the instructor has complete control of the machine to project either still pictures or motion at any rate of speed - forward or backward. It's a very useful instrument. I think you can see how this device could be used for orientations or briefing.

Another development has come from the Land camera system. The old 3 by 4-inch lantern slide projector is back in its own. The Polaroid Land camera permits the immediate preparation of transparencies. For instance, you can take a picture of a chart and immediately have it available as a transparency. Here is one of the charts we use in the ITS, in our orientation briefings. Also, you can use this camera system to take a picture of a group. Remember the picture we took at the beginning of the class? Here it is. These transparencies can be made in a matter of minutes. All it requires is a standard Polaroid camera which most of you are familiar with and a new type of film which they have developed called the transparency film. It is not very expensive. It costs less than fifty cents per projection. This has tremendous application as you can see. Suppose, for instance, you had groups working on solutions to a problem. You could go around the classroom, and take several pictures of their efforts, the scheme of maneuver that they have developed, and project them on the board by the time the class is ready to reassemble. You could point out by examples where they made errors or were very effective in their solution.

These then are some of the new developments which are coming along as a result of better use of transparencies. The field of TV and kinescope recording will produce more and more developments in this field, we believe. With some imagination these developments can be adapted to classroom use, and it takes imagination to be a good instructor. This is one of the attributes that we list as desirable for our instructors. They must have imagination. They must have well integrated personalities. You cannot teach if you are all choked up with your own problems. You must be able to approach teaching from the viewpoint of the student. You must know what you are teaching. You must understand how people learn. You must have skill in instructional methods - the methods that Captain Burns was talking about - when to use lecture and when to use conference. You must have a sound philosophy of education and, finally, you must be able to communicate your ideas. These are the qualities of a good instructor that we teach in our ITC. Achieving good instruction is not difficult. It takes good organization of material and training of your instructors.

This morning we have discussed the mission of the ITS, the way we organize lessons at the Infantry School, the methods we use for training instructors, and, finally, we discussed some of the trends in instruction at the School. We believe that the job of presenting military instruction is of such importance that it requires the best efforts of all of us.

CHAPTER 11
INFANTRY TACTICS

Section I. BATTLE GROUP TACTICS

MAJOR THOMAS H. JONES

Instructor, Fundamentals, Research and Development Section, Command and Staff Department

The Infantryman of today, and even more so in the future, depends heavily on mechanical mobility. The use of the Infantry carrier and helicopter allows the battle group to achieve the speed, dispersion, fluidity of operations and rapid seizure of deep objectives most suitable to the atomic battlefield. However, non-availability of carriers or helicopters, the enemy situation, rugged terrain or low visibility will cause the battle group to frequently attack dismounted.

Control measures most frequently used by the dismounted battle group are the line of departure, boundaries and objectives. These measures provide the framework within which the attacking companies are free to function. Boundaries may be crossed providing coordination is effected between units concerned. Intermediate objectives are used to insure the seizure of critical terrain needed to control the area as the attack progresses, and provide the degree of control deemed necessary by the battle group commander. While the dismounted battle group can disperse to only a limited degree, since it must avoid defeat in detail and its pace is that of the foot soldier, it strives for continuous movement, rapid closing with the enemy and low atomic vulnerability. Assembly areas, attack positions and intermediate objectives are used sparingly since their use tends to slow the attack and create locatable and lucrative atomic targets. The use of two or three companies in the attack, the remainder in reserve, is common.

In mechanized attack, an axis or axes striking toward a deep objective is a frequently used control measure. Atomic and nonatomic fires are rapidly exploited and momentum maintained. As enemy positions are uncovered, units deploy from columnar formations and assault (usually dismounted), then remount and rapidly disperse.

Security for the attacking battle group is provided by speed, dispersion, the use of air and ground security elements, and cover and concealment. In many situations, feints, demonstrations, smoke, secondary attacks, and other deceptive measures can be used to great advantage. Night attacks, usually dismounted, will be frequent. Reserves are used to maintain the momentum of the attack and exploit enemy weakness.

The planning and conduct of the battle group attack is designed to aggressively apply superior combat power (including atomic and nonatomic fires) at the decisive points by proper selection of approaches, formations and organization for combat, and maximum use of supporting fires.

DEFENSE

There are two basic types of defense - position and mobile. The position defense is relatively compact and designed to stop the enemy forward of the forward edge of the battle area (FEBA) and destroy or eject him if he succeeds in penetrating the area. The mobile defense is a fluid defense with forward areas lightly held while the bulk of the force is retained in reserve to destroy the enemy by offensive action. The "layer" variation of the mobile defense calls for the establishment of linear positions in depth with switch positions connecting these "layers" of blocking positions. The "strongpoint" variation of mobile defense, used when the defender lacks mobility (as compared to the enemy) calls for the withdrawal of forward battle groups into strongpoints when enemy pressure forces such action. The battle group is too small to conduct all aspects of the mobile defense. Regardless of the type of defense being conducted by higher eche-

lons, the battle group conducts some form of position defense, delaying action, or combination of the two, or participates as part of the reserve.

Boundaries and limiting points designate the defensive areas of the battle group and companies. Gaps between companies of up to 1,000 yards may sometimes be accepted since 81mm mortars and 106mm rifles will provide a degree of mutual support at this distance.

Responsibility for establishment and control of the combat outpost (located 1,000-2,500 yards forward of FEBA) is usually delegated to frontline companies. Troops for the COP are furnished by either these companies, or by troops of the battle group reserve attached to forward companies. Occasionally, responsibility for providing and controlling the COP may be given a reserve company commander.

The frontages assigned in mobile defense (up to 9,000 yards for battle group) and the desire for dispersion usually require three companies on line. In position defense, the division may assign frontages which permit the battle group to employ two companies in reserve, either in columnar depth, facilitating counterattack, or placed laterally across the rear area to increase blocking capabilities.

The battle group in defense organizes to create a flexible system of fires, barriers and positions which will stop the enemy, or weaken and canalize him for destruction by the striking force and atomic fires of higher units.

Section II. HELICOPTERBORNE BATTLE GROUP OPERATIONS

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Present day military thinkers place a tremendous premium on mobility. Scarcely an article is written, a speech made, or for that matter a period of instruction presented without a big to-do about mobility. Tactical concepts involve wide frontages and great depth for battle units. Reserves move rapidly to the point of decision then disperse with equal rapidity after defeat of the enemy-and many visionaries see jet powered air vehicles flitting about the future battlefield in great abundance.

Our concern for mobility is positively justified, and the time when we shall see tactical air vehicles as the primary means of battlefield movement may be nearer than we think. But for today, and like it or not, we are forced to think of today, we must learn to get the most out of the means we have. For ground mobility we have developed the Infantry carrier. It gives us reasonably good cross-country mobility as well as some protection from enemy fires. Sometimes, however, the Infantry carrier is too slow and too much restricted by terrain barriers. The only tactical vehicle we now have which will provide us more speed and greater freedom from terrain restrictions is the helicopter. Despite the fact that helicopters have been with us for some years, now, there are few units in the Army that can claim the ability to use them and achieve the tactical mobility we require. There is scarcely one unit that can conduct a helicopterborne operation with the same ease and dispatch that it executes a ground attack. Some would consume more time in preparing for and carrying out a helicopterborne move than they would for a foot move. If we are to get full value from our helicopters, if they are to assist us in making our concept of greater battlefield dispersion work, we must be able to make the helicopterborne move a bread-and-butter operation, something we can do every day. If this is to be, we must first be fully aware of the uses to which they can be put, understand how to use them, then last and perhaps most important, use them whenever the opportunity permits.

In considering various helicopterborne operations, first let's look at those using helicopters organic to the Infantry and airborne divisions. The Infantry division has sufficient (eight to be

exact) utility helicopters of the H19 type to lift a rifle platoon. The airborne division has enough light transport helicopters of the H34 type to lift a rifle company. Due to the limited lift capability, particularly in the Infantry division, most of the tactical missions for these helicopters will be of a reconnaissance or security nature. For instance, in the fast-moving attack situa-

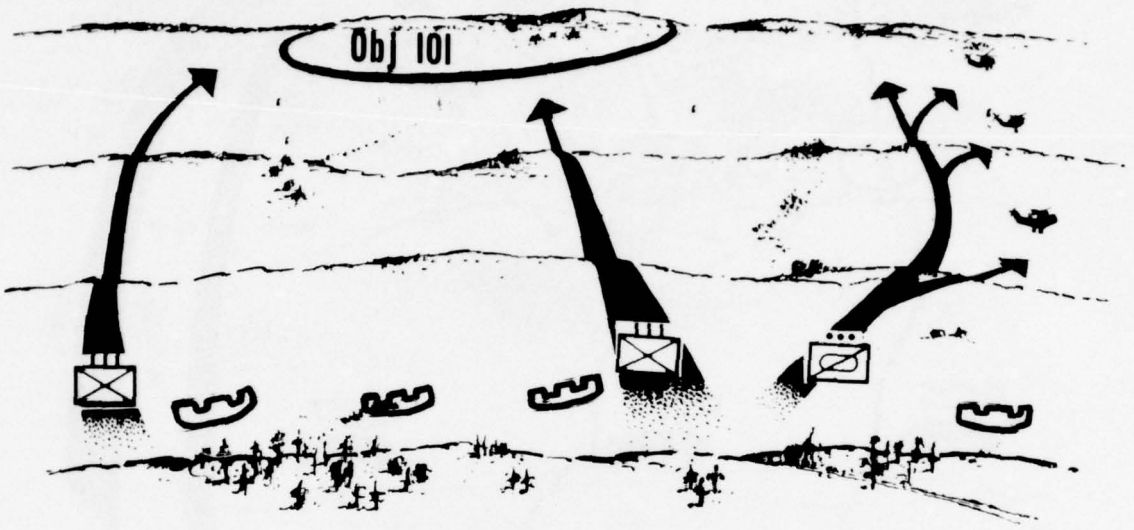

Figure 75. Flank Protection.

tion, utility helicopters are attached to the battle group with an exposed flank, (Figure 75). The battle group reconnaissance platoon, reinforced by two helicopterborne rifle squads has been given a flank security mission. As the attack progresses, the helicopters are used to move rifle squads to occupy successive observation posts and roadblocks, to conduct reconnaissance from the air, and to withdraw the riflemen in carrying out delay of enemy approaching from the flanks. Used in this way the helicopter in effect becomes a part of the security element and remains with it throughout the mission. Conduct of this type mission will require a very high state of training on the part of Infantry squads, as well as initiative and resourcefulness of their leaders. It will also require a high state of proficiency for helicopter pilots in low level contour flying to take advantage of available cover and concealment.

Divisional helicopters may also be used frequently to deliver reconnaissance patrols into enemy territory (Figure 76). As with other reconnaissance patrols in enemy territory, these patrols will usually be conducted at night to take advantage of concealment. One of the accompanying problems is to provide diversions to permit the patrol to be landed undetected. Artillery fires will probably provide the best covering noise. Further diversion may be achieved by landing at additional sites either before or after landing the patrol. This technique has functioned very well in tests and training exercises. Due to the difficulty of concealing helicopters on the ground, they normally should not remain behind enemy lines to withdraw the patrol, except in operations of very short duration, such as a raid.

Another problem incident to this type operation is the difficulty of navigation at night. Some divisional helicopter units actually have achieved considerable skill in this type of night flying. By thorough map study, by selection of routes to take advantage of easily identifiable terrain features such as roads and streams, and wherever possible by previous daylight reconnaissance, efficient flights can be made under conditions of one quarter moonlight.

Helicopterborne operations on a substantially larger scale must depend on aircraft not or-

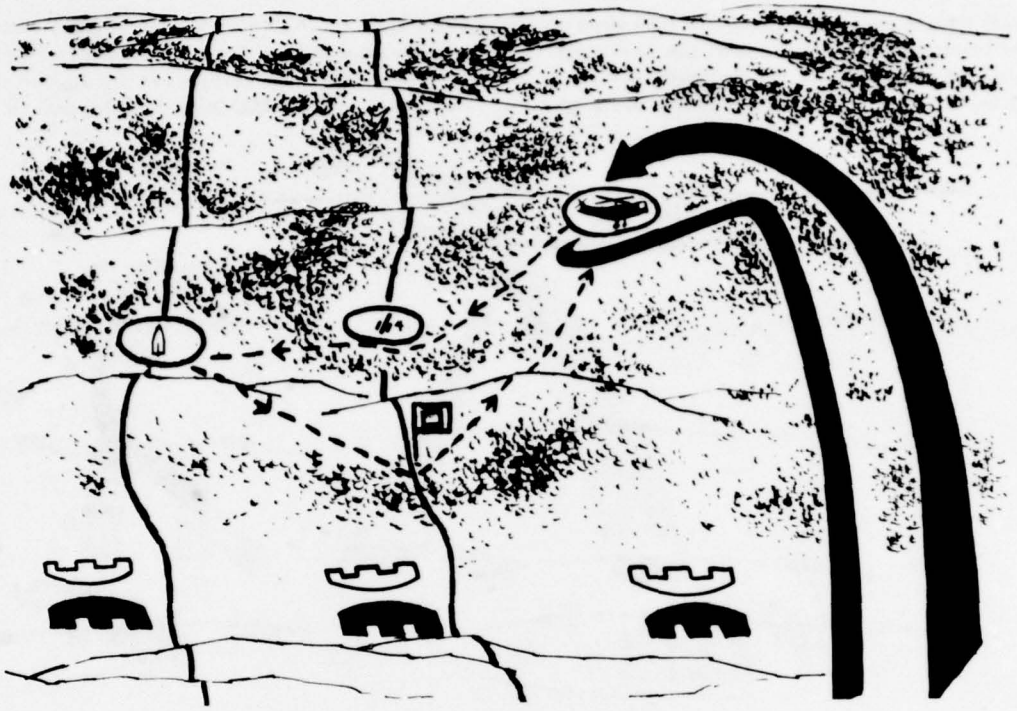

Figure 76. Movement of Reconnaissance Patrols.

ganic to the division. For efficiency and economy these helicopters are now pooled at field army level and allocated to lower echelons as required. There are two principal classes of helicopters now in use for this purpose. One is the light transport such as the H34. The other is the medium transport of the H37 type. This helicopter has a 3 ton payload and seats 23 troops. It may be converted, however, to carry as many as 34.

Many of the operations employing transport helicopters will be in the nature of tactical troop movements behind our own forward elements. In preparation for an attack, units may be moved by helicopter from dispersed areas to attack positions (Figure 77). Fire support elements may be shifted to positions from which they can support the attack. Once the objective is secure, dispersal may be effected by helicopter moves. Similar moves may be carried out in defensive situations to commit reserves to blocking positions and to counterattack positions. These moves have many of the attributes of motor moves and much of the planning is accomplished in the same manner. There are some peculiarities that warrant special attention. Because of these peculiarities, tactical air moves should be preplanned in considerable detail, at least until the unit involved has conducted several and has developed SOP's. Organization for the move, that is, attachment of units and order of march, is determined by the anticipated employment and desired disposition in the new area. Tactical integrity is maintained wherever possible and weapons and crews are loaded together. Headquarters and other critical elements are loaded in two or more helicopters to reduce the risk of loss. The air column is organized into serials and flight units in much the same manner as for a motor march.

Battle group selects and assigns loading sites for each subordinate unit. These subordinate units then mark the loading sites for recognition by helicopter pilots. The companies of the battle group are also responsible for preparation of sling loads as well as for hook-up of the loads to helicopters. Almost all moves by helicopter will involve some loads to be carried externally by sling or cargo nets. At present, slings and cargo nets are being issued to helicopter units. This means that they must be delivered to the unit to be lifted prior to arrival of

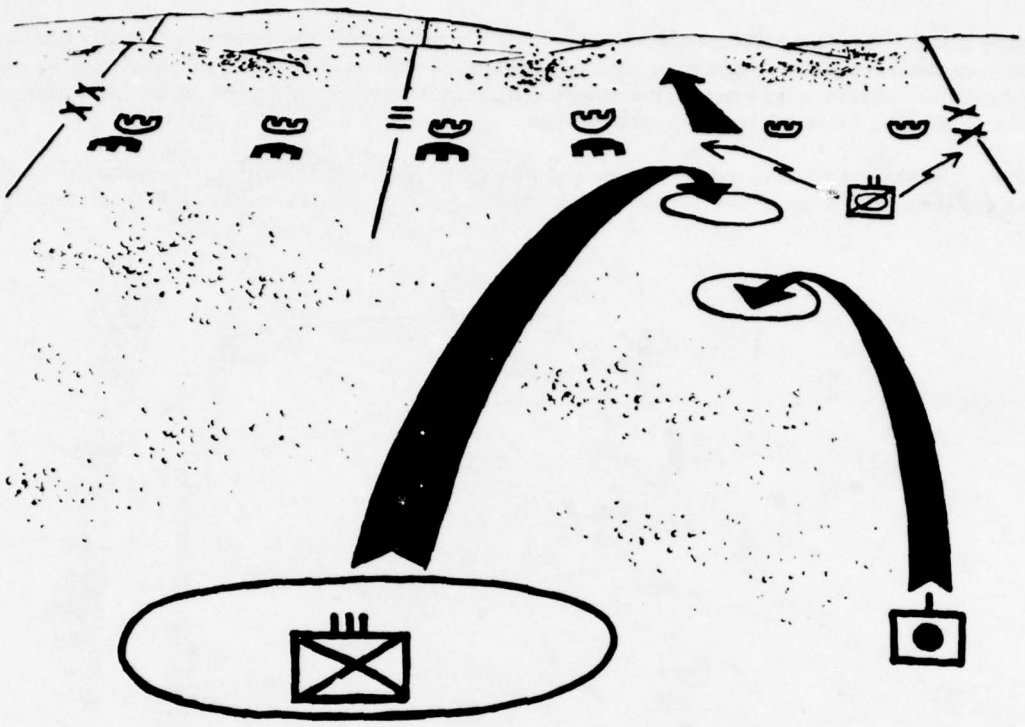

Figure 77. Tactical Movement of Troops Behind Friendly Lines.

transport helicopters in order to permit rigging of loads. Arrangements must also be made for return of the lift equipment following completion of the move. When we arrive at the stage of development in which these moves are truly commonplace, it appears that the external load carrying equipment should be organic to the battle group. Rigging and hook-up are relatively simple matters which can be taught in a short period of time.

Communication between elements of the battle group prior to loading is maintained through normal channels. Once units are loaded, control is maintained through helicopter radios. All helicopter units now have ARC 44 radios which will net with Infantry sets.

Landing sites in the destination area, as well as loading sites in the departure area, must be selected and marked. It is desirable to use sites which will reduce foot movement at either end to a minimum. Terrain will most often be the principal limiting factor. Terrain requirements vary with different types of helicopters. For this reason, and for other integrated planning, it is necessary that the helicopter unit establish early liaison with the unit to be transported.

Some elements of the battle group will move over land. The composition of these elements will depend upon helicopter availability, tactical requirements, and time and distance factors. In addition to the assault gun platoon and non-transportable elements of the reconnaissance platoon, some vehicles of mortar battery, headquarters and the rifle companies may be included. The reconnaissance platoon may be used to mark landing sites and routes in the destination area. Movement of elements overland must be planned to permit arrival at the destination in time for employment in the projected operation.

Rehearsals may be carried out when time and other conditions permit. They are particularly desirable when the units involved have had no previous experience in helicopter moves. Rehearsals should include all phases of the operation, including muster and reporting of helicopters

to loading sites. Usually helicopters allocated for movement of reserves are not physically located with the reserves. They may be kept in separate dispersal areas or they may be committed on other missions so long as these other missions will permit them to be assembled and reported to loading sites within a specified time.

Several of the items thus covered can and should be reduced to SOP's. Although probably no one operation will permit use of the SOP without changes, considerable saving of time can be effected.

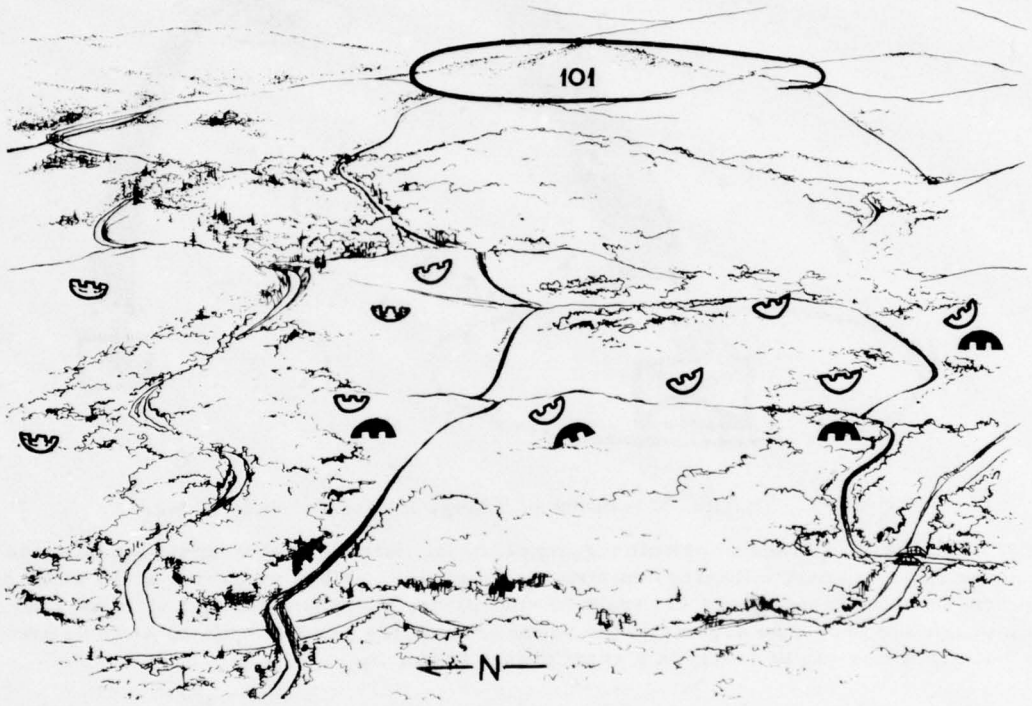

Figure 78. Present Situation, 10th Infantry Division.

There is another type of operation which has some distinctive features and which may be frequently executed by the battle group. This has been variously called the vertical envelopment, the helicopterborne assault, and the airphibious operation. It involves the delivery of units to the rear or flanks of the enemy, from whence ground action can be carried out. To illustrate this type operation, let's look at a division attack situation (Figure 78).

The 10th Division has been attacking to the east. It continues the attack early tomorrow morning to objective 101.

Late this afternoon, elements of the 10th Division seized a bridgehead over the Chattahoochee River in the Fort Benning area. Forward elements are as shown. The division has only a small force east of the river. Crossing will continue tonight, however, and dispositions early tomorrow morning should be as shown in Figure 79. The other units of the division remain in dispersed areas west of the Chattahoochee.

The attack will be preceded by an atomic preparation on enemy main defenses and local reserves. Following closely behind the preparation the main attack is launched in the south by 2d BG, 7 th Inf, mechanized with Infantry carriers and reinforced with tanks. This main at-

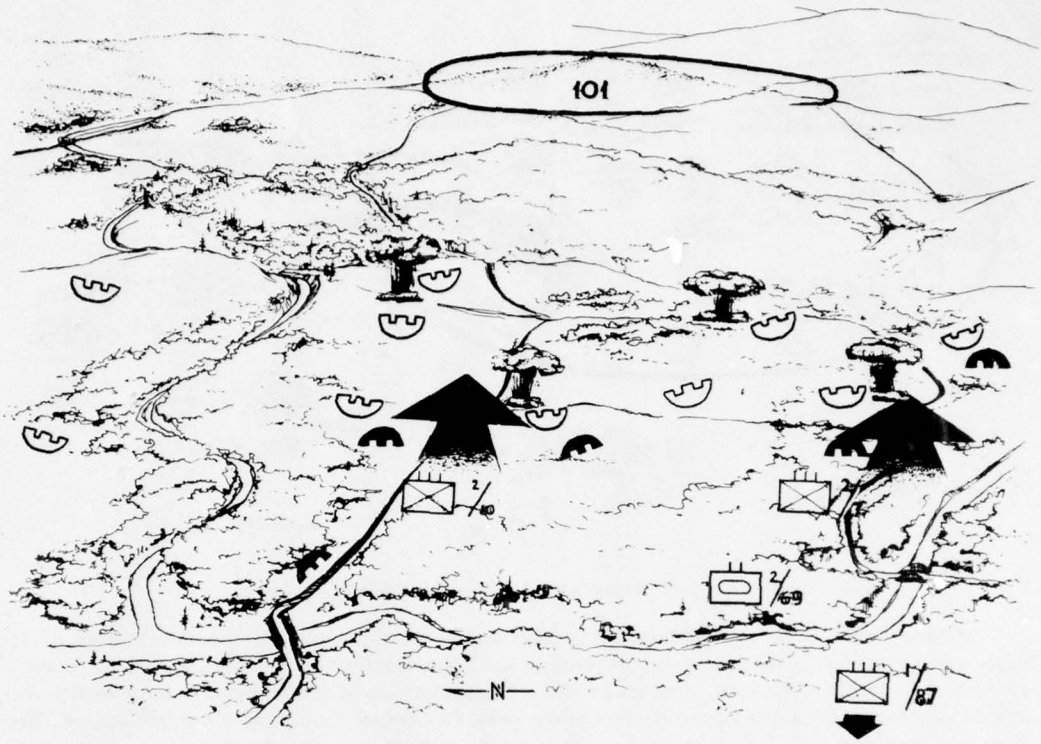

Figure 79. Plan of Attack.

tack is to penetrate the enemy position as rapidly as possible and continue the attack to the division objective.

A secondary attack is being made in the north by the 2nd BG, 10th Inf fighting on foot. Because this attack is being made on foot and because the enemy position is in somewhat greater depth here, this attack in the north will probably move more slowly than the main attack in the south.

In addition to the attacks by these two battle groups on the ground, another is being launched by helicopter. Enough transport helicopters have been attached to the division to lift a battle group. Using these helicopters, 1st BG, 87th Inf, now located west of the Chattahoochee, will attack in two areas, on objective Y and on objective X. The helicopters arrive to pick up troops just before the atomic preparation. They land for loading right in the assembly area.

Immediately following the atomic preparation, a two company task force moves by helicopter to a sheltered position to the rear of objective Y, concealed from enemy positions on the fringe of the atomic effects area (Figure 80). As soon as the task force is on the ground, it attacks to complete destruction of the enemy force on objective Y. Once this is accomplished, it is to do one of two things. If the attack of the mechanized battle group from the southeast is progressing satisfactorily, link-up between the two will be effected very shortly. The helicopter landed force may then be relifted out of the area to prepare for another attack. If, however, the mechanized attack is not progressing satisfactorily, the helicopter landed task force may continue its attack to the southwest to further assist the penetration. This task force has a purely offensive mission. It will not attempt to seize, then defend terrain. The concept of these attacks in the south is to strike the enemy as hard and as rapidly as possible with a decisive force to effect the penetration quickly.

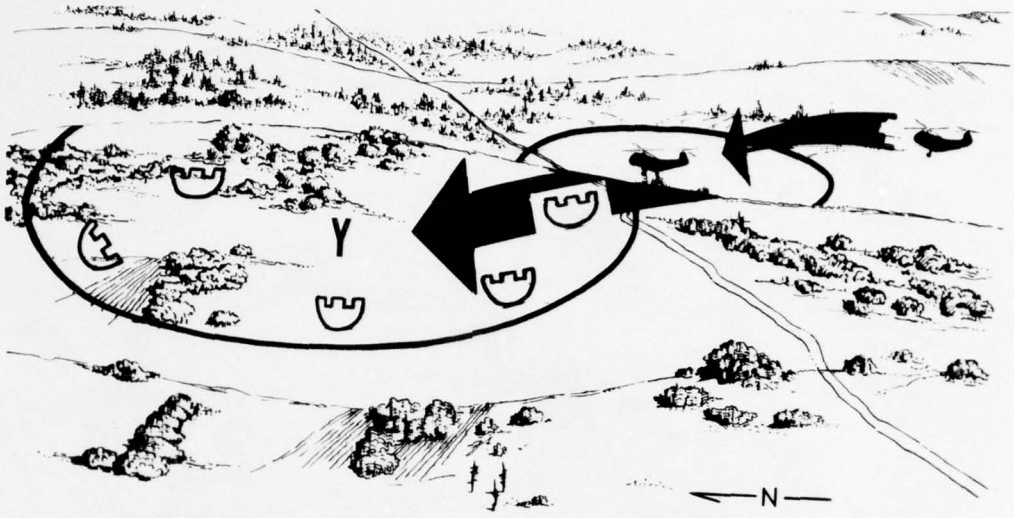

Figure 80. Helicopter Attack of a Defended Area.

At the same time the task force is moving in on objective Y, the remainder of 1st BG, 87th Inf is helicopterborne on its way to objective X. There it will land and prepare to block enemy withdrawals and reinforcements, and to assist in destruction of the enemy troops to the west. This helicopterborne force leaves its assembly area following along the Chattahoochee, then along Upatoi Creek to its objective area. This route avoids enemy positions as much as possible. It is easy to identify from the air. The helicopters fly at treetop level to obtain concealment from the enemy to the flanks. It is recognized that these helicopters are vulnerable to ground fires. We must use every means available to protect them. We seek to fly through the gaps in enemy lines. Artillery fires are scheduled on known or suspected enemy positions along the route. We may use smoke to screen our movement. Tactical Air Force is called upon to protect us from enemy air and to suppress ground fires. Escort helicopters armed with machine-guns and rockets accompany the column to attack previously unlocated enemy weapons.

Now take a closer look at objective X (Figure 81). Intelligence indicates that it is not physically occupied by the enemy. We therefore land directly on the objective to permit the greatest speed in organizing the position. After unloading, the helicopters take off and return by the same route. Only about five minutes should elapse from the time the first helicopter sets down until the last one is airborne on the way out. Rifle troops move immediately to assigned positions on the ground (Figure 82). Since the enemy is on all sides, it is necessary to set up an all around defense. Early warning of the enemy's approach is provided by the reconnaissance and security line composed of outposts, observation posts, roadblocks, and patrols operating out beyond our defensive position.

The circular pattern of the defensive position offers the best in security and strength against ground attack from any direction. It is quite vulnerable to atomic weapons however. A 50 kiloton atomic weapon will destroy the defending unit. We must, therefore, take steps to reduce the risk (Figure 83). Unless an enemy ground attack is imminent, elements of the helicopter landed force will, as soon as they have located their defensive positions, move out from these positions to reinforce the security elements. There they will prepare delaying positions while about a third of the force remains to prepare the defensive positions. In the event of enemy attack, for instance from the east, the troops disposed on the outer perimeter fight a delaying action back to the prepared defensive position. Troops along unthreatened portions of the outer perimeter will remain there. The ability of the helicopterborne force to perform this type of maneuver depends in large part upon the mobility of the opposing force and the nature of the terrain. This

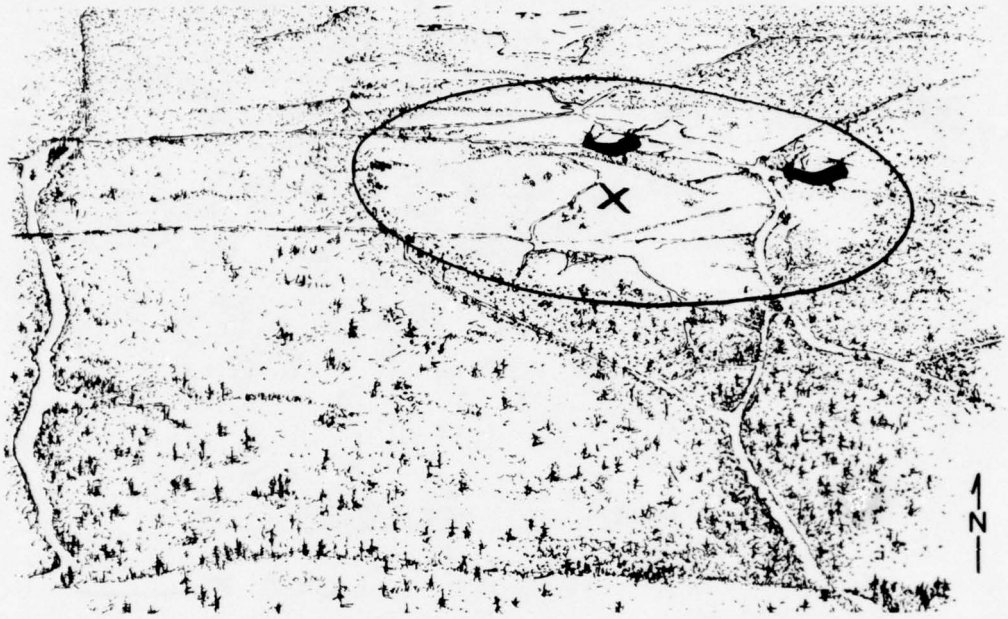

Figure 81. Helicopter Landing in an Undefended Area

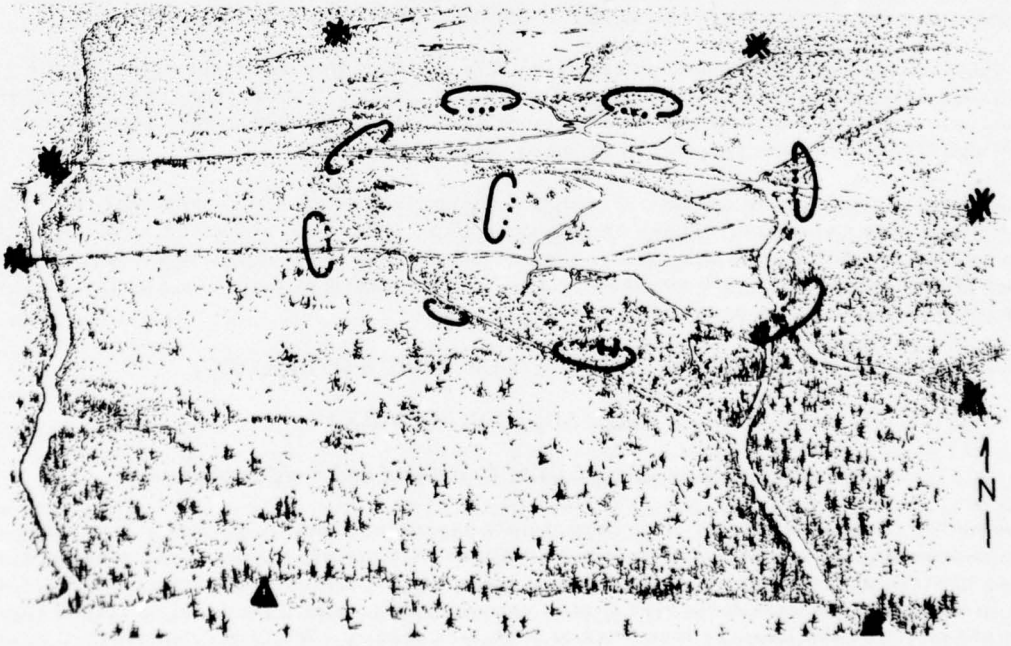

Figure 82. Organization of Defense

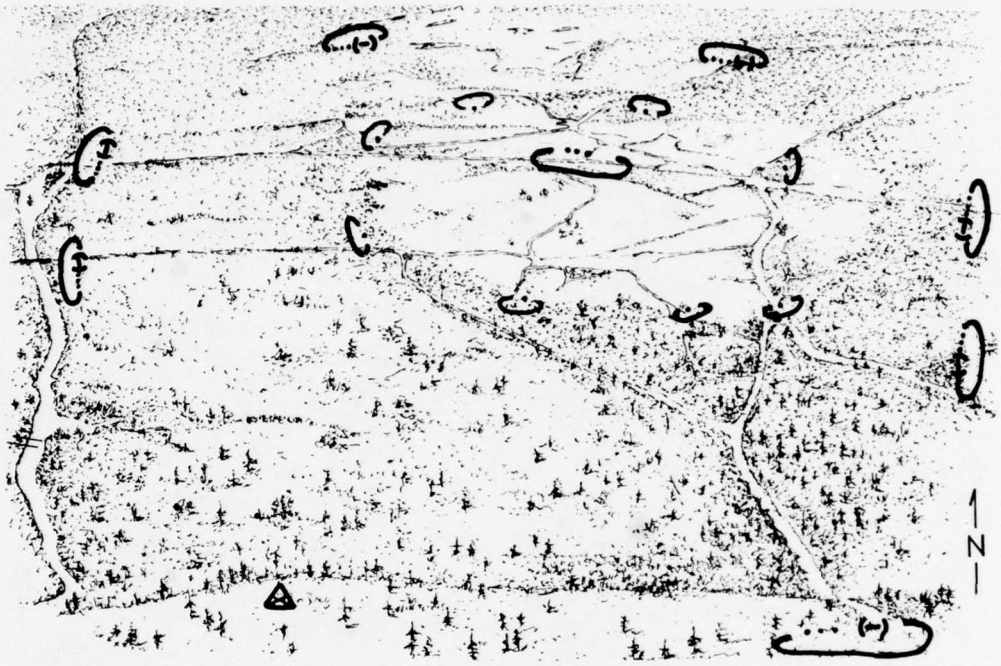

Figure 83. Expansion of the Defense Position.

area is quite wooded except for small clearings such as those where the helicopterborne force landed. In this kind of terrain, foot troops may be expected to do very well in delay against a mechanized enemy. In open terrain, this maneuver would be more difficult.

This helicopterborne assault on objective X is intended to contain the enemy to the west and permit his early destruction by the advancing ground attack. The mission is both offensive and defensive. Once the juncture has been accomplished, the helicopter landed forces revert to reserve and disperse or are dispatched on other missions.

These helicopterborne operations which we have illustrated are representative of those the battle group may undertake. There are others which we have not shown. For all of them, however, it can be said that the helicopter, its limitations notwithstanding, represents the fastest means of tactical mobility now available. The key to success in their use lies in understanding their tactical value and in practice.

Section III. MOBILE TASK FORCE OPERATIONS

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Recently the Command and Staff Department has added a new problem, a live firing demonstration depicting a company-size mobile task force with atomic support. This demonstration is accompanied at each level of instruction of leader type classes at the Infantry School by problems in which the students form task forces commensurate with their level of instruction and in some cases act as the Infantry members of such task forces. While the demonstration covers most of the teaching points applicable to task forces, it accents the techniques involved in their actual operations and emphasizes the training, teamwork, and prearranged maneuvers necessary in a highly mobile situation.

Introduction. The military definition of a task force is a temporary grouping of units under one commander to perform a specific mission. Task forces are not new. One of the earliest task forces of our own army was the Legion Formation of 1793 designed specifically to fight Indians on the frontier. It was a balanced force of Infantry, mounted rifles, a troop of dragoons, and a company of artillery. These formations under General Anthony Wayne were successful in defeating the Indians at the Battle of Fallen Timbers. Such forces have been used throughout military history to get a special job done.

The mobile task force of today has taken on added significance for use on the atomic battlefield. It offers a hard hitting unit which can mass quickly, attack, and again disperse before it becomes a target for enemy atomic fires.

Attention was focused on the use and training of task forces by Continental Army Command Memorandum Number 13, dated 4 June 1956, titled Organization and Training for Mobile Task Force-Type Operations. This memorandum pointed out the necessity for flexibility of organization and the need for widely dispersed, highly mobile forces on the atomic battlefield. Field commanders were directed to experiment with various sizes and combinations of task forces and report on those considered most effective. Guidance was furnished on the size forces from platoon to regimental level with appropriate missions for each. While this memorandum was published prior to the reorganization of the Infantry Division, the concept and principles are equally applicable to our present organization.

Mobile task forces may take many forms and be put to varied uses. The forces employed may move in trucks, in full tracked vehicles, by helicopters, or by combinations of these. The size of the task force and the type units assigned is dependent on the mission, the enemy situation, the type of terrain over which it must operate, and the troops and equipment available to the commander responsible for the formation of the task force. It may be of battle group size with one or all of the companies of the battle group as a nucleus. It may have one or more of the platoons of the rifle company as a basis while the platoon size force may have rifle squads as a nucleus with other elements to support it. The size and composition of the task force will vary as often as the mission. The commander does not stereotype his task forces but retains flexibility of organization by fitting each task force to its mission and the current situation.

Whatever the size force the commander should insure that it contains a headquarters or control element, one or more maneuver elements, and fire support elements. Fire support elements may be direct, indirect, or both, dependent on the mission. The strength of each element will depend upon the distance the task force will operate from the parent unit, the desired ratio of fire support to maneuver elements, and how long it must sustain itself independently to accomplish the mission. These factors may also cause the commander to add security or reconnaissance elements and logistical support.

Since the organization of each task force is dependent upon the mission, the enemy, the terrain and weather, and the troops available, it is necessary to first depict the tactical situation which caused the task force we are concerned with to be formed (Figure 84). Location of the demonstration area is on the ridge 400 yards east of the junction of Lorraine Cross and Moore Roads.

General Situation. The 10th U. S. Infantry Division has been attacking south against successive enemy defensive positions with strong delaying forces between them. The position along Macon Road has been breached and the division commander has ordered the 1st BG, 87th Infantry to make a reconnaissance in force against a suspected defensive line along Buena Vista Road while the remainder of the division is mopping up. For this mission the division commander attaches to the battle group - a tank company, an engineer company, a platoon of Infantry Carriers and sufficient transportation to motorize the entire battle group.

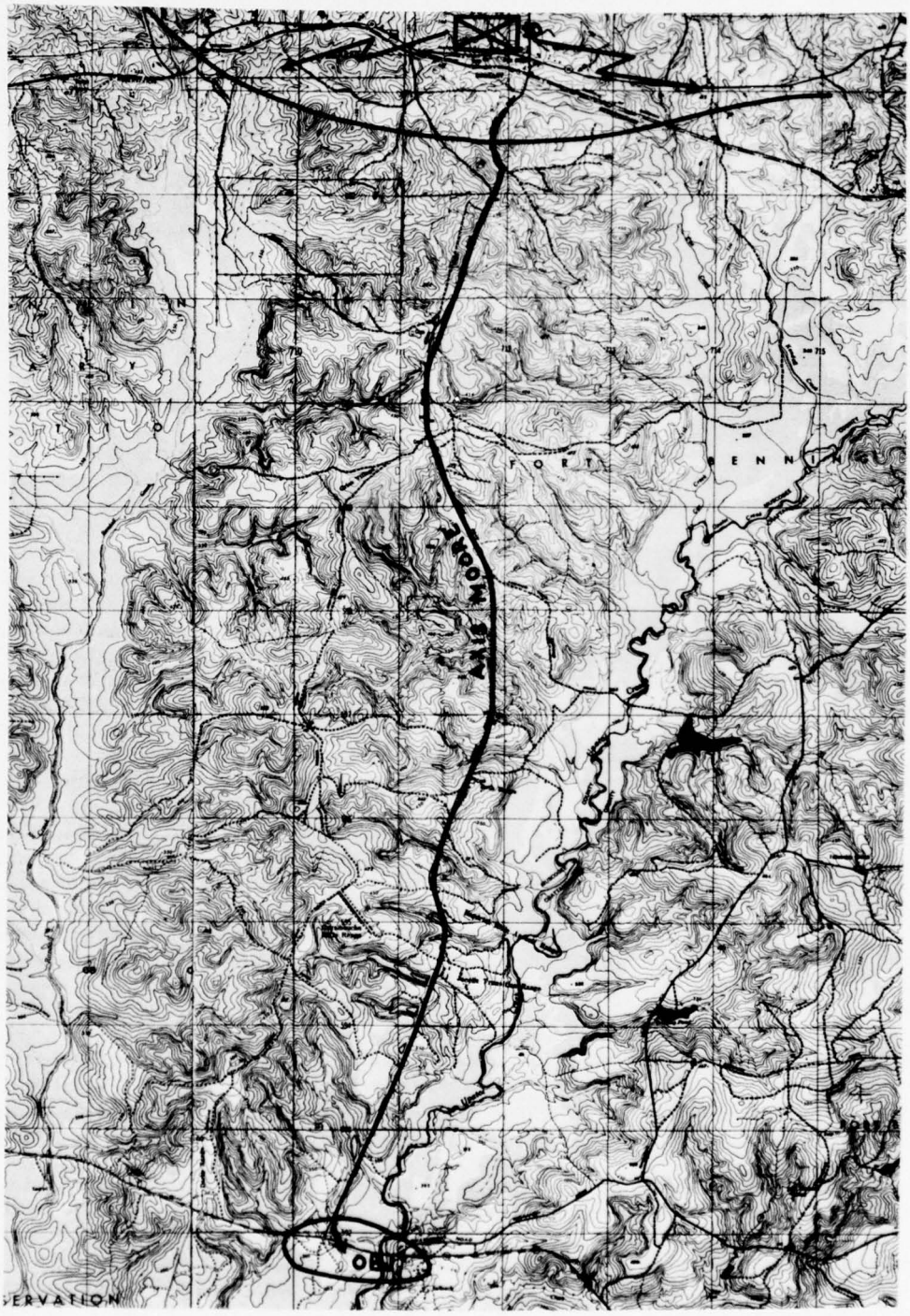

Figure 84. General Situation, 10th Infantry Division.

Since speed is essential in this operation, and to exploit the breaching of the enemy defense and continue the impetus of the attack, the battle group commander decides to utilize a task force to lead his attack. The elements of his task force have previously rehearsed or taken part in similar operations and can be prepared to move on short notice. Planning will be brief and the task force commander will rely heavily on previously developed Standing Operating Procedures and previously rehearsed battle drills.

Organization. In forming this task force the battle group commander again considered his mission, the enemy, terrain and weather, and the troops available. He designated a company commander as task force commander. Since most of the units of the task force are from the battle group and the platoons of the rifle company are used as a nucleus, the organization of both of these units is reviewed briefly (Figure 85).

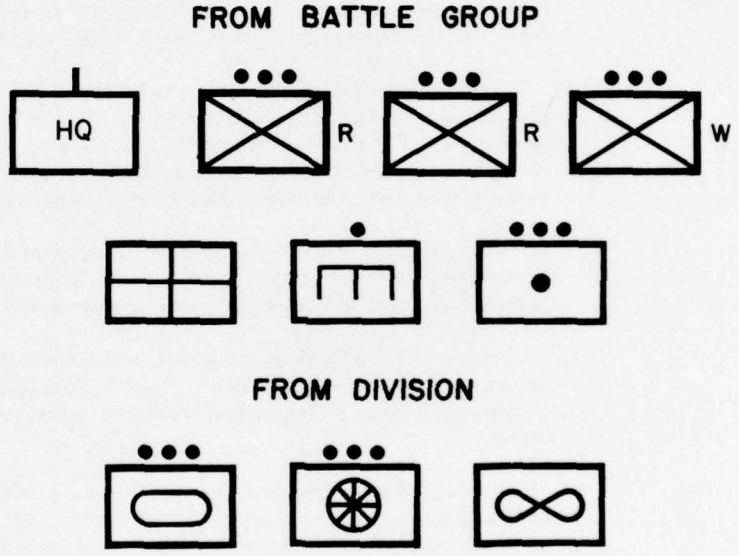

Figure 85. Task Force Organization.

From a rifle company we take a portion of its headquarters for the task force command element. The task force commander will have with him his control group to include his weapons platoon leader, a mortar battery forward observer party, an 81mm mortar forward observer, the communications sergeant, radio operators and messengers.

The company executive officer, supply sergeant, armorer and mechanics will comprise the mobile command post group and will be in the column in another vehicle.

Two of the rifle platoons with their arsenal of small arms, will provide the necessary powerful maneuver element and give the task force the capability of holding ground once it is seized.

The three 81mm mortar squads and two 106mm antitank squads of the weapons platoon will furnish part of the indirect and direct fire support.

This leaves the company with two rifle platoons which the battle group commander may use as the nucleus of other task forces or attach to other rifle companies.

In addition to these units the commander decides to add from the headquarters and headquarters company an ambulance from the medical platoon for evacuation of wounded, and an engineer squad from the battle group engineer platoon to assist in mine detection and clearance,

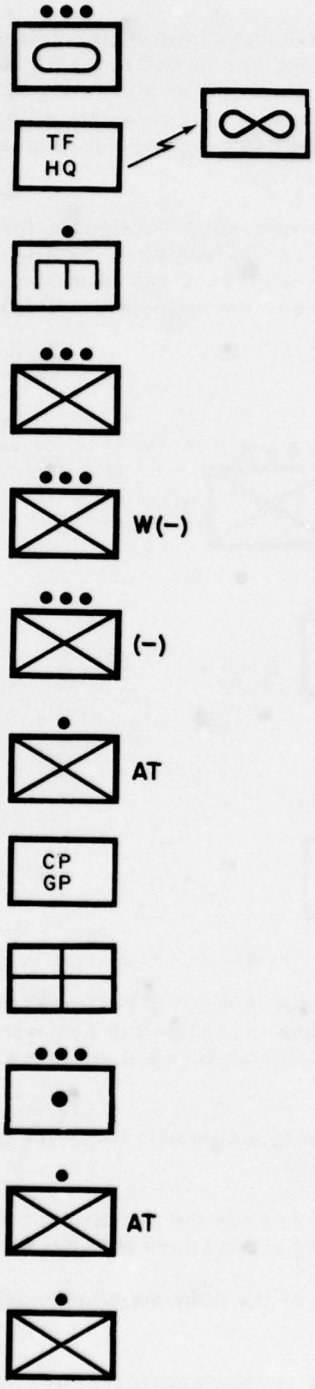

Figure 86.
Order of Movement.

and to perform minor engineer tasks.

A platoon of 4.2 inch mortars is added from the battle group mortar battery to insure the task force of sufficient indirect fire support for the mission.

These units comprise the basic essentials for this task force. To give it the added combat power believed necessary, the battle group commander adds the following elements of divisional units attached to the battle group: first, a tank platoon from the tank company to provide greater direct fire support and maneuver capabilities. This platoon of one officer and nineteen men provides the task force with heavily armored firepower and excellent communications. Its five 90mm guns, five .50 caliber and five .30 caliber machineguns are a welcome asset in any fight.

Second, sufficient Infantry carriers are added to mechanize the task force and to give it a degree of armor protection. Each of these M-59 carriers mounts a .50 caliber machinegun and can carry a squad of men. Radios are interspersed among the carriers to furnish communications for control of the task force.

And finally, a reconnaissance helicopter is furnished to increase the task force's reconnaissance capability. This helicopter may also be used for resupply or evacuation of wounded.

Here is a fighting team which possesses flexibility of organization, a high degree of cross-country mobility and excellent communications. This task force can move, shoot, and communicate.

Order of Movement. The task force commander must now decide his order of movement (Figure 86.) This order of movement is adopted for the initial movement to contact; the location of elements within the task force will change with the situation. The task force commander places units in the column in the order in which he expects to use them, and to obtain maximum security and control.

The tank platoon will lead to take advantage of its direct fire weapons and armor protection. This platoon is kept intact so that it may fight as a team.

The task force commander locates himself close behind his lead element so that he can quickly take control of any situation which arises. He will retain for his control group the carrier with the radio which gives him the greatest flexibility of communication and enables him to contact all units of the task force and the battle group commander.

Behind the control group is the engineer squad; readily available to keep the road clear of obstacles.

Following this will be the first rifle platoon. Its formation will vary according to the terrain over which it is operating. At times the tanks and carriers adopt an integrated formation.

The 81mm mortars of the weapons platoon are well forward in the column so that they can remain within range of the lead elements at all times.

Next will be the second rifle platoon minus one squad, a 106 antitank squad for antitank protection of the column, the remainder of the CP group to include the ambulance, the 4.2 inch mortar platoon, and an antitank squad, and a rifle squad for rear security.

The helicopter will be in radio contact with the task force commander and will reconnoiter to the front and flanks of the column. This helicopter may also be used to maintain contact with other friendly forces in the area. A trained observer may ride with the pilot as the representative of the task force commander, or the task force commander may use the helicopter for reconnaissance and control of the task force.

The tactics for the TF's Operations are the same as those for any unit of similar size, but to capitalize on the mobility and fire power inherent to this force the commander must be prepared to take quick, aggressive action whenever he meets resistance. His planning must be as detailed as time will permit. There will be habitual use of fragmentary orders and reliance on the initiative of subordinates. The use of prearranged code words and visual signals should launch basic maneuvers in minimum time. The establishment of SOP's and drills developed in combined arms training will be of great value in insuring quick action by all leaders. Phase lines, check points, and planned concentrations along the axis of advance will assist in control and in calling for indirect fires.

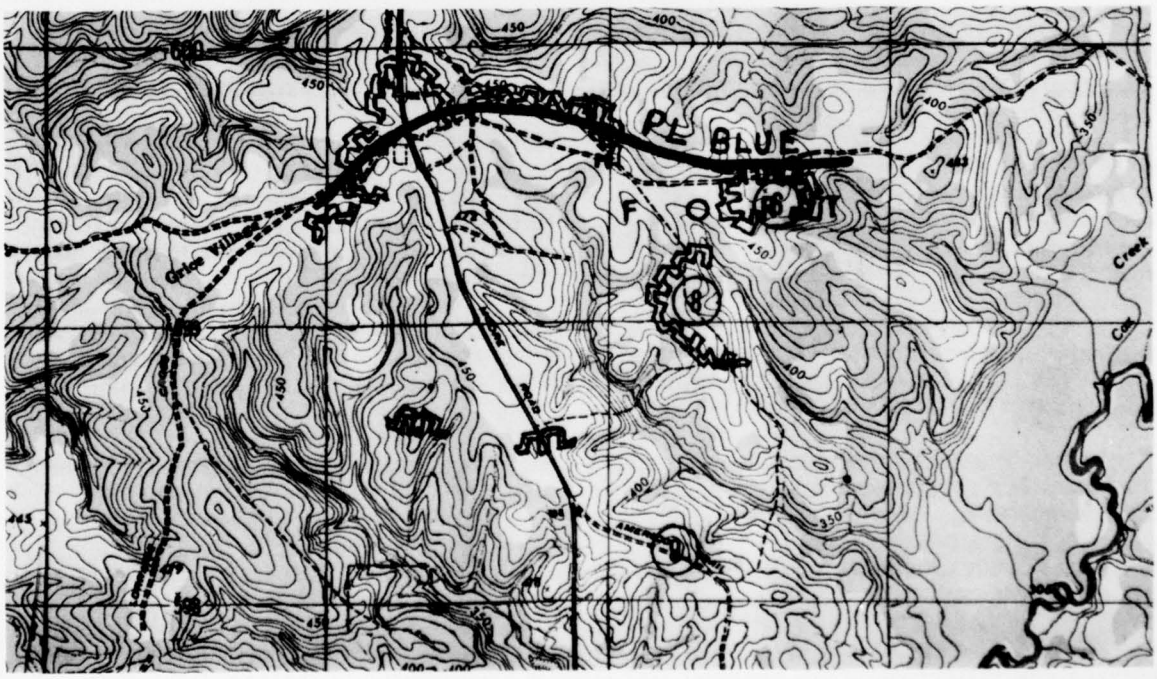

Figure 87. Demonstration Terrain and Control Features.

Special Situation. Prior to the start of the action the students are oriented on the local terrain and the control features for that area (Figure 87). Bleachers are located as shown by the letter "X" on the map and are facing south. Check points used as objectives are indicated on the ground by numbered panels. Aggressor fires are simulated by using demolitions.

As we join the task force it has just encountered the strong delaying position along the ridge extending east from BM 482 to HILL 477. After reconnaissance by ground and air, the task force has moved back and called for a low yield atomic weapon.

Demonstration. A simulated atomic weapon is detonated near BM 482. Shortly thereafter the lead tank of the task force is seen moving down Moore Road. This tank hits a minefield connecting two heavily forested areas on the sides of the road. An Aggressor AT gun covering the mine field fires on the tank and disables it.

The ensuing action of the demonstration is covered by the voices of the task force commander and his leaders, and by the narrator. TK: RAINBOW KINGPIN, THIS IS RAINBOW ALPHA, MY LEAD TANK HIT A MINEFIELD JUST SOUTH OF PHASE LINE BLUE AND WAS DISABLED BY AN ANTITANK GUN DOWN THE ROAD. I AM RETURNING FIRE. OVER.
TF CO: ALPHA THIS IS KINGPIN. I'M ON MY WAY UP, WHAT CAN YOU SEE? OVER.
TK CO: THIS IS ALPHA. NOT TOO MUCH. THERE'S A LOT OF SMOKE AND DUST. MY RADIAC INSTRUMENTS INDICATE IT'S NOT TOO HOT IN AREA. THE ONLY ENEMY I'VE SEEN WERE ON THAT AT GUN. OVER.
TF CO: THIS IS KINGPIN, HOLD ON AND I'LL CONTACT THE CHOPPER. BREAK: RAINBOW STAR, THIS IS RAINBOW KINGPIN. OVER.
HELICOPTER: THIS IS RAINBOW STAR, I HEARD YOUR TRANSMISSION. THAT SHOT HIT NEARLY EVERYONE ON PHASE LINE BLUE, BUT THERE ARE STILL SOME POSITIONS UNTOUCHED ON HILL 477 AND THE RIDGE SOUTHWEST OF IT. TERRAIN EAST OF YOUR DISABLED TANK APPEARS TRAFFICABLE. TERRAIN TO THE WEST IS HEAVILY WOODED. OVER.
TF CO: THIS IS RAINBOW KINGPIN, ROGER, MOVE TO THE EAST, KEEP CLEAR OF OUR FIRES AND WATCH THE LEFT FLANK. BREAK:
RAINBOW ALPHA, THIS IS RAINBOW KINGPIN, BYPASS LEFT, WE WILL JOIN YOU. OUT.

Not knowing the depth of the minefield and having a force capable of cross-country movement, the task force commander takes advantage of the leeway afforded by an axis of advance and decides to bypass with the majority of his force. Based on the information transmitted by the helicopter he determines that the best route is to the east and begins movement in that direction immediately. While his mission is dominant at all times he takes action to clear the road for the remainder of the battle group. Here are his actions.

SAY, COMMO SGT, CONTACT THAT ENGINEER SQUAD BEHIND US AND TELL THEM TO CLEAR A LANE THROUGH THE MINEFIELD BY THAT DISABLED TANK. THEY CAN USE THEIR .50 CALIBER MACHINEGUN ON THE CARRIER TO COVER THEM AND I'LL ADD A 106 AND SOME MORTAR SUPPORT.

81 FO, DISMOUNT THE MORTARS. HAVE ONE MORTAR PUT SOME WHITE PHOSPHOROUS ON THAT ANTITANK GUN AND THE OTHER MORTARS BE PREPARED TO FIRE ON CHECK POINT 8.

WEAPONS PLATOON LEADER, CONTACT THE LEAD 106 AND TELL HIM TO MOVE UP TO SUPPORT THE ENGINEERS.

MORTAR BATTERY FO, PREPARE TO FIRE ON THOSE POSITIONS ON CHECK POINT 6 WHEN I ASK FOR IT.

OK, DRIVER, MOVE OUT AND TAKE THE FIRST TRAIL TO THE LEFT.

In effect, a small task force has been left to deal with the minefield and the enemy on the

road. Because of the remaining enemy positions still intact on the terrain to be covered, the mortars are alerted to be prepared to fire on them to assist the movement of the task force.

In moving through the bypass area the tanks move a section at a time while the other section covers. They are fired on by the enemy as they move.
TK: RAINBOW KINGPIN, THIS IS RAINBOW ALPHA. I AM RECEIVING FIRE FROM VICINITY OF CHECK POINTS SIX AND EIGHT. AM RETURNING FIRE. OVER.
TF CO: THIS IS KINGPIN, ROGER, I CAN SEE THEM. CONTINUE YOUR FIRES AND BE PREPARED TO ATTACK BOTH OBJECTIVES ON MY SIGNAL. YOU WILL LEAD EACH RIFLE PLATOON WITH A SECTION OF YOUR TANKS. OVER.
TK: THIS IS ALPHA, ROGER, OUT.

The tanks have taken up hull defilade positions and are returning the fire when the task force commander arrives. Since the enemy is still occupying the area, he must attack to facilitate the accomplishment of his mission. His attack orders are simple and based on prearranged maneuvers and control features.

TF CO: KINGPIN ONE AND TWO, THIS IS KINGPIN ALPHA. MOVE TO MY FLANKS AND PLAN TO ATTACK CHECK POINTS SIX AND EIGHT. KINGPIN ONE WILL BE ON THE LEFT AND ATTACK CP 6. KINGPIN TWO WILL BE ON THE RIGHT AND ATTACK CP 8.
FOLLOW THE TANKS TO THE OBJECTIVES ON MY SIGNAL. OVER.
1ST PLAT: THIS IS KINGPIN ONE. ROGER. OUT.
2D PLAT: THIS IS KINGPIN TWO. ROGER. OUT.
TF CO: MORTAR BATTERY FO, GIVE ME TIME FIRE ON CHECK POINT 6 AND SHIFT TO THE EAST AFTER THE CARRIERS HALT ON THE OBJECTIVE.

EIGHTY-ONE FO, GIVE ME SOME VT ON CHECK POINT 8 AND SHIFT TO THE SOUTH AFTER THE CARRIERS MOVE ON THE OBJECTIVE.

MORTAR BATTERY FO, GET ME SOME SMOKE ON THAT RIDGE ALONG AMERICO TRAIL, TOO. PUT THE ARTILLERY ON IT.

The direct fires of the tanks are joined by those of the 106 squads while the carriers of the rifle platoons are moved into position. Time or VT fires are requested to keep the enemy down while the tanks and Infantry carriers attack the objectives. Smoke is placed on the next terrain feature to screen the operation.

TF CO: THERE COME OUR MORTARS. MESSENGER, FIRE THAT GRENADE.
ALL RAINBOW STATIONS, THIS IS RAINBOW KINGPIN. MOVE OUT.

Once the indirect fires begin the tanks lead the way to the objective. The tanks and carriers move as far as possible under the time fire. As these fires are shifted the Infantry platoons dismount under cover of the tank weapons and the .50 caliber machineguns of the carriers for the assault. Once the objectives are secured the Infantry will again mount on the carriers and continue the mission of the task force. This concludes the demonstration.

While a company-size type task force was used for the demonstration, the principles of organization, the types of missions, and the techniques of operation are the same for any size force. To the Infantry maneuver elements, capable of moving on foot, by ground vehicles, or through the air, we add the proper balance of command, direct and indirect fire elements to fit each mission. Future tactical organizations may well be made up of such highly mobile groupings, moving quickly from widely dispersed areas to concentrate, strike at a decisive point and rapidly disperse before the enemy can react with mass destruction weapons. The flexibility of organization of task forces, the variety of missions which they can perform, the speed with which they can be organized, make these independent forces valuable to the field commander.

Section IV. WEAPONS AND ASSAULT GUN PLATOONS IN THE ATTACK

CAPTAIN DONALD B. CARMICHAEL

Instructor, Committee DELTA, Command and Staff Department

A distinguished General once concluded a briefing relative to an impending attack with these well-chosen and inspiring words, "God favors the bold and strong of heart". History reminds us that this initial encouragement, coupled with a sound maneuver and fire support plan were instrumental in gaining an American division a foothold on Guadalcanal in the early campaigns of WW II. There are many variables in combat, such as leadership, enemy, weather and terrain. Today, however, we will be concerned with one of the "Old Reliables" of battle -- fire power and its corollary, fire support. Specifically, we will cover the weapons platoon of a rifle company, the assault gun platoon of battle group headquarters company and their fire power and employment. Before the demonstration begins, let us discuss the weapons of these platoons briefly.

Combat experience, improvements in weapons and techniques along with the advent of atomic weapons and the resulting requirement for mobility and dispersion brought about a reorganization of the Infantry division. For example, the weapons platoon of a rifle company packs the solid high explosive punch of the 81mm mortar and the effective antitank protection of the 106mm recoilless rifle. The battle group headquarters company now has an assault gun platoon. This platoon is organized with four assault guns. (M-48 Patton tanks with 90mm gun). Ultimately a guided missile will replace this interim weapon. This missile will be capable of minimum and maximum range killing ability, and will be controlled by Infantry personnel on the ground. Such missiles are under development.

Today, gentlemen, we will be concerned with a demonstration which will portray the tactical employment of the weapons platoon and the assault gun platoon in support of a rifle company in its seizure of an objective.

In previous problems in this area students have conducted a terrain exercise involving the planning, troop leading and coordination coincident to the employment of the assault gun and weapons platoons in the attack. Emphasis is placed on the method of utilization, selection of firing positions, and timely displacement of these weapons to support the attack, the consolidation of an objective, and the preparation for the continuance of the attack. So that you may follow the sequence of action, this is the general and special situation (Figure 88).

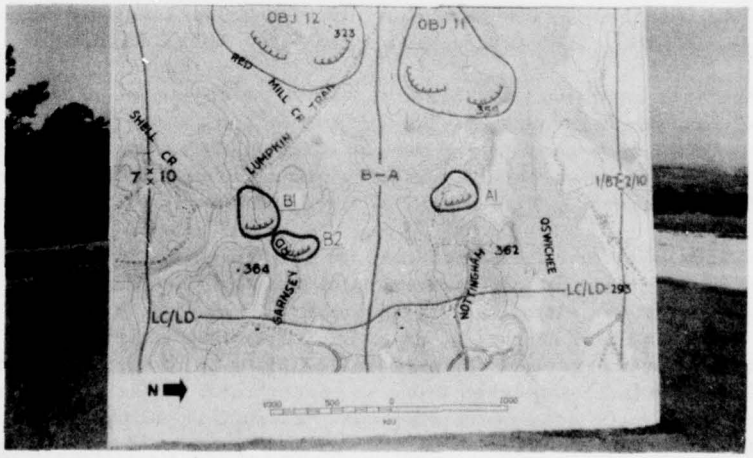

Figure 88. General Situation.

The 1st Battle Group, 87th Infantry is attacking west; elements of its reconnaissance forces have encountered stubborn resistance and have been stopped 1000 yards west of Jamestown Road. Friendly units on our flanks have been held up also. The 2d Battle Group, 7th Infantry is on our left and generally abreast, whereas the 2d Battle Group, 10th Infantry, on our right has been held up east of Jamestown Road. This exposes the right flank of 1st BG, 87th Inf. The battle group commander has been directed to continue the attack and seize prominent terrain features in his zone. These terrain features are objectives 11 and 12 and are assigned to Companies A and B respectively. For the demonstration, we will be concerned with Co A's zone of action and the seizure of its intermediate objective (Figure 89).

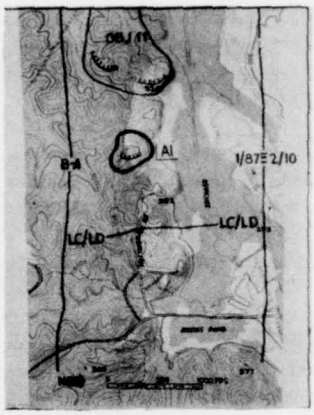

Figure 89. Special Situation.

The 1st Battle Group, 87th Infantry closed into assembly areas east of Jamestown Road at 0730 hours. At 0800, the BG commander issued his warning order for the continuation of the attack; H-hour is at 1100 hours today.

Captain Company A and Lt Firepower, his weapons platoon leader, received the battle group warning order and have now returned to the company. While the company executive officer takes the necessary action to alert the company for the attack, the company commander and his platoon leaders go forward to conduct a reconnaissance.

During the reconnaissance, the company commander provides guidance using map and ground references. He determines that an intermediate objective, marked A1 must be seized before his company can continue the attack to Objective 11. He bases his decision upon reported enemy strength in this area.

In his concept of the attack the company commander indicates he will seize A1 with the first platoon, employing the balance of the company in a column of platoons. The other platoons will follow on order and be prepared to assist or assume the first platoon's mission. The rifle platoon leaders leave to conduct their own reconnaissance.

The Company Commander directs Lt Firepower, weapons platoon leader, to prepare recommendations for the employment of the weapons with particular attention to the exposed right flank and the company's left flank; the left flank is nearer the objective, and provides good firing locations.

In the meantime, the battle group S-3 issues instructions to the assault gun platoon leader. These instructions include the BG commander's guidance relative to antitank protection on the right flank and fire support for the Co A attack. Consequently, Lt Assault, assault gun platoon leader, coordinates with Captain Company A inasmuch as his platoon will be operating in Company A's zone of action.

The rifle company commander and battle group S-3 have issued instructions so that the weapons and assault gun platoon leaders may accomplish their respective reconnaissance. After both officers completed their reconnaissance they returned to their commanders. At battle group, Lt Assault recommended to the S-3 that the assault guns be utilized in general support, since the right flank of the battle group is exposed and constitutes a dangerous armor approach. In addition, the area along the proposed LD provides suitable locations for firing positions and there is a good lateral and trafficable road net available. The battle group S-3 accepted these recommendations and directed the assault gun platoon leader to work closely with the commander of Company A.

Upon returning to the Company A command post, Lt Assault informs CO Co A that he has effected necessary coordination with Lt Firepower on the employment of their weapons. So that there is a mutual understanding of the recommended employment of these weapons, the three officers move to a vantage point to discuss it.

The tactical employment was resolved in that all the supporting weapons would be in general support and initial firing positions would be near the proposed line of departure. This decision was based on these considerations: proximity of the objective from the LD, good fields of fire available from the LD, centralized control of the weapons, flexibility of fires to include massing of available fires upon a target, and facilitation of ammunition resupply and displacement.

CO Co A placed his weapons in this manner. (See Figure 90). The AT weapons (106 RR) were placed along the finger leading towards Objective A1 in the left sector. These weapons were positioned less than 1200 yards from the intermediate objective. In addition, the mortars were placed 200 yards to the rear of the line of contact, in defilade, so they could effectively cover the entire zone and yet be within close support distance for Co A's attack. The assault guns were positioned by section. One section covered the exposed right flank of the BG and the other was located to effect close and continuous fire support for company A.

At 0930, the platoon leaders joined CO Co A at a vantage point overlooking the battle area. CO Co A then issued the attack order, to include the method of utilizing the 81mm mortars and antitank squads, initial firing position targets or sectors of fire, fire control instructions, displacement directions and information relative to coordination with other units. After receipt of their orders, the platoon leaders departed to conduct additional troop leading steps.

In addition to the earlier instructions and the order given to him by CO Co A, Lt Firepower effects coordination with the right platoon leader of Company C since the machineguns of this platoon will support the attack of Company A. Moreover, communication must be effected between the assault guns and Lt Firepower's AT weapons which will be firing from the LD. As Lt Firepower will remain along the LD near these weapons, he will control all supporting direct fire weapons in the attack. He will have communication with his company commander on the company command net and use, in an emergency, a secondary means through the FO and the fire control net.

The time is now 1045 hours. The 81mm mortars have moved into position and registration has been completed. CO Co A realizes that the Aggressor on objective A1 not only can observe the antitank squads and assault gun platoon moving into position, but also can observe his leading rifle platoon moving to the line of departure. In order to conceal this movement, the CO Co A directs Lt Firepower to fire smoke with the mortars on objective A1 at H-10 minutes.

While the smoke covers the objective, the antitank squads began their move from defiladed positions to their firing positions in the left sector. The assault guns began their move toward predetermined positions in the right sector. Simultaneously, the weapons squad of the 1st platoon, Company C, moves a pair of machineguns into partial defilade to give fire support for the

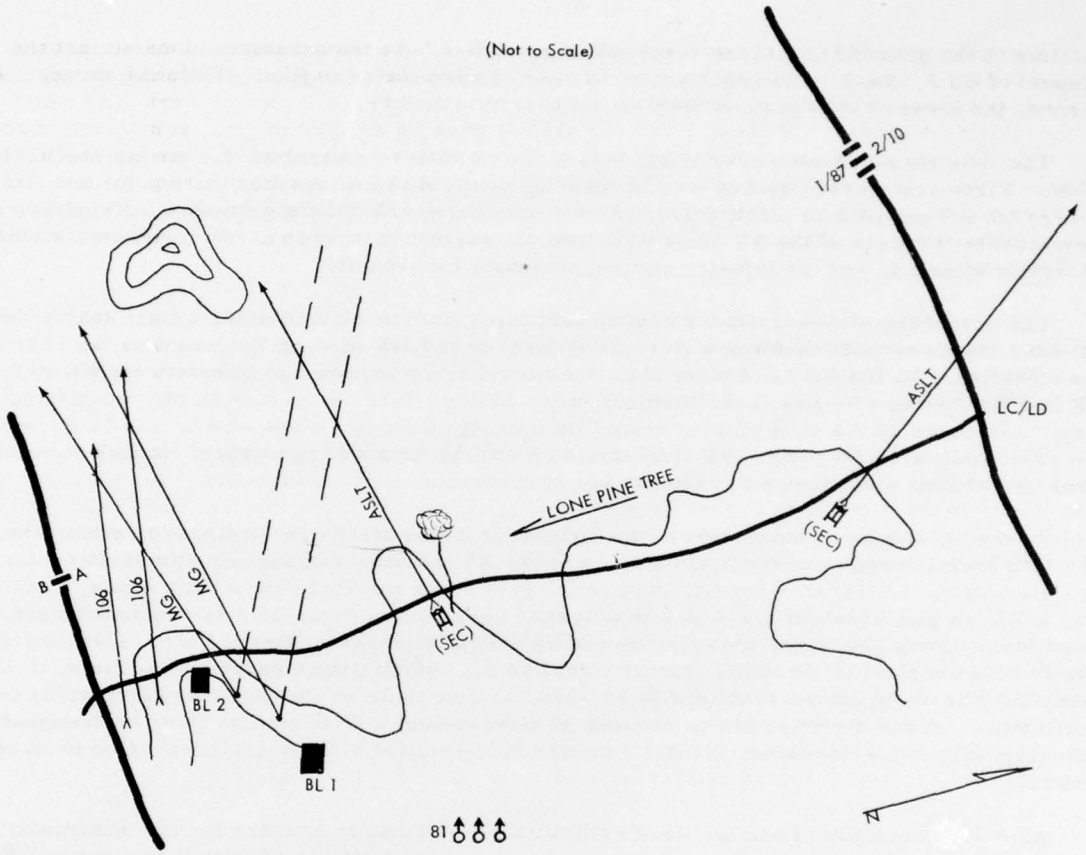

Figure 90. Placement of weapons.

attack of Company A. Ammunition bearers run forward and deliver ammunition to these machinegunners. To provide additional ammunition on position, the M 274 light weapons carrier (army mechanical mule) - attached for this operation - moves forward and supplements the ammunition supply. Once the supporting weapons are in position the signal is given to commence the scheduled fires.

At H-hour, Co A crosses the line of departure. Scheduled fires of all the supporting weapons have begun to fire to neutralize the enemy and cover the movement of the attacking riflemen. These fires, previously plotted by map or observation are fires on all known or suspected enemy positions. The mortars seek out defiladed areas and possible troop concentrations. The direct fire weapons fire on point targets and targets of opportunity. In order that you may understand how effectively these fires assisted Co A in attaining its objective, the following action occurs.

The lead rifle platoon comes under fire soon after it crosses the line of departure. The platoon leader locates the enemy weapon which is holding up his unit, and requests fire support from CO Co A. Notified of this situation Lt Firepower (the weapons platoon leader) took prompt action. One of the machineguns located along the line of departure is placed into action. This weapon pinpoints the target, and fires of the antitank rifles are massed to neutralize this enemy position. When this action is completed, the assault gun section begins to fire.

This assault gun section observes an enemy vehicle, presumably a tank, and places fire upon it. This information and the result of the action are given to the CO Co A and the battle group commander. Each of these persons is informed of all actions, especially information

relative to the possibility that the enemy is using armor. As the assault guns are in general support of Co A, there is no requirement to receive permission to fire. While the enemy vehicle burned, the forward rifle platoon reports firing from a bunker.

The rifle elements seek cover, and appropriate action to neutralize this enemy position is taken. Fires are massed by fire commands originating with the weapons platoon leader. He orders the AT weapons to mark the target by a spotting round from the co-axial .50 caliber rifle. then masses the fires of the AT gun squads and the assault gun section. Firing from the enemy bunker is silenced, and the Infantry platoon continues its assault.

The assaulting platoon leader requests scheduled fires to shift to other areas; at this time CO Co A receives word that a new Aggressor force is moving through the woods to the rear of the objective. As the CO Co A must shift the mortar fires anyway, he instructs his FO to get HE and WP fire on this new threat immediately. Mortar fires are placed on the reinforcing Aggressor force as the rifle platoon begins its assault up the left slope of A1. CO Co A controls his supporting fires by radio. All fires are then shifted to new target areas. In this situation, fires are shifted when masked by the assaulting troops.

As the rifle units move quickly to the summit of A1, mortar fire continued to neutralize possible enemy troop concentration areas, and the AT weapons and assault guns fired on targets of opportunity. During this period, the assault guns fired ricochet fire; a fuse setting of delay was used, so that when the projectile was fired it bounced and exploded a few feet in the air. In addition, these guns fired time fire on enemy troops withdrawing to the rear. This fire was timed to explode in the air to the rear of objective A1. During the consolidation, the machineguns along the line of departure continued their fires, so that some of the supporting fire would be continuous. At the direction of the weapons platoon leader, a fire element from each supporting unit displaced to the objective. At this time the machineguns of Company C reverted to company control.

As A1 is consolidated and CO Co A relocates his platoons to prepare for the continuance of the attack, he notifies the battle group commander of the situation. This is a continuous process. Reorganization, as appropriate, is concurrently accomplished during the action. Ammunition is replenished and evacuation of casualties is achieved by vehicle and litter carry.

As indicated earlier, displacement was timely. This displacement included one squad from the AT squads and one section of the assault guns. In addition, two mortar squads displaced. The other fire element of each unit continued to fire on targets of opportunity. This displacement was on or adjacent to objective A1. Adjustment of these positions was made to facilitate preparation for the next mission.

Although success of this company operation depended on many variables, leadership, the exigencies of the mission, weather and terrain, the enemy's ability to contain our movement and protect his terrain, certainly the available fire support represented by the mortars, AT weapons of the attacking company, the assault gun platoon and machineguns of other units were a vital and dependable contribution. Only the proper employment of these weapons to include efficient methods of utilization, concealed firing positions and timely displacement could have made this attack successful. This fire support covered movement, saved time, provided protection and minimized casualties for the attacking rifle company.

CHAPTER 12

ASSISTANT COMMANDANT'S CLOSING FORUM

BRIGADIER GENERAL STANLEY R. LARSEN

General Larsen:

We hope you have had a constructive and enjoyable five days here at Fort Benning, and that you have received appropriate and satisfactory assistance. At this time, as a conclusion to our annual conference, we will have a short forum to answer any questions you may still have; and to offer you further opportunity to express your opinions. We have appreciated your participation in the exchange of ideas, and we always welcome comments. I have invited the Department Directors and appropriate staff agencies to offer replies to your questions.

QUESTION: Will you briefly discuss the status of the M56 and the M48 insofar as interim weapons for the assault gun platoon?

ANSWER: The main armament of the assault gun platoon of the battle group, Infantry division presently consists of four 90mm gun tanks (M48). These are an interim weapon; the ultimate main armament will be an effective antitank guided missile. The main armament of the assault gun platoon of the battle group, airborne division, presently consists of six 90mm guns, self propelled, full tracked (M56). These are also an interim weapon; the ultimate main armament will be an effective antitank guided missile.

QUESTION: What is being done by the Infantry School to communicate their thinking of the Infantry in the future and the combat developments with units in the field and other service schools?

ANSWER: We try to accomplish this in various ways:

We send out monthly, over the signature of the Commandant, a letter to the field to all Infantry division commanders, training commands, and separate battle groups. We also began last month to send letters to all division commanders, and separate regiments of the National Guard and Reserve. We send out new ideas to people we feel have primary interest in the Infantry; in addition, we request their ideas and thinking. We also give these commanders advance warning on new doctrine which we believe will be accepted by USCONARC. They in turn give us ideas which assist us in submitting opinions and ideas to USCONARC.

We send liaison people to other service schools to give them our latest thinking on Infantry and also obtain their thinking on whatever branch of service they represent. In addition, we invite other service schools to come here and discuss items of interest to both schools.

We also trade information by commenting on proposed doctrine, proposed field manuals, etc., sent down from one school to the other for comments.

By publishing Infantry magazine. This publication has been revised and it will put out doctrinal information, ideas, and articles signed by individuals as individual contributions. We hope that all of you will have an opportunity to get this magazine and seize upon it as a method of exchange of ideas. We also hope that in this method we don't have to look to the Infantry School only as the contributing factor to the magazine. This way we invited other people with good ideas to contribute to the Infantry.

We conducted an Intelligence Seminar here 19 - 24 May at which were represented commands from all over the world - 22 commands, 45 representatives. During this seminar we exchanged ideas as would be desirable in the intelligence field.

We also conducted a physical training seminar which was the first of its kind in the Army.

We are presently planning to conduct a world-wide Infantry Conference here at Fort Benning the first week in December of this year. This will be the first world-wide Infantry Conference since 1946.

We sent a team of six officers including the Commanding General, General Powell, to the 7th Army Infantry Conference in January 1958. Representatives to this conference were all the battle group commanders of the Infantry and Airborne Divisions in 7th Army, some 42 general officers representing not only the United States but the French Army, the British Army, and the West German Army. After this conference, this team visited two Infantry divisions and the airborne division to discuss ideas and problems encountered with the ROCID organization.

We feel that progress has been made in getting our ideas out, however, there is still a lot of room for improvement.

QUESTION: What has the Infantry School done about the undesirable time lag in the opportunity for an Infantryman to command between company and battle group?

ANSWER: The Infantry School has studied this question and we have proposed that the company commanders and the mortar battery commanders in the battle group be raised to the grade of major. This would give us a command slot in this long period between captain and colonel. We also studied the problem of giving the battle group command to a lieutenant colonel. We have forwarded that thought to USCONARC, however, there has been no direct proposal on it.

General Larsen:

Gentlemen, it has been a very successful conference as far as we are concerned here at the Infantry School. In discussions with personnel of the School, I gather that we have gained a lot from your comments, and I hope that your stay has been profitable. Gentlemen, I want to present to you now the Commandant of the Infantry School, Major General Freeman.

CHAPTER 13

COMMANDANT'S CLOSING REMARKS

MAJOR GENERAL PAUL L. FREEMAN, JR.

I am sorry that I haven't been able to spend more time with this group, particularly because there are a lot of old friends in it, and I am curious also to see what your reactions are to some of the things that you have seen and heard during the past week. I am sure you found many of them interesting, and many of them must have evoked some new thought on your part.

I hope, also, that you had an enjoyable time while you were here at Fort Benning. We feel that the medium of getting you here and using you to carry the message and work of the School back to the people you are teaching is one of the greatest accomplishments we can make.

May I express for all of us here at the School our appreciation for your attendance at this conference. Thank you.

APPENDIX I

CONFEREES ATTENDING 1958
INFANTRY INSTRUCTORS' CONFERENCE
23-27 JUNE 1958

INSTALLATION	NAME	RANK	SVC NR
US Air Force Academy Denver 8, Colorado	John W. Carley	Major	026571
Office of the Deputy Chief of Staff for Mil Opns Wash 25, DC	James H. Moore	Lt Col	034735
	Oscar A. Mall	Lt Col	031796
	Reginald J. Hinton	Major	079853
Quartermaster School, US Army, Ft Lee, Va	John I. Pray	Lt Col	022214
	H.S. Cunningham	Lt Col	
	Frank O. Knoeller	Major	080946
	Robert M. Brambila, Jr	Captain	0928865
US Army Chemical Corps School, Ft McClellan, Ala	Michael Barszcz	Major	01301926
	H. R. Jacobs	Major	01170786
	John A. Callanan	Captain	078749
USARCARIB, Ft Amador, CZ	Francis M. Rooney	Lt Col	023147
	Harold I. Jones	Major	080913
	William L. DeVane	Captain	061887
US Army Command & General Staff College, Ft Leavenworth, Kans	Lee Wallace	Colonel	032065
	Aaron U. Trimble	Lt Col	043675
	Neal G. Stewart	Lt Col	033670
US Naval Amphibious Base, Little Creek, Va	William J. Ankley	Captain	065259
Hq USCONARC, Ft Monroe, Va	Morgan A. Whitfield	Lt Col	036389
	Lawrence E. Spellman	Major	050267
	Richard A. Beyer	Major	038263
US Army Engineer School, Ft Belvoir, Va	Lester K. Olson	Lt Col	030640
	Robert F. Gallagher	Captain	01328686
	Delbert J. Hammock	Captain	02262936
US Marine Corps Schools, Quantico, Va	Martin J. Sexton	Lt Col	013215
	Earl F. Roth, Jr	Captain	051363
Adjutant General's School, US Army, Ft Benjamin Harrison, Indiana	Elmer B. Scovill	Major	035851
	Verlie G. Knoy	Captain	02037993
	Sigurd Olson	Captain	02046324
	William J. VerHey	Captain	01690725
United States Military Academy, West Point, N. Y.	John H. Spears	Lt Col	046027
	George T. Larkin	Lt Col	023293

INSTALLATION	NAME	RANK	SVC NR
US Army War College Carlisle Barracks, Pa	Walter M. Higgins	Colonel	021987
US Army Ordnance School, Aberdeen Proving Ground, Maryland	Conrad R. Underdahl	Lt Col	033523
	William R. Hambrick	Major	01315059
	Henry E. LeFebvre	Major	036358
	James A. Curtis	Captain	062624
Finance School, US Army, Ft Benjamin Harrison, Ind	Robert Reese	Lt Col	01295937
	John E. Strever, Jr.	Major	081264
	E. C. O'Steen	Captain	02028351
US Army Transportation School, Ft Eustis, Va	Wyndham H. Bammer	Major	036903
	Guy A. Eberhardt	Captain	069639
US Army Intelligence School, Ft Holabird, Md	Louis L. Toth	Lt Col	01288468
	Ralph E. DeKemper	Lt Col	033240
	Thorburn B. Broaddus	Major	01310054
US Army Security Agency Training Center and School, Ft Devens, Mass	Thomas K. Galleher	Major	01295195
	Norman L. Overton	Captain	070461
	Clifford C. Nunn, Jr	Captain	060465
	Dr. William R. Tracey	Civilian	
US Army Air Defense School, Ft Bliss, Tex	Joel T. Walker	Lt Col	022007
	Edward H. Cope	Major	065037
	William C. Heard	Captain	069672
US Army Chaplain School, Ft Slocum, NY	Joseph R. Andrews	Major	070250
The Signal School, Ft Monmouth, N. J.	Orwin C. Talbott	Lt Col	024617
	John F. Sullivan	Major	081266
	Karl H. Borcheller	Captain	057038
US Army Advisory Group Air Command and Staff College, Maxwell AFB, Ala	George C. Morton	Lt Col	039010
US Army Armor School, Ft Knox, Kentucky	Julius W. Levy	Colonel	052446
	Walter H. Williams	Lt Col	038967
	Richard G. Shank	Captain	069790
US Army Artillery and Missile School, Ft Sill, Okla	John C. Barney, Jr.	Colonel	023963
	Lawrence S. Fawcett	Lt Col	045319
	Gerald G. Burch	Major	063283
The Army Aviation School, Fort Rucker, Ala	Paul C. Swink, Jr.	Captain	02001124
	William E. Hornish	1st Lt	077458
USAF Air Ground Operations School, Keesler AFB, Miss	Robert R. Summers	Colonel	042841
	Robert P. Armstrong	Lt Col	01292635

Armed Forces Staff College, Norfolk 11, Va	Ralph D. Crosby	Colonel	033981
The Judge Advocate General's School, Charlottesville, Va.	John G. Lownds	Major	038211
US Army Special Warfare School, Ft Bragg, N. C.	George N. Jones	Colonel	019965
	Laurence T. Ayres	Lt Col	043715
Army Medical Service School, Brooke Army Medical Center, Ft Sam Houston, Tex	Robert C. Aycock	Lt Col	046664
	Melecio J. Montesclaros	Lt Col	01305289
Provost Marshal General's School, US Army, Ft Gordon, Ga	Curtis W. Markland	Lt Col	0308374
	John Synowsky	Major	01312172
	Richard C. Levers	Major	01314503
US Army Electronic Proving Ground, Ft Huachuca, Ariz	Fred R. Ulrich	Lt Col	
	Carl E. Lundquist	Col (Ret)	
US Army Signal Training Center, Fort Gordon, Georgia	Joseph A. Brunner	Lt Col	0292275
	Huston E. Maxwell	Lt Col	0322468
	Paul G. Stuckart	Major	01638619

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DISTRIBUTION:

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Conferees listed in Appendix I	2 each
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Senior Army Advisors, USAR	1 each
Commanding Generals, Airborne Infantry or Infantry Divisions	5 each
Chiefs, Military Assistance Advisory Groups & Military Missions	5 each
The United States Army Maintenance Board	5
The United States Army Infantry Center	40
The United States Army Infantry School	300