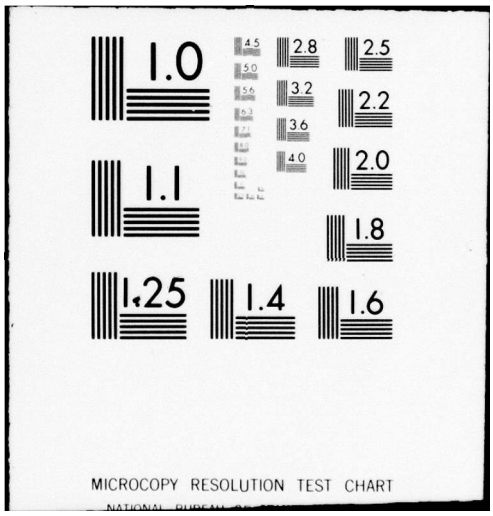
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THE INFANTRY SCHOOL
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INFANTRY INSTRUCTORS' CONFERENCE

THE INFANTRY SCHOOL

Fort Benning, Georgia

6 - 11 June 1955

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 a continuing and deep interest in Infantry Instructors at other service schools as primary representatives of The 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.

AUTHORITY: Office, Chief of Army Field Forces first indorsement, dated 6 December 1950 to The Infantry School, letter file GNKEAD-A 352, subject: "Uniformity of Doctrine, Tactics and Techniques Taught at Schools of the Army Education System," dated 15 November 1950.

CONFEREES: Representatives of Army Service Schools and Colleges, Continental Army Command, Canadian Army Staff College, Joint Brazil-U. S. Commission, Marine Corps School. (Appendix)

HEADQUARTERS THE INFANTRY SCHOOL
Fort Benning, Georgia

SCHEDULE FOR INFANTRY INSTRUCTORS' CONFERENCE

6 - 11 June 1955

Monday, 6 June 1955

0925-	Assemble in Patrick Hall.
0930-1050	Welcome--Commandant Opening Remarks--Assistant Commandant Orientation and Outline of Conference--Director of Instruction. Discussion: "Infantry Instructors' Problems and Recommendations." Conducted by the Director of Instruction.
1100-1200	Presentation: "Status of Infantry Training Literature and Visual Training Aids," Chief, Publications and Visual Aids Office. Scope: Current status of training literature and visual training aids for which The Infantry School is responsible. Discussion of Monthly Mailing List of Instructional Material and The Infantry School Quarterly.
1200-1300	Lunch.
1310-	Assemble in Patrick Hall
1315-1405	Presentation: "The Infantry School Evaluation Procedures," Director of Instruction. Scope: Discussion of Assistant Commandant's Policies and their application in the overall evaluation program conducted at The Infantry School.
1415-1630	Presentation: "Leaders Reaction Course," Director, Staff Department. Scope: Discussion of the concept of the course; demonstration of the operation of the Reaction Course and of student counseling procedures.
1730-1830	Commandant's Reception for Conferees: 115th Student Company Recreation Room.

Tuesday, 7 June 1955

0755-	Assemble in Patrick Hall.
0800-0930	Presentation: "Staff Subjects," Director, Staff Department.

	Scope: Intelligence estimate form; area damage control; Part II, The Infantry School War Game; escape and evasion training; The Infantry School's responsibilities for Army Physical Fitness Program; miscellaneous changes in organization, procedures and training.
0945-1040	Presentation: "The Role of the Infantry in Future Warfare," Director, Tactical Department.
	Scope: Discussion of the probable role of Infantry in modern war; of research, development, tactical, and organizational trends which affect the Infantry; and of problems peculiar to Infantry and to the Army which remain to be solved.
1050-1155	Presentation: "Infantry Communications," Director, Communications Department.
	Scope: New developments and trends in Communications within the Infantry regiment; Infantry communications display.
1200-1300	Lunch.
1300-1310	En route to Hook Range.
1315-1405	Presentation: "Weapons Training and Techniques," Director, Weapons Department.
	Scope: Recent changes in weapons training literature; new weapons and training techniques.
1415-1515	Presentation: "Lightweight Weapons System," Director, Weapons Department.
	Scope: Discussion of capabilities and limitations of the Lightweight Weapons System; Lightweight Weapons cadre training program; Lightweight Weapons demonstration firing; demonstration manual of arms and bayonet training with Lightweight Weapons.
1515-1525	En route to Pond 3.
1530-1700	Presentation: Continental Army Command Board Nr. 3, President, Continental Army Command Board Nr. 3.
	Scope: Discussion and demonstration of material and equipment under development and/or test by Continental Army Command Board Nr. 3.
2015-2025	En route to Fiske Range.
2030-2230	Presentation: "Night Firing Techniques," Director, Weapons Department.
	Scope: Conference and demonstration of night firing techniques.

Wednesday, 8 June 1955

0755-	Assemble in Patrick Hall.
0800-1200	Presentation: "Infantry Tactics," Director, Tactical Department.
	Scope: The current infantry concept of mobile defense and related considerations, e.g., battlefield surveillance; BCT perimeter defense; large scale night operations, employment of the battalion antitank platoon; rifle company operations; employment of the scout dog platoon.
1200-1300	Lunch.
1315-1705	Visits to Departments and Installations.
	Scope: Conferees visit installations or problems of individual interest.

Thursday, 9 June 1955

0855-	Assemble in Patrick Hall.
0900-1050	Presentation: "Tactics and Techniques in Atomic Warfare," Director, Tactical Department.
	Scope: Discussion of new tactics and techniques in atomic warfare.
1100-1150	Presentation: "Air Mobility," Director, Airborne-Army Aviation Department.
	Scope: Organization, Mission, Functions of the Airborne-Army Aviation Department; discussion of tactical air mobility utilizing army aircraft.
1200-1300	Lunch.
1300-1310	En route to Lawson Army Air Base.
1315-1505	Presentation; "Air Mobility," Director, Airborne-Army Aviation Department.
	Scope: Demonstration of loading and unloading techniques for army aircraft; demonstration of helicopterborne and fixed wing assault utilizing pathfinders.
1505-1525	En route to Patrick Hall.
1530-1705	Presentation: "Tactical Employment of Army Aircraft," Director, Tactical Department.
	Scope: Staff planning techniques for air transported operations; concepts of tactical employment of army transport aircraft, to include ground tactical plan; landing plan; selection of approach and return routes; juncture planning; fire support planning, use of helicopters in patrolling operations.

Friday, 10 June 1955

0755-	Assemble in Building 2150.
0800-0950	Presentation: "ATFA Organization and Test," Director, Staff Department. Scope: Discussion of the organization of the ATFA infantry division; the ATFA test concept; and the ATFA test results.
0950-1010	En route to Patrick Hall
1015-1200	Commandant's Forum
1200-1300	Lunch
1300-	Departure

THE INFANTRY INSTRUCTORS' CONFERENCE

Commandant's Welcome

Gentlemen:

One of my first official functions when I arrived here last year as Commandant was to address the conferees at the Instructor's Conference. Now it is again my pleasure to welcome you to the Infantry Center and to this year's Infantry Instructors' Conference.

I would like to tell you what we have tried to do during this past year, and what we are stressing. Last August, Department of the Army published and sent through CONARC, a directive which reached The Infantry School about 1 October. This directive stated that The Infantry School would be responsible for development of air transportability doctrine for all army units. As a result of that directive, we have given the matter considerable study. We have asked ourselves just how airborne and air transported units would be used in the future in atomic war and have come up with a concept which we believe seems reasonable. During the course of this conference, we will go into considerable detail concerning this matter, and we would like to get your reaction. As a result of the directive, we reorganized and expanded our Airborne Department until today it is known as the Airborne-Army Aviation Department. Our thinking is that we must lay the foundation right now at The Infantry School so that all infantry units will be capable of vertical envelopment as used in new assault tactics. We are doing considerable work with helicopters in tactical problems. You will hear more about this later in the conference.

One other thing mentioned in last year's conference, which we have stressed, is night work. I think all of you who were in Korea will agree that there is room for much improvement in fighting at night. We are attempting to set up a marksmanship course for every weapon. For every daylight marksmanship course, there will be a night counterpart. We have been working very closely with The Engineer School on development of infrared.

You are well aware that during the past year, Exercise FOLLOW ME was conducted. The 3d Division, permanently stationed at this post, was reorganized. The maneuver was conducted between Fort Benning and Camp Rucker. The exercise was conducted for the purpose of testing extended formations, assuming atomic bombs would be used throughout the exercise. A great deal of stress was given to the play of atomic weapons. I believe you are also aware that the 3d Division is again being reorganized for Exercise SAGEBRUSH to be conducted in October or November of this year.

I haven't anything else to add at this time. I have a period with you at the end of the conference. At that time, will you please feel free to ask any questions of us and we will try to answer them. By your careful questioning, and being critical of us, of our tactics and other matters presented here, we hope to arrive at sound, firm doctrine. That is the only way we can get it.

We are very glad to have you here and we hope you enjoy your week with us.

Joseph H. Harper
Major General, USA
Commandant

THE INFANTRY INSTRUCTORS' CONFERENCE

Assistant Commandant's Opening Remarks

Gentlemen:

I would like to add my welcome to that just extended by General Harper. It is a real pleasure to have you here. We look forward to these conferences as a means for bringing you "back home" to The Infantry School. I have looked forward to visiting here and we hope you have.

As many of you are probably aware, The Infantry School is one of the largest educational units of its type in the world today. During the past year we have processed approximately 20,000 students including 800 allied students representing 30 different countries. These students were enrolled in approximately 175 different classes ranging in length from two weeks to six months. We teach 31 separate courses of instruction and have vault files for approximately 2700 different problems.

The principal mission of The Infantry School is to prepare officers and selected enlisted men to perform those duties within reinforced Infantry Regiments which they may be called upon to perform in time of war.

In order to accomplish the missions of The Infantry School, we have the organization as shown on the following page. This indicates only the School and does not show other post agencies comprising The Infantry Center. The latter headquarters controls all the post technical and administrative services which support the School. In addition, The Infantry Center controls the Combat Training Command which provides all the school troops for The Infantry School problem demonstrations. Combat Training Command includes one regiment of infantry, two artillery battalions, one engineer combat company, one chemical smoke generator company, one antiaircraft artillery battery, one searchlight battery, one tank battalion and one tank company, one helicopter company, and one scout dog platoon.

The mission of the Commandant is to command The Infantry Center and to command and supervise the operation of The Infantry School.

The Assistant Commandant exercises direct supervision over the activities of The Infantry School and assumes the duties and responsibilities of the Commandant during his absence.

The Deputy Assistant Commandant exercises general supervision over the operations of the Academic Department and functions in a manner similar to a chief of staff. He performs such duties as the Assistant Commandant may direct and acts for him during his absence.

Essentially there are three sub-divisions of The Infantry School:

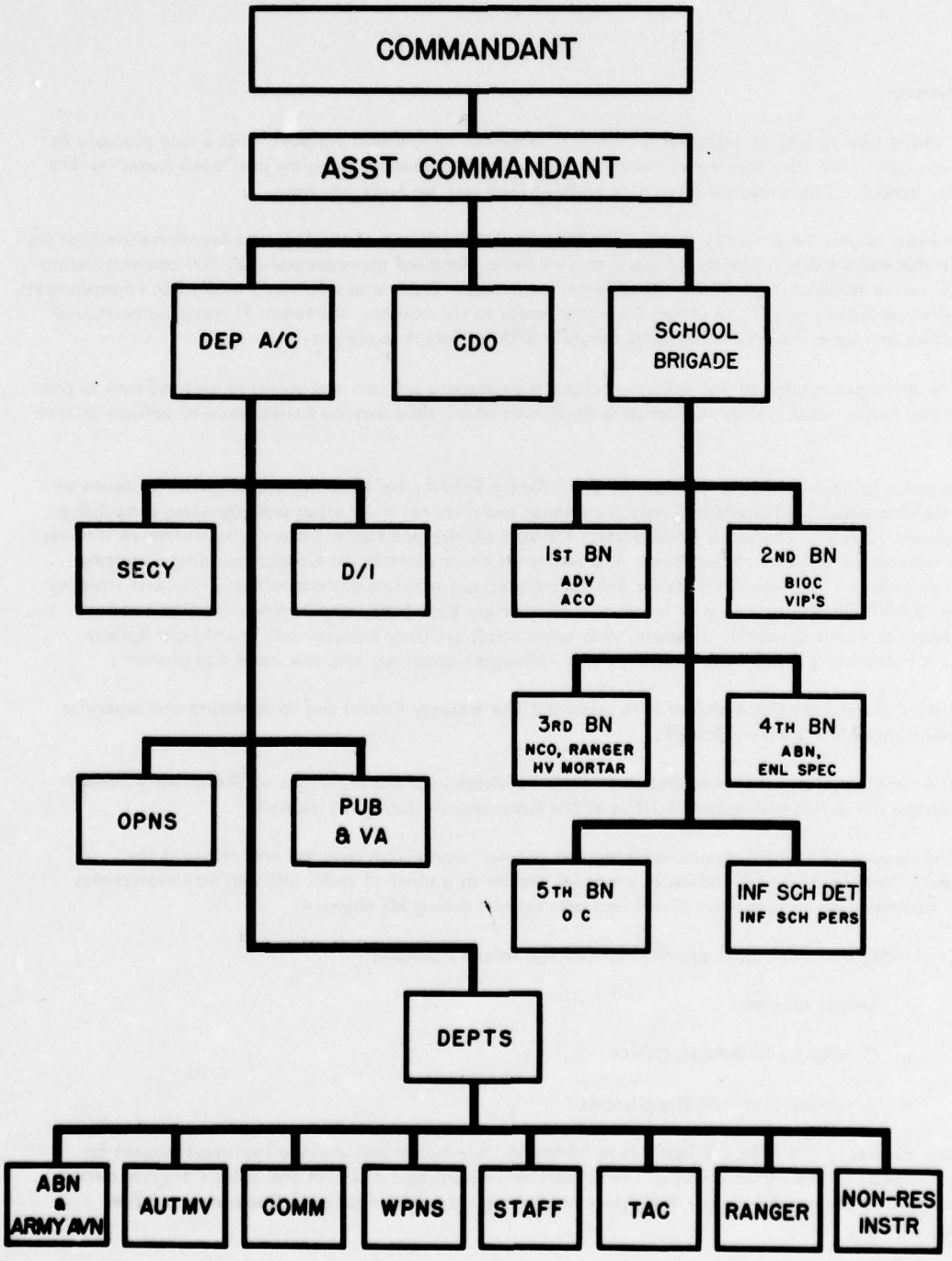
a. School Brigade

b. Combat Developments Office

c. Academic Staff and Departments

The mission of The School Brigade is to command, administer and provide logistical support to resident classes at The Infantry School, to all officer and enlisted cadre of The School Brigade units, and to enlisted personnel (except WAC personnel) assigned to the Academic Department of The Infantry School.

THE INFANTRY SCHOOL
ORGANIZATIONAL AND FUNCTIONAL CHART



The mission of the Combat Developments Office is to develop and evaluate new doctrine, tactics, techniques and organization of line Infantry and Airborne Infantry, and to initiate the requirements for new-type equipment and weapons for the Infantry; to maintain liaison with Continental Army Command Boards and development and research agencies, both civilian and military, and to evaluate their work as it pertains to The Infantry School; to monitor and/or supervise, as directed, troop tests of organization, tactics, techniques, new equipment and weapons usage, and training. (The mission excludes the conduct of technical tests and laboratory experiments.)

The Secretary serves as the administrative executive for the Assistant Commandant and supervises the procurement and assignment of military and civilian personnel for The Infantry School. He is custodian of resident student academic records; administers the evaluation program for resident students; and supervises The Infantry School library.

The mission of the Director of Instruction is to supervise and coordinate resident instruction and the preparation of programs of instruction; to evaluate all military instruction; formulate instructional standards; operate an interdepartmental system of problem inspections; to arrange special training for students, staff and faculty, and visitors; to prepare plans and recommend policies; to review problems, material and other publications; and to supervise and assist in the training of resident allied students.

The mission of the Operations Office is to provide services and facilities required by the Academic Staff and Departments of The Infantry School that present the various courses of study to students.

The mission of the Publications and Visual Aids Office is to supervise and coordinate the preparation and revision of field manuals, training circulars, training films, film strips and graphic training aids; to process and review, edit all instructional material prepared by instructional departments for reproduction by the Army Field Printing Plant as well as other material submitted by staff agencies of the Academic Department and The School Brigade; to publish the "Infantry School Quarterly," "The Army Reserve Training Bulletin" and "Combat Forces Journal Newsletter"; and to supervise the operation of the Army Field Printing Plant.

There are seven instructional departments concerned with Resident Instruction at The Infantry School and one Non-Resident Instruction Department concerned with Army Extension Courses.

The Airborne and Army Aviation Department was organized in February of this year to implement new air mobility roles assigned The Infantry School by the Department of the Army. Now, we have primary responsibility for the development of doctrine, tactics and techniques for Army Airborne operations. This includes:

a. Basic airborne parachute tactics and techniques.

b. Pathfinder functions employing the parachute and/or organic aircraft.

c. The tactical movement of Army Combat Units employing all types of aircraft.

d. The conduct of air transport assault tactics employing all types of aircraft.

e. Principles of tactical air supply employing all types of aircraft and aerial delivery means.

In order to carry out this expanded role the department is organized into two groups: the Airborne School and the Air Mobility Group. The former retains the same mission that it had before the reorganization, that is, to prepare and present resident technical airborne instruction and to prepare training literature on the same subject. The Air Mobility Group develops new doctrines, procedures and organizations for Army operations involving air mobility. It also conducts tests and evaluations in this regard.

The Automotive Department prepares and presents resident instruction in the organizational maintenance and operation of motor vehicles authorized in the Infantry Regiment, and in the duties of motor officers, motor sergeants, and mechanics.

The Communications Department is responsible for preparing and presenting resident instruction pertaining to the employment and organizational maintenance and repairing of signal communication within the Infantry and Airborne Infantry regiment. It also provides technical training of communication and counterfire personnel within the regiment.

Weapons Department is assigned the mission to prepare and present resident instruction in all Infantry weapons varying from the .45 caliber pistol to the 106-mm recoilless rifle; and to furnish information and conduct studies concerning Infantry weapons in conjuction with CONARC Board Nr. 3 and other agencies.

Staff Department prepares and presents instruction in the organization, duties, responsibilities, functions and operation of battalion, regiment, and comparable unit staffs; organization and general functions of division staffs; and such miscellaneous subjects including leadership, bayonet, physical training, hand-to-hand combat, close-order drill, map reading, military medicine, airborne and amphibious operations, and atomic subjects. This department conducts field command post exercises, and the Instructor Guidance Course for The Infantry School. A representative of the Marine Corps is assigned to the Staff Department and presents instruction in Amphibious Operations.

Tactical Department has the responsibility for preparing and presenting resident instruction in the combat training of individual soldier and the tactics and troop leading of units up to and including the reinforced Infantry and Airborne Regiment and the Armored Combat Command, together with instruction in the associated arms. Officers from Armor, Artillery, Engineers, Chemical and the Air Force are assigned to this department.

The Ranger Department is charged with the preparation and presentation of instruction designed to train selected company grade officers and non-commissioned officers to conduct Ranger type operations, and to instruct and train others in Ranger type operations, with the objective of improving the training capabilities and leadership of Infantry units.

The mission of the Department of Non-Resident Instruction is to supervise the preparation and revision of instructional material designed for use in extension courses of The Infantry School; to enroll students, maintain student records and conduct student correspondence; to provide staff supervision and coordination for the preparation and revision of Infantry training programs; to supervise and coordinate the preparation of special programs for the reserve components, including subject schedules, staff training programs, and USAR School programs; and to provide support for the Infantry and General Military Science and Military Schools ROTC programs. Since 1 May the Department of Non-Resident Instruction has been given responsibility for supervising the preparation of all Army 10 Series common to all Arms. Previously, The Infantry School was only responsible for the 20, 30, and 40 Extension Course Series. In addition, the Department is now providing support to the National Guard Officer Candidate program.

Your brochures for this conference list the principal courses of instruction which we teach at The Infantry School, and you can read up on them at your leisure. In addition to the courses listed in the brochure, we also present instruction for Reserve Component Field and Company Grade Officers on a two (2) week refresher basis; USMA 2d Class for four (4) weeks each summer; a two (2) week course for Rifle Marksmanship Instructors; and a six (6) week course in Pathfinder techniques about which you will hear more on next Thursday from the Airborne-Army Aviation Department.

Colonel, Infantry
Acting Assistant Commandant

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CHAPTER 1
INFANTRY INSTRUCTORS' PROBLEMS AND RECOMMENDATIONS

COLONEL MILDREN
Director Of Instruction

Gentlemen:

The past year has been a significant one for the Infantry. We have made tremendous strides in directing our thoughts toward the future battlefield through revolutionary changes in tactics and techniques. In addition, we have tested new organizations and initiated requirements for necessary infantry arms, equipment, and transport to enhance our capabilities in the new concept. So, for the next five days we will discuss those changes and requirements with a viewpoint towards receiving your thoughts, your challenges, and your recommendations for areas of improvement in these tactics and techniques.

Members of the Staff and Faculty here at Benning have been looking forward to this visit by you: our representatives at the other Service Schools. I know they have expended considerable effort to make this conference stimulating and interesting. I hope that you find it so. Throughout, we have endeavored to schedule the type conferences and demonstrations that will prove helpful to you in the performance of your duties as infantry instructors at the various schools to which you are assigned.

As you know, The Infantry School, in all instruction, stresses the training of personnel to perform effectively not only as individuals but as members of a fighting team in combat, a combined and joint team. Battles, campaigns, and wars are won as a result of this close teamwork by all Arms and Services. Unfortunately, there are many Americans today, military as well as civilian, who have swallowed the propaganda that one Service alone can defeat a major world power. Some have questioned the need for Infantry in modern times. It behooves all of us, we Infantrymen, to be progressive in our thinking and enthusiastic in our expression of the part Infantry will play in the future.

This, then, will be the underlying thought for our conference, and the basic theme will be fully expressed by Colonel Russell tomorrow morning when he presents the "Role of the Infantry in Future Warfare." All discussions which follow that presentation will be detailed outlines of the Infantry developments and trends in weapons, communications, equipment, and mobility so necessary to fulfill that role.

Many of you remember that during last year's conference we conducted seminars and discussion group periods as a means of obtaining your ideas on the application of atomic firepower and mass destruction weapons to infantry tactics. Those ideas and suggestions were utilized in arriving at the techniques which will be discussed during this conference.

Several months ago we published and sent to your schools a brochure entitled "Infantry Instructors Conference." Since that time several changes have been made in the detailed schedule of events. The correct agenda is shown on the mimeographed schedule of instruction which was issued to you upon your arrival. Presentations today will include a discussion of the current status of Infantry training literature and training aids, a discussion of The Infantry School evaluation program, and a demonstration of the leaders reaction course. This evening, at 1730 hours, the Commandant will hold a reception for all conferees in Headquarters and Headquarters Company recreation room. Uniform will be the one you have on now with the addition of a tie. General Harper wants to meet each of you so there will be a

receiving line. Tuesday there will be a discussion of the TIS War Game which is presented to Advanced Course students. In addition, the Staff Department will discuss changes in training and staff procedures. Following Tactical Department's presentation on the Role of the Infantry, the Communications and Weapons Department will demonstrate and discuss developments and changes in Infantry communications and weapons. CONARC Board Nr 3 will demonstrate items of material and equipment now under development by that agency. On Wednesday and Thursday, the Tactical Department and Airborne Department will present new concepts for Infantry tactics and techniques with emphasis on air mobility. This will include a demonstration of army aircraft and the utilization of pathfinders.

Wednesday afternoon has been reserved for you to visit the various departments of the School. In this connection, some of you have requested discussion of items not included in the regular agenda. These items have been planned for discussion on Wednesday afternoon and are listed in a second mimeographed schedule issued to you upon your arrival. You are, of course, welcome to participate in as many of these discussions as you desire. A sign-up list will be posted on the bulletin board in the rear of this room. Please indicate your desires prior to Tuesday. We are also prepared to discuss any additional topics that you propose.

The conference will end Friday morning with a discussion of the ATFA Infantry Division, test concept and test results, and a Forum to be conducted by the Commandant.

If you desire any training literature or other written material which is available here at the School, please place your request with your group guide officer or with the respective department project officers. Their names and phone numbers are listed in the directory of your brochure. In addition, your group guide officer will, if you desire, arrange to have all the material which you require mailed to your home station. He also will arrange transportation as you may need for visits to departments, problems or other official business.

The remainder of this period has been reserved for you and a discussion of your problems. In addition, we desire any recommendations you may submit for the improvement in the relationship between you and The Infantry School. At the 1952 Conference, one of the conferees suggested that we publish a Quarterly News Letter to keep you abreast of changes in school teachings, such a publication has been sent to you ever since that time. That is one example of what can be accomplished if you let us know about your problems. When you ask a question please announce your name and the school you represent. I encourage you to ask questions and offer such comments that you may have at this time. The TIS Department Directors and Staff Chiefs are present to discuss your remarks.

Lt Colonel Clark, AA & GM Branch, The Artillery School: We are interested in the status of the recommendation of replacing Infantry officers when their tours of duty are up at other service schools. Will the replacements come from Fort Benning or will they come from some other source?

Colonel Mildren: This same question was posed at the conference last year. At that time we prepared a request to CONARC for utilization of TIS instructors at other service schools and discussed the subject with Career Management during a visit to Washington. Personnel in Career Management stated that Infantry instructors at other schools would be graduates from TIS but such a policy as we proposed would require an excessive number of station changes each year. Colonel Smith, can you add anything to that?

Colonel Smith, Secretary, The Infantry School: We had a proposal on this subject from CONARC last fall upon which they requested our comments. The plan was to be effective on the first of January. We were all for it. We requested the number of instructors we would have to provide and the approximate date of transfer. We gave our comments and that is the last we have heard from it. It is quite possible CONARC ran into problems at their own level. The plan

was for instructors to be here for a year to become familiar with The Infantry School and then to be stationed at other schools.

Lt Colonel Milotta, CONARC: That action was assigned to the Infantry Section at CONARC. I remember the letter to which Colonel Mildren refers. The best I can recall, that is the situation on the letter. When it was circulated to the commandants of various schools, there was a lot of disagreement as to what the procedures would be. Benning would have had the officers first, for one year, then they would go to another service school for two years. Department of the Army didn't particularly "buy" that because they saw some difficulties in making permanent changes of station after one year and then another after two years. Commandants could not agree on length of tours at various schools. The Artillery is actually putting this into practice by their Career Management at Department of the Army. That is where the thing stands as I know it. The difficulty right now is the permanent change of station involved. What the final action will be, I don't know. In the case of the Infantry, this runs into a tremendous number of officers.

Major Barnum, The Adjutant General School: In presenting our airborne instruction to the Advanced Class, I made a trip to Fort Campbell and drew, on a temporary basis, some parachute equipment. Is there any possible way for having salvage equipment assigned to one of these schools for use in instruction?

Colonel Tolson, Airborne-Army Aviation Department: I can't give you a clear-cut answer on that. That equipment you are referring to is controlled by the Quartermaster. We will see if we can find you an answer.

Lt Colonel Milotta: In the case of The Infantry School, they submit a request to CONARC and if there is sufficient justification, it is given approval. I suggest you try the same thing.

Major Barnum: We will work on it from that angle.

Major Cain, The Armored School: My question is about field manuals. The ones we have are outdated to a large extent. I assume the drafts are going to reflect the new material used here in tactical instruction. When are we going to get the new manuals? Will they be ready in time for the new program of instruction annexes or should we continue to use the ones we now have?

Colonel Boyle, Publications And Visual Aids: We intend to cover that in the period we conduct this morning but we can't give you a firm answer on when you will get them.

Colonel Mildren: They were completed some time ago. In view of the tests taking place in the Third Division, we were directed by CONARC to hold up publication of those because they figured there would be changes, and rightly so. This procedure would eliminate your receiving a number of changes about the time you received the basic manual. We have tried to keep you informed of the changes in the Quarterly News Letter.

Lt Colonel Clark: Fort Bliss is very much interested in trying to phase in a time schedule for new organization, tactics, and concept. Have you any information I can take back to indicate whether it will be FY 56 or FY 57 when we actually begin to teach the new Infantry organization and tactics?

Colonel Stilwell, Tactical Department: Are you speaking of the ATFA organization? I suppose that will be up to CONARC approval on the results of the test. The tactics are being taught now. You can apply it to three companies or four companies. The new tactics will be presented later in the conference. Relative to the question on field manuals, advance sheets given to students incorporate latest changes which will be published in field manuals.

Lt Colonel McKean, The Ordnance School: Our program of instruction for the Associate Advanced Course has been reduced from 15 to 12 weeks. When the cut came up, the first section to be hit was Combined Arms. The School went back and requested 15 weeks instead of 12 weeks but an answer hasn't been received.

Colonel Mildren: Have you cut your program of instruction to 12 weeks?

Lt Colonel McKean: We came up with three programs of instruction for planning purposes. CONARC did cut them of course.

This came out in the common subject letter.

Colonel Mildren: Whether a course is to be 12 or 15 weeks is up to the school commandant, subject to approval by CONARC. However, any length over twelve weeks must have strong justification.

Lt Colonel McKean: We have done that a long time ago but haven't received an answer.

Colonel Mildren: We have increased our requested POI time in the Associate Advanced Course to 17 weeks. We felt very strongly that the Associate Advanced Course, being essentially the same as the Advanced, should include those new concepts on organization and tactics. We can't see how you can reduce the time and still present the subjects necessary to carry out the mission of the course.

Lt Colonel Clark: Can't we get the common subjects requirements reduced? By the time you teach common subjects that are listed, you can't branch out at all as far as Combat Arms and Combat Arms Groups are concerned. By the time the common subjects letter comes down approved, we have very little time to write new problems. By the time the programs of instruction get CONARC approval the fiscal year has already started. In the meantime, we have written innumerable problems which are of no value whatsoever because the program is not up-to-date.

Lt Colonel Milotta: I am glad to hear these remarks about the common subjects and the preparation of programs of instruction. Of course, you know the common subjects letter is put out in the Spring. Requirements are for subjects common to all service schools and most of them are placed upon CONARC by Department of the Army. The problem facing us right now concerns the expenditure and control of money. Higher Headquarters takes a look at where we are spending our time. I am speaking particularly of the Basic Course. They say too much time is spent in school and not enough time in the unit. The whole objective now is not to teach the student what would be good to know as a basis to start his career but to teach him only enough for us to get maximum service out of the two years he is in the Army. We eliminate as much of the requirements as permissible in the common subjects letter and what you get is what we cannot take out of it.

This is the way a POI is approved and the way it is handled. The program of instruction goes to CONARC into the G-3 Section. They check to see if it complies with common subjects requirements and the ammunition requirements. Then the various branches work it over. Before approval can be given it must have Department of the Army approval. The Adjutant General must check for prerequisites compliance with the School Catalog and a couple of other requirements. Then it comes back to you. That whole process takes a couple of months.

Lt Colonel Clark: Down at Bliss they have cut all Infantry instruction in the Basic Course. Looks like we have fought a losing battle.

Lt Colonel Milotta: In CONARC last November we activated three arms sections. These sections were Armored, Artillery, and Infantry. They were headed by Major Generals. Part of the mission assigned these arms branches was that of reviewing programs of instruction of other schools for branch instruction. We haven't been in business long enough to start doing that. It will will be our business in the Infantry to check the programs of instruction coming in from various schools to see if our instruction has been cut. If you will notify me, just an informal note will do, I will be alerted to such a change and I can start checking on it. When you see the number of POI's involved, 31 here at TIS, multiply that by the number of service schools and you can see what a tremendous job it is, but if you will drop me a little note then I will check on it to see if we can do something about it.

Colonel Mildren: Colonel Clark, you made one premise that is not quite correct. All POI revisions are not required at the start of a fiscal year. Here at The Infantry School all of our courses are not revised at one time. In view of the fact that we have 31 courses of instruction, it is quite apparent that we could not revise all of them at one time. It will probably take all of FY 56 to revise those 31 courses. It may be next Spring be-

fore some are revised to reflect the common subjects letter now in effect.

Lt Colonel Milotta: I don't know how they do in The Artillery School. We haven't checked all programs of instruction. We check the new programs of instruction submitted against the common subjects letter in effect at that time.

Lt Colonel Clark: We revise every program of instruction for all 19 courses to be effective on 1 July.

Colonel Mildren: Do they close down the school to do that? I don't see how the Departments can do that and still maintain their instruction.

Lt Colonel Milotta: There is no requirement for them to be done that way.

Colonel Mildren: We do put high priority on changes in our leader type programs: the Advanced, Associate Advanced, Associate Company Officer, and Basic. We revise these around the first of the fiscal year and the others later on. For example, the BIOC will be revised for the first class in August.

Lt Colonel Clark: Are you starting a Regular Company Course here?

Colonel Mildren: We have authority from CONARC to initiate a program for a Regular Company Course. However, Career Management pointed out a year ago that they could not support it at the time. Therefore, we are staying with our Associate Company Officer Course of 15 weeks duration.

Lt Colonel Gallagher, The Signal School: I would like to say that the support received from The Infantry School is adequate. I think it is that and more. In addition to the Infantry Instructors' Notes we receive the Quarterly. We have experienced prompt service on material requested from TIS. I wish to thank everyone involved. TIS is a very fine supporting agency.

Colonel Mildren: We certainly appreciate that comment. Many of you are aware of the circular published last December emphasizing that no schools were to send out publications or requests for publications by mail unless sent through the Book Store and paid for by you. It is felt that this is an economy move. The only exceptions are the Quarterly News Letter and the Quarterly Magazine. CONARC is battling at the present time to obtain certain other exeptions to this.

Conferee: I understand Change 3 to AR 310-10 is out which authorizes sending material out to representatives at other service schools.

Lt Colonel McKean, Ordnance School: Do you issue material such as field manuals, etc. to allied students? At the Ordnance School we have had difficulty involving allied students possessing classified material when they were checked at the ports. They were not classified as such. At the present time they have to clear through their appropriate embassy to get this material.

Colonel Mildren: Colonel Boyle, can you comment on this?

Colonel Boyle: I am not sure that I understand the problem.

Lt Colonel McKean: Do you allow allied students to buy material in the Book Store?

Colonel Boyle: Yes, we do.

Conferee: How are field manuals classified since we have done away with RESTRICTED?

Colonel Boyle: Many are for "OFFICIAL USE ONLY." Not too many students will buy field manuals at the book store for, as someone brought out earlier, the 7 series is out of date.

Lt Colonel McKean: How about your advance sheets and lesson plans?

Colonel Mildren: Advance sheets, class problems and discussion sheets are issued to students, and they can keep all of this material.

Colonel Stillwell: The Koreans get them in their own language.

Lt Colonel Milotta: I can't imagine sending an allied student here, spending a lot of money on him, and then sending him back over there with millions of dollars worth of foreign aid equipment which we have sent over, and not giving him a manual on how to use it.

Colonel Tolson: I think the problems you are talking about arose when we had to make a review of some of our training manuals as a result of the new classification. That was about a year ago last fall. A great number of field manuals were made unclassified and a small number changed from RESTRICTED

to CONFIDENTIAL. What I think came up was that a few schools, in going through lockers of allied students, found some manuals which were marked RESTRICTED that had been marked up to CONFIDENTIAL and the word just hadn't gotten around. I think this caused the basic difficulty.

Lt Colonel McKean: There is a question of field manuals being Army property and handouts being school property.

Colonel Tolson: I understand that DA furnished field manuals to the various embassies.

Colonel Mildren: I don't know that we can solve that problem. The missions have our manuals and are translating them into the respective languages.

Major Olson, The Chemical School: We have a problem on training films. There is a weapons series coming out now which we have attempted to get hold of to cut out certain portions for our use. We were told that we could not cut them up. We have even tried to buy them. TIS and other schools have cut them up in the past. How can we get training films to use as we see fit?

Colonel Boyle: We will get an answer for you before the end of the week.

Colonel Stillwell: We cut them up but we splice them back before they are returned.

Lt Colonel Gallagher: There was quite a "flap" last year, I understand, regarding airborne and ranger requirements for regular army second lieutenants. I understand the Ranger Course has been somewhat diluted to conform to the requirements of these individuals. It that true, or is it somewhat the same?

Colonel Mildren: In my judgment, the Ranger Course has not dropped in standard one bit. At the present time we must give tabs to all who finish the course. Previously only top grade students were qualified for what we considered to be Rangers. There was nothing wrong with the other students; they just were not the top men in the class. All were well trained who finished. We felt that some were distinguished and some were not. We awarded tabs to the former only.

Colonel Dalton, Ranger Department: The standards have not been lowered at all. If anything they have been improved through experience. In the past only distinguished graduates received the tabs but now all receive them. As presently set up only the non-graduates do not receive tabs. Only about 10% do not receive tabs now, whereas previously this figure was 50% to 60%.

Colonel Mildren: Are there any other questions? Please be back in your seats at 1055 hours.

CHAPTER 2
STATUS OF INFANTRY TRAINING LITERATURE AND VISUAL TRAINING AIDS

COLONEL WILLIAM G. BOYLE
Chief, Publications and Visual Aids Office

Gentlemen, as you have recently learned, I am Chief of the Publications and Visual Aids Office, The Infantry School. My office is responsible for the supervision and direction of the following activities: The Army Field Printing Plant, The Infantry School Quarterly, Training Literature Section (Field Manuals, Training Circulars, etc.), Visual Aids Section (Training Films, Film Strips and similar items), and Infantry School Publications.

Two of my assistants will cover in detail functions in which you are interested. Major Rathbun will discuss the status of the Training Literature and Visual Aids Programs. After him, Lt. Ekstract, Acting Editor of the Quarterly, will discuss that publication with you.

Major Rathbun: In our brief discussion of training literature and visual aids this morning, we do not propose to go into great detail as to what The Infantry School is doing and what the status of the various projects is. We propose, rather, to acquaint you generally with our training literature and visual aids program so that at any future date you will be able to direct queries for information to the proper source. We would like you to leave here knowing which field manuals and training films The Infantry School is responsible for and those that do not fall within our field of responsibility. We should also like you to associate our office with TC and TF just in case you should have questions in the future.

Included in the handouts that have been placed on your desk during the intermission are, first, a status of The Infantry School's Department of the Army Training Literature Program, and, second, The Infantry Training Films and Film Strips. These papers will give you most of the details you would like to know as to the present status of our field manuals and training films.

During the past year, new manuals have been added to The Infantry School's training literature responsibilities. Two of these fall within the field of physical training—FM 21-20 "Physical Training" and TM 21-100 "Physical Conditioning." Two others are in the airborne field, being 57-210 "Air Movement of Troops and Equipment," and a new manual entitled 57-35 "Army Transport Aviation—Combat Operations." The estimated dates of revisions on these manuals are indicated on your handout. A training circular on the tactical employment of the scout dog platoon has also been added.

All of our 7-series manuals—in which I know you have a considerable interest—are in a state of suspense, awaiting decision on changes in infantry organization. A good portion of the past year was spent preparing training literature for the troops that tested the new organization. When these tests have been evaluated, the manuals will be revised and published as new 7-series manuals.

During the period of suspension, priority is being given to the preparation of weapons manuals. Manuscripts of the .30 caliber and .50 caliber machine guns, the 106-mm Recoilless Rifle, and the 81-mm Mortar, are in the final stages of preparation. FM 23-32 "Rocket Launchers" is at the Government Printing Office and should be distributed soon. FM 23-5 "U.S. Rifle, Caliber .30, M1" is in the early stages of revision. Among the many changes in the manual will be a new approach to marksmanship training.

Training Films

The third handout on your desk "Status of Infantry Training Films and other Visual Aids," contains a listing of infantry films and visual aids which were released during

the past year, are presently in production, approved but in suspension, or declared obsolete after annual review and considerations for the FY 56 schedule. All infantry visual aids are reviewed yearly by the School and recommendations are submitted to CONARC on their suitability. At the same time, TIS submits its requirements for new visual aids and training devices.

Training film and film strip production here at the School has been considerably curtailed during the past year. Generally speaking, we have avoided producing films which must depict present infantry organization inasmuch as they would be obsolete upon the adoption of the new organization. Film and GTA projects presently in suspension for this reason are listed on page 4. It is expected that these projects will be completed in approximately 18 months after a new organizational doctrine has been approved.

A new concept on instructional films has been perfected during the past year and are called Class "E" training films. Motion pictures of this nature are limited to one teaching point with a film running time of no more than 6 to 7 minutes. Portrayal in this type of film has many advantages. First, student interest need only be maintained for a few minutes at a time; second, the student is not confused by too many teaching points and/or unrelated material; and third, sufficient time is left for student participation. The "hard-to-teach" subject, or the subject on which insufficient or unsuitable training aids are available, present an excellent opportunity for portrayal in this manner. Everyone in the classroom is able to see the aid and the demonstration. These have been particularly desirable for instruction in civilian components. In addition to other advantages, the Class "E" film can be produced for approximately one-tenth the cost of a normal film (cost per minute basis). Three such films are already in Central Film Libraries: Basic Functioning M1 Rifle and Trigger Housing Group, Machinegun Clinometer, M1917, and Position and Grip, Machinegun M1919A6 on M2 Tripod. Fifteen additional subjects are expected to be released this summer, and six more this fall. A recent inquiry to the field and civilian components indicated that there are many more such films needed. Those presently being considered by TIS are indicated on pages 9 and 10. It is expected that some of these will be produced before the end of the year.

Lt. Ekstract: Gentlemen, this year, *The Infantry School Quarterly* celebrates its 30th anniversary. Since the very beginning, the goal of this magazine has been to keep Infantrymen abreast of the latest Infantry theories and techniques. Today we try to keep our readers not only up to date but *ahead.* We do not limit our scope. We try to present material of genuine interest to everyone from squad leader to regimental commander.

The Infantry School Quarterly has undergone many changes in the past two years. As a result, our circulation has risen to a new all-time high and we are now able to spend more money to attract good military writers.

I am sure we all agree that no magazine is any better than the articles it presents. We are always in the market for new articles. We cover every phase of Infantry—tactics, weapons, communications, staff procedures, airborne activities, administration—anything that might be of value to Infantrymen who are miles away from The Infantry School. And, in order to give our readers complete coverage, we need your help.

I hope you will keep in mind the fact that the Quarterly presents not only doctrinal articles, but an increasing number of opinion and "how-to-do-it" articles. We are trying to stimulate new ideas and offer practical aid to commanders in the field. The how-to-do-it articles are particularly helpful to junior officers.

I think we can get a better picture of this magazine by looking at some of the articles in the April issue. If you will open the copy on your desk, we can examine the magazine together.

LOOK TOWARD TOMORROW (Page 13)

If you will turn to page 13, you will find a good example of a "one man's opinion" article. Since so many of us are vitally inter-

ested in the tactical employment of atomic weapons and the demands these weapons will make on Infantry organization, we asked General Fritzsche to give us his thoughts on the subject.

In "Look Toward Tomorrow," he offers an outline of what we can expect in any future reorganization of the Infantry. This is only an opinion, but it is the opinion of the Assistant Commandant of The Infantry School. We wish that every Infantryman could have the opportunity to read this article.

EVERY MAN A SERGEANT YORK (Page 31)

Here we have a good example of a doctrinal article. Major Hughes offers the latest aids to rifle instructors as developed by The Infantry School. Note the picture of the new firing data card on page 33. This is the replacement for the standard rifle score card. The use of the firing data card will be covered in detail when Change 2 to FM 23-5 appears in the near futre. You can see that we coordinate with all of the various departments in The Infantry School to offer our readers advance information whenever possible.

"WHAT'S NEW" (Page 56)

The most prominent example of this advance information in the Quarterly is the four-page feature entitled "What's new," which begins on page 56. We hold our deadline for this feature open until the last minute in order to present as many late developments as possible. "What's New" offers the Infantry instructor another distinct advantage because it always presents the latest information about field manuals and training circulars which have been sent forward by the Training Literature Section of the Publications and Visual Aids Office.

THE T-48 RIFLE (Page 79)

On page 79, we have what we like to call a Quarterly *first*. Here, in words and pictures, we give you the facts on the new T-48 rifle which is now under test. This is material which has not appeared in any other publication and, up to this time, has not been generally available to Infantrymen.

KEEP 'EM ROLLING (Page 92)

If you will turn to page 92, I would like to offer you an illustration of the influence of the Quarterly.

As Director of the Automotive Department of The Infantry School, the author has developed a new course for commanders entitled *The Commander's Automotive Preventive Maintenance Training Program.* This article describes the program and has illustrations which show the Infantry commander just how to go about inspecting the vehicles in his unit to be sure that proper maintenance is carried out. The entire program is presented in a book which is on sale at the Book Department, The Infantry School. Within a week after the publication of this article, the Book Department had sold 1,500 copies of *The Commander's Automotive Preventive Maintenance Training Program* and had to reorder a complete new stock. So you can see that your ideas will reach a wide professional audience through the Quarterly— the magazine with a wide *reach!*

I have been encouraging you to write for the Quarterly. Now I would like to tell you what type of payment you can expect if you do submit material. We are authorized to pay up to a maximum of 100 dollars for an article. The average author's take home pay is 40-50 dollars. We believe that you gentlemen are an excellent source of material because you know what is happening at your service schools that may be of interest and value to Infantrymen. If you do not have enough material on hand to supply an article immediately, we would appreciate a short item for inclusion in "What's New." Then if more information becomes available, you can develop it into a full-scale article. And remember, you do not have to be an Ernest Hemingway or a William Faulkner to write for the Infantryman's magazine. We have a competent staff of editors who are capable of editing and rewriting anything you submit. If you can't do anything more than develop an outline for us—if the idea is good, we will pay for that too. On page 51 of the April issue, you will find an article that was almost entirely developed by our staff. The idea was the author's and

he got a nice check, but we did the bulk of the legwork.

Before closing, I would like to tell you about some articles that will appear in future issues of the magazine. As a matter of general interest you might like to know how we determine the types of articles that we present. For the past six months we have been sending a questionnaire to our readers asking what they would like to read in *The Infantry School Quarterly*. The most frequent requests were for articles about atomic weapons, the Soviet army, new tactics and new doctrine. As a result, you will soon be reading articles on these very subjects. In the July issue we have "The Day the Sky Fell," an article on atomic warfare which should provoke quite a bit of discussion. In the October issue we have an article which describes Soviet tactics, another that deals with the Soviet army and an article entitled "How to Survive an Atomic Blast." We will continue to send these questionnaires to our readers and their needs will direct our editorial policies.

Remember, if you are looking for something of professional value, presented in a readable, palatable form, then read the *Infantry School Quarterly*—The magazine for Infantrymen.

NOTE: Informational copies of any material referred to in any portion of this report may be obtained by writing to The Commandant, The Infantry School, ATTN: Publications and Visual Aids Office.

CHAPTER 3
THE INFANTRY SCHOOL EVALUATION PROCEDURES

LT COLONEL McBRIDE
Office Director of Instruction

Every one of the 29 service schools represented at this conference is involved in a positive and continuing evaluation program. The methods used at one school may vary from those employed at others but the objectives of this evaluation are the same: that is to determine the instructor or the student who needs assistance; to counsel these individuals; to assess the results of this advice in each instance; to eliminate those who fail to respond; and to objectively analyze the subject material taught at the school, and the teaching methods, with a view toward constantly improving doctrine and techniques.

This period is included in your Infantry Instructors' Conference in recognition of the constantly increasing emphasis on evaluation. The handout summarizes current Infantry School Evaluation Policies and Procedures; however, this period is not specifically designed to sell you our methods for evaluation. We hope instead that during the next fifty minutes we can generate a conference on evaluation utilizing the handout as a reference or as a point of departure for this general interchange of ideas. Your comments may prove to be the basis for appropriate modification and improvement in evaluation procedures currently in effect here at The Infantry School or at other service schools. I suggest that in our discussion we follow the handout format, first considering Student Evaluation, then Self-Evaluation, the Inter-Departmental Inspection System, the Block Inspection System, and finally our so called Assistant Commandant Policies. I am of course prepared to elaborate on any of our evaluation policies and procedures as outlined in the handout based on your expressed desires as indicated by your questions throughout the period.

We devote a considerable amount of time and effort to our student evaluation program, and have systematized these procedures to a marked degree. Your handout outlines the procedures in effect here, that is, a tactical officer assigned to all Associate Infantry Company Officer, Basic Infantry Officer, Officer Candidate, and Advanced Non-Commissioned Officer level classes, with faculty advisors for all remaining casses. Faculty advisors for specialist classes come from departments primarily involved in presenting instruction to that class. We prepared and distributed a copy of our Manual for Tactical Officers on evaluation procedures for the Basic Infantry Officer Course for each agency represented here. It is, of course, yours to take back to your school if you so desire. This folder is prepared specifically for our Basic Infantry Officer class. A similar type folder, with appropriate modifications, is prepared for other classes that have assigned tactical officers. If you have had the opportunity to glance through it, you will note that there are 38 pages of instructions for tactical officers; a detailed form for recording all information that we need to know about each individual student; and finally, about 15 different forms, which are utilized by tactical officers, or by the Battalion or Brigade Evaluation Panels, in their deliberations.

The Infantry School student evaluation program is a function of the Office of the Secretary and of the School Brigade. What questions do you have now that I can answer on this program?

Major Wampler, Engineer School: Do you have a similar folder applicable to the Advance Class for your faculty advisor?

Lt Colonel McBride: The faculty advisor does not use this form as such.

Colonel Smith, Secretary, TIS: The Advanced Class student receives an academic report. The only information given is that required by regulations which includes his class standing. This is a word picture of his performance over the year the same as that which goes on an efficiency report. We also

comment on his ability to write and orally present problems as a result of the staff study each regular advance student prepares during his course. All of the information goes into the word picture. No other form is filled out by the faculty advisor.

Lt Colonel McBride: In specialist courses, especially for enlisted personnel, the faculty advisor maintains very close supervision over the class and keeps a close check on those students who are borderline cases. In these specialist classes students who are in danger of failing are brought before the faculty advisor and department directors at least twice during the course and are counselled on those ways and means they should employ to improve their relative class standing.

You might ask whether or not it is worthwhile to become involved in the heavy administrative effort which I am sure you appreciate exists in this type student evaluation program. The Infantry School thinks that it is.

Lt Colonel Gallagher, The Signal School: Regarding statistics, are you prepared to give any on what you have accompished? Number of commisions revoked, how you handle turnbacks, etc.

Lt Colonel McBride: Let me cite figures for Basic Officers. I suspect that you are all familiar with the provisions of Circular 55 which Department of the Army published about one year ago authorizing Commandants of Service Schools to revoke the commissions of newly commissioned second lieutenants who fail their Basic Branch Course through failure to demonstrate the required degree of academic and/or leadership proficiency. As a result of our evaluation effort during the past academic year in the Basic Officer Classes, General Harper has revoked the commissions of over ninety (90) second lieutenants.

Lt Colonel Gallagher: Can you give us a breakdown as to those eliminated for academic, leadership, or disciplinary reasons?

Colonel Smith: Roughly 80% for academic reasons and 20% for leadership and disciplinary reasons. If they can't pass the Basic Course they are not qualified for commissions.

Lt Colonel Gallagher: Are statistics available on which colleges are turning out this group? Is there any indication that these failures can be attributed to any specific type institution?

Colonel Smith: Yes, we keep detailed statistics. If you will come by my office, I will be glad to show you these figure I might point out that beginning last July intelligence tests are administered to ROTC students at the end of their second year, which, if properly administered, will screen out many of the inept students before they get here.

Lt Colonel McBride: To complete answering your question, Colonel, we make positive efforts to comply with General Dahlquist's desires as regards turning back Regular Army enlisted personnel who fail any course in the School, either in specialists or leadership courses. Faculty Boards, and Battalion and Brigade Evaluation Panels, will in every instance carefully evauate each individual case, and if there is the slightest cause for them to feel that by turning back a student he can successfully complete the course, they will so recommend.

Major Wampler, The Engineer School: On the leadership side, you have 20% or so that are eliminated. Is that a Bell frequency approach where the bottom men are automatically under pressure or is it absolute composition?

Lt Colonel McBride: You will note on page thirty (30) of the instructions contained in the folder are examples for tactical officers' consideration in assessing what does or does not constitute good leadership qualities. He utilizes these examples as guidelines in his consideration of the leadership potential of the students for which he is responsible. We do not feel that the last eight or ten people in each class as we evaluate them leadership-wise are on the danger line. A man must demonstrate positive lack of leadership ability before his commission is revoked.

Not included in your hand-out is another area of evaluation that we are just starting here at The Infantry School and since it is something we have not yet implemented, we can't state definitely whether or not it will have the desired results. This is a 400-question General Education Development Test

which was prepared by the Director of Instruction. This test will be administered to all advanced level students prior to the beginning of the course and a simiar type test administrated again at the completion of their instruction. We hope through this device to assess or evaluate the effectiveness of our teaching procedures. The test is not easy, 400 questions in 3½ hours, and the questions are in many instances detailed and difficult.

Some several years ago, CONARC directed that we give students the opportunity to comment and make recommendations on their course of instruction. They called that the Self-Evaluation Program. To comply with that directive, we have initiated here at The Infantry School a statistical type evaluation. We discovered that it would be next to impossible to evaluate written comments as submitted by the thousands of students we process each year; therefore, we developed a statistical type question sheet and now process student responses through the IBM machine. You have samples in your hand-out of a type student questionnaire. You also have in your hand-out, a sample of the form letter and the questionnaire, which we send out to each of these students approximately four months after they graduate from their course of instrution. We get about 60% response to these questionnaires. I confess that we find a certain sameness in the responses that students make to our questionnaires. Are there any schools which actually analyze the written student comments? I understand that perhaps The Engineer School does.

Major Wampler, The Engineer School: It is a rather large job for the Instructional Methods Branch at The Engineer School. They take all raw comments and compile a report which goes to the Assistant Commandant; he and his people evaluate the report then it is circulated to various departments within The Engineer School for necessary action. Sometimes a particular group will react violently to certain phases of instruction and then in the next survey students will indicate that the same instruction is wonderful. It takes a lot of time, I would say a month, from the time the students graduate before the report goes in.

Lt Colonel McBride: Does the School take positive corrective action based on student comment? If students comment unfavorably on areas of instruction, does someone move right in to take action based on their comments?

Major Wampler, The Engineer School: Yes. We try to find out first what is wrong, whether it is the school or the student. Sometimes it is the student, sometimes the school.

Lt Colonel McBride: What do you think generally of student comments? Is it appropriate to take positive action based solely on such comments.

Lt Colonel Gallagher, Signal School: I have found that you have to investigate each individual case specifically. It is time consuming but rewarding.

Captain Snedeker, Judge Advocate General's School: We have a system which was initiated by the last Advance class. They asked for time so that they could sit down and analyze, as a group, problems that existed in the school as far as students were concerned. They then vote as a group, on problems as expressed on individual basis. Those receiving ¾ backing from all students were submitted as remedial action which was needed at the school. So we have a group analysis rather than an individual analysis of the problem at the school.

Lt Colonel McBride: I think that type evaluation would warrant much more consideration than individual comments. We have received that kind of report from our regular advance classes and give them full consideration.

Captain Cain, The Engineer School: We send our graduate questionnaires out sixty (60) days after the end of a class. The student's commander submits an evaluation report on him. The student also submits an evaluation report. There is no collaboration. I think this is particularly good. Our Instructional Methods Branch, which is under the Operations Division of the school, is responsible for surveying about 20% of the students. They take all comments and put them in a "package" and send them to the departments for comment. After they have been commented upon, Operations personnel consolidate them and send them up to the As-

sistant Commandant. We try to get some positive evaluation here.

Colonel Johnson, Army War College: You might be interested in what is done at the Army War College. Of course they don't have the problem you do. One class of 200 students per year. At the completion of any course, there are 11-12 courses, students get a questionnaire. I do agree that you have to examine student comments. The big trouble there, as I see it, is that the students comment on their side of the course. They don't see the whole picture as does the faculty.

Lt Colonel McBride: That is an excellent thought. Comments would be more valid if made at the end of a course or block of instruction. Actually, in our system here, the questionnaires are issued to the apparently most discerning students only a few weeks after their course begins so that the students can and should actually prepare their comments on each block of instruction as it is completed. One other factor as regards the Army War College is the comparative ability of the selected senior officer students attending the course to evaluate the instruction they receive as compared to the ability of a junior officer or non-commissioned officer.

Our inter-departmental problem inspection program is described in relatively complete detail as Part Three of your hand-out sheet. I think it is written up in such detail that any elaboration is unecessary. Do you have any question or comment as regards the feasibility, desirability and possible value of such an inter-departmental inspection system.

Lt Colonel Clark, AA & GM Branch, The Artillery School: I woud like to ask how it is working here. We didn't care too much for it at Bliss.

Lt Colonel McBride: Before answering the question, let me ask if there are any other schools which use this inter-departmental type system?

Lt Colonel Baker, The Artillery School: We used a similar system until last year and then stopped it. We didn't find that it was particularly successful.

Lt Colonel McBride: We recognize certain inherent deficiencies in this system; however, we feel that here at The Infantry School we have a program that works quite effectively. This is possibly due to several reasons. In our Instructor Guidance Course we try to sell new instructors on the fact that they will get as much, if not more, out of the problem inspection as the instructor being inspected. We try to sell them on the fact that they will benefit by getting out and seeing what other departments are teaching and how they are teaching it. We feel that there is a positive value in getting people out of the Tactical Department, for instance, where they are dealing in tactics only, and down to the Automotive Department where they see completely different subject material and teaching techniques. They may well see an instructor who is far more competent than they are and thereby gain from the problem more than they contribute. Problem inspection reports from the various departments are channeled through the Office of the Director of Instruction. They are then sent to the department inspected for either information, or for their comments and/or recommendations. If the inspecting officer has no comments to make as regards improving the problem the report is sent for information. If he does have a proposal that will, in his opinion, improve the problem, the report goes to the department for their comment. All of these inspection reports are summarized periodically and forwarded to the Assistant Commandant, and perhaps, the fact that these reports are submitted to the Assistant Commandant is a factor in improving the type reports and type evaluations we get out of the inter-departmental system. It works here, and rather well, although as I said before we recognize certain inherent deficiencies and problems involved in conducting such an evaluation program.

Lt Colonel Baker, The Artillery School: I would like to add something to what I previously stated. We didn't stop the requirement for visits to other departments. The Assistant Commandant prescribes every instructor must attend instruction put on by other departments for a certain number of hours each month. We just stopped the written reports. We realize the advantages the instructor receives by visiting departments other than their own.

Lt Colonel McBride: You have, in effect,

an inter-departmental problem visiting system with no report. It puts the thing purely on the basis of "When I inspect this problem, what can I get out of it or what can I learn from it" without any necessity to evaluate the subject matter and technique of presentation from a standpoint of improving it. That is certainly an excellent system.

Lt Colonel Miller, Command and General Staff College: I was an instructor here at Benning for three years and I know that all of the instructors here didn't like the system used here at The Infantry School. When making an inspection, the inspector would tell the instructor if he saw anything he felt would help his conference but as far as the report was concerned, hardy anything derogatory was ever put in there.

Lt Colonel McBride: I think you would be somewhat amazed at the caliber of the reports which are submitted here at TIS. Almost all of our instructors now go out on problem inspections imbued with a positive desire to see what they can do to improve the problem they are going to inspect, and they are going to inspect, and they come up with some very fine recommendations. Much of the success of our inter-departmental system results from the application of our Assistant Commandant's policies. These Assistant Commandant's policies have systematized our procedures. The fact that we have the Assistant Commandant's policies as an SOP or guideline for evaluation is a definite factor in improving the efficiency of our inter-departmental inspection system. It takes much of the "my opinion against yours" out of it.

In the Evaluation Section of the Office of the Director of Instruction there are two officers who actually go out and spend as much time as is necessary to evaluate a complete course or a portion of a course of instruction. We have achieved excellent results from this system, though of course it involves the assignment of officers to a non-teaching job. Yet the value of seeing everything that is presented in a course of instruction, or all of the material that is presented in a specific block of instruction has given us a rather positive insight into some of the prevalent deficiencies in our instructional techniques and in the curriculum that we are teaching. To some extent this evaluation system has been instrumental in developing the Assistant Commandant's Policies which are, in effect, nothing more or less than do's and don'ts for instructors at TIS. Your handout includes all TIS Assistant Commandant Policies developed to date.

The thought expressed in para 1b, Part 5, of your handout sums up the philosophy of these Assistant Commandant Policies. In effect only the very finest curriculum and teaching techniques will be successful in a school that presents instruction eight (8) hours a day for many weeks. Compliance with Assistant Commandant policies will result in effective teaching. Effective teaching insure maximum student learning.

There is an item in paragraph 2 of the Policies handout which might be worthy of discussion. The statement is made that the average student attention span is eight minutes, more or less, dependent upon many variables. Is that indeed a fact? What are your observations on it? Can you keep a man motivated for more than eight minutes without injecting some interest gaining factors in the instruction?

Mr. Spore, Editor, Combat Forces Journal: It is difficult to say. It is indeed a fact that in written or spoken words there is a need for something to sustain attention. I think all editors think about that. There have been many magazines laid aside because the reader lost interest. Students will do the same. There are several ways of doing it. Sometimes we are faced with the danger of compromising some of the information to the point of being superficial. It might become a matter of trying to entertain rather than inform.

Lt Colonel McBride: We here accept the fact that in either written or spoken words, there is a span of interest beyond which you start losing members of your audience, unless at some pre-arranged points in your talk you inject interest gaining factors. We also say that it is the instructor's responsibility to present instruction so that a student is motivated to learn. How do you feel about that? Should we motivate students to learn or should students be responsible for main-

taining unflagging interest because they are being paid to attend school.

Colonel Wood, the Chemical School: We do not feel that he learns because he is being paid to do it. He is just being paid to go to school all right, but he may go through the motion of just sitting and doing nothing. I think that in about 75% of the cases, the student has to be motivated by the instructor primarily.

Lt Colonel McBride: We discovered that many of our instructors here at The Infantry School were trying to get too much teaching into a period of instruction. As an expert in their field, they wanted to get everything they know about the subject to the students without regard for the amount of time that the students had to actually learn what was being presented. We have now imposed a requirement that the instructor analyze the teaching points in a period of instruction. The vault files on the various problems and the visitors' folders must list these teaching points. The instructor must know the teaching points of his problem and he must cover them so that the students can learn them.

Lt Colonel Miller, Command and General Staff College: We do almost the same thing as you do. We prepare a directive for subject problems which includes what we call "instructional points." This comes down from the Executive of Instruction to the author of the problem. He builds his problem or writes his subject in such a way as to cover these instructional points and adds to them by preceding each section of his problem with points to be emphasized. Then at the end of each section, normally, is a summary which he can tie directly to the instructional points. I think they are used in the same way to which you were referring.

Lt Colonel McBride: Thank you, it appears that our procedures are very similar. We are emphasizing this matter of including only as much in a problem as a student can really learn, and our instruction appears to be improving to a marked degree. We have cut the narrative out of our vault files to eliminate any possibility of instructors memorizing their presentation. If an instructor researches his subject material and knows it, he is a better teacher. We have eliminated all type student advance assignments except "Study." There is no more "Read" or "Scan." Students quickly determined that the subject material in reading assignments would be covered in class, and so they habitually ignored such assignments. It was only a matter of time before they became conditional to ignore all advance assignments. Now we have "Study" only and a positive control system to insure that students complete their "Study" assignments. We limit the study time to approximately 20 minutes per hour of instruction.

Gentlemen, before concluding this period let me again emphasize that all of us in the Director of Instruction's Office are available to discuss evaluation with you at your convenience during this conference, or to reply to your written queries after you return to your home stations. It has been a pleasure conducting this conference with you.

CHAPTER 4
LEADERS' REACTION COURSE

LT COL ROBERT J. MACDONALD
Chairman, Leadership Committee

It is my purpose to brief you on The Infantry School's Leaders' Reaction Course. This type of reaction course is new to the United States Army. It is the latest thinking on reaction type devices in the service today, and it is an aid that may well help you to develop junior officers and noncommissioned officers into more effective leaders.

First, I would like to give you a brief history of the reaction course. A system similar to this one was utilized by the German Army during World War II. It was necessary at that time for a German officer candidate to successfully pass the course before being considered for a commission in that army. When the war ended the British adopted the test and transplanted it to their institutions, Sandhurst and the Royal Air Force Academy. The British have a great deal of confidence in this course as a testing device. The Leaders' Reaction Course was brought to the United States by the Air Force and set up at Maxwell Field, Montgomery, Alabama. It is used in the Squadron Officers' Course as one of four means of student evaluation.

In September 1953, the Leadership Committee was ordered to be prepared to conduct a Leaders' Reaction Course for West Point Cadets who were coming to Fort Benning in 1954 for a six-week summer training period. All conceivable sources of information were exhausted. Different type tests were evaluated and it was finally determined that Project X, as it was called at Maxwell Field, was the most feasible type of test for the students that we would be working with. Representatives of The Infantry School traveled to Maxwell Field and saw the test in action. Squadron officers were participating at that time, and I might say that we were highly impressed with what we saw. As a result, the Leaders' Reaction Course, as we call it, was constructed and put into operation late in the summer of 1954. The first students to run it were men from the Physical Training Committee of Staff Department. Then we imported men from the Ranger Department and members of the Advanced Leaders School of The Infantry Center to go through the course to further help us in our testing process. The first class to receive the course officially was Officer Candidate Class Nr 1 of 1954. Since then, the same Leaders' Reaction Course has been administered to all noncommissioned officer, officer candidate, and basic officer classes and all members of The Infantry Center Advanced Leaders School.

The Leaders' Reaction Course is solely an instructional aid. If properly operated it will assist greatly in attaining a high type of leadership in the United States Army. Unquestionably, it has been a highly successful operation here at The Infantry School.

The Leaders' Reaction Course Booklet contains complete information necessary for the construction and operation of the course.

When a class arrives at the Leaders' Reaction Course, the previously designated groups of twelve men each line up behind the raters who are located behind the stakes corresponding to the lettered groups of the students. We have found that it saves a lot of time to organize the class into the twelve-man groups before arriving at the course site. As soon as the class is completely formed, their attention is directed to the Principal Instructor who is standing up on the catwalk at the center of the course. He gives the students an orientation as follows:

"Gentlemen, you are about to participate as a team member in The Infantry School's Leaders' Reaction Course. The purpose of the reaction course is to help you become a better leader. This objective is obtained by means of presenting teams of six (6) students with a situation requiring a problem to be solved. These men are rated on certain leadership traits as they solve the problem at

hand. No doubt most of you will have pointed out to you today strengths or weaknesses which you never knew about before. If we in the Leaders' Reaction Course help you identify these strengths and weaknesses, you should be in a better position to capitalize on your strong traits and improve upon possible hitherto unknown weaknesses.

"You will be at the course this afternoon for a period of four (4) hours. Your rater, the officer who is with you, will divide you into groups of six officers each. On the first task, numbers 1 through 6 will work the problem; on the second task, numbers 7 through 12 will work the problem. You will alternate in this manner until you have completed all the twelve tasks of the course. You will have time at the completion of each task to discuss with the rater those elements of group leadership which either permitted you to be successful with your task or which prevented successful completion. Tomorrow afternoon your rater will meet and speak with you individually and privately concerning his impression of you as a result of your activities today. At that time, he will point out to you your strengths and your weaknesses as he has seen them. He will offer you advice as to how you may improve and allow you to discuss freely anything you wish concerning your leadership.

"We urge you to enter into these tasks wholeheartedly so that your rater may have full opportunity to get a true picture of your leadership ability or potential. If our findings are to be of benefit to you, they must be based upon fact. From what the members of the Leadership Committee have seen of the spirit of the students of your group, there should be no lack of enthusiasm out here today.

"Now for some administrative instructions. I cannot overemphasize the great importance of maintaining the security of the Leaders' Reaction Course. By that I mean that if anyone of you passes on to another person who might some day be administered the Leaders' Reaction Course any information concerning the situations or solutions, the value of the course to that person and his team members will be lessened. We ask you to discuss that Leaders' Reaction Course among yourselves as much as you desire—we want you to—but we very vigorously urge you not to divulge any information concerning it to any other person in the military. I'm sure that most of you will take the attitude that 'I had to figure out those problems; let the next guy do the same.'

"If anyone is seriously hurt, and I do not believe there will be any such cases, we have an ambulance available. In the event you scratch your hand or something of that nature, let your rater know and we will have the medic fix you up. Work hard and approach all tasks with the one thought of helping yourselves be a better leader. Now, Gentlemen, there's one thing I want you to thoroughly understand before we start on the Leaders' Reaction Course. This course will have no bearing whatsoever on your grades at The Infantry School. This device is here to help you to become a better Infantry commander and you will get no numerical rating on your activities here today. So, give it everything you have in order that we may get a true picture of your leadership ability. Raters, take charge."

As soon as this information has been given the students, the raters take charge and lead them on the double into the respective cubicles. Group "A" moves to Task Nr 1, Group "B" to Task Nr 2, etc. As soon as the men arrive in the task area, the rater issues each man a numbered bib which is strapped on. The number appears on both chest and back and can be easily seen. The students are referred to from then on as numbers and not as names. When this has been accomplished, the rater gives his group a thorough administrative orientation in which information concerning off-limit areas, safety precautions, and some more administrative details are given. When that has been accomplished, the principal instructor, who is centered on the catwalk, will blow a whistle. This is the signal for the first task to begin. In each task we have a clip board which contains a situation. This situation serves as the kick-off for the problem. It tells the student what the situation is and what task is to be accomplished.

Fifteen minutes is allowed for the completion of each task. At the end of each task,

two whistles are blown, at which time students cease work and return equipment. When the equipment has been returned, the rater holds a group critique of the problem just completed. The group critique is utilized to discuss those elements of group leadership that either permitted the group to be successful or prevented it from completing the task. This takes approximately three and one-half minutes. Not only the workers, but the observers are included in the group critique. The observers have been instructed beforehand to watch closely for leadership influences, so that they may participate in the critique period. The raters should promote observer discussion during this critique.

When the next whistle is blown, all teams move clockwise to the next task and begin work immediately. The raters will cause their students to cheer loudly when rotating from one compartment to another. This builds enthusiasm. We feel that the more enthusiasm we can get from the students in the reaction course, the more that they will gain from it. Not only do we promote cheering as the teams rotate from cubicle to cubicle, but encourage the observers to cheer and urge on to a higher height the members of the working team. When the teams rotate the men that were observing in the first task become the workers, and the workers of the first task become the observers of the second. Alternation in this manner continues until the course is completed. This means that each group will run a total of six (6) tasks, giving the rater an opportunity to adequately observe each student throughout the conduct of the course.

It is not easy to do an outstanding job as a rating officer. He must watch the persons in his group with a keen eye if he is to come up with a good, sound picture of the personality of each man. To assist him in getting a good picture of these personalities, the rater uses what is known as the Rater's Form. On the rater's form there are six traits. They are *decisiveness, judgment, enthusiasm, tact, unselfishness,* and *initiative.* The rater gets as many true ratings as he can on each man.

That night the rater consolidates all of the information that he has obtained on each man and draws up a word picture of each individual so that he will have well laid out in his mind what he is going to say to each man during the counseling period on the following day. The counseling periods are held in a large building such as a theater, where a cubicle set-up can be used (Figure 1).

Here is the stage. Down here are the tables and chairs where the students not being counseled sit. In the rear of the theater, you can see that we have several cubicles set up so that each counsellor can have complete privacy in talking to his students. As one man finishes his counseling period, he goes back to his desk and sends the man following him back into the cubicle. This operation is repeated until each man has been counselled by his rater.

The counseling is a very critical time. It is here that the rater does his greatest work toward helping the student improve his leadership ability. Here he discusses weaknesses of the man and gives him advice as to how to improve these weaknesses. He points out the strengths possessed by the individual and shows him ways that he can capitalize on these strengths. He motivates the man. He tries to show him that the responsibility of leading is probably the greatest responsibility on earth. He tries to instill in him an attitude of pride for the military service and of being an officer of the United States Army. He answers any question that the student may have concerning his leadership ability. It has been our experience that the student, when properly handled by the counsellor, completely bares his soul, admits weaknesses and honestly and sincerely tries to get ways and means of improving himself. This counseling period is a very valuable time; I cannot overemphasize its importance. In a few minutes I am going to have conducted for you two skits in which the principles of counseling will be illustrated. One skit will be an example of how *not* to counsel. The other will be an example of how the counseling period should be conducted.

However, I want to take a few minutes to answer a question which I am sure is in the minds of all of you, and that question is — "How do you obtain raters that can perform in the superior manner that is obviously re-

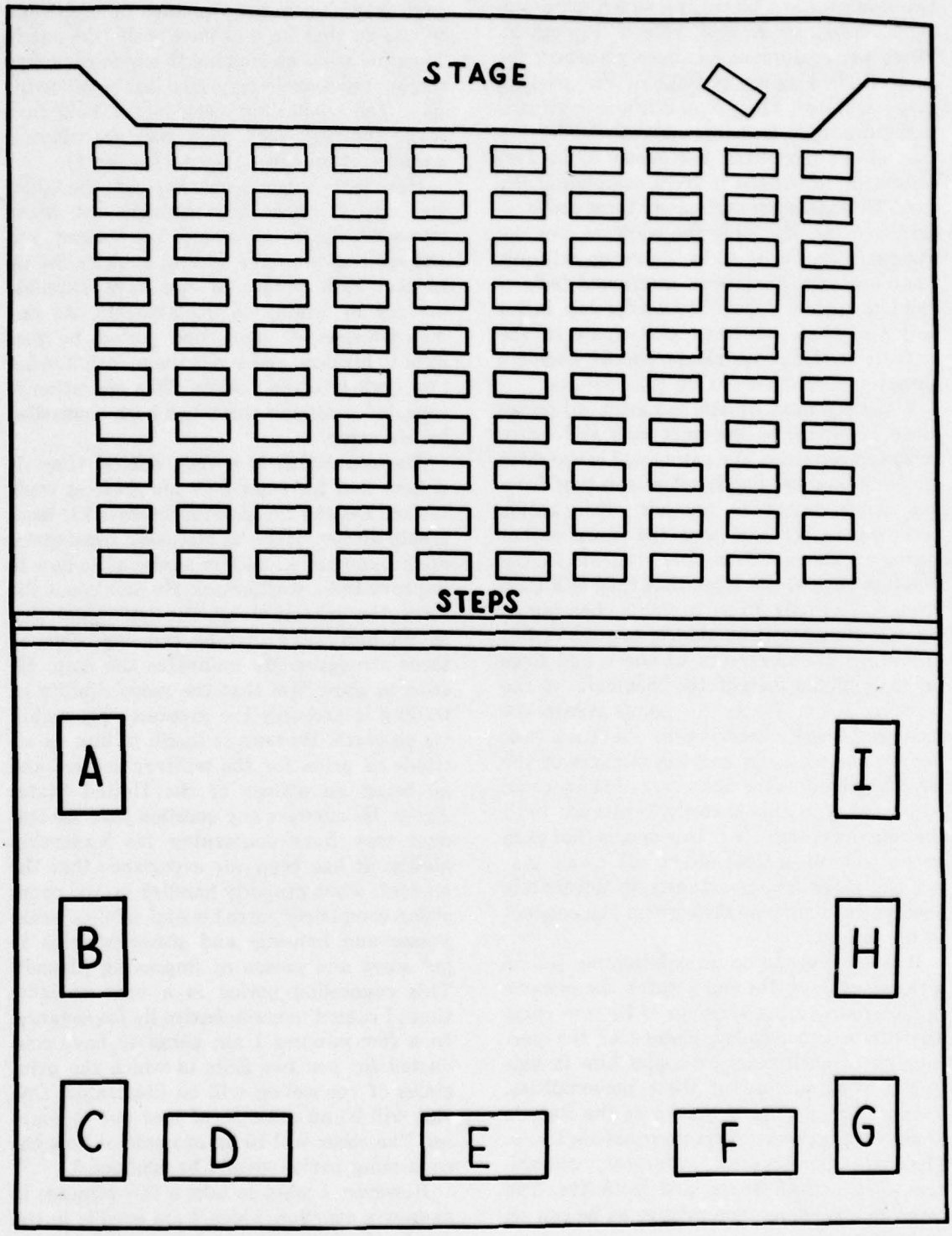


Figure 1. Cubicle Set-Up for Counseling.

quired?" Well, Gentlemen, we draw on the finest officers that can be supplied by the Staff Department. We try to use officers of rank, years of experience and a sound knowledge of human behavior. We have to insist upon good men to perform as raters. But our efforts don't stop there. We conduct what we call a Raters School, presented by the Leadership Committee, in which we go into every aspect of the Leaders' Reaction Course and explain it in detail. We give the prospective rater every bit of information that he could possibly need in performing duty as a rater. We do not put the officer who has received the Raters School directly into rating. We give him a few days or weeks in which he can come out to the course while it is in operation and observe other raters in action. Any questions that he might have in his mind can be answered at that time. We leave no stone unturned to develop the best possible hard core of raters. The Leadership Committee comprises the backbone of our so-called raters corps. Leadership instructors comprise a minimum of fifty per cent of the raters for any one running of the course. It is logical to assume that men involved in Leadership instruction should be among the most highly qualified raters.

Now, Gentlemen, imagine if you will that this stage is a counseling cubicle in Theater Nr 8. Major Gore, a man of many years service in the United States Army, is just coming into the theater to prepare for his counseling period. He meets Captain John Wahl of the Leadership Committee, who has arrived early to coordinate and get things set up for the counseling period. Let's see what Major Gore has to say as he enters the theater.

(At this time Major Gore counsels a Second Lieutenant Radford. He violates all of the principles of good counseling. He definitely does not motivate the student. He ridicules him, he ridicules the Army. He does nothing to gain the confidence of this young lieutenant. Confidence in the rater determines the extent to which the student will accept information and advice.)

There you have a good example of how *not* to counsel a student of the Leaders' Reaction Course. It may appear amusing at this time, and I'll admit we did attempt to inject some humor into the skit; but, believe it or not, we do have some raters who come almost that close to violating every principle of counseling that has been developed.

Again, picture yourself in Theater Nr 8. In Captain Wahl's cubicle, Lt Johnson is reporting for counseling. (Captain Wahl stands up, greets Lt Johnson with a smile, shakes his hand, and puts him at ease. They both sit down. Captain Wahl does not jump right into the meat of what he has to say. He throws out a couple of pleasant remarks to insure that Lt Johnson is relaxed and is ready to talk about himself. Captain Wahl then tries to get Lt Johnson to talking about himself. Many times the student will broach the subject of his own weaknesses without the rater having to do it. This precludes bluntness and possibly some embarrassing moments. It is best if the rater does not have to state the weaknesses of the person. Captain Wahl commences a discussion of how Lt Johnson can improve his weaknesses. Before Lt Johnson leaves the cubicle, Captain Wahl gives him a pat on the back, encouraging him to exert maximum effort in improving himself because of the great importance of leadership in his career. As Lt Johnson leaves the cubicle, Captain Wahl gives him his name and telephone number in order that Lt Johnson may contact him again if he has further questions concerning his leadership.)

I hope you see what we are trying to accomplish in the counseling period. We are trying to be completely honest, completely sincere, in helping our students to make themselves better leaders. In counseling, the student must be completely at ease; he must have complete confidence in his rater. He must feel that there is only one purpose for sitting down in that cubicle with the counselor, and that is to improve himself. Captain Wahl not only gave the student factual information concerning his personality, but gave him ways and means of strengthening his weaknesses. He also tried to inspire the leader to improve himself. He tried to make the student understand that any improvement that he makes will be entirely up to him, with of course the willing help of his superiors.

Gentlemen, I cannot overemphasize the

importance of this counseling period. Through our experience, we have found that this is the most beneficial part of the reaction course. Although much leadership is taught in the reaction course itself during the critique periods, the instructor strives to give a little capsule lesson in leadership, using the task just completed as his example. Also, in the actual running of the course, the student sees for himself his strengths and weaknesses. Students have been very honest and unrestrained in telling us that they have gained great benefit from having gone through the Leaders' Reaction Course here at The Infantry School.

We strive to get realism in the reaction course. The student arrives equipped with steel helmet and rifle which remain with him through all the tasks except the one dealing with a prisoner of war compound. We try not to pussy-foot in the reaction course. If the rater sees that a man is going to do something that will give him a minor scratch or a bruise, he will not be stopped. The problem continues. Of course, discretion is used. If a man is doing something that may result in serious injury, he is stopped. We have found that the students like this idea of realism, of playing the game a little rough.

QUESTION: How much does it cost to build the Leaders' Reaction Course?

ANSWER: The Infantry School course cost $2800. This covered materials only. Our labor was supplied by the 78th Engineer (C) Battalion. The Air University contracted with a civilian concern for their course at a cost in the neighborhood of $5000 in 1950.

QUESTION: If this class (Officer Candidate) were being tested, approximately what number would fail the course?

ANSWER: As I have pointed out, we use the course as an instructional medium only, and we have not set up standards for success or failure; therefore, it would be difficult to approximate the number of failures. I would say, however, that there would be very few in this group. These candidates are in their fourteenth week of training and most of the undesirable ones have been eliminated. Moveover, these men have worked as a team for a long while and are in fine physical condition. The amount of failures in a BIOC class, however, would be greater due mainly to a lack of confidence, but also because of a lower state of physical fitness and the fact that they have not worked as a team as long as the Officer Candidates when they are administered the course.

QUESTION: Are the Officer Candidate Tactical Officers present while their class is being administered the course?

ANSWER: No. We feel that if the candidates know that they are being observed by their tactical officers, who are in the business of evaluation, they may tend to be artificial in their actions in an effort to impress the tactical officers. As we are striving to get a true picture of the personality of each man with an eye to helping him to improve, it is considered harmful to have any distracting influence present. One tactical officer is present for the purpose of control only.

QUESTION: What is the advantage of a course of this type over those normally found in training units?

ANSWER: The type test found in training units is designed to test military knowledge such as intelligence, first aid, technique of rifle fire, etc. The Leaders' Reaction Course tests leadership traits exclusively. It is a leader reaction course in the truest sense. As a matter of fact, one of our JCOC visitors, a high ranking official of a civilian corporation, told us that he was going to set up such a plant as this at his plant as an additional means of selecting good civilian leaders.

Chapter 5
STAFF SUBJECTS
Section I. INTRODUCTION

COL JOHN R. SMOAK
Director, Staff Department

Gentlemen, our discussion during the next one and one-half hours will first cover briefly the mission of the Staff Department. Then, representatives of the four groups—Personnel, Intelligence, Operations and Training, and Logistics—will discuss those matters concerning their particular fields of interest, some of which are new or have been changed since last year's conference and which are considered of primary interest to you.

The Staff Department portion of The Infantry School mission is listed under the four headings of *Instruction, Reference, TIS Projects,* and *Developmental Work.*

(1) *Instruction.* We are responsible for resident instruction in the duties and functions of the unit staff at the battalion and regimental level and for sufficient familiarization with the duties of the division general staff to make clear to students the relation between the unit staff and the division staff. Instruction in these functions is presented to the basic classes as they apply at platoon and company level and as they apply for use by enlisted specialists. Included with the more normal staff responsibilities is instruction in staff techniques connected with psychological warfare, use of mass destruction weapons, special forces operations, air-ground operations, airborne, air-transported and helicopter operations, and amphibious operations. In addition to these staff subjects, we teach also the general subjects of leadership, map reading, escape and evasion, drill and command, hand-to-hand combat, physical training, bayonet, and hygiene and first aid. We parallel our resident instruction as closely as possible by producing material for nonresident instruction in the extension courses of The Infantry School.

(2) *Reference.* Closely related to our instructional mission is that of production of reference material. However, we produce not only material for support of instruction here, but also for general reference anywhere in the military service. The material is produced in the form of Field Manuals, Technical Manuals, Special Texts, Reference Data on The Infantry Regiment and Division, and Training Films.

(3) *TIS Projects.* In addition to the instruction and preparation of reference material, our mission includes doing a variety of jobs under the heading of TIS projects.

We monitor the Operations, Intelligence and Reconnaissance Specialists Course.

We conduct the Instructor Guidance Courses wherein all new instructors of The Infantry School are given a common orientation prior to instructing TIS classes.

We conduct the Staff Study Program for the advanced classes.

We produce and keep current the Reference Data, Infantry Regiment and Division, used by the departments of the School in their instruction.

We supervise and are represented by members on the Army Training Program Board which prepares Army Training Programs, Army Training Tests, Subject Schedules, and Tables of Ammunition Allowance for the units of the regiment and division.

At the end of the first part of the Advanced Course, we supervise the running of a three-day Field Command Post Exercise.

As a second part of the Advanced Course, we supervise the running of a War Game, "Life of an Infantry Regiment," which portrays the experiences of a hypothetical infantry regiment during the phases of *Activation, Training, Movement Overseas, Staging, Combat,* and return to the zone of interior for *Inactivation.*

(4) *Developmental Work.* We assist other agencies of The Infantry School, principally Combat Developments Office, in

analyzing new developments which are or might be applicable within the field of our mission. This opportunity insures that our instructors are made aware of trends and developments in their areas, which will inevitably make them more vital instructors and more impressive to their students, Also, the instructor can function as an avenue of valuable information and ideas from the students themselves.

Representatives from each group will now discuss those subjects selected for this portion of the conference.

Section II. PERSONNEL GROUP

LT COL A. P. SHIPLEY
Chief, Personnel Group

The Personnel Group of the Staff Department, in addition to topics in the field of Personnel Management, is responsible for instruction in Leadership, Congressional Relations, Public Information, Military Justice, Drill and Command, Bayonet, Physical Training, and Hand-to-Hand Combat.

In addition to the Leaders' Reaction Course, which has been discussed earlier, we have changes to report in the Physical Training and Personnel Management fields due to the transfer of responsibility for Physical Training from The Army General School to The Infantry School, and the change in classification and assignment procedure of enlisted personnel.

First, in Physical Training, on 1 May this year the Physical Training Department from The Army General School at Riley was transferred to The Infantry School and is now operational as the Research and Development Section of the Physical Training Committee in the Personnel Group. Coincident with the transfer, The Physical Training mission formerly assigned to The Army General School was transferred to The Infantry School. I would like to give you a brief background of our Research and Development Section.

It was originally formed as the Army Physical Training School at Camp Lee, Virginia, in 1946 where it had the mission of training physical training supervisors and instructors. In 1948, the school was transferred to Fort Bragg where it remained until 1953. During this period the school graduated some 2000 supervisors and 1500 instructors. Effective 1 January 1954, CONARC transferred the school from Fort Bragg to Fort Riley, redesignated as the Physical Training Department of The Army General School. At the same time, the mission of training supervisors and instructors was dropped and The Army General School was assigned the mission of Research and Development in the Physical Training field. More specifically, the mission was preparation of training literature and training aids, and generally setting the policy for Physical Training in the Army. That mission has now been assumed by The Infantry School.

Some of the projects now underway will give you an idea of how the section is carrying out the assigned mission.

Currently FM 21-20, the physical training manual, is being revised and TM 21-200, a new Technical Manual, is in manuscript form. The Field Manual is reduced in scope and size to make it more usable at company level or as an instructor's manual. The Technical Manual will include sufficient materials to support planning and programming by higher echelon, physiology, and the technicalities that answer the "why" of physical training. It is of interest to note that this is the first time that a Technical Manual has been published on the subject of physical training. These manuals should reach the field early next year. The scoring system for ATT 21-1, The Physical Fitness Test, is being revised as a result of research studies and is scheduled for distribution with the manuals. A new Basic Physical Achievement Test is being devised for combat type units to be administered in addition to the Physical Fitness Test. Additionally, a research study on the results of the Physical Fitness Test administered to 10,000 men in the Army is just about completed

and the results of this study should produce guidance in the over-all Army Physical Training Program. Finally, physical training in field units is being observed and evaluated and plans are underway to analyze and study physical training in foreign armies.

To summarize, now that the mission for Physical Training has arrived at its logical home, the home of the Infantry, you may expect improvement in the Physical Training program throughout the Army.

Second, in the Personnel Management field, effective 1 July 1955, the enlisted personnel management system will be changed. A new classification and assignment system and a new MOS code will be placed in effect. A new Service Record (DA Form 24) and a new Enlisted Qualification Record (DA Form 20) will be initiated for each soldier. Specialists will be separated and distinguished from noncommissioned officers.

The old system of career guidance with its career fields, job progression ladders, lateral transfers, assignment adjustments and other administrative controls will be completely out. In its place we will have new and simplified classification and assignment procedures that give the regimental and lower commanders considerably more latitude in assignment of personnel and place more emphasis on the needs of the service. At the same time, the new procedure will protect the soldier from unnecessary and erratic reassignments.

The new classification code is a five-digit system with each digit representing a specific area, entry group, MOS, skill level, and special qualification.

To briefly describe the new system, ten occupational areas have replaced the old career fields. The occupational areas, designated one through ten in the order listed and indicated by the first digit of the classification code, are Combat, Electronics, Electrical Maintenance, Precision Maintenance, Military Crafts, Motor Maintenance, Clerical, Graphics, General Technical, and Special Assignment.

Following the occupational area, the Entry Group—Artillery, Armor or Infantry, for example—is indicated by the second digit in combination with the first.

The third digit in combination with the first two digits represents the specific MOS; for example, Light Weapons Infantryman.

The fourth digit in combination with the preceding digits represents the skill level within the MOS as a rifle squad leader. A rifleman is 111.00. A senior rifleman is 111.10. A platoon sergeant is 111.80. The skill level digit is awarded only to indicate the actual level of skill attained by the soldier and is not awarded solely to reflect his pay grade or the skill level digit indicated on the TOE. Higher skill level digits are awarded after satisfactory performance of duty in a job requiring the higher skill level. Thus, a commander will know from this fourth digit the level of skill that he can expect from a newly assigned soldier.

The fifth digit is used for special qualifications. Among these are "7," parachutist, and "8," instructor.

Sixth and seventh digits are used only to indicate special language qualification.

To illustrate, the classification 111.77 indicates a Combat Infantry Light Weapons Infantryman whose skill level is squad leader and who is a qualified parachutist.

In the enlisted field, the separation of specialists from noncommissioned officers is of vital importance. The purpose of this separation is to restore and enhance the prestige of the NCO. This will be accomplished by appointing as specialists those persons occupying duty positions designated TOE's or TD's as specialist positions. Comparison of the new specialist titles and pay grades are Master Specialist (E-7), Specialist First Class (E-6), Specialist Second Class (E-5), and Specialist Third Class (E-4); however, in comparison of rank a corporal (E-4) is above a Master Specialist. There will be considerably fewer noncommissioned officers in the lower grades. The new TOE for the rifle company, for example, designates in the rifle squad only the squad leader to be a sergeant first class, and the assistant squad leader to be a ser-

geant. The remainder of the rifle squad consists of: automatic riflemen, specialists third class; senior riflemen, specialists third class; and riflemen, privates first class.

The new Form 20 and Service Record have been revised to support the classification system and to eliminate duplication on the two forms. Two changes have entered into the rating system for enlisted men. The officer or warrant officer first in line of supervision over the enlisted man will now make the efficiency rating. A conduct rating now replaces the character rating and is made by the unit commander.

In addition to these forms which will be in effect 1 July 1955, the new Officer's Form 66 was adopted effective in February this year. The form has been revised to simplify entries, eliminate non-essentials and present a neater, easier read summary of the individual officer's history.

I have briefly high-lighted the changes in our fields of responsibility. Lt Colonel Brickles, Chairman of the Personnel Management Committee, Lt Colonel Humphrey, Chairman of the Physical Training Committee, and Lt Colonel MacDonald, Chairman of the Leadership Committee, the experts in their particular fields, will be present during the question period and the break in the event you have questions. Also, if at any time during the Instructors' Conference you have questions or matters of interest in our field of responsibility, please stop by my office, Room 231, Building 35, and we will be happy to answer your questions or discuss your problems with you.

Section III. INTELLIGENCE

MAJ MARSHALL WHITING
Instructor, Intelligence Committee

The force which develops the most combat intelligence the fastest in future wars has the greatest chance for survival.

The answers to specific questions relative to the three elements of combat intelligence (weather, terrain, and enemy) are a prime operational planning requirement. In this regard, acknowledgment of our deficiency in the intelligence field has come from many quarters. Corrective instructions from Department of the Army and CONARC have been implemented throughout the Army to alleviate this deficiency.

The increased emphasis on surveillance makes the job of the unit S2 even more important than in the past. The rapid identification and location of remunerative atomic targets and the maintenance of adequate surveillance of the target until it is engaged are within the capability of the Infantry regiment, but must be improved.

Instruction presented at The Infantry School has been modified to cover recommendations from higher headquarters and to improve our progressive approach to combat intelligence. The intelligence instruction presented here is directed at the development of intelligence consciousness on the regimental and battalion levels. We do not train intelligence specialists. Our objective is to give every officer and noncommissioned officer attending The Infantry School a good working knowledge of the objectives and techniques of intelligence at the level at which he is most likely to work. For example: The Officer Candidate and Basic Infantry Officer Courses emphasize the individual's responsibility to observe and report and stress the assistance the S2 can give him in the accomplishment of his mission. This training is accomplished by conferences and practical work as well as by integrated intelligence situations in field exercises.

The objective of our course is to make all students fully realize the necessity and value of combat intelligence. We stress methods of integrating intelligence training with all tactical exercises. The establishment of a workable collection and reporting system for units at battalion and regimental levels during tactical exercises is necessary in order that all commanders within the Infantry regiment can develop current, accurate intelligence estimates.

OLD INTELLIGENCE ESTIMATE

Issuing Section and Hq
Place
Date and Time

Charts or Maps:

1. MISSION

2. SITUATION AND COURSES OF ACTION

   a. Considerations affecting the possible enemy courses of action and our mission. Consider such of the following and other factors as are involved.

      (1) Characteristics of the area of operations.

         (a) Weather (and effects)

         (b) Terrain (military aspects)

      (2) Enemy situation

         (a) Strength and combat efficiency.

         (b) Composition.

         (c) Dispositions, including fire support.

         (d) Recent and present significant activities.

         (e) Status of supply and morale.

         (f) Reinforcements.

   b. Enemy Capabilities

      Note courses of action within the capabilities of the enemy that can affect the accomplishment of the mission.

      (1) Analysis to justify the selection of relative probability of adoption of enemy capabilities.

      (2) Relative probability of adoption of enemy capabilities.

   c. Best avenue of approach for our forces.

3. EFFECT OF ENEMY COURSES OF ACTION ON OUR MISSION

NEW INTELLIGENCE ESTIMATE

Issuing Section and Hq
Place
Date and Time

INTELLIGENCE ESTIMATE NR .....

Map or Chart References

1. MISSION

2. CHARACTERISTICS OF THE AREA OF OPERATIONS

   a. Weather—(1) Existing situation (2) Effect on enemy capabilities (3) Effect on our mission.

   b. Terrain—(1) Existing situation to include COCOA. (2) Effect on enemy capabilities. (3) Effect on our mission.

3. ENEMY SITUATION

   a. Composition
   b. Strength
   c. Disposition to include fire support
   d. Recent and present significant activities
   e. Logistics
   f. Reinforcements
   g. Peculiarities and weaknesses

4. ENEMY CAPABILITIES

   a. Enumeration of enemy capabilities.
   b. Analysis and discussion of enemy capabilities.

5. CONCLUSIONS

   a. Relative probability of adoption of enemy capabilities.
   b. Effect of enemy capabilities on our mission.

Figure 2

The Intelligence Estimate (Figure 2) now has five paragraphs instead of three, but the contents of the new estimate are relatively the same as those of the old estimate: paragraph 1 describes the mission, paragraph 2 describes the characteristics of the area of operation, paragraph 3 describes the enemy situation, paragraph 4 enumerates and discusses enemy capabilities, and paragraph 5 discusses probability of adoption of enemy capabilities and their effects on our mission.

EVASION AND ESCAPE TRAINING

The Common Subjects Letter from OCAFF for 1954 and 1955 directed The Infantry School to initiate a course of instruction on Survival as related to Evasion and Escape. The basis for the instruction is DA Pamphlet 21-46 with Change 1 and DA TC 621-1. Two hours are devoted to this instruction which is given to all leadership type classes.

Current army training policy is directed towards developing a strong will to fight and training the individual to survive if captured or to regain contact with friendly forces if isolated during combat operations.

A one-hour class on survival training is presented to advanced classes and field officer refresher classes. This instruction reviews the training outlined in TC 621-1 which specifies three phases of survival training and relates this program to the present army training to illustrate how survival aspects are already integrated into our current training.

The basic considerations for the organization and conduct of an evasion exercise which are discussed during the class are: the initial situation must be simple and logical; the terrain should be rugged in nature, adequate in size, with easily defined boundaries; the aggressor force must be adequate in strength for the area and size of the unit to be trained; and control measures must be simple and easily understood.

A copy of Evasion Exercise, Problem Nr. 6644, is available upon request.

The purpose of Survival, Evasion and Escape training is to teach each soldier to evade the enemy if he is isolated from his unit and to escape from the enemy if captured.

Section IV. OPERATIONS AND TRAINING

COL ROBERT J. McBRIDE
Chief, Operations and Training Group

The Operations and Training Group is responsible for the preparation and presentation of instruction in the fields of organization, training, and combat operations which encompass the responsibilities and duties of the S3.

To accomplish our instructional mission, this group has been organized into a headquarters, a Training Committee, and an Operations Committee.

Subjects presented by the Operations Committee are staff organization and functioning, functions of the S3, Commander's Estimate, Operational Planning Techniques, Operations to include combat plans and orders, S3 Records and Reports, Troop Movements, Helicopter Operations, Air-Ground Operations and coordinated map maneuvers and command post exercises on battalion and regimental level for which the Staff Department is responsible.

On the surface it may appear that we encroach upon the responsibilities of other departments. I should like to emphasize that we stress staff planning, functions and responsibilities in the presentation of these subjects, but our activities are closely coordinated with the Tactical Department and other departments concerned. The committee is charged with presenting instruction in amphibious operations, airborne and air transported operations, psychological warfare and atomic warfare—again, considered from the standpoint of the special planning and staff functioning principles involved.

The Training Committee's field of responsibility includes the presentation of instruction in Training Management, Methods of

Instruction, Preparation of Field Exercises, Organization of the Infantry Regiment and Division, Organization of the Department of Defense and Department of the Army, Troop Information and Education Program, Training Aids, Mutual Security Program and Staff Writing and Staff Studies. This committee also conducts the Instructor Guidance Course, prepares and publishes The Infantry School Reference Data, and provides principal representation on such boards as the Army Training Program, Army Training Test, and Air-Mobility.

In addition to the subjects mentioned, this group participates in many problems for which other groups or departments have principal responsibility.

Students are issued considerable printed material on Operations and Training subjects, such as the Operations and Training Handbook, Handbook for the Preparation of a Field Exercise, the Staff Writing Handbook, and copies of Command Post Exercises, all of which are quite valuable for future reference.

Gentlemen, we have had several significant changes in the field of organization and training since last year's conference. To mention a few:

1. The Recoilless Rifle Platoon of the Heavy Weapons Company has been redesignated as the Antitank Platoon and has been reorganized to provide for three (3) antitank sections. Each section is organized into a section headquarters and two (2) antitank squads. Each squad is equipped with one (1) 106-mm Recoilless Rifle which may be fired from the ¼-ton truck or from its ground mount.

2. The Airborne Infantry Regiment now has its organic Tank Company and the Airborne Division now has one (1) instead of two (2) Tank Battalions.

3. The Division Special Service Section has been deleted. Its functions are to be assumed by higher headquarters.

Department of the Army has published and distributed new TOE's for the Infantry and Airborne Infantry Divisions. These tables are numbered 7-1R, 7-2R, etc., for the Infantry Division and 7-57R, etc., for the Airborne Infantry Division. They supersede the present 7-1, etc., series effective when authorized by Department of the Army.

These new TOE's designated noncommissioned officer and enlisted specialist grades. Current information indicates that the new specialist program will become effective on 1 July 1955.

Details of organizational changes which *will* be effected as a result of the new TOE's are included in the reference material being made available to you.

Since the last Instructor Conference, Department of the Army has published and distributed new Army Training Programs for each type unit in the infantry regiment. They are numbered 7-200, 7-201, etc., for the company level and 7-300 and 7-301, etc., for battalion and regimental advanced unit training. These new programs supersede ATP 7-300, dated 1952.

CONARC is now preparing Subject Schedules to support these new ATP's. This project should be completed by 30 June 1955, and the new Subject Schedules should be published during the latter part of this year. The Infantry School has been given the responsibility for reviewing these ATP's and Subject Schedules and revising them as necessary to keep them up-to-date.

A new training film on "Methods of Instruction" and "Training Aids" is being prepared. This film will be made of three parts, each of 20 minutes duration, and will amplify and expound on teaching methods, presentation techniques, and practical work phases of instruction as specified in the new FM 21-6, "Techniques of Military Instruction," dated May 1954. It is expected that this film will be completed during the latter part of this year.

This group is now in the process of revising and rewriting FM 21-5, "Military Training." The synoptic outline for the new manual has been approved by CONARC and it is expected that the final draft will be forwarded for approval and publication by the end of this August.

A new course of instruction on " Staff Writing" and "Staff Studies" was prepared

and presented to the Regular Advanced Class. This course replaced the "Monograph" instruction in the Program of Instruction for this class. It consisted of 15 hours of instruction, to include the techniques of conducting oral briefings of studies and related papers. Each student was required to write a complete staff study on a subject selected from a list of subjects of military significance which were chosen by the various instructional departments of the School. After submission of the completed studies, each student was required to present an oral brief of his study. To supplement the instruction and to provide readily accessible reference material to the student, a detailed and comprehensive "Handbook on Staff Writing" was prepared. This handbook is now in considerable demand. Not long ago, a corps commander wrote to General Harper and requested that 30 copies of this publication be sent to him for distribution within his headquarters. A copy of this document will be issued to you, together with such other instructional material that you may desire.

During the summer and fall of 1953, there was developed a Part II to the Infantry Officer's Advanced Course. This part of the course is entitled "War Game—The Life of an Infantry Regiment" and some 15,000 man-hours of work went into the initial production of this exercise. At last year's conference, Col Smoak discussed this problem in considerable detail to include our method of organization, our concept of procedure, our general method of operation and the part the student plays in it.

The purpose of this part of the course is to give the student a working knowledge of the command problems, staff organization and staff coordination involved in the life of an infantry regiment. This purpose is accomplished by having the advanced course students spend the last month of their course in a series of practical exercises concerning the Activation, Training, Movement Overseas, Staging, Combat and Occupation, Return to the ZI, and Inactivation, of a hypothetical infantry regiment. At the beginning of each of these phases the students are given a short orientation of the work to be accomplished. This orientation includes a short training film which highlights some of the activities that take place during that particular phase. A terrain film of the actual area of combat operations is also shown during the combat phase. This film was produced especially for this problem although some of the scenes in the training film were obtained from cuts of other films made during the past 10 to 15 years. Following the orientations, the students go to their assigned cubicles for work as six-man groups consisting of the regimental commander, executive officer, S1, S2, S3, and S4. The problems solved are those which are inherent to the particular phase through which our hypothetical organization is passing at the time. These command and staff assignments are rotated from time to time so that each student has an opportunity to serve in all positions during the conduct of the problem. In effect, this exercise gives the students an opportunity to apply the principles and techniques which they learned during Part I of their course.

Students receive a minimum of guidance during the War Game. It is intended that they use their own initiative and knowledge to solve the problems created. The need for organization, orientation, and discussion as well as leadership on the part of every commander is emphasized. Experience has proven that the extent to which the students learn and gain an understanding of the problems presented is dependent upon the capabilities of the detailed commander. A Director Headquarters, composed of members of the faculty who also represent the division staff, is maintained throughout the exercise. Students requiring assistance are directed to the appropriate division staff officer.

Near the end of each day's work, the class is assembled for a discussion of its work. One student command and staff group presents its solution and other student staff groups enter into the controlled discussion which follows in order to bring out all the principles which were considered in arriving at a solution to the problem.

The problems considered in this exercise are those that are likely to be encountered in an actual situation, such as during the activation and training phases; those problems with which the regiment would be confronted during the early periods of mobilization are pointed out. Likewise, in the other phases, realistic situations are presented by the injection of problems involving the use of helicopters, atomic warfare, fire support coordination, dispersion, movement, communications, logistics, operations over extended distances, and many others.

This problem has been enthusiastically received by the last three Advanced classes. It is a remarkably effective teaching vehicle and we are now working on necessary minor revisions prior to its presentation to the 1955-56 Advanced classes.

Section V. LOGISTICS

COL MELVIN C. BROWN
Chief, Logistics Group

Since the Instructors' Conference of last June, a number of interesting developments have occurred in the field of logistics. These new aspects have, of course, been incorporated into our teaching and I will now run down the five main functions of logistics: supply, evacuation and hospitalization, transportation, service, and management in that order, and hit the high spots for you.

In the field of supply, as you well realize, the logistician is faced with a tremendous problem in the number of different items required to keep our forces functioning properly. During the period of World War II and since, the ever increasing complexity of our fighting equipment plus our typically American desire for a high standard of living even in combat has resulted in a very sizeable increase in the number of items in the Supply System. In order to spread the word, and get all of us thinking about this matter as we go about our various jobs, I would like to quote in part a letter of 20 December 1954 addressed to Major Commands, signed by the Chief of Staff, General Ridgway.

"There are too many items of supply, equipment, and ammunition in the Army logistic system. The infantry division is now authorized 27 types of weapons, 115 types of ammunition of which 86 are in the infantry regiment, and 30 vehicles of different types and modifications. I realize that sometime in the past each item has been justified as being desirable and necessary. In numerous instances such justification is no longer valid.

"Today we face the possibility of a war in which major segments of our logistic system may be destroyed. It is mandatory that we simplify our supply problems. We must reduce the numbers and kinds of items in the supply system to those that are absolutely essential to the successful accomplishment of our mission. 'Nice to have' items must be eliminated. Special purpose items must be drastically reduced in number and retained only in those cases where their function is essential and where it is impossible to perform that function with a general purpose item. Flexibility must be retained through variations in the application of equipment rather than by insisting upon numerous items of equipment with slightly different capabilities."

The rest of the letter and its various indorsements pertain to implementing instructions which I will omit. There is a fine statement of the problem—the solution will of necessity take time and come about through standardization and a general effort toward simplification. The next time you have something to do with writing a TOE or a T/D&A for a unit or a headquarters, bear the big objective in mind: sooner or later we all get into the act of creating requirements, this is everybody's business.

Now let's consider for a moment the matter of combat supply under modern concepts of warfare. The magnitude of the

destructive area of modern weapons and the increasing requirement for speed in all phases of logistical and medical support have presented a number of conflicting requirements for the logistician and his commander to juggle and keep in balance to the best of their ability. We have to remain mentally flexible—under one set of conditions supply point distribution whereby the using unit brings its supplies forward in its own transportation may be used, whereas, the next day the same unit under slightly different tactical conditions may require unit distribution having supplies delivered by transportation of a higher echelon. This matter of combat supply is going to require that supply and maintenance installations be small, highly mobile, and widely dispersed and against this requirement must be placed the realities of available manpower, communications for control of dispersed installations, and requirements for local security.

In the field of administrative supply procedures, or, as we call it, garrison supply, there have also been changes. A new special regulation on Property Accountability was distributed last fall. It was designed to tighten up supply controls while simultaneously reducing the administrative workload involved at unit or company level. You will find that command responsibility over supplies is now more clearly defined. Commanders of all echelons are held directly responsible for the state of supply in their units. Further, the commander is held responsible for efficient supply administration within his organization.

The administrative procedures and records required at organization and unit level are prescribed and result in a reduction in the number of records required at company level.

One administrative barrier has been lowered with the initiation of a rather ingenious property turn-in tag. This tag which bears a DA Form number has a detachable stub, which acts as a receipt to the company supply officer's record. When a piece of equipment or some portion of a whole item, such as some tools from a mechanics tool set, is turned in, the stub of the turn-in tag serves as a receipt and replacement requisition. No paper work whatsoever is required to cover the transaction. The system works somewhat like the procedure for turning in shoes for repair, simple but effective.

Let's consider now the second main function of logistics, evacuation and hospitalization. The principles of evacuation and hospitalization with which we are familiar from World War II and Korea are still applicable; however, the mass casualty producing effect of modern weapons presents us with some hard facts to deal with. The present medical facilities are capable of handling casualties produced at relatively uniform or predictable rate at or near the front, however, handling masses of casualties produced almost instantaneously anywhere in the combat zone is quite another matter. Since under such conditions unit medical personnel will become casualties in the same percentage as the troops they support, the problem cannot be met by increasing the size of unit medical detachments. It boils down to the fact that each of us is going to have to be an aidman in addition to our other training. If we are to limit mass mortality, all soldiers must be able to treat shock, apply artificial respiration, and take other life sustaining first aid measures pending arrival of medical support from outside the disaster area. Present Army Training Programs call for only five hours of first aid training and this during the first eight weeks of training—thereafter none, unless prescribed by the unit commander. Based on personal experience in command, first aid training is often neglected and we must have a lot more of it. We have submitted a study recommending about five times as much first aid training be included in the Army Training Program. Since experience indicates that the number of survivors will be directly proportionate to the amount of immediate first aid given, the matter should be of personal interest to each of us.

Supply and evacuation and hospitalization are very dependent on the next main func-

tion of logistics—transportation. In the field of transportation, the truck continues to be our principal support vehicle in the Infantry Regiment. The present trend is toward the development of a "family" of vehicles and standardization of present types which will reduce the number of spare parts considerably as well as simplify maintenance problems. This, of course, is in furtherance of the principles outlined in General Ridgway's letter. Increasing emphasis and study is being placed on aerial supply by fixed wing aircraft and helicopters; however, for the immediate future, at least, the bulk of our logistic transportation requirements will have to be met by vehicles.

Under the heading of service I want to mention that since World War II there has been increased emphasis on placing ordnance maintenance support for track and wheeled vehicles as far forward as possible. As you may recall, the World War II Infantry Division had an Ordnance Company which normally operated well back in the division area. This required disabled vehicles to be evacuated considerable distances from the front for repair and then back to the front again. During the Korean conflict the Division Ordnance unit was set-up as an Ordnance Battalion with a forward and a rear company. The forward company is capable of sending maintenance platoons to Regimental Combat Teams for close and direct support to work with mechanics assigned to the regiments. While this change took place in 1952, I mention it here because most Infantry officers reporting to the school appear to be unfamiliar with the change, and we, as Infantry officers, should know what support is available to our units.

Now let's get on to the general function of management. What's new under this heading? Well, almost everything we have covered so far could be called management but the specific aspect I'm pointing to now is planning for combat operations. In this field there are again two items I want to bring to your attention.

First, there has been a change in the form of the Administrative Order. Formerly, there were six (6) major paragraphs in the Administrative Order. They were in sequence: Supply, Evacuation and Hospitalization, Transportation, Service, Personnel and Miscellaneous. There are now seven (7) major paragraph headings, Civil Affairs and Military Government has now been included as a separate major heading after paragraph 5, Personnel. The S4 or G4 is responsible for preparation of the order. At regimental level S1 gives S4 the information to be included in paragraph 5, Personnel, and paragraph 6, Civil Affairs and Military Government. At Division and higher level the G1 submits paragraph 5 and the G5 submits paragraph 6 to the G4 for inclusion in the order. The heading and ending for the order is the same as for the operation order.

Second, the coming of mass destruction weapons has placed a new type of planning for "Area Damage Control" under the staff responsibility of the G4 or his counterpart at lower echelons.

The purpose of Area Damage Control is to minimize the effects of mass destruction weapons or natural disaster on our operations. This can be accomplished through passive defensive measures to include dispersion and duplication of installations, control of personnel and traffic to avoid creating profitable targets, first aid training for all personnel, and other passive measures which will normally be included in standing operating procedures. In addition to such passive measures a plan known as an Area Damage Control Plan will be prepared by the area commander—the purpose of this plan is to aid in the restoration of support which has been interrupted by disaster and to limit the damage to property and casualties to personnel, as far as possible, by immediately sending to the stricken area emergency rescue and damage control teams.

In a field army, for example, the Army Commander will appoint an Area Damage Controller who is responsible for planning, organizing, and conducting area damage control in the Army Service Area. The area damage control plan will divide the zone or area into sectors which will be mutually

supporting. Units and teams in each sector will be designated to be sent on call to a stricken sector to provide transportation, medical assistance, fire fighting, decontaminating and other services required.

As you can readily visualize, the preparation of formal and complete area damage control plans within the Communications Zone and the Army Service area is necessitated by the size and nature of installations. As one progresses closer to the front, supply, maintenance and service facilities naturally are smaller in size and more dispersed, hence area damage control planning is more informal and more a matter of standing operating procedure; however, the principles apply to some degree at all echelons.

Each of the many points I have brought to your attention could be the subject for much more discussion, so those of you who wish to pursue in detail any of the material mentioned, are invited to visit the Logistics Group in Room 217.

On the table at the rear of the room you will find a display indicating the simplification of unit supply records at company level. There is an Instructor from the Logistics Group present with instructional material furnished to students here at the School covering points I have mentioned. If you need copies of this material, he will arrange to get it for you.

CHAPTER 6
TRENDS AND DEVELOPMENTS IN INFANTRY COMMUNICATIONS

LT. COL. MARVIN FLETCHER
Acting Director, Communication Department

Lt Col Fletcher: The purpose of this conference is to keep us all abreast of new trends and developments in the field of communications. Consequently, we will attempt in the next sixty-five minutes to familiarize you with some new equipment as well as some new techniques which are presently in varying stages of development.

For this purpose we are dividing the conference into three groups. Divided in this manner you will be better able to inspect the equipment.

Here in Brown Hall we have set up Station #1 where you will be shown the new AFSAM-7 (See Appendix II). The information which you will receive at this station is confidential. At Station #2 we have some radio equipment displayed. Some of this equipment is quite new. Here we will show you the AN/GRC-19, the AN/PRC-14 and 15, and the AN/ARC-27—equipment which I believe you may not have seen before.

We also have displayed the AN/PRC-10 and the Antenna RC 292, which I believe many of you have seen before.

As all of you know, in this thermo-nuclear age there is ever-increasing stress being placed on speed and mobility, dispersion and flexibility. On the one hand we are forced to disperse in order to survive and on the other we are forced to speedily reconcentrate in order to exploit and drive on and through to a decision. Here again we are confronted with the apparent age-old contradictions in the principles of war, that is the principles of economy of force and maneuver weighed against those of mass and unity of command. As we disperse in width and depth we increase in like degree our demands upon our communications. Hence in order to exercise command and control we must increase ranges of our communications. For this age of high speed mobility, maximum flexibility, and optimum dispersion, coupled with optimum capability for high speed reconcentration for exploitation purposes is an age of reliable, reasonably long-ranged communications. Therefore, at Station #2 we'll outline some of the means we are using to extend these ranges so that Infantry communications will continue to perform their vital mission of enabling the commander to control his unit at all times, even under the stress of extended ranges during heavy enemy action in the most adverse weather.

At Station #3 you will see the new Switchboard SB-86, the new telephones, the TA-43 which replaces the EE-8, and the Sound-powered phone TA-1/TT. Also at this station you will see the *LC 236*, a wire-laying plow. This latter device, when further developed and improved, should afford our wire systems substantial protection in atomic blast areas as will be explained to you by the officer-in-charge.

We plan after this introduction to rotate each of your groups to the three stations I've just mentioned. You will spend approximately ten minutes at each station after which we request that you reassemble here in Brown Hall for a discussion period. If you have not already done so, we request that you now take a minute or two to write down any questions which you may now have on the subject of Infantry Communications. We will collect these questions before you depart to visit the display stations. Then when you reassemble here we will answer those questions for you to the best of our ability. At that time we will have set up here on the stage a panel of officers. To them you may direct any further questions or discussion which you deem pertinent.

I wish to assure you that our Infantry Communications will work, that you will be surprised at how well they stand up against

an atomic blast, and that we are constantly getting better performances at ever-increasing ranges. We find that most of our officers and men must have impressed upon them all the various means of communication at their disposal, how to use these means, and above all how to invoke immediate-action to restore any means which have temporarily failed. With personnel well-trained in these essentials we find that our communications are even more reliable at greater distances and under more adverse conditions of weather and terrain than we rate them to be in our manuals and text books.

Major Ward: Studies conducted prior to World War II indicated the desirability of reducing the number of radio sets having similar characteristics. With this thought in mind, military characteristics were prepared in August 1947 for the Radio Set AN/GRC-19 and were subsequently adopted. In February 1949, they were revised and again revised in September 1952. During March 1953, the AN/GRC-19 was subjected to a preliminary test. Twenty-six deficiencies were noted. These have since been corrected and, at the present time, the set is undergoing final testing. (Figure 3)

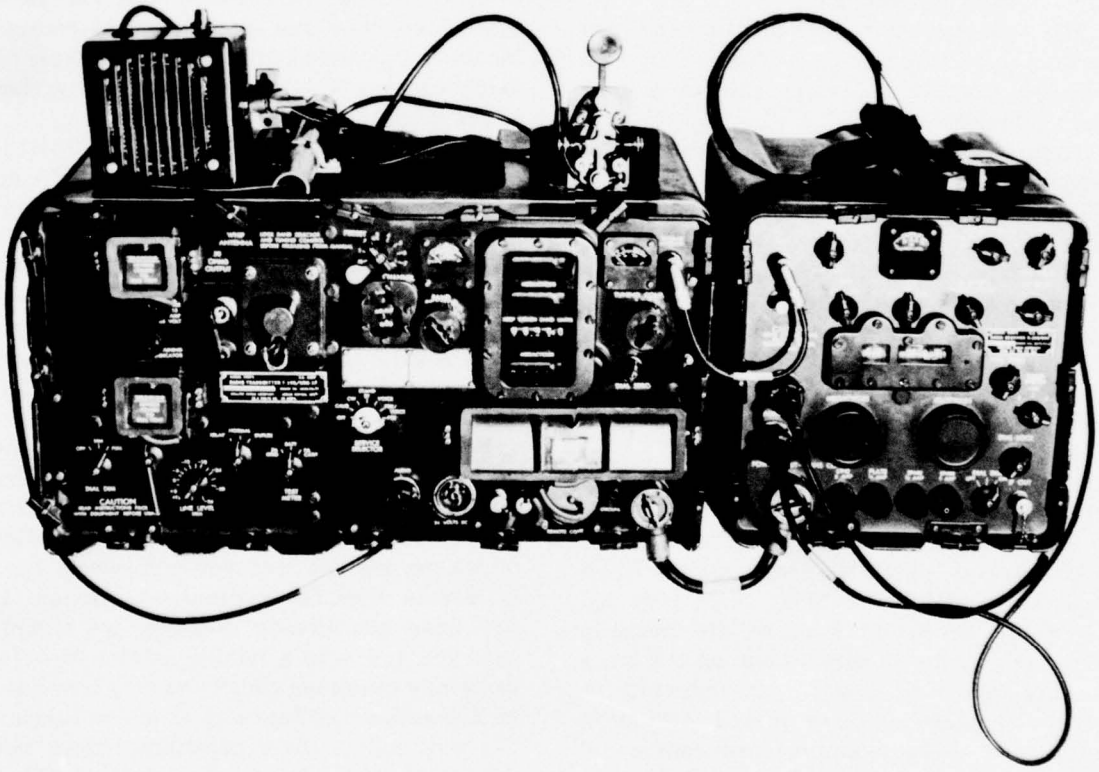


Figure 3. AN/GRC-19.

The AN/GRC-19 is a medium power (100 watts), amplitude modulated, vehicular radio set. It was designed primarily for battalion, regimental, and division levels to replace the SCR-193 and the SCR-506 and to supplement the AN/GRC-9.

It will transmit and receive voice, CW, and, in conjunction with other equipment, radio teletype signals within the frequency range of 1.5 to 20 megacycles.

The transmitter of the AN/GRC-19 is fully automatically controlled. This is accomplished

through the use of an auto-tune system and three servo systems. The operator selects one of eight pre-set frequencies, presses the key or micro button, and within a few seconds the transmitter will tune itself to the desired operating frequency. Any eight frequencies can be pre-set by the operator in a few minutes.

For vehicular operation, a special installation kit with a high capacity generator is required; for fixed portable operation, any 28 volt d.c. source is sufficient, providing it is capable of supplying the necessary power.

The AN/ARC-27 is a standard Navy and Air Force, airborne, remote controlled, amplitude modulated, ultra high frequency (UHF), communications set. Its frequency coverage of 225 to 399.9 megacycles is divided into 1750 channels, any 18 of these channels can be pre-set and selected, either at the receiver transmitter unit or at the remote control unit. Included in the receiver tranismitter unit is a guard receiver which is used to monitor an emergency channel. Retransmission can be accomplished with this equipment in association with the AN/GRC-3 through 8 series, when the AN/ARC-27 is used as a ground set. (Figure 4)

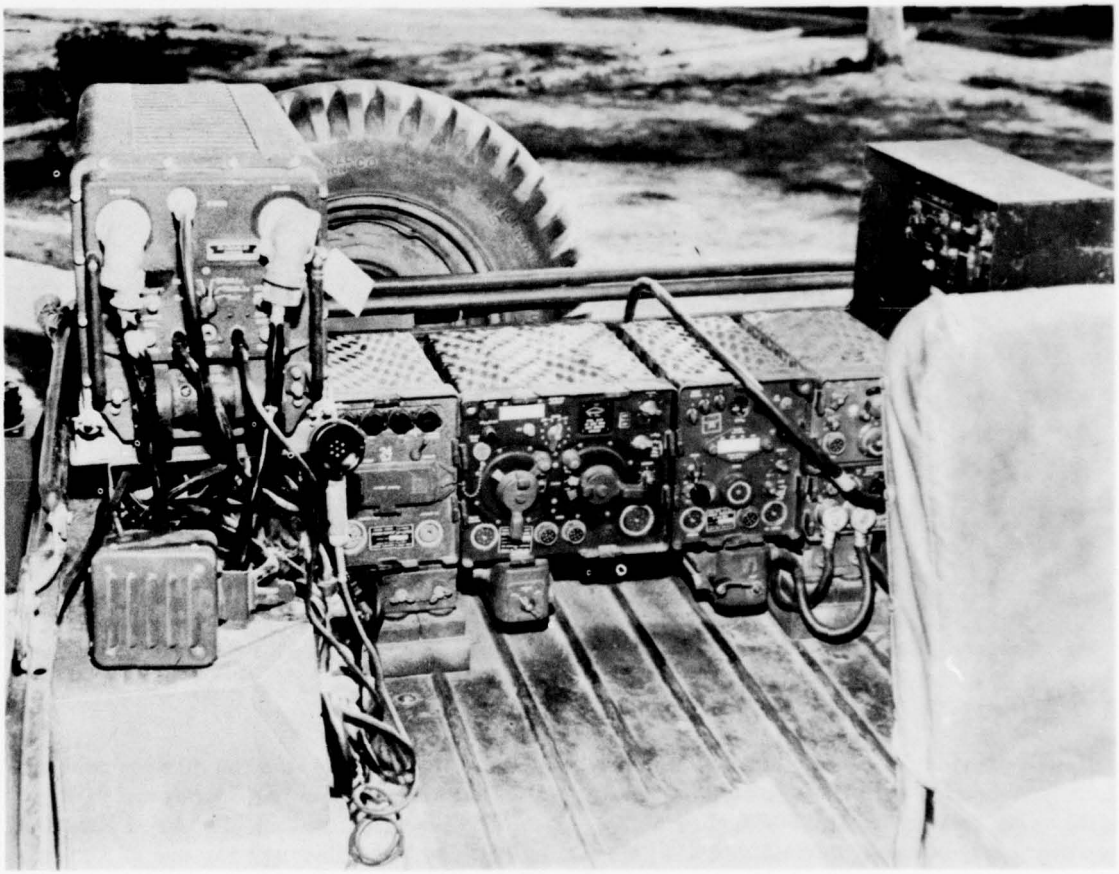


Figure 4. AN/ARC-27.

The transmitter output is 9 watts and ranges up to 130 miles, air to ground, can be expected providing the aircraft is at 10,000 feet or more. Due to its extreme "line of sight" characteristic, considerably less range can be expected at lower altitudes.

The Air Force has been developing and using UHF (Ultra high frequency) equipment for some time. To maintain air-ground liaison, the Army has been using, as an interim set, the AN/PRC-14. This set was originally Navy equipment, but has been modified to Army specifications. It is light weight (30 lbs) and can be carried and operated by one man. (Figure 5)

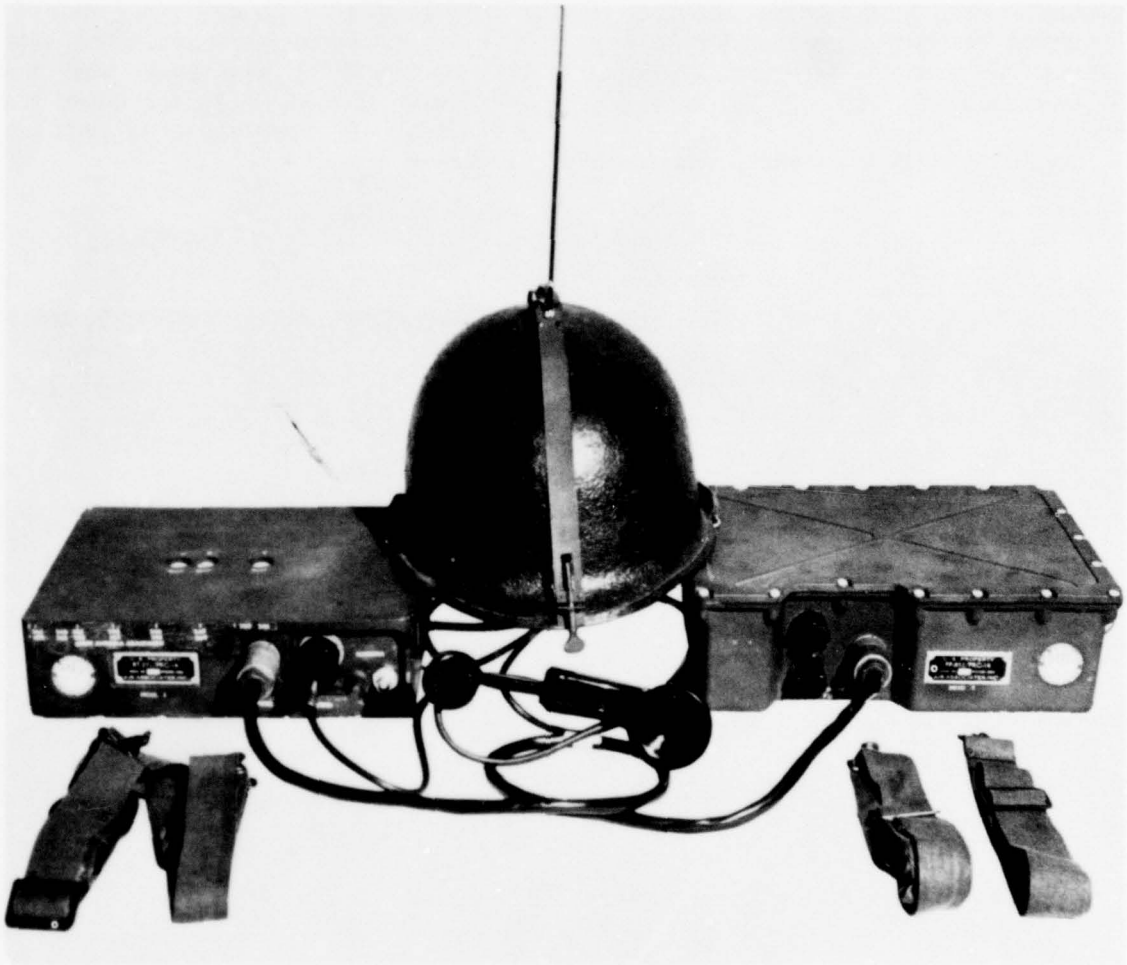


Figure 5. AN/PRC-14.

It will provide "line of sight" communications and beacon facilities, up to a distance of 30 miles, to aircraft at 5,000 feet or more; however, considerable variation below this distance may be encountered, depending upon the terrain variations.

The AN/PRC-14 is amplitude modulated and operates from 225 to 400 megacycles. Any 4 frequencies can be pre-set and are readily accessible to the operator.

The power output of the AN/PRC-14 is about one watt. Through the use of a special harness, a seven to fourteen inch vertical antenna is fastened to the top of the standard steel helmet. This has the effect of giving the operator a "Man from Mars" look. Two

power sources can be used, one is comprised of a vibrator supply and a six volt Edison Cell type battery; the other is the usual dry cell type battery. The total weight of the AN/PRC-14 is dependent upon the type of power source used: with the dry battery it is 24 pounds, with the vibrator supply 28 pounds.

A need has existed for quite some time in the Infantry rifle companies for a light weight, portable, radio communications set for use between squad and platoon leaders. The AN/PRC-15 weighs only 3 pounds 6 ounces. It is frequency modulated and can be operated with other FM sets organic to the Infantry regiment. Its frequency coverage from 47 to 55.4 megacycles is divided into 43 channels. It has 2 pre-set frequencies, either of which can be selected by the operator; however, once pre-set, they cannot be changed by using personnel. Its power output is less than a quarter of a watt; however, it will operate over a distance to 500 to 800 yards.

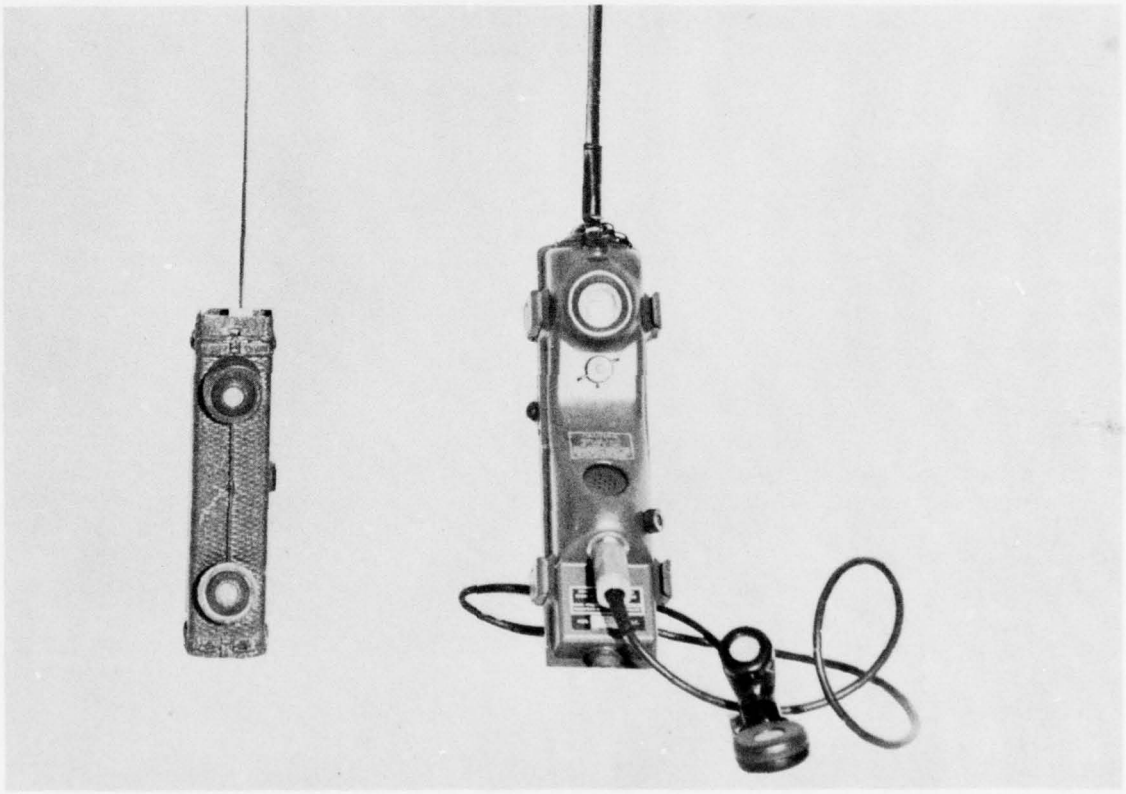


Figure 6. AN/PRC-15.

This set has been found to be unsuitable for an Infantry platoon to squad radio, primarily because of its shape. It ties up the platoon or squad leaders hands. It is shown to indicate the trend toward smaller and lighter equipment.

While transistors have not been used to any great degree in the equipment displayed here, the trend I have just mentioned will be followed as new and better production methods are developed for making these devices.

The challenge facing communication personnel today is how to extend the ranges of the radio sets presently organic to the infantry regiment. Nothing can be done to the equipment itself to extend its range, as its power output is determined by design; however, a great deal can be done to better utilize the power available.

The first step in the proper utilization of a radio set's capabilities is in correct siting; this is especially so for HF (high frequency),

VHF (very high frequency), and UHF (ultra high frequency) sets. Through careful selection of location and by raising the antenna as high as possible, the ranges of our present equipment can be increased considerably.

The Antenna Equipment RC-292 (Jungle Antenna) was designed with this principle in mind. It is an elevated, modified ground plane antenna, designed to operate with and increase the range of, equipment operating in the frequency range of 20 to 58 megacycles; such as, the AN/GRC-3 through 8, and the AN/PRC-8 through 10 series. As an example, the AN/PRC-10 has a planning range of 3 to 5 miles, by using Jungle Antenna the range is extended to 12 miles. Although the power output of the AN/PRC-10 is still one watt, through the use of the RC-292, the antenna is raised 30 feet above ground, thus utilizinng to better advantage its power output. (Figure 7)

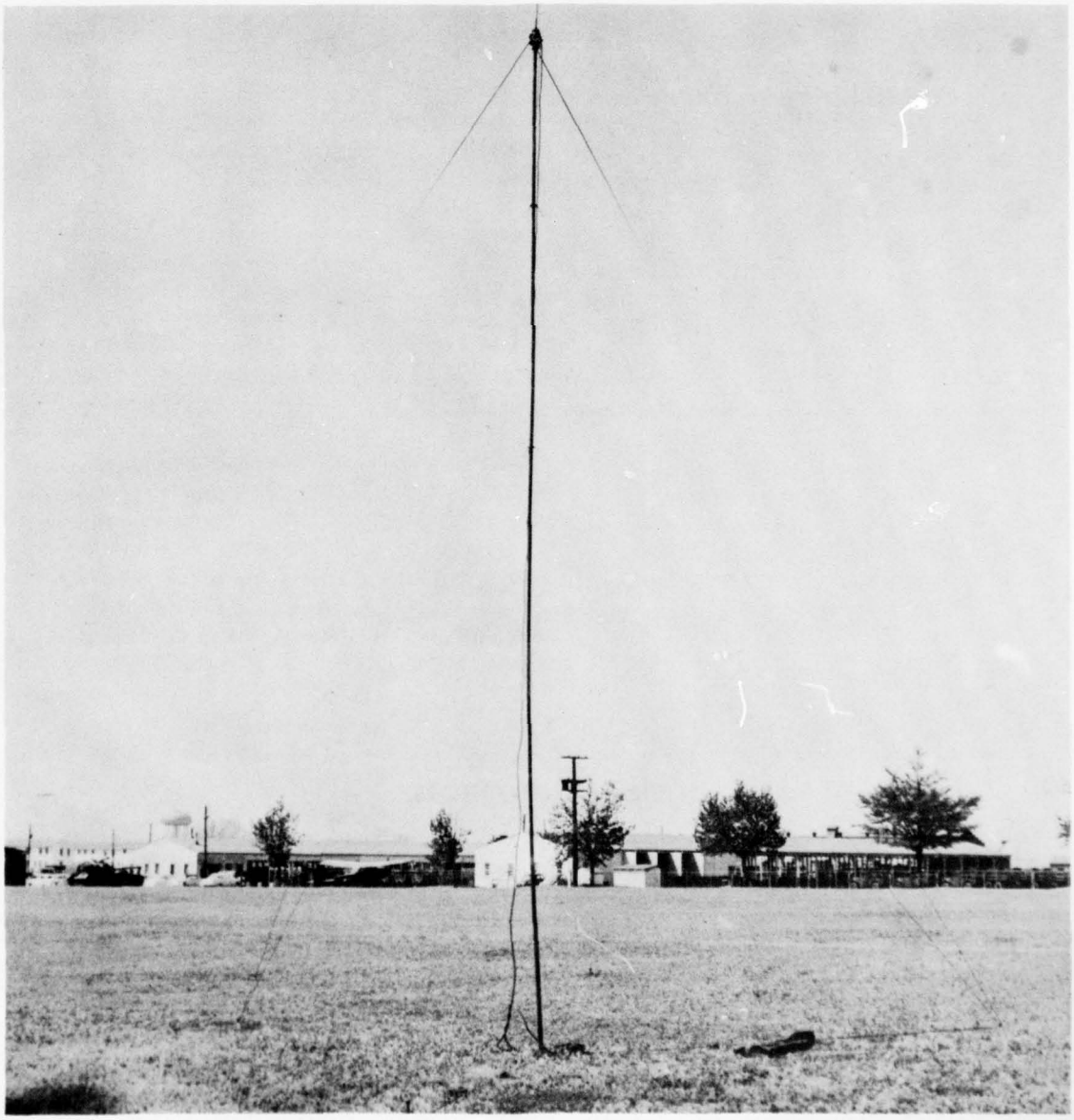


Figure 7. RC-292.

Another means of extending the ranges of our present radio equipment is through the use of directional antennae, whereby, the available power is concentrated in one direction, rather than radiated equally in all directions. The effect in the direction of maximum radiation is the same as though the power had been increased.

The long wire antenna and the vertical rhombic are both highly directive antennae and extend the ranges of infantry radio sets considerably, however, their use under all conditions is made difficult by several factors. One—time and space are consumed in their construction; two—due to their high directivity they must be properly oriented; three—on the battalion and regimental levels, equipment and technical "know-how" are not always available for their construction.

In other than fast moving situations some of these limiting factors could be overcome, through the issue of a light weight antenna kit and training of radio communication personnel in its use. The antenna orientation of units operating forward to rear presents no problem; however, antenna orientation of units operating rear to forward would be a problem, in that in all probability subordinate units would be widely separated, and the chance of communication with more than one or two units at one time without changing the orientation of the antenna is improbable.

Another type of directional antenna that would eliminate some of the undesirable characteristics of the long wire and vertical rhombic antennae, is the multi-element beam. This could be issued in a light weight, kit form and with some variation be designed to mount on a vehicle.

The multi-element beam could be constructed in such a manner as to allow the radio operator to orient it in any direction in a few seconds time. The space consumed by the antenna would be no problem at the frequencies used by infantry FM equipment.

In addition to extending the ranges of radio sets presently used in the infantry regiment, directive antennae would greatly minimize the effects of enemy jamming and interception on units operating from front to rear.

Capt Poe: The SB-86 is a new portable, field type, local battery telephone switchboard which can be rapidly installed or dismantled for quick moves. It can also be used to interconnect voice-frequency tele-typewriter circuits. (Figure 8)

One Jack Field section of 30 Jacks is provided for field telephones or trunks to other switchboards. The SB-86/P can be expanded to a 60-line switchboard by stacking a second Jack Field section above the first one. A rotary switch, mounted beneath each Jack, provides a selection of common battery or magneto supervision for each circuit. Two of the circuits can be used as trunks to civilian exchange line circuits.

Eight cord packs and the operator's pack are mounted in the key shelf section. Each cord pack contains two cord circuits.

A power pack is provided to furnish signaling battery and ringing current. The power supply PP-990/G (power pack) is encased in a steel box which contains the switches, voltmeter, binding posts, and compartments for two banks of batteries. This switchboard requires the following batteries for operation; four BA-30, one BA-2 and 10 BA-200/U. It has a built in hand generator for emergency use and may be powered from any source of 24 volt DC current.

The SB-86 weighs 180 pounds with one jack field section (30 lines) or 211 pounds with two Jack Field sections (60 lines). Operation of this switchboard is faster and easier than that of the BD-91 or SB-22.

Recommendations have been made that one SB-86/P should replace two of the SB-22/PTs in Regimental Hq and Hq Companies.

The SB-86 is now classified as standard and is being issued to some units.

Telephone set TA-43/PT is a light weight, rugged, immersion proof, self-contained, field telephone set incorporating recent developments in telephone instruments and circuits. The receiver end of the handset is designed for use under a standard field helmet. A canvas carrying case protects the set, holds the components together and facilitates handling and carrying. (Figure 9)

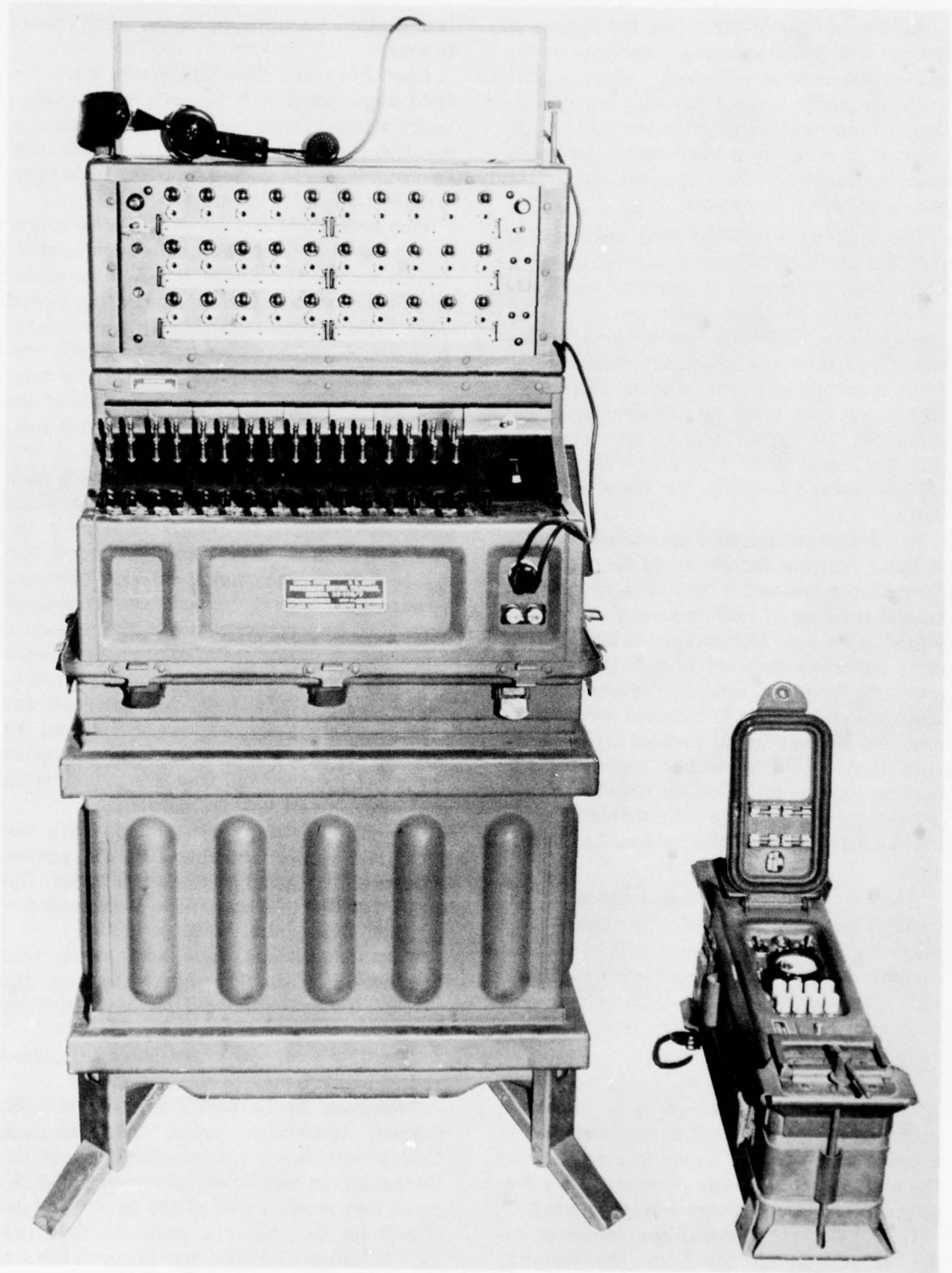


Figure 8. SB-86.

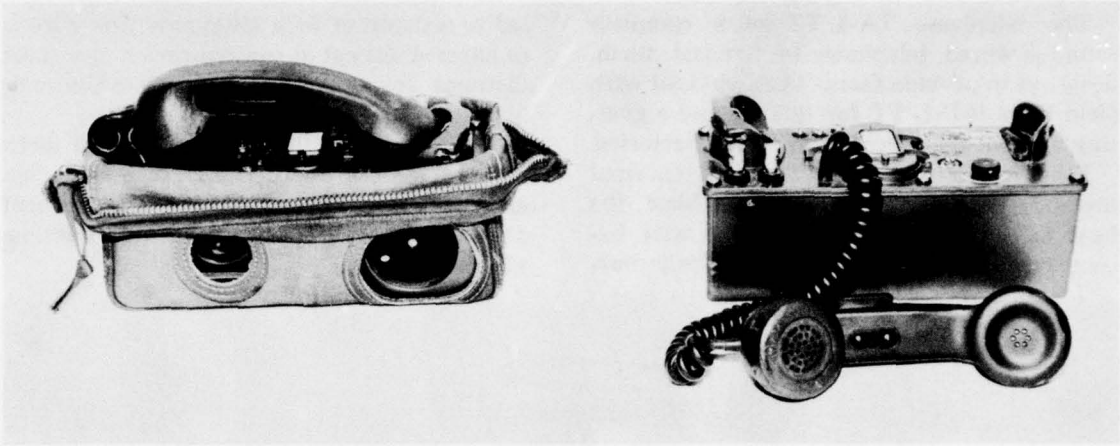


Figure 9. TA-43/PT.

The TA-43/PT is lighter than the field telephone EE-8 ( ), which it replaced, by almost 2 pounds. It weighs approximately 8.4 pounds. A volume control has been provided for the incoming signalling circuit and a woodpecker type sound is produced by the buzzer instead of the common ringing noise to which we are accustomed. This signal is much easier to hear over battle noises. The range of the TA-43/PT is also greater than that of the EE-8 ( ). Planning range of the EE-8 ( ) was 18 miles over WD1/TT wire; it is 22 miles using the TA-43/PT and, in many cases, we have used it up to 46 miles in point to point communication.

The telephone set is designed for all conditions of outdoor use in combat areas and for general use on a horizontal surface, or it may be mounted vertically on a wall or other support. The carrying case with its strap and flat loops on the bottom facilitates vertical mounting. With the telephone set in a horizontal position, the handset must be on top. For vertical mounting, the line terminals must be at the top of the set to assure proper support of the handset and to facilitate operation of the generator.

This telephone has passed the experimental stage; has been classified as standard and is now being issued to replace the EE-8.

There has always been the problem when using the TS-10 sound powered telephone of signalling the distant station. The TS-10 has neither a signalling device nor a ringer to receive a signal; this problem has been overcome in our new sound-powered telephone TA-1/TT. (Figure 10)

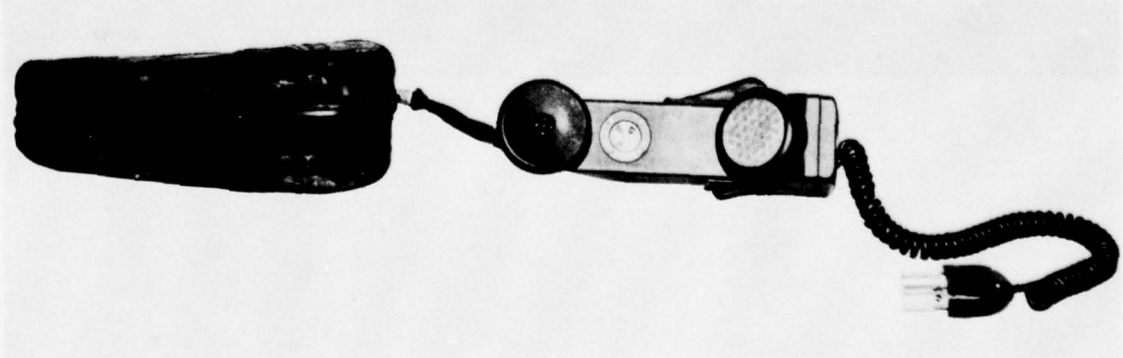


Figure 10. TA-1/TT.

The telephone TA-1/TT is a complete sound-powered telephone in handset form, designed to provide facilities when used with field Wire WD-1/TT for talking and signalling without the necessity for using batteries.

When wire laid above ground (normal method) is subjected to an atomic blast, the heat melts the insulation and the wire becomes completely useless. When wire is buried to a depth of only six inches, the wire is unharmed, except at ground zero and a short distance from ground zero, by an atomic blast.

A method must be devised to place tactical wire underground. The LC-236 cable layer is the first successful piece of equipment developed that will accomplish this mission. (Figure 11)

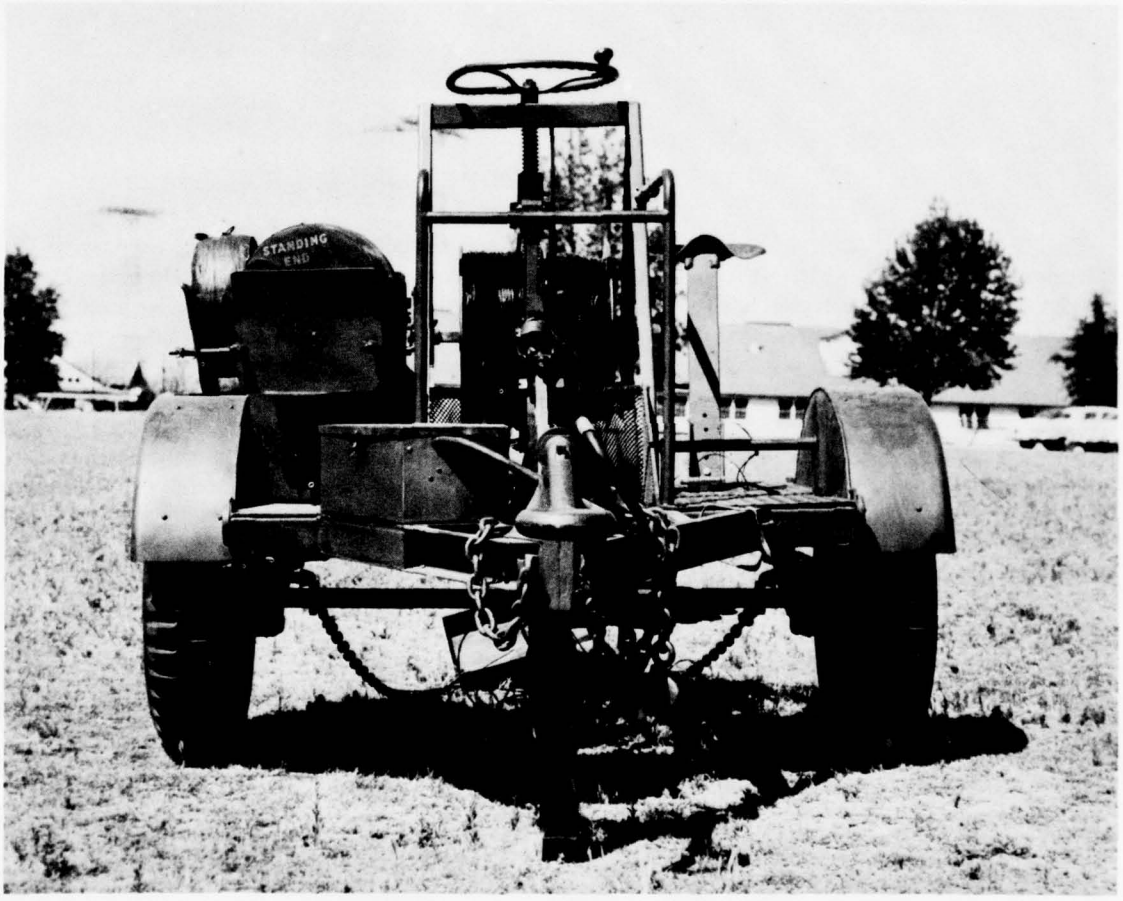


Figure 11. LC-236 ( )/MT.

Cable Layer Underground LC-236 ( )/MT is a light weight, trailer mounted plow capable of burying one spiral four cable or four pairs of wire WD-1/TT to a depth of from 0 to 10 inches in average texture soil. It may be drawn by either truck, 2½-Ton, Cargo, 6x6, or Truck, ¾-Ton, Cargo, 4x4. The total weight of the cable layer unloaded is 1,115 pounds. The cable layer is equipped with: a colter wheel for cutting through sod, light roots, and surface crust; a plow for cutting furrow and setting wire and cable underground; a drag pan to cover trace; a depth gauge; a safety trip mechanism to bring plow out of ground upon striking any object offering 3,000 pounds or more resistance; a reel arbor and wire dispenser mountings; and a signal device from operator to vehicle driver.

The LC-236 ( )/MT is still in the test stage. Some of the results of previous tests are listed below.

This equipment does an excellent job of laying wire and cable. Wire and cable have been buried at varying depths in all types of soil encountered at Fort Bragg and Fort Benning. Seven inches depth is, in most soils, the optimum for good coverage of wire, vehicle traction, and safety trip-out. In turf covered top-soil, when plow is at 7 inches depth, speeds as high as 15 MPH can be maintained without strain on ¾-Ton Truck or tripping plow by stress exceeding 3,000 pounds.

The drag-pan for covering traces has proven of no value.

Wire may be pulled up out of trace and recovered without material damage if done a short time after burying. Since wire or cable will only be buried for circuits which it may be reasonably assumed will be used for an extended time, recovery should not be contemplated.

Plow operates well over ground of uneven configuration.

Some realignment is needed on the feeder rollers for both the MX-306/G and reel dispenser. Signal Corps Engineering Laboratories have been informed of this and have indicated that correction can be effected easily on production models.

Communication checks of wire buried with cable layer have indicated that good talking quality can be maintained for distances up to 13 miles for two to three weeks after burying.

Some service tests remain to be conducted on this equipment before a decision as to adaptation by the Infantry can be made.

QUESTION: Will television enable us to control widely dispersed units, i.e., battalions and regiments in Atomic War?

Capt Linsley: ANSWER: Television will, undoubtedly, eventually be available at least down to Infantry regiments as a means of control for commanders. TV cameras in air OPs and at ground OPs will greatly assist commanders in the control of their units.

QUESTION: What radio and what radio net will the battalion commander use to request tactical air support?

Capt Linsley: ANSWER: The battalion CO can use his AN/PRC-10 when on foot, his AN/VRC-10 when in his vehicle, or his AN/GRC-7 when in his CP for transmitting immediate air requests by radio. In all cases he will transmit over normal command nets, using the available retransmission facility to contact the Div G3-Air direct. Intermediate superior FSCCs will monitor.

QUESTION: Please describe the communications used from the forward observer who first detects an atomic target to the headquarters controlling the atomic strike. How direct is this net?

Capt Linsley: ANSWER: The FO will use normal FD communications to division FSCC (retransmission from battalion to division artillery). Division FSCC will relay requests thru channels to approving headquarters. The controlling of the strike will be as directed by the approving headquarters.

QUESTION: In connection with employment in the mobile defense concept and in defense on extended frontages, what new equipment is being developed?

Capt Linsley: ANSWER: The communication capability of the present Infantry regiment will adequately support most extended front or mobile defense missions. Test and studies have been, and are being, conducted to determine possible improvements. Some of the new items of equipment being tested are Radio Set AN/GRC-19 with AN/GRC-46

for long distance multi-channel radio-teletype uses and Radio Set AN/GRC-10 for lower echelon multi-channel radio-telephone uses.

QUESTION: Is the CPRC-26 a Canadian Set?

Maj Ward: ANSWER: The AN/CPRC-26 was designed for the Canadian Army. It was tested by CONARC Bd #5 and found to be adequate and desirable for use by US Army units to replace the AN/PRC-6. Inasmuch as the US Army has in stockpile sufficient AN/PRC-6 Radio Sets to supply Army needs for 10 years, it was decided not to procure the AN/CPRC-26. Obviously a much better set will be developed by that time.

QUESTION: What is the distribution of sound ranging equipment in ATFA organization?

Maj Collins: ANSWER: Under the ATFA organization the sound ranging platoon is in the Headquarters and Service Battery of the Light Artillery Battalion. It is my understanding that the platoon, instead of having 3 squads, will have 3 sections. These sections can be "farmed" out to the separate infantry battalions and operate practically the same as they do now within the infantry regiment.

QUESTION: Is any increased emphasis being placed on training of personnel in radio in view of extended areas of operations contemplated? Are more and larger radios being given smaller units to insure communications in view of extended areas of operations contemplated?

Maj Ward: ANSWER: As was seen in the display of radio equipment, much emphasis is being placed on training personnel to achieve extended ranges from the radio equipment presently on Tables of Organization and Equipment.

To answer the second part of that question, I would like to say that in Germany today more powerful radio sets have been "pushed down" to battalion and company command posts to fill the need for extended range communication. In exercise "FOLLOW ME" this was also accomplished. For example, ATFA-1 TOE provided an AN/VRC-18 for the rifle company commander and an AN/GRC-19 for the battalion commander.

QUESTION: Do you plan to cover the "grid system" for use on the atomic battlefield?

Lt Col Harbort: ANSWER: The applicability of the "grid system" for communication within the infantry division was tested during exercise "FOLLOW ME" and further tests will be conducted during exercise "SAGEBRUSH." In the grid-type communication system, the conventional concept of an axis of signal communication extending along the axis of tactical movement is replaced by the concept of a communications grid which is oriented along the axis of movement but which extends laterally across the width of the zone occupied by the organization which the system serves. Under the conventional concept, the system was built upon a backbone of high-capacity circuits whose route followed the main axis. Under the new concept, the system is built upon a framework or grid of multi-channel wire and radio-relay circuit links whose routes form a lattice covering an assigned area. Communication centers or sub-centers are provided at all points of intersection on the grid. These centers contain terminal equipment for the wire and radio links which compose the basic grid and, in addition, contain facilities for switching and thru-patching of individual communication channels. When grid-type communication systems are used in the combat zone, the grid communication centers are mobile with all equipment mounted in vehicles. Since each circuit link in a grid system is terminated at a communication center, each channel (voice or teletype) within a link may be regarded as a circuit unit. These circuit units are the basic elements from which a flexible communication system, responsive to the varying operational requirements of the new Army, can be built. The grid-type system permits units, headquarters, and command posts to be connected to any of its several communication centers and to communicate with any other portion of the area through the system. Distribution of the total communications capacity over the area concerned greatly lessens the effect of enemy action, since it is possible to obtain alternate routings of circuits around a damaged section by utilizing other elements of the grid system. The use of both radio relay and wire circuits in each section of the grid further lessens the effect of enemy countermeasures,

sabotage, and other means of disrupting communications. This feature also permits more rapid installation of the initial system and makes possible the relocation of grid communication centers without complete interruption of connecting circuits to other communication centers. In a like manner, headquarters and command posts may move to any desirable location in the area without disruption of the basic grid system. The command radio nets provided continuity of communications during the period that these elements are moving from one location to another. Although the complexity and the configuration of the grid communication systems will vary at the different echelons of command where the systems are used, the basic features of the system are the same at all echelons.

CHAPTER 7

Section I. WEAPONS TRAINING TECHNIQUE

COLONEL CHARLES F. LEONARD, JR.
Director, Weapons Department

The subject for this period of the conference is Weapons Training and Techniques. I will discuss recent changes in techniques, training literature, training aids, and modification of weapons. Your second hour with this Department will include a discussion of the capabilities and limitations of the T48 and T48E1 rifles and demonstrations of the manual of arms and bayonet training with the T48 rifle. This later demonstration will be conducted by the Staff Department. This evening you will see a presentation of and participate in Night Firing Techniques developed as a result of "Operation Moonlight."

The items we will cover during this period are those which we feel will be of greatest interest and benefit to you and concerning which, perhaps, you have received little information because of recent changes and developments.

As a representative of The Infantry School in weapons training and technique, I cannot over emphasize the importance of good, sound weapons training. We are all concerned with increasing the firepower of the Infantry regiment without increasing the manpower. One means of accomplishing this is to increase the effectiveness of our weapons training and to demand a higher standard of performance by the individual. We *can* get more out of our weapons and it is up to us to do so by improving our teaching methods and training techniques.

Last year, at this conference, as some of you remember, you were told that we had taken definite measures to insure proper training of the individual soldier with his weapon. This is a continuing program here at the School and we feel that there has been improvement in the methods being used.

Let us now discuss some of the changes which have occurred along this line. Among these new developments are included the re-establishment of pit scoring during record firing on the known distance range, an improved version of the firing data and score card, a new method of disking targets, a new target for 1000-inch range firing, and the reinstitution of The Infantry School's Rifle Marksmanship Instructors Course.

The practice of pit scoring discussed with you last year was initially directed in September of 1953 by Continental Army Command. Subsequently, in November of 1954, Change 1 to Field Manual 23-5 was published directing that pit scoring be re-established throughout the Army. Now commanders again have a yardstick by which they may measure the true marksmanship ability of the men in their units.

The improved version of the firing data card which was discussed at last year's conference and a new score card have recently been combined as DA Form 83.

Examples of the old and new forms were distributed at the beginning of the period. The score card portion of this form may be converted to a pit score card by simply printing or stamping the word "pit" in the block provided for the firer's name. The use of this form is outlined in the revision of Field Manual 23-5 which is in the process of preparation. When used as suggested, this new firing data card is an invaluable aid in marksmanship training.

This revision also introduces a new method for target disking which is designed to assist the scorer in determining the value of shots.

In order to raise the standard of rifle marksmanship training throughout the Army, Continental Army Command directed in December of 1954 that The Infantry School conduct a Rifle Marksmanship Instructor Course. Some 800 enlisted men and 80 officers have now been graduated. Since this course was designed primarily as a finishing school for rifle marksmanship instructors, the material is presented in a concentrated form over a period of two weeks. In view of this fact, it has been necessary to re-evaluate the prerequisites for individuals

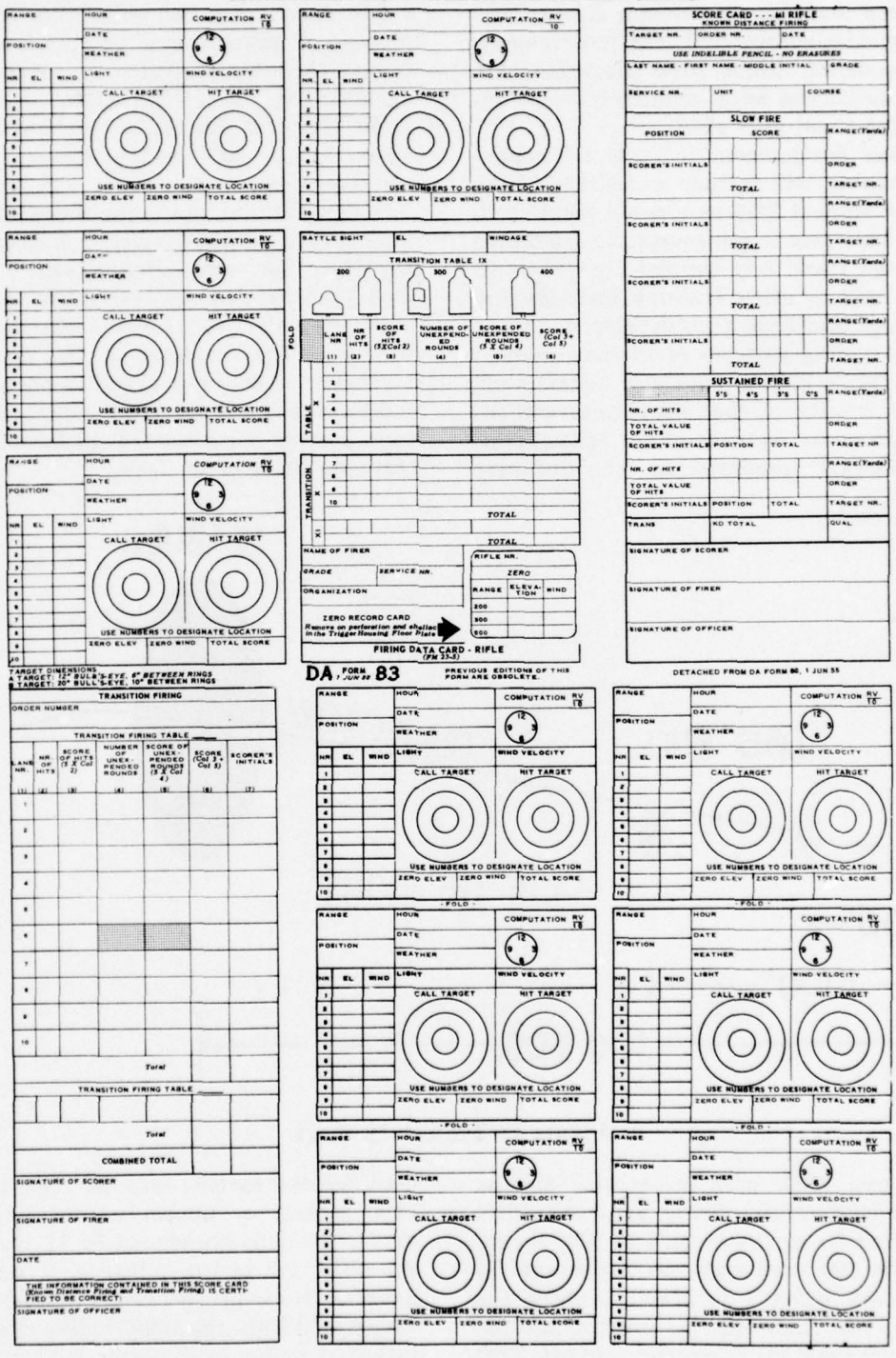


Figure 12. Revised firing data card.

attending this course. Recommendations have been made to Continental Army Command to raise substantially the requirements for attendance. Eight Rifle Marksmanship Instructor classes have tentatively been projected for fiscal year 1956.

Further development in rifle marksmanship training will include a revised edition of Field Manual 23-5 as already mentioned. It will incorporate improvements contained in Change 1 and 2 to the October 1951 edition as well as other training methods and techniques that have been developed. One of the outstanding features of the new manual will be its "easier to read and understand" style. It is planned that its format will incorporate many features of the special text, "Hits Count," prepared at The Infantry School and recently published as Department of the Army Pamphlet 23-2. We are in process of preparing a pamphlet on night firing, the title of which is appropriately, "SHOOTING IN THE DARK."

We will next discuss those changes which have taken place in the special purpose weapons field.

A new training aid is the redesigned 1000 inch target which enables the firer to see relatively the same size bulls-eye at 1000 inches as he sees at 200 yards using the standard "A" type target with its 12 inch bulls-eye. The diameter of the new 1000" bulls-eye is 1.66". For practical purposes the radius of the bulls-eye and the distance across each scoring ring can be considered to be three quarters of an inch.

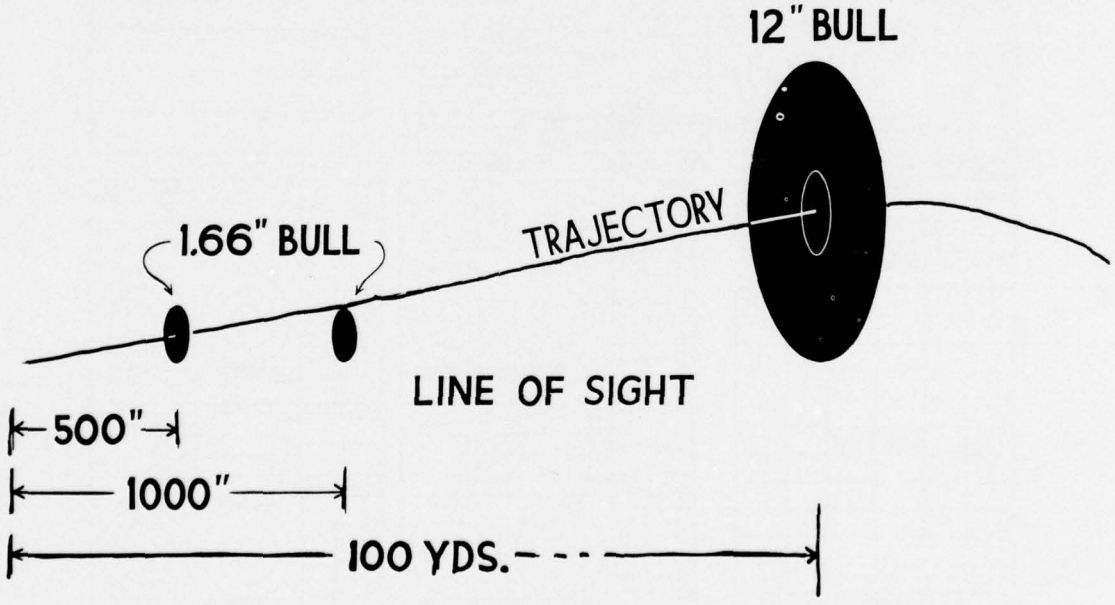


Figure 13. Trajectory chart.

This new 1000" rifle target may also be used for 500" carbine firing. Experience has shown that firing the carbine at 1000 inches using the 100 yard sight setting results in shot groups about 1 to 2 inches above the center of the bulls-eye. In order to hit the center, the firer has to employ hold-off. This is, of course, objectionable in initial training of the individual.

The rifle "A" target (12" bulls-eye) is used for the carbine only at 100 yards. At 1000 inches, or approximately ¼ of 100 yards, the bulls-eye should be ¼ the size of the rifle "A" target bulls-eye, if we are to have a true proportional representation. This would make the 1000" bulls-eye approximately 3 inches in diameter, and would necessitate making another target. However, using the redesigned 1000" rifle target for carbine firing at 500 inches gives us a true

proportional representation of the "A" target at 100 yards.

A group of carbines were test fired at 100 yards, using the rifle "A" target (12 inch bulls-eye), and at 1000 inches and 500 inches, using the new 1000 inch rifle target (1.66" bulls-eye). This test indicates that when using these targets, there is a very close correlation between firing the carbine at 100 yards and 500 inches, and consequently we have adopted the shorter range in our instruction.

A number of new developments have taken place in the field of machine guns during the past year.

We have produced several Class "E" training films of 5-10 minutes duration and are producing more. These films demonstrate a particular teaching point. They may be spliced together in sequence or be shown separately. Based on cost per minute of running time, the Class "E" film is much less expensive than the standard training film, however, the Class "E" film is designed to supplement, not replace, the standard film.

Among the Class "E" films already produced for machine gun instruction are: "Position and Grip with the Light Machine Gun on Tripod"; "Zeroing" of both the light and heavy Cal .30 machine guns; and a seven film series covering the entire cycle of operation of the caliber .30 machine gun. We anticipate that by the end of October this year all twenty-three (23) of the currently scheduled Class "E" films for the machine gun will have been completed. It may intrest you to know that several requests for films currently scheduled for production were generated in the field by civilian component agencies and training divisions which have found this type of film particularly suitable for their needs.

The next subject is electrically operated target holder mechanisms currently undergoing development and test. There are two mechanisms both of which are remotely controlled and use standard cardboard "E" and "F" silhouette targets. The targets may be raised or lowered at will; they fall and disappear when hit by a projectile from a small caliber weapon. Both devices eliminate the requirement for elaborate range installations which include pits and communication between target and firing locations. They also eliminate the pit detail necessary for target operation and for scoring.

One of these mechanisms, called "Punchy Pete," was designed and developed by Human Resources Research Unit Nr. 3, here at Fort Benning. This mechanism is operated by a commercial type, 12 volt automobile battery. It is simple in design, relatively cheap to fabricate, is approximately eighteen inches (18") square and twelve inches (12") high, weighs fifty-eight pounds (58 lbs) including battery. It is readily hand transportable by two men. This mechanism will hold a single "E" or "F" type silhouette target. (Firing demonstration using the "Punchy Pete.")

The other mechanism, known as the 3-C-52b, was designed and developed in conjunction with the Weapons Department, The Infantry School, by Naval Special Devices Center, Port Washington, Long Island, New York. In addition to the previously enumerated common characteristics of the two devices, this mechanism which is more complex in design has these desirable features:

a. Holds either one or two "E" or "F" silhouette targets.

b. Will drop when hit or remain vertical at the option of the operators as opposed to the "Punchy Pete" which automatically drops when hit.

c. Has a single hit counting device which will record cumulative totals up to 600 hits per minute.

d. Is moisture proof.

e. Is lightweight (61 pounds), compact, and can be easily transported and installed by two men.

f. Is adaptable to operate on 110V alternating or direct current on the standard PE 75 generator. A single PE 75 provides enough power to operate three standard machine gun transition fire lanes of eight targets each.

We anticipate that from these two devices one mechanism will be developed which will fulfill the Infantry's long standing requirement for an economically produced, simply installed and maintained, readily adaptable target which will be suitable for both field

and known distance firing. (Device displayed in rear.)

From the standpoint of machine gun training literature, the revised draft of the new FM 23-55 "Browning Machine Gun, Cal .30" is at CONARC awaiting final approval and publication. The initial draft of FM 23-65 "Browning Machine Gun Cal .50" has been completed and forwarded to appropriate service schools and other agencies for comment.

On the recommendation of The Infantry School, CONARC has approved the designation of specific personnel as crew members, on an additional duty basis, for all caliber .50 machine guns authorized in the Infantry regiment. We have also designed and had approved a mandatory training program for these crew members.

There have been several new developments in the field of mortars in the past year.

Last year we stated that an 81-mm Mortar Canadian base plate was being tested with favorable results. This base plate has now been standardized. It is circular in design, 21 inches in diameter, and weighs approximately 25 pounds as against 47 pounds of present models. The total weight of the mortar is now reduced to 93 pounds.

Thought is being directed towards a reduction in the weight of the bipod assembly in an attempt to further reduce the total weight of the 81-mm mortar to 75 pounds.

The new nine pound high explosive round for the 81-mm mortar, which we mentioned last year, has become standard. This round has a range of 4200 yards and will replace the present HE light and HE heavy rounds. It will have a bursting area comparable to the HE heavy round and the accuracy of the HE light. Two other nine pound rounds to replace the present white phosphorus and illuminating shells are currently being tested. When these two are standardized, one firing table can be used for all three types of ammunition since they will be ballistically the same. There is also a new VT fuze to be used with this round.

Final prototypes of the T-18 Plotting Board, a later, modified version of the M-10 have been tested and are awaiting final approval. The new board provides plotting area for greater ranges and increases the accuracy in plotting by the Fire Direction Center.

A new graphic firing table (GFT M57) with three (3) instead of two (2) elevation scales as on the present GFT has been recommended for standardization. There has been considerable delay experienced in standardizing this item; however, it appears that testing and developing agencies are satisfied with this new model, and it will be forthcoming in the near future.

A new one piece base plate for the 4.2-inch mortar has recently been standardized. It is lighter and more durable, weighing 205 pounds as compared to 217 pounds, than the old two piece base plate. (Displayed in rear)

A new steel bridge for the 4.2-inch mortar has been standardized. It is more durable but somewhat heavier, weighing 184 pounds as compared to 161 pounds, than the old bridge. (Displayed in rear)

A VT Fuze has been recommended for the 4.2-inch mortar to be used with the HE shell.

A training film, "Observation of Mortar Fire by the Combat Soldier" was approved for release on 2 December 1954. The film contains the basic principles of observation of fires controlled by the target-grid method of fire control. It includes the WORM formula, bracketing and creeping methods of adjustment, elementary ballistics, locating targets for the fire direction center, and the initial fire request. The film runs 41 minutes.

A thirty minute training film on the mechanical training of the 81-mm mortar is scheduled for flming this summer adn will probably be released in the fall.

A special text entitled, "4.2-inch Mortar Gunnery," was published by The Infantry School in July 1954. It contains complete instructions on Fire Direction Procedures for the heavy mortar and is used in resident instruction here at the School.

As some of you remember, we showed you a picture of the new standard antitank weapon at the conference last year; however, at that time, ammunition was not available and consequently the fire power of this weapon was not demonstrated. At this time,

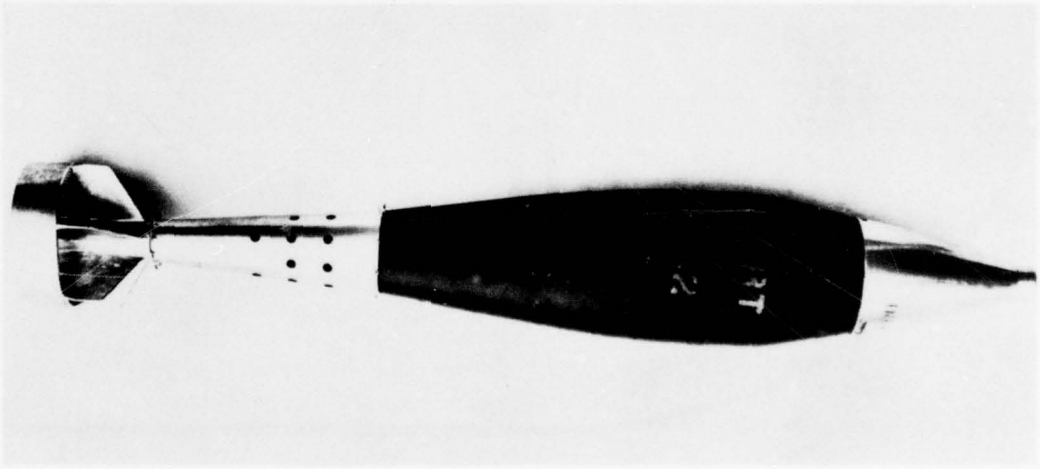


Figure 14. New nine pound round.

a brief review of the characteristics and a demonstration of this weapon are in order. As you remember, with this weapon, we have decreased the size of the enlarged reaction chamber. The muzzle velocity of the weapon is increased to 1650 feet per second. A caliber .50 semiautomatic spotter rifle is mounted coaxially with the 106-mm tube. The projectile of the spotter rifle has approximate the same ballistic characteristics as the projectile of the major caliber. Minor adjustments in elevation can be made by the small knob in the center of the elevating handwheel and both weapons are fired using this knob, the spotter rifle by pulling, and the major caliber by pushing. (106-mm firing demonstration)

Note that the gunner adjusts with the caliber .50 and upon getting a hit immediately fires the major caliber.

With production of the standard 106-mm Recoilless Rifle M40 underway, modification of the present 105-mm Recoilless Rifle has started. This modified 105-mm Rifle is called the M27A1.

In modifying the 105, the chamber is counterbored to accept the new type fin stabilized round. The fin stabilized M341

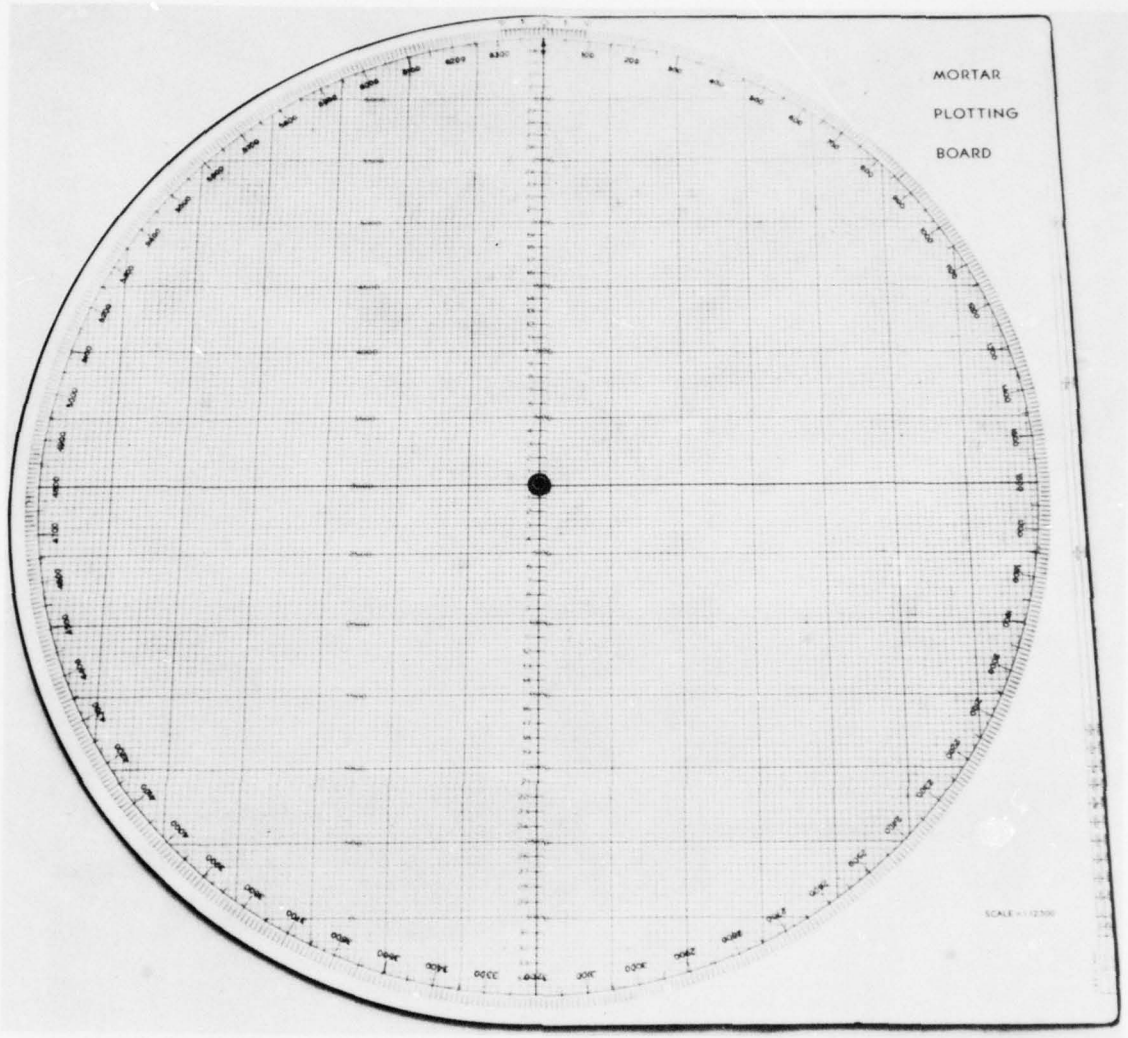


Figure 15. T-18 plotting board.

round has been developed for use with this rifle. The M344 round is the standard High Explosive Antitank round for the 106.

Ammunition for the modified 105-mm recoilless rifle will be so labeled and is not interchangeable with the 106 ammunition because of the variances in propellent charges. (Ammunition displayed in rear.)

The weight of the modified rifle is approximately 700 pounds. It is still permanently mounted on a ¼-ton truck; therefore, it cannot be employed off the vehicle as can the 106. Maximum range of the 105 is 9300 yards; of the 106 is 8400. Useable effective range for both weapons using the fin stabilized round is 1200 yards.

As units of the Regular Army receive the 106, their 105's will be turned in for modification and will then be issued to National Guard and Reserve Units for training purposes. The characteristics are so similar that the complete transition by Reserve and National Guard Units will not be difficult when the 106-mm rifles finally become available to them.

A new Field Manual 23-82, "The 106-mm Recoilless Rifle," is now in draft form and has been forwarded to various agencies for comment. This manual should be in the hands of using units by the end of this year.

A new short training film "Restoration of Balance" of 10-12 minutes, and film strips

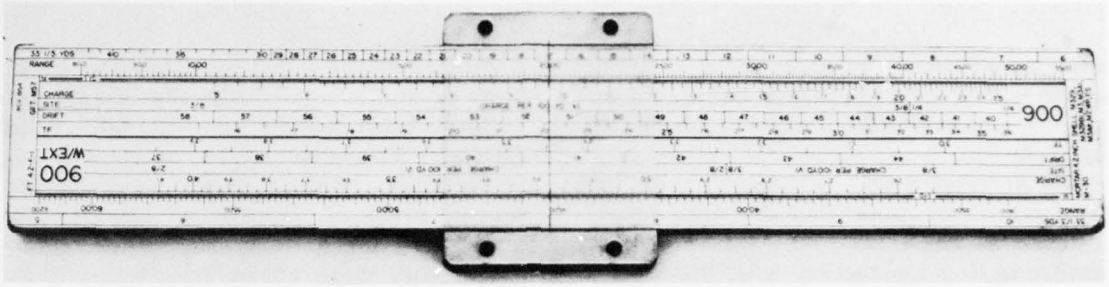


Figure 16. Graphical firing table M57.

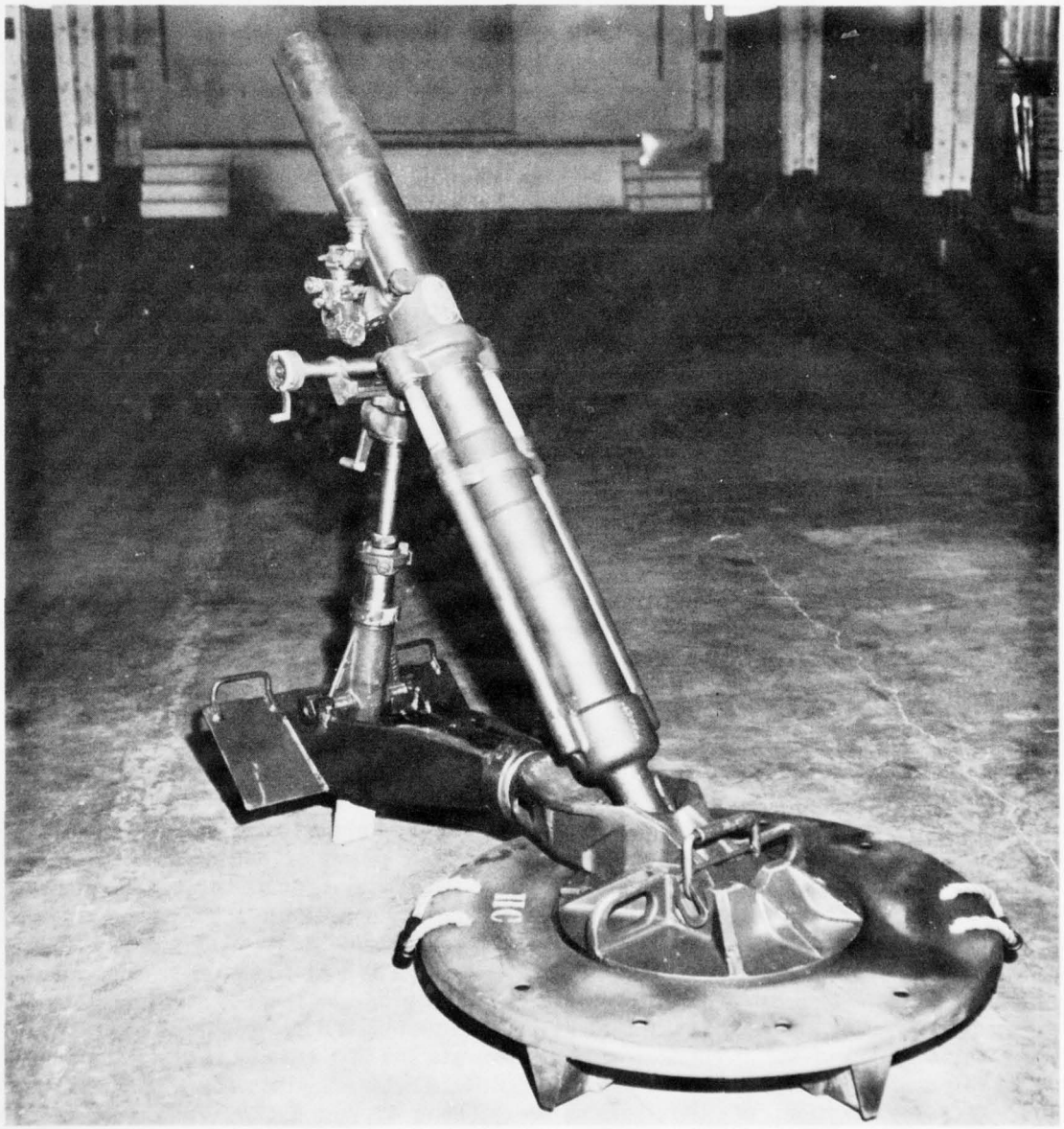


Figure 17. 4.2-inch mortar M30.

covering all phases of mechanical training and crew drill with the 57-mm rifle are presently in production and will be released in the near future.

The Armored School is responsible for the development of tank gunnery techniques; however, at The Infantry School we present familiarization instruction with the 90-mm M48 tank. During the past few months the M47 tanks have been replaced in most regimental tank companies by the M48. As research and development continues, many modifications are being made in sighting equipment, fire control instruments and machine guns mounted on the tank. These are being incorporated in our instruction as rapidly as they become standardized. (Tank displayed in rear.)

Several new types of tank ammunition have been produced. These include a new hyper-velocity, armor piercing, "Discarding Sabot" round with tracer. This discarding sabot round is made up of a split casing which adapts the round to fit the bore of the weapon, and a small projectile of tungsten carbide. Upon leaving the rifle the casing falls off; thus allowing the armor piercing projectile to retain a higher velocity than that of previous "Hypershot" rounds. This higher velocity gives us much greater accuracy and more armor penetrating capability. A fin stabilized HEAT round, the projectile of which contains a shaped, high explosive charge, is also designed for use against armor. A canister round for use against personnel at short ranges and HE marker rounds of different colors have also been developed.

We have discussed various weapons of the Infantry regiment and some of the progress we have made in the field of development. In view of the necessity for training the soldier to use his weapons effectively, I would like to re-emphasize that aimed and accurately placed fire will do the greatest damage at the least cost to us in lives and money.

Section II. THE LIGHTWEIGHT WEAPONS SYSTEM

1st LT THEODORE G. JENES JR.,
Weapons Department

2d LT ROBERT S. ANDERSON,
Staff Department

The Army's efforts to equip and train itself for modern war have resulted in many revolutionary and far reaching developments. The Infantry School has been involved in many of these projects, one of the most interesting of which has been participation in the troop test of the proposed lightweight rifle system.

The Infantry School assisted in planning these tests and is assigned certain areas of primary responsibility. Generally, service schools are responsible for Part III of the Troop Tests. The purpose of this part of the tests is to determine the relative efficiency of the test and standard weapons when used by each of the Arms and Services. Included is the consideration of the effect that adoption of this system would have on the operations and organization of the various branches of the Army.

In accordance with the mission of the Infantry School, The Weapons Department was directed to develop marksmanship techniques and a training program utilizing the T-48 and T-48E1 Rifles in order to train the cadre of several units which were to conduct the troop testing phases.

The T-48 and T-48E1 Rifles are but one type being considered by the Army in developing a lightweight weapons system to replace our present family of small arms. By lightweight system, we mean a light and a heavy barrel version of the same weapon with interchangeable parts and similar characteristics. The T-48 Rifle was selected for this testing program because it is available in large numbers. This system, if adopted, will replace the M-1 Rifle, Browning Automatic Rifle, Carbine, and Sub-Machine Gun.

The T-48 and T-48E1 Rifles are manufactured by the Fabrique Nationale Arms of War located in Hertsal, Belgium. These weap-

ons were recently adopted as the standard rifles of the British Army, and information has been received that Canadian Army troop tests are in the final stages. All indications point to adoption by the Canadian Army also.

Some of the anticipated advantages of a lightweight rifle system over our present system include: interchangeability of parts between models, identical magazines, a large capacity magazine for both rifles, a lighter automatic rifle and the use of a lighter, shorter round of ammunition.

Interchangeability of parts means a simplification of maintenance and supply problems.

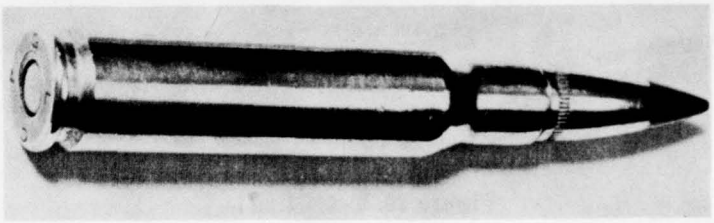
The identity of magazines allows the riflemen and automatic riflemen in a squad to freely exchange loaded magazines.

Through the similarity of parts and functioning, a man trained with the T-48 can with little additional training effectively operate the T-48E1 Rifle. Conversely, a man trained with the T-48E1 can operate the T-48. Identity of functioning allows a decrease in the amount of time required to teach mechanical training with the light and heavy barrel versions of this weapon. This feature not only means hours saved in training, but it permits a greater degree of tactical flexibility within small units, for any man in a rifle squad can be a rifleman or an automatic rifleman as the situation demands.

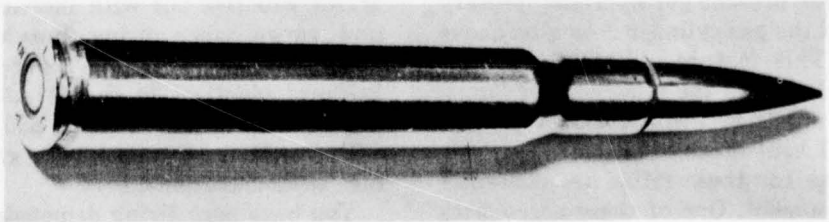
A larger magazine capacity increases the rifleman's ability to provide longer periods of unbroken sustained fire which is important in the final stages of an assault. In addition, clips for charging a partially emptied magazine have been designed. The rifleman can easily reload a partially emptied magazine while it is still in the rifle. This will eliminate waste of ammunition by riflemen who, when armed with the M1, had a tendency to waste the last remaining rounds in their clip so that they might reload their rifle with a full clip of ammunition.

A lighter automatic rifle permits the riflemen to carry a greater amount of ammunition.

The ammunition selected for use with all lightweight rifles being considered is the 7.62 MM NATO round which has been adopted for use by all of the North Atlantic Treaty Organization Nations. Although it is approximately 10 per cent lighter and one half inch shorter than our present calibre .30 M-2 round, it possesses the same ballistic characteristics.



7.62mm M-61



Cal .30 M2

Figure 18.

This allows a reduction in the Infantry soldiers load and a decrease in the shipping and storing space presently required for this type of ammunition. Ammunition for the T-48 includes armor piercing M-61, tracer M-62, and grenade launching cartridges M-64, as well as the ball round M-59.

The T-48 when equipped with a flash suppressor and a magazine of 20 rounds weighs approximately the same as the M-1 rifle loaded with an eight round clip. It is 44½ inches long, gas operated, air cooled, and has a combination change and safety lever that restricts it to semi-automatic fire. When equipped with a change lever identical to that on the T-48E1 rifle it is capable of full automatic fire. In the hands of the well trained rifleman its maximum effective range using the M-61 round is 500 yards. This is equal to the maximum effective range of the M-1 rifle.

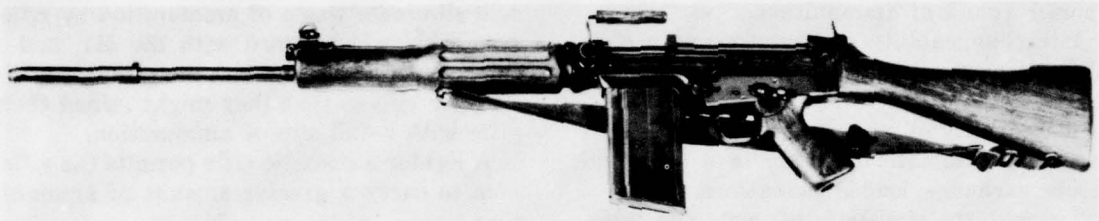


Figure 19. T-48 rifle.

The T-48E1 rifle is identical to the T-48 except that it is equipped with a bipod, heavier barrel, a hinged butt plate, and a change lever which allows semi-automatic fire or automatic fire at a cyclic rate of 650 to 700 rounds per minute. It weighs approximately 14½ pounds which is eight pounds less than our present Browning Automatic Rifle combat loaded.

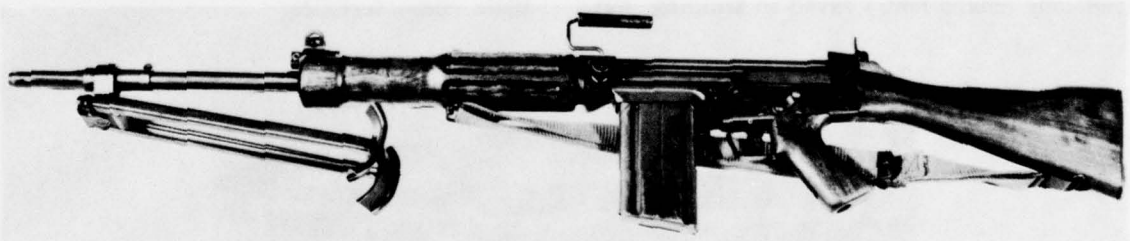


Figure 20. T-48E1 rifle.

Both rifles are equipped with a web sling and a folding carrying handle. These rifles are unlike our present gas operated military rifles in that the gas cylinder is located above the barrel. This feature combined with the pistol grip decreases the tendency for "muzzle jump" or "rise" which exists in our conventional bent stock weapons

Accessories for these rifles are currently under development. One of these accessories is the knife type bayonet which you have seen demonstrated. Another accessory is the rifle grenade launcher. This launcher is used essentially the same as the M7A3 for the M-1 rifle. It will fire the same grenades that the M7A3 will fire but with increased accuracy and range when using the M64 grenade launcher cartridge. The barrel and sight leaf are identical to the M7A3. The maximum effective range is from 260 to 270 yards with the M28 (Energa) rifle grenade (Firing Demonstration).

You have seen firing demonstrations illustrating and emphasizing the accuracy and rates of fire of both weapons, and the volume of accurate fire produced by a team of

riflemen, one man armed with the T-48 and the other armed with the T-48E1 rifle. The volume of accurate fire combined with their mechanical simplicity makes these rifles an efficient and easy to maintain combination of Infantry weapons.

In compliance with Continental Army Command's directive, The Infantry School began drawing up a program of instruction for troop test cadre personnel late in August 1954. When approved in its final form this program of instruction outlined a 130 hour training course. It was designed to turn out qualified cadre instructors capable of teaching the T-48 rifle to troops who were to participate in the tests.

106 hours were to be conducted by The Weapons Department in methods and techniques of instruction to be employed in the conduct of marksmanship and mechanical training with the T-48 and T-48E1 rifle. This included qualification firing with both weapons.

Continental Army Command's Board Number 3 was responsible for 8 hours of instruction to include the plan of the troop test of the lightweight weapons system, use of gun books, means of recording data, nature of questionnaires, and methods of compiling responses.

The Staff Department presented 16 hours of instruction broken down into two eight hour blocks. One block covered the Manual of Arms for the T-48 and T-48E1 rifles to include general rules of movements and positions. The second block was concerned with the use of the bayonet to include practical exercises and running of the bayonet assault course.

A special text was written and printed here at The Infantry School which covered the Weapons and Staff Department phases of this course. The text was subsequently issued to and used by cadre personnel and was retained by them upon their return to parent troop test units. In addition, they were issued DA Pamphlet 23-2 "Hits Count" for their retention and use.

Two cadre classes were conducted, one in January and one in March of this year, with very encouraging results. Student firing and graded tests combined with student questionnaires revealed a satisfactory degree of proficiency in ability to handle the weapons. A high degree of retention of basic knowledge of both rifles and the ability of cadre personnel to conduct high caliber instruction with these weapons was also observed.

An interesting aspect of this cadre training program was the fact that students were given complete sets of training aids to take back with them to their troop test units. This included plastic models of the rifle for use with the master view-graph in teaching functioning.

One of the implications of the T-48 rifle is its effect upon the Manual of Arms and Bayonet Training. The rifle's pistol grip has caused changes to the Manual of Arms as we now know it, but our bayonet movements have remained basically the same.

The Manual of Arms for the T-48 rifle is executed in the cadence of quick time and while standing at a halt. When the sling is adjusted it will be on the right side of the pistol grip. Unless otherwise specified the manual will be executed without the magazine in the rifle. When the magazine is in the rifle, the weapon will be carried at sling arms (Manual of Arms Demonstration).

The introduction of the T-48 rifle would not change the Army's method of bayonet training or bayonet fighting.

As it has been in the past, the emphasis is on developing skill with the bayonet and at the same time developing and fostering the aggressive spirit and the desire to close with and destroy the enemy in close combat. We call this, "The Spirit of the Bayonet" (Bayonet Demonstration).

Section III. INDIVIDUAL AND SQUAD NIGHT FIRING

CAPTAIN JOSEPH W. POWERS
Weapons Department

The problem of accurate shooting at night is one that has always plagued the Infantry soldier. We are going to discuss: first, the research conducted to devise techniques to improve individual night firing; second, the phases of training utilized to teach individual night firing; and third, the techniques and training methods developed to insure adequately controlled squad fires at night.

The Korean War pointed out vividly the reason why we must be prepared to shoot effectively at night. In Korea, we faced a fanatical night fighting enemy. The North Koreans conducted most of their early campaigns at night. The Chinese Communist Army entered the Korean War in November of 1950 with a night attack. In April of 1951, the Chinese Communist Army launched their first spring offensive with a night attack. Our military doctrine advocates night fighting, but the Infantry soldier lacks confidence in his ability to shoot at night; furthermore, he even lacks confidence in his ability to see at night. Many commanders hesitate to conduct operations at night because they lack confidence in the proficiency of their soldiers, and they fear the confusion that may result from night engagements.

In view of these facts, in January 1953, Army Field Forces (now CONARC) recommended that further research be conducted to improve the individual proficiency of the soldier at night. This recommendation was accepted and research was initiated by Unit 3 of the Human Resources Research Office (HUMRRO). The personnel in this unit are research scientists from the George Washington University who operate under contract with the Department of the Army. The code name given to this research project was "Moonlight."

HUMRRO divided their research into four phases, Moonlight I, II, III and IV. As a result of initial research, techniques were developed and adopted and then implemented by training circular #27, dated December 1953. This training circular prescribed individual night firing instruction. In February 1955, Department of Army Training Circular 23-1, "Technique of Rifle Fire at Night Without Artificial Illumination," was published which included the information contained in Department of Army Training Circular #27 pertaining to firing by the individual soldier. It also included Squad Defensive Night Firing instruction and Squad Assault Night Firing instruction.

The first phase, Moonlight I, was to determine detection capability of the individual soldier in realistic situations under low levels of illumination. In other words, to find out just how far a soldier can see at night. In the test one hundred soldiers were placed in the prone position to observe to their front and were instructed to indicate when they could positively detect a man to their front. Soldiers in battle dress walked from the front toward the observers. When an advancing soldier was detected he was halted and the distance from the observer recorded.

Results of this test are as follows: under a brilliant half moon, a soldier with good night vision can detect and identify a man at a range of 75 yards, a soldier with average night vision can detect and identify a man at a range of 35 yards, and a soldier with poor night vision can detect and identify a man at approximately 15 yards. Under starlight conditions, a soldier with good night vision can detect an approaching soldier at a range of 35 yards, a soldier with average night vision can detect an approaching soldier at 18 yards, and a soldier with poor night vision can detect an approaching soldier at 10 yards. The overall effective range for detecting under a level of illumination of half moon or less is 50 yards.

During World War II, research had been conducted in the field of night vision. This research was also successful. In Field Manual 21-75, "Combat Training of the Individual Soldier and Patrolling," there is a chapter on night vision.

We must teach the soldier how to use his eyes effectively at night. Prior to teaching

a soldier how to see at night we must explain to him how his eyes work. We know that we have two types of eyes, day eyes and night eyes. Directly behind the retina of the eye, we have what we call the cone region which contains approximately seven million cone cells. We refer to this area as our day eyes. They function only in high levels of illumination. In the outer portion of the retina of the eye we have what we call the rod region which contains approximately one hundred and thirty million rod cells. We refer to this area as our night eyes. The night eyes function at low levels of illumination.

Since we have night eyes, we have to know how to use them. To do this, we apply the principles of night vision.

THE FOUR PRINCIPLES OF NIGHT VISION

1. DARK ADAPTATION
2. OFF CENTER VISION
3. SCANNING
4. CONFIDENCE

Figure 21. Principles of night vision.

The first principle of night vision is dark adaptation which is the process of conditioning the eyes to see at night. It takes a minimum of thirty minutes for your eyes to become adapted to the dark. During this thirty minutes, three things take place in the eyes: first, the iris of the eye expands to allow more light to enter; second, the cone cells, or your day eyes, go blind; third, the rod region of the eyes begin to manufacture a chemical called visual purple. This is a chemical extracted from the Vitamin A content in the body. When light strikes the visual purple it causes a reaction which stimulates the rod cells of your eyes enabling you to see. After you are in the dark approximately ten minutes you are fifty per cent dark adapted; after twenty minutes, eighty per cent; and after thirty minutes, ninety-eight per cent. Once you have become dark adapted exposure of your eyes to light for a short period of time will destroy the night vision or dark adaption. Red light will not destroy the night vision. You will notice out here tonight that we use red lights for all range functions to preserve dark adaption.

The second principle of night vision is "off center vision." In the daytime you are accustomed to staring directly at and concentrating on any object you wish to see. When you do this, the image is focused on the cone region of the eye. However, at night you must stare to one side or the other of any object you wish to see. You focus your line of sight approximately six to ten degrees away from the object so that the image enters the eye at an angle and falls upon the rod region of the eye; thus enabling you to see.

The third principle of night vision is scanning. Scanning is moving the eyes in short abrupt movements over an area to be searched. In daytime we teach troops to scan an area by sweeping their eyes along parallel overlapping strips until they pick up a target. At night when you wish to search an area you look at a point then, after four to ten seconds, shift your eyes to another point and, after four to ten seconds, to another point in short abrupt movements. During the four to ten seconds when you are looking at any one portion of an area the visual purple in one particular set of rod cells will be used up. The set of rod cells will become fatigued, and the image will fade away. This is why you must shift your eyes every four to ten seconds to a new point, bringing in to play a new set of rod cells and a new supply of visual purple.

The fourth principle of night vision is confidence. Confidence is believing that you can see at night and believing what your eyes tell you, and it is a summation of the other three principles. Application of these principles or techniques is a prerequisite to all night operations.

Moonlight II was specifically concerned with improving individual shooting ability at night. Moonlight III tested the possibilities of developing a night sight.

Many types of sights were tested such as mechanical, illuminated, and optical. In the field of mechanical sights, devices such as post and buckhorn sights were tested. However, none of the mechanical sights were satisfactory since, under low levels of illu-

mination, the sights used masked the firer's vision. Further, if he closed one eye to aim through the sights, which is normal for many soldiers, he lost one half of his night vision ability, making it even more difficult to see.

Illuminating sights were also tested, and they also proved unsatisfactory since a beam of light of any type interferes with or completely destroys night vision.

In the field of optical sights there proved to be some possibilities. For example, the telescopic sight on a snipers rifle will permit fairly accurate sightings at dawn, dusk, and in moonlight. This sight magnifies the degree of illumination; however, it does not operate efficiently in low levels of illumination. Further, issuing each rifleman telescopic sights is costly, requires additional maintenance, and adds additional equipment for the soldier to carry.

The sniperscope showed the most promise. It is operable on the darkest nights up to ranges of approximately 135 yards. However, it has absolutely no daytime use; therefore a soldier would be required to carry an item of equipment which could only be used at night. Further, the initial cost, weight, maintenance, and training problems prohibit the issuing of sniperscopes in large numbers. Results of these test indicated that a new type of sight was not the solution to individual night firing.

The only alternative then was to find another method or technique of shooting the rifle which would require no new equipment, no additional expenses, no extra weight added to the rifle, and yet provide the means for use during the day or under artificial illumination. Three techniques were developed and they were built around what the eye can do at night. For example, since it is impossible to aim through the peep sight the head must be held high. In order to gain maximum vision at night both eyes must be open. Since there is a considerable flash from the rifle at night, it was concluded that some protection from this flash must be given to the eyes to help preserve the dark adaption. It was concluded that the technique of aiming must be one which permits some method of pointing at the target.

Three techniques were developed and tested, but one proved more effective than the other two. All three of these techniques were tested using only normal aiming methods. Soldiers using the technique adopted and implemented by Department of Army Training Circular #27 obtained sixty-three per cent more hits than soldiers using normal sighting and aiming methods.

We will now consider the phases of training which are used to teach this "Pointing Technique."

Individual night firing is conducted in four phases: orientation firing, night vision, daytime corrective firing, and night application firing. Orientation firing is conducted on a suitable open area at night. No formal instruction is given. It is pointed out that the problem of shooting at night is a difficult one and that we are attempting to improve the soldiers shooting ability at night. Range regulations, safety rules, scoring and marking of targets, and the conduct of firing are reviewed. Then the students fire eight rounds at twenty-five yards and eight rounds at fifty yards. If the degree of illumination is greater than a half moon, they fire eight rounds at fifty yards and eight rounds at seventy-five yards. M type silhouettes painted black are used as targets.

Targets are scored, hits computed, and the results announced to the firers. A critique is conducted at which time students are queried in regard to problems they encountered. Some of the problems to date indicate the following: some cannot see the target, some are unable to use their sights, and some state that the flash of the weapon seemed to momentarily blind them. Since he has been given the opportunity to test his own firing ability at night, limitations of night firing capabilites are clearly indicated to the rifleman.

The next day he receives a two hour course of instruction in night vision which is the second phase of instruction in night firing. Principles of night vision are reviewed and practical work is conducted in a blacked-out class room using the shadowgraph equipment described in FM 21-75.

The same day the rifleman is introduced to daytime corrective firing, and he learns the technique for shooing his rifle at night

by firing at a large "B" type bulls-eye mounted on a 6′ x 6′ frame. He fires a rifle without sight with a flash hider attached so he may become accustomed to seeing it. The target is set at a range of 50 yards, the overall effective night range. He fires three round shot groups until he obtains a shot group in the bulls-eye or on a line vertical to and below the bulls-eye. Upon securing a shot group in the bulls-eye, he recalls how he held the rifle, and this hold becomes his night zero.

The same night he is given his fourth phase of training, "Application Night Firing." At this time he uses the pointing technique which he learned during his "Corrective Firing," and he again fires a rifle without sights with a flash hider attached to protect his eyes from the muzzle flash. "Application Night Firing" is designed to give the soldier an opportunity to use the proper technique and to build up his confidence in firing at night. Numbers of hits and the percentage of hits obtained during orientation firing compared with the number of hits and percentage of hits obtained during application firing indicate the degree of improvement.

Upon completion of the four phases of instruction, the soldier is required to fire a proficiency course outlined in Training Circular 23-1, DA, February 1955. This serves to give him additional training in night firing and provides the commander with a means for determining the individual proficiency of his troops.

Now let us consider the six principles which are a part of this technique in firing the rifle at night.

PRINCIPLES OF NIGHT FIRING (M1 RIFLE)

1. **DEVELOP NIGHT VISION.**
2. **KEEP HEAD HIGH.**
3. **KEEP BOTH EYES OPEN.**
4. **LOCATE TARGET.**
5. **USE A POINTING TECHNIQUE.**
6. **SQUEEZE THE TRIGGER.**

Figure 22. Principles of individual night firing.

First, develop night vision. Individuals require at least thirty minutes in the dark to adapt their eyes prior to any firing. Their dark adaption must be protected. They must avoid staring at lights, flares, or other illumination.

Second, keep the head high. Since sights cannot be used, the head is kept as high as possible.

Third, keep both eyes open in order to make maximum use of night vision ability. If a firer closes one eye, he loses one half of his night vision capability. With his head high and both eyes open, he locates the target by scanning the area and uses off center vision to hold it in his line of sight. He then points his rifle in the direction of the target, and when he feels he is aligned lowers his rifle more than he feels is necessary to hit the target. This is necessary because soldiers using this technique have a tendency to raise the muzzle end of the rifle up to the line of sight. When this is done most individuals will fire high. Last, squeeze the trigger as in all normal firing. (Cutaway model demonstration).

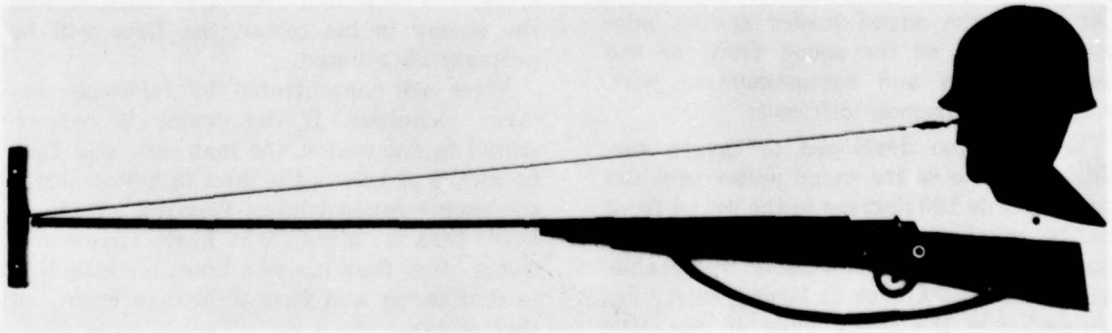


Figure 23. Model firer using the pointing technique.

Tests have shown that right handed firers will fire slightly to the left and left handed firers will fire slightly to the right. This is another peculiarity that occurs when using the pointing technique. Therefore, a right handed firer must not only lower his rifle in order to hit the target, but he must aim slightly to the right. Thus right handed firers aim slightly to the right and left handed firers aim slightly to the left. The lowering of the rifle and aiming to the right or left is called "Hold Off" and is determined by each individual during corrective firing. (Conferee firing)

The objective of Moonlight IV was to develop methods and techniques for training squads to achieve adequately controlled fire under low levels of illumination in offensive and defensive action.

To insure effective squad defense at night, techniques were developed which would enable the squad to operate at night as it would during daylight: to insure surveillance of the entire squad sector, proper target allocation, fire control to include initiation, distribution, concentration, shifting, and ceasing fire, and conservation of ammunition.

In daylight, the above can be accomplished under direct control of the squad leader since he and the squad members can see the terrain. Sectors can be pointed out by reference to terrain features, riflemen and automatic riflemen can be allocated targets, and fires can be opened, distributed, concentrated, shifted or ceased under the direct control of the squad leader. Further, the squad leader can see and designate targets to the riflemen. He can see all of the squad sector, and he normally can see the general location of most of the squad members.

At night the squad leader cannot adequately see all of the squad front or the enemy situation and communication with his squad is extremely difficult.

The technique developed to insure surveillance of the entire squad sector provides that the whole 180 degrees to the squad front must be covered at night. This is necessary since the flanks are extremely vulnerable. Each rifleman searches at least a thirty degree sector of the front, thus if the five riflemen and the assistant squad leader search at least a thirty degree sector the entire 180 degree squad sector will be under surveillance.

As a teaching vehicle, the squad front is divided into thirty degree sectors by referring to the hours on the clock. For example, twelve o'clock is to the squad front, nine o'clock is to the squad left flank, and three o'clock to the squad right flank. The five riflemen and the assistant squad leader from left to right search nine to ten, ten to eleven, eleven to twelve, twelve to one, and so on. Automatic riflemen are not given a definite search sector but are responsible for firing at enemy automatic weapons in the entire sector. Naturally, in combat, the size of the squad, disposition on the terrain, mission and other factors may require modification of each man's sector.

Riflemen are instructed to fire only at enemy personnel at night. Automatic riflemen fire at enemy automatic weapons, referred to as flashing targets. If there are no flashing targets present, automatic riflemen then engage enemy personnel.

Fire control is insured by following four basic techniques. First, "Initiation of Fire." Riflemen open fire when they see the enemy in their own sectors. They are instructed not to fire at noises or sounds alone or at the flash of automatic weapons. Tests indicate that it is very difficult for riflemen to aim and hit automatic weapons unless they can see the gunners.

If the squad members follow the technique for initiating fire, that is open fire when they see an enemy in their sector, they automatically distribute their fire. If the enemy is evenly distributed across the entire squad front, and each man opens fire when he sees the enemy in his sector, the fires will be properly distributed.

Fires are concentrated by following another technique. If the enemy is concentrated in one sector, the man who will first be aware of this is the man in whose sector the enemy concentration appears. The technique then is: a man who hears firing in a sector other than his own turns his attention to that sector and fires if he sees enemy in that sector.

In order to release a concentration that

has been established by the previous technique and to provide for shifting of fires, no man will fire more than three rounds into another man's sector before coming back to his own. If he finds no enemy in his own sector he is free then to concentrate his fires in other sectors where he may see the enemy.

A requirement has been established for all riflemen to cease fire when enemy is no longer seen in a sector. Thus, when there are no longer any enemy personnel in any man's sector, the squad will have ceased fire.

Ammunition is conserved by using the techniques just described.

A technique has been developed to permit automatic riflemen to engage flashing targets with reasonable accuracy. A piece of luminous or adhesive tape is placed on the front sight hood of the automatic rifle. The automatic riflemen locate the enemy weapons by observing the flash, pick up the flash by sighting through the rear peep sight, and center the flash of the weapon on the top center of the luminous tape. The bipod permits the rifleman to hold the BAR steady while aligning on the flash of enemy automatic weapons.

These techniques are introduced in three phases of training: orientation firing, daytime corrective firing, and night application firing. Experimental Infantry squads who received this training obtained two per cent hits during their orientation firing. During application firing they obtained thirty-two per cent hits, a fifteen hundered per cent improvement. Then they fired against standard Infantry squads who had not received training in these special night techniques. The standard Infantry squads obtained four per cent hits, and the experimental squads, using the techniques we have described, obtained thirteen per cent hits. This is a 250 per cent improvement.

In training the squad in assault at night, the primary difficulties encountered are: maintaining alignment, maintaining the rate of fire, and securing effective hits on the targets.

During their daytime corrective firing, squads are trained in the new under arm position. In this position the rifle is held with the butt half way between the hip and the arm pit, the right hand grasping the small of the stock, and the left hand just behind the upper sling swivel. They are then instructed in the importance of maintaining alignment during the assault at night. They are to maintain approximately five yards between men during the assault, dress is normally to the right unless otherwise specified, and maintain alignment by observing the muzzle flash of the weapons of other squad members. They conduct nonfiring and firing practice using the under arm position, maintaining alignment, and loading on the move until they become proficient.

Upon completion of corrective firing, squads then receive their application night firing. All squad assault instruction can be given in one night in approximately eight hours.

Experimental squads receiving this training averaged eighteen hits per squad, whereas standard squads who had not received training in these special techniques averaged eight hits per squad. This is an improvement of approximately 142 per cent in favor of the experimental techniques. Of significance is the fact that the experimental squads fired 232 rounds to obtain 18 hits while the standard squads fired 171 rounds to obtain 8 hits. This indicates the value of training in improving rate of fire and accuracy.

Training in Squad Defensive Night Firing, Squad Assault Night Firing and the ranges prescribed, are outlined in Department of Army Training Circular 23-1, "Technique of Rifle Fire Without Artificial Illumination," 24 February 1955.

CHAPTER 8
INFANTRY TACTICS
Section I. INTRODUCTION

COLONEL JOSEPH W. STILWELL, JR.
Director, Tactical Department

The Tactical Department will present to you various thoughts, the subjects of which are listed in detail in the brochure. We have chosen these subjects because they include our latest teachings and we think each will be of interest to you. These are the changes in tactics and techniques Lt Colonel Russell referred to yesterday and which are now accepted here at the School. This material will be in the new manuals when published. In the meantime, we will issue to you our latest battalion and company and platoon advance sheets, compiled as I have them here. The battalion booklet is complete and correct. The company and platoon book lacks two problems which are again being revised. The revisions will be mailed to you about 1 October. You will not receive the regimental book until 1 October because it is being brought up to date. If you have any regimental subjects on which you would like advance information, ask us and we will dig it out and give it to you. We can no longer refer the students to the manuals that are five and six years obsolete, so we rewrite the material and issue it as Advance Sheets for study reference. This material has been accepted here and in general has been accepted at CONARC but not in detail. We hope that it will be published at an early date, probably after completion of the ATFA tests.

There will be time for a few questions at the end of each presentation. In addition, this morning at 1130 there will be a half hour available for questions you might have. The afternoon is also available, and in accordance with your requests we are setting up a panel discussion in this hall at 1315 on Perimeter Defense, Anti-guerilla Measures, and Counter-Infiltration Tactics. At that time, after we have covered these subjects, the panel will handle any other subjects of interest to you.

You will later be furnished with a complete report of this conference prepared from a tape recording. Therefore, we ask when you make a comment rise and wait for the hand microphone before you speak. Please give your name each time, and the school you represent to aid us in identifying you on the tape.

It is a difficult thing, sometimes, to sell a thought. The one I want to sell this morning is that we must have your reaction to what we are doing. If you think it is good, all right; if you think it is bad, that we need to know. We ask you to consider this conference a two-way street. You can help us tremendously, as in past conferences, if you will comment on what we are doing.

Section II. CURRENT INFANTRY CONCEPT OF MOBILE DEFENSE

LT COL LAWSON W. MAGRUDER, JR.
Regimental Tactics Committee

It is always nice to see old friends here at the Infantry Conference and it is also nice to have an opportunity to make new friends. And speaking of new, in the next period we would like to give to you a new concept for the employment of infantry units in the mobile defense. We say it is new. In fact at the conference last year, many of you may have remembered the remarks of General Harper on the great problem we have in defending

on vast frontages and depths. Those remarks made the work that the Tactical Department had undertaken many months before most timely and important. And since your conference last year we have developed a technique, which we teach here as resident instruction, for the employment of Infantry units in mobile defense.

The concept of mobile defense is certainly not new; it is as old as the concept of defense. So we need to review very hurriedly why we want to take up the mobile defense. You are going to notice throughout the morning that we are going to keep the echelon initially at that of the infantry division. You might wonder, "Well, why is that?" because this school is concerned with that of the Infantry regimental level. We think to make the picture unfold completely, we must do it initially at the infantry division. We can take the position defense and vary it until we can come up with a frontage on the infantry division level, extended position, of approximately 20,000 yards. Now that is predicated on the range of the organic weapons. Position defense is a defense, a compact defense, depending upon mutual support in which we organize the terrain and prevent the enemy from passing a certain position, our main line of resistance. He comes in, we move him out. Now what happens when we are given a frontage in excess of 20,000 yards? We have lost the ability to carry out the position defense and the alternative would be that of retrograde. Well, certainly, retrograde is not the answer. So therefore when we are given a defensive mission at division with a frontage in excess of 20,000 yards and commensurate depth to that position we must adopt a mobile defense.

What is mobile defense? Mobile defense is actually the thinking of the commander in that he will use minimum forces forward to canalize the enemy and then destroy the enemy by offensive action. You might think as we develop this thing today that this is nothing but extended position defense. Now, initially the disposition may look like extended position defense, but remember it is the intent of the commander to do what? Canalize the enemy and then destroy him by offensive action. Now there is the basic difference, I should say, between the position and the mobile defense. With that in mind, let's go along and develop the dispositions of troops within the mobile defense, go into the use of the various weapons, the use of the attached and supporting units, and then go into the conduct of the mobile defense.

You people in the field are certainly aware of the fact that for resident instruction you have to teach the TOs which we have at the present time. We are going to present here the Table of Organization for the division with which we are familiar: the nine Infantry battalions, our regular artillery battalions, and our tank battalion. As this is developed, go through your mind and think of what would be a better organization. We stated initially that we would take up the mobile defense when we had a frontage and depth in excess of the range of our weapons precluding our effecting the position defense. Another reason might be, and certainly a very potent reason in our current thinking, that when great dispersion is required to protect us against possible Aggressor use of mass destruction weapons.

Let us now turn to the disposition of the troops. In organizing a mobile defense, troops are distributed so that: a portion of the force is used in security missions to warn of impending attack and to delay and disorganize the enemy; a portion of the force is used in the occupation of strong points across the forward defensive area to canalize the attacking forces into terrain favorable to the defender, or to repel, slow down or stop the attacker by the application of firepower; and the remainder of the force occupies strong points composing the striking force to be used alone or with other non-engaged portions of the force to destroy the enemy by a combination of fire power and offensive maneuver.

SECURITY ECHELON

As in position defense, the security forces may include aviation, a covering force, and a general outpost. In place of a combat outpost, the strong points across the forward defensive area establish detached observation posts with the following missions:

1. Furnish early warning of enemy advance to the strong points through maintenance of surveillance across the front.

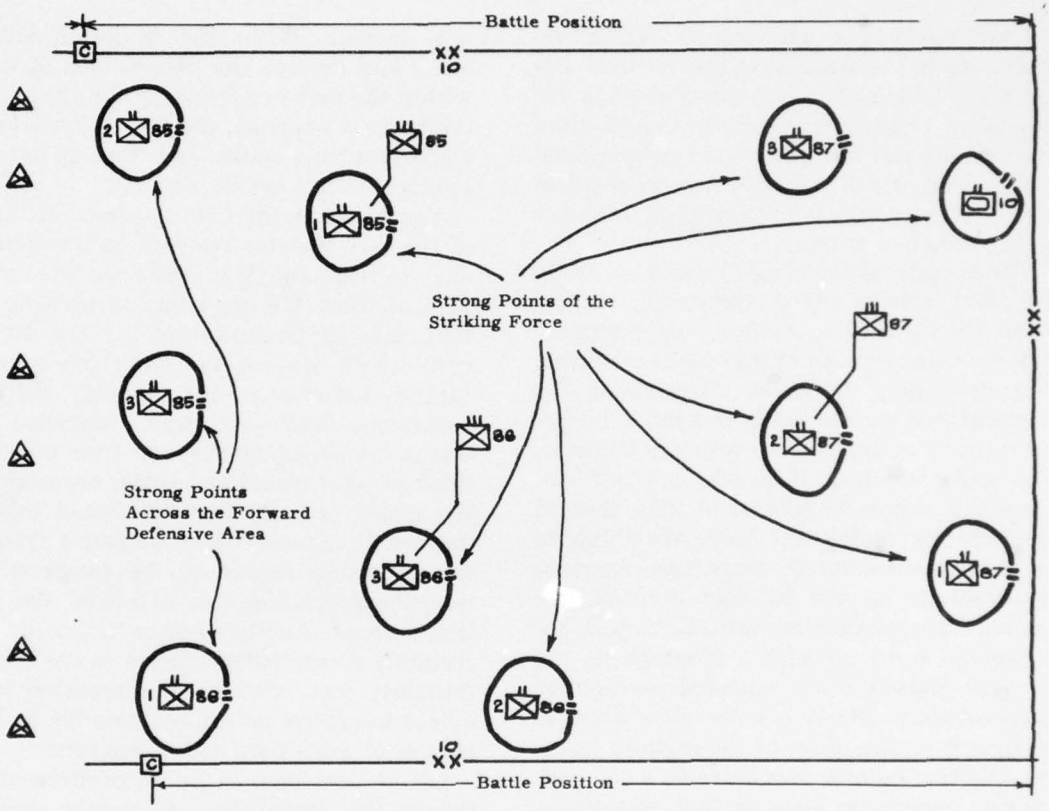


Figure 24. Mobile defense.

2. Prevent close observation of our positions by the interception of enemy patrols.

3. Delay, deceive and disorganize the enemy, to the maximum extent possible, by long range artillery and mortar fires as he approaches the line of observations posts.

4. Assist units which engage in raids and spoiling attacks by furnishing guides and observation throughout their area of surveillance.

Covering forces must have detailed plans and adequate communications so that they can be withdrawn into or through the strong points when the enemy attacks in force.

STRONG POINTS ACROSS THE FORWARD DEFENSIVE AREA

Strong points across the forward defensive area are located on terrain features dominating enemy avenues of approach. Their function is to destroy, slow down, stop, or repel the advancing enemy. They should be so located that they canalize the enemy into areas of the defender's choice. These strong points may serve as pivots of maneuver for offensive action or as bases for reconnaissance forces. Since strong points may not be mutually supporting, they must be prepared to continue resistance when bypassed or surrounded.

The smallest Infantry unit given the mission of organizing and holding a strong point in a mobile defense is normally a reinforced battalion. Units smaller than a battalion lack the combat power required to defend a strong point long enough to permit effective offensive counteraction.

When the location of dominating terrain features does not permit adequate coverage of an area, or when the frontage is so extended that small units operating between organized defensive positions may be cut off and destroyed by enemy infiltration, patrol bases may be sent out in front of the strong points in the forward area to furnish security for patrols, forward observers, and air

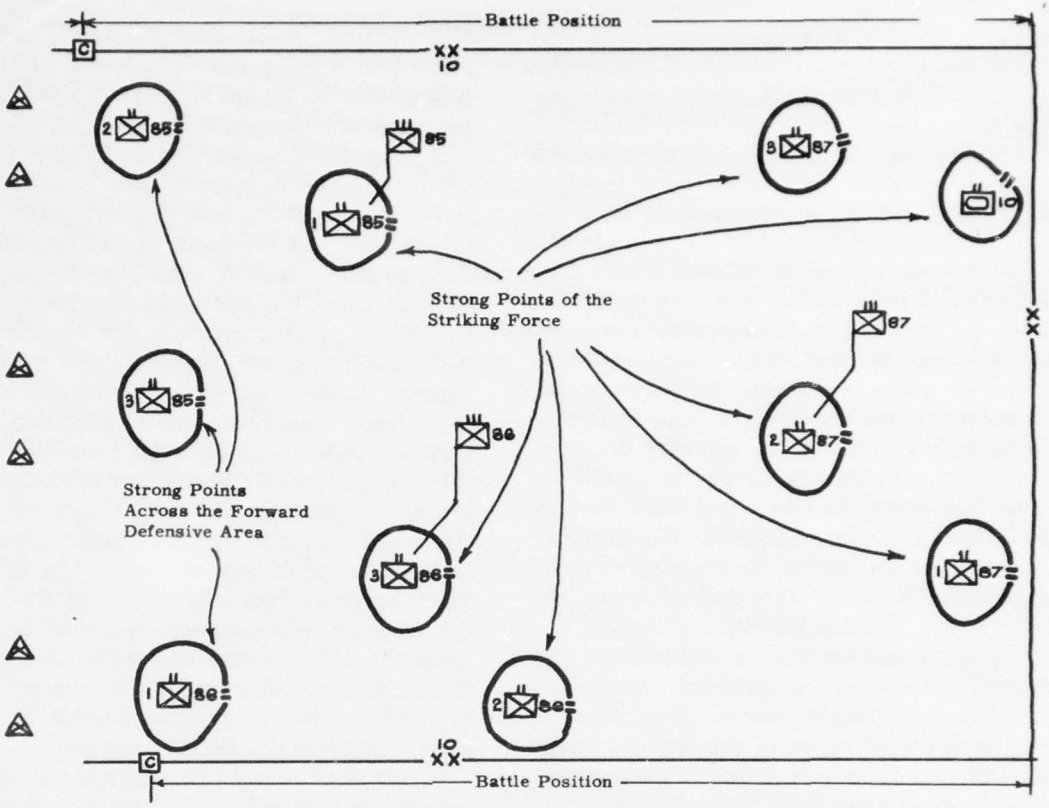


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control teams. Patrol bases are withdrawn into the strong points in the event of a strong enemy attack.

THE STRIKING FORCE

The striking force consists of reinforced battalion or larger size strong points in deployed defensive positions and tank battalion units held in positions of readiness. The primary mission of the striking force is to attack and destroy enemy forces previously canalized by the strong points across the forward defensive area. Because the entire battle position may have to perform the role of canalization, the striking force is deployed initially in prepared positions similiar to those in the forward defensive area. The striking force can be employed on an offensive mission in front of, within, or behind the forward defensive area. It should be employed at such a place and time as will best insure destruction of the enemy forces. Ideally, it is used following an atomic strike against enemy forces previously canalized by the strong points.

In the discussion of frontages and depth, we notice in a mobile defense wide intervals may exist between strong points. The units occupying the strong points are assigned definite areas of lateral responsibility, thus insuring adequate security along the entire front. Security elements in the form of outguards and patrols are established forward of and in the intervals between strong points.

The area in which a mobile defense is conducted must have sufficient depth to allow for canalization of the enemy attack to ground of the defender's choice where the enemy will be destroyed by fire or by a combination of fire power and offensive action.

Barriers are constructed throughout the battle position to delay the enemy forces, and to canalize the enemy into areas where maximum casualties may be inflicted by atomic or non-atomic defensive fires, by the maneuver of reserves, or preferably by a combination of fire and maneuver. Artificial obstacles, such as mines, warning devices, and atomic and chemical munitions reinforce the natural obstacles. Safe lanes or gaps are left in the barrier to permit maneuver of the forward defensive area strong points and offensive action by the striking force. Wide frontages frequently prevent complete coverage of the obstacles by small arms and automatic weapons. Fire plans provide for their coverage with mortars, artillery, atomic weapons and tactical air. The barrier system must be completely coordinated with all elements. It must not be permitted to interfere with the maneuver of forces from the strong points or of the counterattack. Where wide frontages prevent complete coverage of minefields by fire, minefields must be covered by observation. All combat and combat support troops, in addition to engineers, are employed in the construction of minefields.

In the mobile defense, increased emphasis must be placed on cover, concealment, and camouflage, and on the employment of deceptive measures, both to increase the security of our forces and to aid in canalization of the enemy.

Without an adequate plan of surveillance, the concept of mobile defense will not be effective. Generally, in the mobile defense, strong points will not be mutually supporting. It is, therefore, of the utmost importance that these increased intervals between strong points be kept under observation in such a manner as to obviate the possibility of enemy airborne attack, guerilla action and infiltration or other undetected movement of troops, in such numbers as to threaten the integrity of the strong points or critical installations. The commander, based upon the plan of higher headquarters, develops a detailed plan of the employment of all available means in order to provide adequate surveillance. Initially, he may emphasize the plan of surveillance forward of the battle position. He should, however, maintain a proper balance for the plans of surveillance both within and forward of the battle position. The combat effectiveness of the strong point is maintained by avoiding the assignment of such responsibilities for surveillance as are beyond its capability. When it is desired that the strong point take on responsibilities for surveillance beyond its capability, additional means must be assigned it by the higher commander. The higher commander assumes the direct responsibility for that portion of his over-all area which is not specifically charged to a subordinate commander. Within his re-

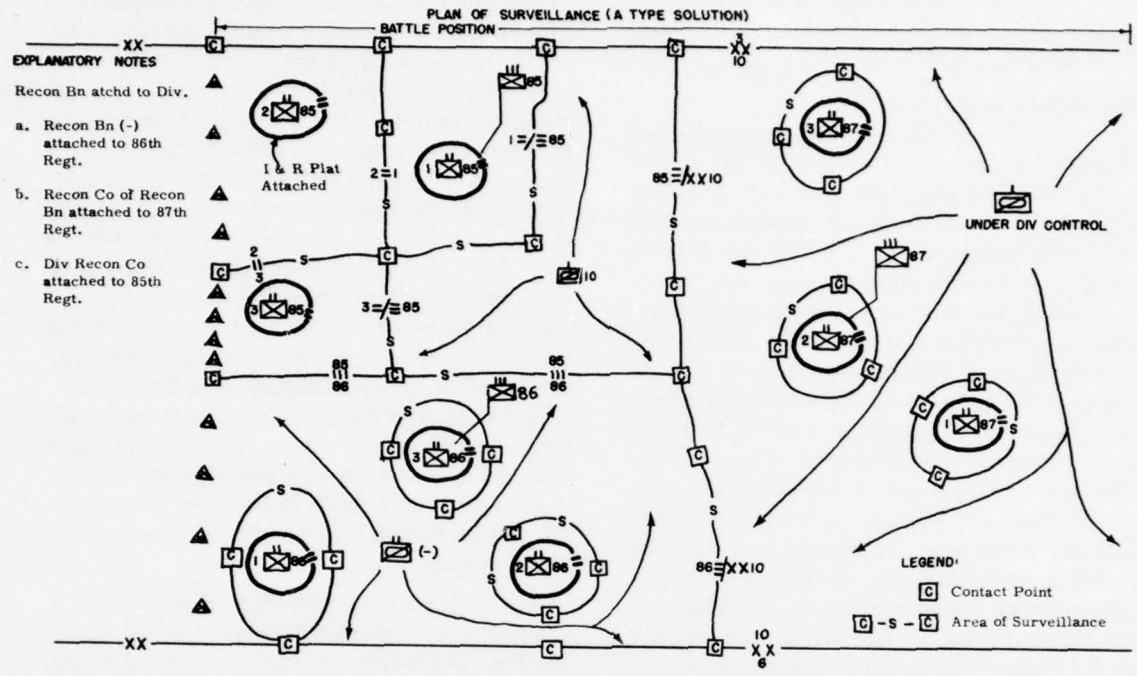


Figure 25. Plan of surveillance.

spective area of surveillance, a commander is charged with the all-inclusive responsibility for observing and reporting the presence of enemy. This may be accomplished through a combination of patrols, observation posts, outguards, detached posts, patrol bases, listening posts, and air reconnaissance.

In organizing for a mobile defense, evacuation and resupply by air are planned in the event routes to the rear are denied to the defender.

Let us consider the use of the regiment in mobile defense. Since strong points are normally organized by reinforced battalions or larger size and since the mobile defense concept envisions the use of the bulk of the forces offensively, the infantry regiment will normally be unable to conduct, by itself, all of the aspects of a mobile defense. Instead it normally participates as part of a larger force. Exceptionally, where the terrain canalizes the enemy attack into one specific area, the infantry regiment with additional attachments may be able to conduct independently a mobile defense. Normally, however, the conduct of a mobile defense is charged to division or higher level.

ORGANIC UNITS

In mobile defense a regimental headquarters must be prepared to command any combination of combat units within the division. For a comparison between the present command structure and an anticipated one. See Figures 26 and 27.

Because of the extreme frontage usually assigned a regiment in mobile defense, heavy mortar company elements will frequently be attached to units occupying strong points.

Tank Company elements may be attached to units occupying forward strong points to provide antitank defense. Those strong points most likely to be employed in offensive action should have the preponderance of the available tank strength attached to them.

The regimental I&R Platoon may be retained under regimental control or attached to one of the battalions across the forward defensive area.

When retained under regimental control, the platoon will reconnoiter that portion of

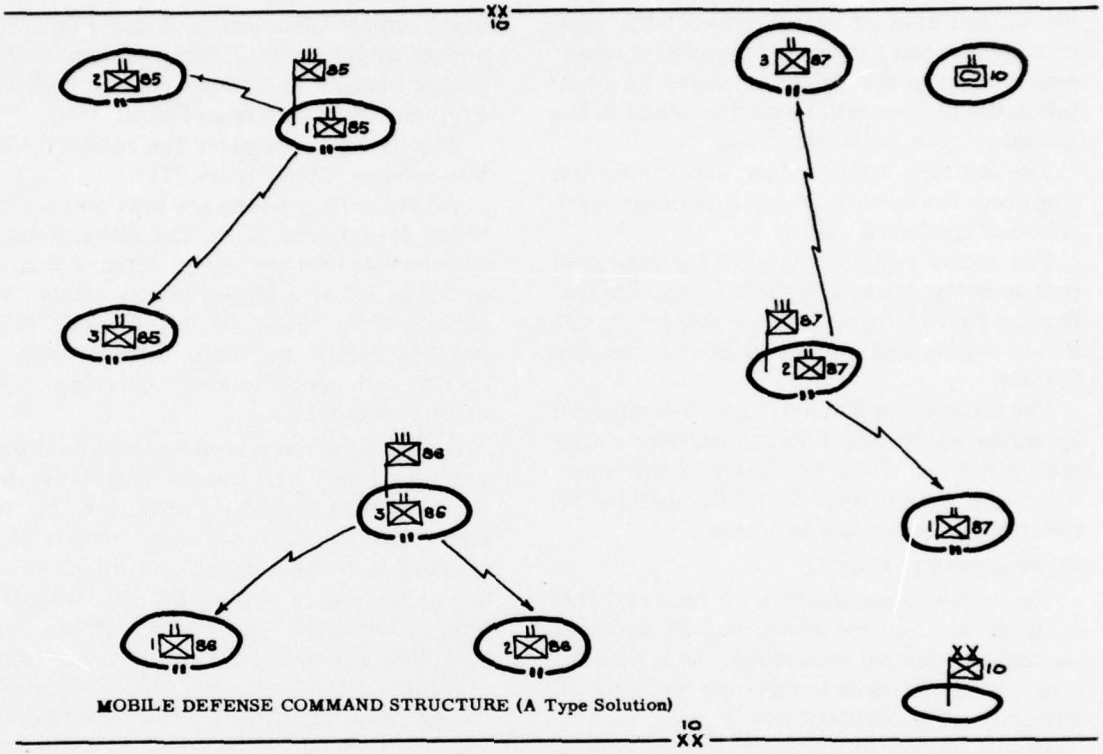


Figure 26. Mobile defense command struc-

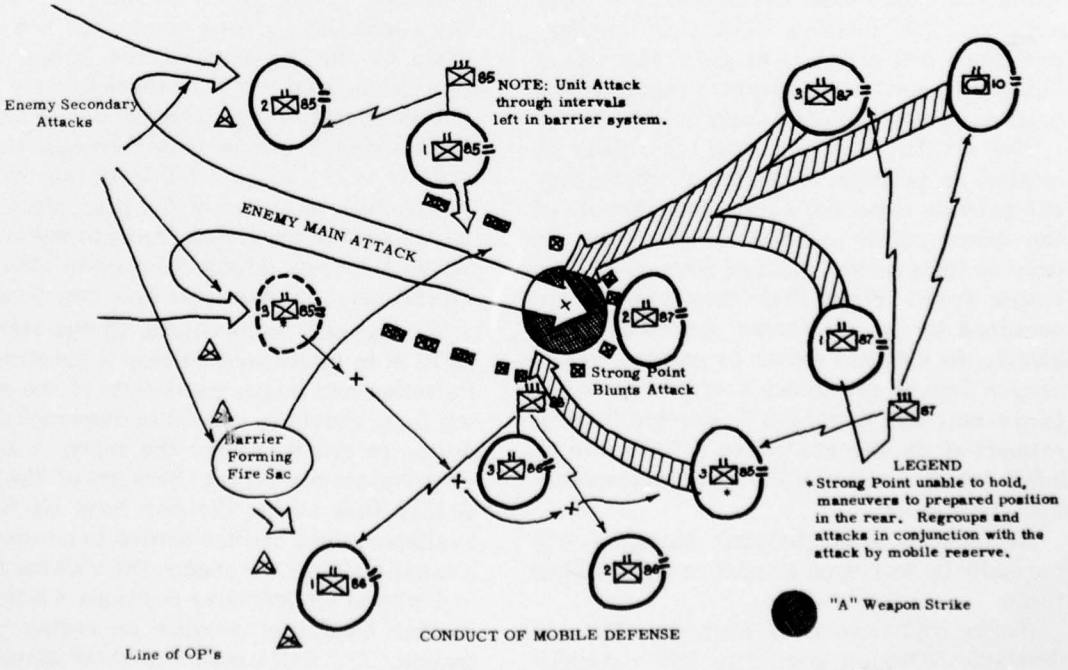


Figure 27. Conduct of mobile defense.

the overall area of surveillance of the regiment which has not been charged to a subordinate commander. When attached to a battalion the platoon will be used to assist in the battalion plan of surveillance.

The antitank mine platoon and supporting engineers are used to assist in the implementation of the barrier plan.

The security platoon is used for command post security. Plans are made to use this platoon as part of the defense of a strong point if the regimental command post is located therein.

The counterfire platoon is usually employed by squad within the forward defensive area strong points. When employed in this manner, wire is laid directly to the battalion's fire support coordination center.

SUPPORTING UNITS

The rapid concentration of artillery fire is essential to a successful mobile defense; centralized control of artillery is desirable. Every effort is made to meet the main attack *with a mass of artillery fire.*

The Infantry division artillery is considered to be the minimum required against a weak enemy on a normal front. When fronts are extended beyond the normal concept the division artillery must be reinforced by corps artillery. The division light field artillery battalions will normally be given the role of "direct support" of an infantry regiment and positions are organized to permit 360° firing.

The artillery battalions will normally be located in position areas from where they can provide close and continuous support of the strong points and from where they can provide the greatest mass of fires across the entire front. When their positions are approached by strong enemy elements in the attack, the artillery moves by echelon, at the proper time, to previously prepared positions in the rear and continues to provide fires in support of the defense. When cut off, and as a last resort, artillery units will join the nearest strong point.

At division level the tank battalion will normally be employed as part of the striking force.

Centralized control of engineer effort is desirable; division engineers will normally be employed in direct support of tactical units, unless distances and communications dictate attachments. Extensive damage from enemy nuclear burst may require additional engineer assistance from Corps.

Finally let us consider the conduct of mobile defense. (See Figure 27)

All security echelons are provided with detailed operational plans, including plans for withdrawal into organized defense positions in the event of a strong enemy attack. Supporting fires cover the withdrawals. Those security forces maintain contact with the enemy and continue their delaying tactics as they withdraw.

Unless fires have been ordered held up in order to effect surprise in accordance with the higher commander's plans for this purpose, the defender uses every means at his disposal to harass, delay, and inflict casualties as the enemy approaches the battle position. If the enemy penetrates a strong point, consideration must first be given to destroying him with forces available within the strong point. In the face of an overwhelming enemy attack which, because of its direction, may be canalized better at a point farther to the rear, forces defending a strong point may be ordered to withdraw to a previously prepared strong point. It must be emphasized that these strong points will not withdraw on the initiative of the strong point commander, but will be withdrawn only upon the order of the higher commander. When the integrity of a strong point becomes threatened it is the responsibility of the division commander to maintain the resupply and to maneuver his remaining forces to restore the integrity of the strong point or to allow the strong point to maneuver to a new position.

The primary employment of the striking force is to attack and destroy a penetration. Battalion and larger sized units of the striking force should be located in dispersed areas dug-in in order to deny the enemy a remunerative atomic target. Because of the possibility that at the division level all forces available might become needed to accomplish a canalization of the enemy, the striking force is deployed on defensive positions which will further block and canalize an enemy penetration. The units manning these dispersed strong points must, however, remain mobile

and must be oriented to the offensive at all times.

The success of the entire defense depends largely on canalizing the enemy into areas favorable to the defender and the subsequent employment of the striking force to destroy this penetration. Those units occupying strong points which are not engaged and which could contribute to the success of the attack are employed under the command of the striking force commander.

The striking force may also be used in a spoiling attack, taking the enemy by surprise as he is assembling to attack our strong points across the forward defensive area. Ideally, this type of an attack is launched in conjunction with the use of atomic weapons.

The use of suitable armored personnel carriers will greatly increase cross country mobility and enable the striking force to concentrate rapidly for the attack.

When you return to your school, I am sure you are going to have to comment on a paper which has been developed by the Infantry section of CONARC. We have received the paper and they have taken the various things which we have sent forward and which we have been selling as our particular concept and taken what the current FM 100-5 has and actually the difference is largely a matter of semantics. However, they have asked us to comment on the following concept of mobile defense in infantry units. They have called the forward strong points (and incidentally they are of battalion size) battalion strong points across the forward defensive area, just as we have presented to you here. They have, however, called the rearward battalions strong points which may be used as part of the striking force. These rearward battalions may be used in the same mission of canalizing as those in the forward area or they may be used as a striking force. The remaining battalions are in blocking positions and comprise the striking force. They are adopting the armored concept of a strong point system with the striking force in blocking positions.

We say here at the school that the security echelon for the mobile defense is the same as in position defense. CONARC's concept is no GOPL, they say we will not have a general outpost but we will have a mobile security force and in essence, the strong points across the forward defensive area will take on the mission of the general outpost.

That is what they are going to request of you to comment on. You can see there is very little difference between the concept we have presented to you and that which has been sent out by the Infantry Section of CONARC. You might ask what is the school's position. Gentlemen, we concur in what has been sent down by CONARC. In fact we concur so much it did not have to reach the Indian level, it stayed at the Chief level and they said we concur.

There is the concept of mobile defense for infantry units as taught at The Infantry School and we have shown you the concept as developed by the Infantry section, CONARC. Now we have about five minutes and we would like very much for your questions.

QUESTION: *Major Heske, Signal School:* I am interested in the control factors of the counterattack. You have 3 battalions checked for striking forces, one right, one center; how are they going to be controlled?

ANSWER: *Lt Col Magruder:* That is a very good question. We think, gentlemen, in this concept that each infantry regimental commander must be prepared to lose a battalion or to add one or more battalions to his command if he is to be used in an offensive role. In other words, it might well be in this case that the particular regimental commander of these three battalions would take control of a fourth battalion. Now it is going to have to be directed at division level, you can see that. But we think as a maneuvering element again, the regimental commander will control the movement and may well in his attack have five battalions rather than three.

QUESTION: *Lt Col Gallagher, Signal School:* Where does the normal mobile defense and mobile defense on a greater front begin and end? As I understand it, the mobile defense as I had formerly known it was on "X" number of yards of front. Is it true in assuming that this frontage here is some-

what greater than that formerly taught at The Infantry School?

ANSWER: *Lt Col Magruder:* I didn't make my point clear, Col Gallagher. We think that when frontage is in excess of 20,000 yards for an Infantry Division, it is impossible to effect a position type of defense. Predicated upon what? Upon the range of the organic weapons. Now for anything in excess of 20,000 yards and with commensurate depth we think that the mobile type of defense is the only type of defense that can be adopted to carry out a defensive mission. So as to X number of yards (and as you know we all hate these guide figures) we say that 20,000 yards as far as the frontage is concerned is a fairly accurate figure where the extended position defense must cease and you go into mobile type of defense.

QUESTION: *Lt Col Gallagher:* What is the maximum?

ANSWER: *Lt Col Magruder:* Well, again that is purely hypothetical, and when you ask for the maximum I cannot give you the answer. I don't know what the maximum is. I will tell you this that in our resident instruction in which we defend the west bank of the Our River we have come up with some 45,000 yards but we have such rugged terrain that there are 5 to 6 mile gaps between strong points which are covered by reconnaissance units. But a definite figure I can't give you.

QUESTION: *Lt Col Gallagher:* In leading up to this I failed to realize whether or not it was the shortage of forces in the theater or on the front that forced us into this mobile defense, or whether it was just because of the atomic concept. Which is it?

ANSWER: *Lt Col Magruder:* I will say first it was paucity of troops, lack of troops. The only problem you have in defense is lack of troops. Now if you have the troops that you can keep filling battalions in, lose a battalion and keep filling them in, then the position defense is a stronger type of defense than the mobile defense. You cannot, however, overlook the fact that in the position defense with 10,000 yards frontage you offer a much more remunerative target to the enemy for mass destruction than you do in the extended or the mobile. As far as comparing the mobile defense and the extended position defense you actually are going to lose less of your battalion in an extended position defense against, say a 20 KT weapon, than you will in the mobile defense because in the mobile defense you have a tight compact perimeter and will lose the entire battalion. So as far as the battalion is concerned you will probably lose less personnel in the extended position defense, but in the overall picture with the use of numerous weapons of larger yield then, certainly, the mobile defense gives you a better dispersion against atomic weapons than would the position defense. It is appropriate at this time to discuss the effects of dispersing in conventional warfare. If an Aggressor has the capability of massing conventional artillery employing "hub to hub" positions, then again by adopting the mobile defense we present less remunerative targets. But lack of troops is your problem in defense.

QUESTION: *Lt Col Gallagher:* What are we planning against, the nominal missile or the 40 KT?

ANSWER: *Lt Col Magruder:* Well, actually, you are getting a little beyond the scope of this problem. But we don't even discuss thermal weapons at this school; if they hit us then we don't have too great a problem. Remember seeing that helmet yesterday? Well, once we are dead you can't kill us any more. We must keep at a yield which is within our utilization powers. Our dispersion will dictate the size of our weapon. So actually, Col Gallagher, I can't give you a concrete answer there.

QUESTION: *Lt Col Gallagher:* One last question and I'll sit down. Between battalions, what is the minimum distance recognized as safe and still allowing the enemy to have the capability to drop the 20 KT missile in between them?

ANSWER: *Lt Col Magruder:* About 5,000 yards.

Section III. BCT PERIMETER DEFENSE

MAJOR CHARLES D. FOLSOM
Battalion Tactics Committee

Frequently in military operations units may be required to conduct a defensive action while separated from other friendly units. This may occur when a unit is on a separate mission, when operating as a strongpoint in mobile defense, when cut off from friendly forces by enemy action, or when terrain restrictions such as woods, jungles or mountains prohibit contact between units. Such situations will be more common in war where atomic weapons are used since units will habitually fight separated from each other to avoid mass destruction. Under such circumstances the defending unit must deny the enemy the opportunity to attack an open flank. The perimeter defense or variations of it frequently offers the best solution. In a perimeter defense a unit is disposed to defend against attacks from all directions simultaneously. A battalion combat team charged with organization of a forward strongpoint in mobile defense usually will adopt a perimeter type defense.

When the battalion commander establishes a perimeter defense he disposes the bulk of his force to form a perimeter (main line of resistance) and positions an adequate reserve to provide depth. The perimeter consists of a series of mutually supporting platoon positions organized to take advantage of observation and fields of fire afforded by commanding terrain. Natural obstacles, such as rivers, swamps and lakes may be used to strengthen the defense from a given direction and allow the defender to concentrate his forces on the more likely avenues of approach. All elements and installations of the battalion are normally located within the perimeter.

In organizing a battalion perimeter, the fundamentals of defense are applied to the maximum extent practicable. Considerations for the location of boundaries and limiting points are the same as for other types of position defense.

The Infantry School, in developing its portion of the mobile defense doctrine, has integrated several problems into the program of instruction at battalion level. One of these is a terrain exercise entitled, "BCT as a Strongpoint." This problem was tested by employing a BCT of the Combat Training Command on the terrain. Upon completion of the test, the problem was rewritten to incorporate the lessons learned. The student, acting as the BCT commander, is given the following information: An Aggressor force moving north is believed capable of reaching Road Junction X (Figure 28) in approximately forty-eight hours. The 10th Infantry Division has been ordered to establish a mobile defense of a 25 mile wide area south of COLUMBUS. The 86th Infantry has been ordered to establish the general outpost, while the 85th and 87th Infantry Regiments have been ordered to organize and defend battalion strongpoints in the forward area of the division sector. The 2d Battalion, 85th Infantry, will organize a strongpoint 12,000 yards to the east and the 1st Battalion, 87th Infantry, will organize a strongpoint 10,000 yards to the west. The BCT commander, located on Hill 521, receives the regimental defense order, pertinent extracts of which follow:

"25th FA Bn direct support 85th Inf
"Co A, 41st Engr C Bn supports 85th Inf
"1st Bn (BCT 1)
Attached: 1st Plat Hv Mort Co
1st Plat Tk Co
I&R Plat
1st Plat, Co A, 41st Engr C Bn

Organize, occupy and defend strongpoint to include Hill 521 and prevent enemy use of HOURGLASS—FIRST DIVISION Road complex. Conduct surveillance in designated area.

Allocated three (3) 105-mm how barrages."

How does the commander organize the strongpoint to accomplish his mission? In making his plans for defense, he must visualize primary platoon positions, locations of

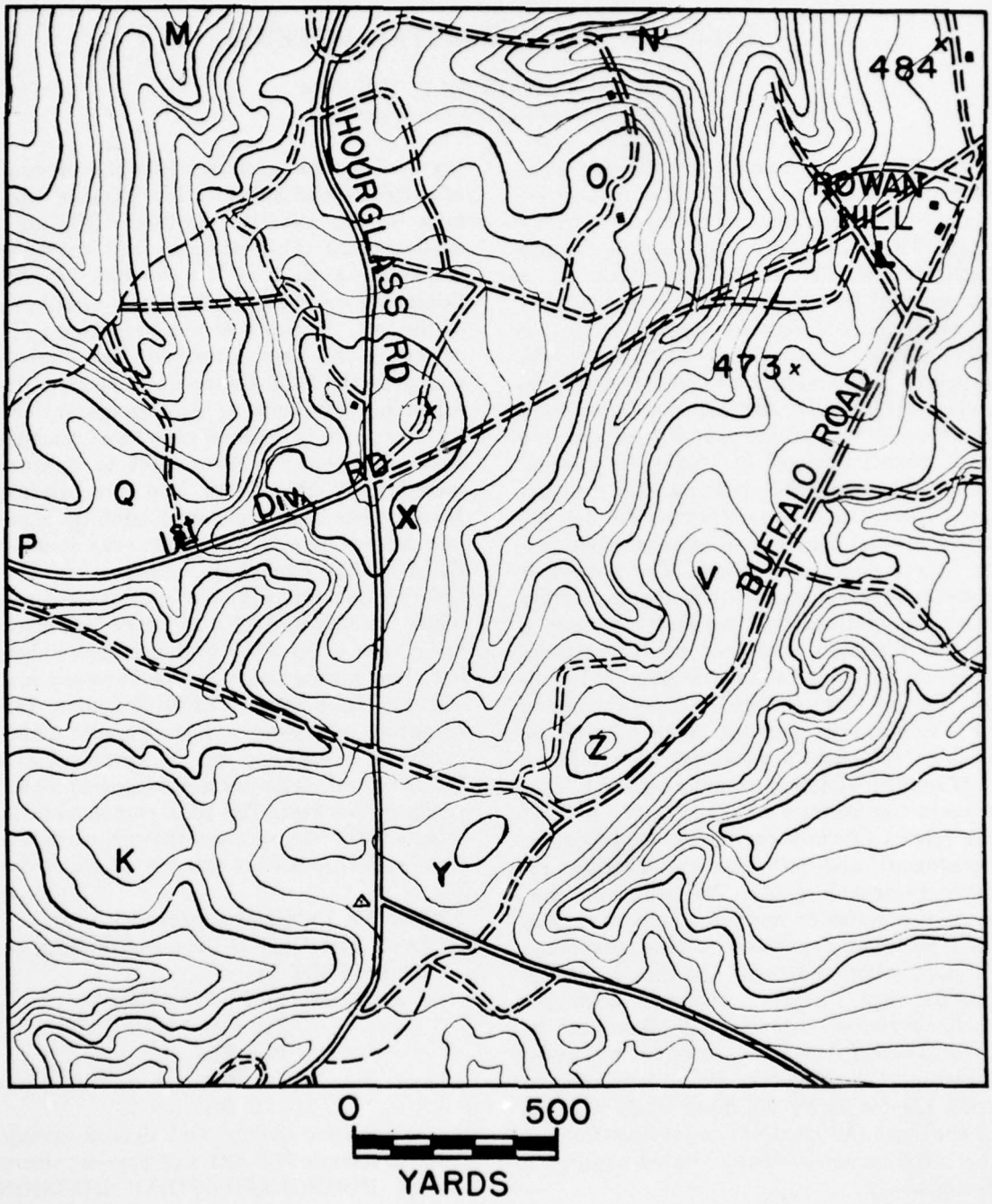


Figure 28. Situation map.

boundaries and limiting points, missions and locations of all weapons, and organization of the assigned area of surveillance encompassing the strongpoint.

A solution to the organization of this strongpoint is as shown in Figure 29.

Since Hill 521 dominates the area, the defense is centered on this terrain feature. The commander realized the requirement for defense against an enemy attack from any direction, with primary consideration to the southern portion of the perimeter to meet

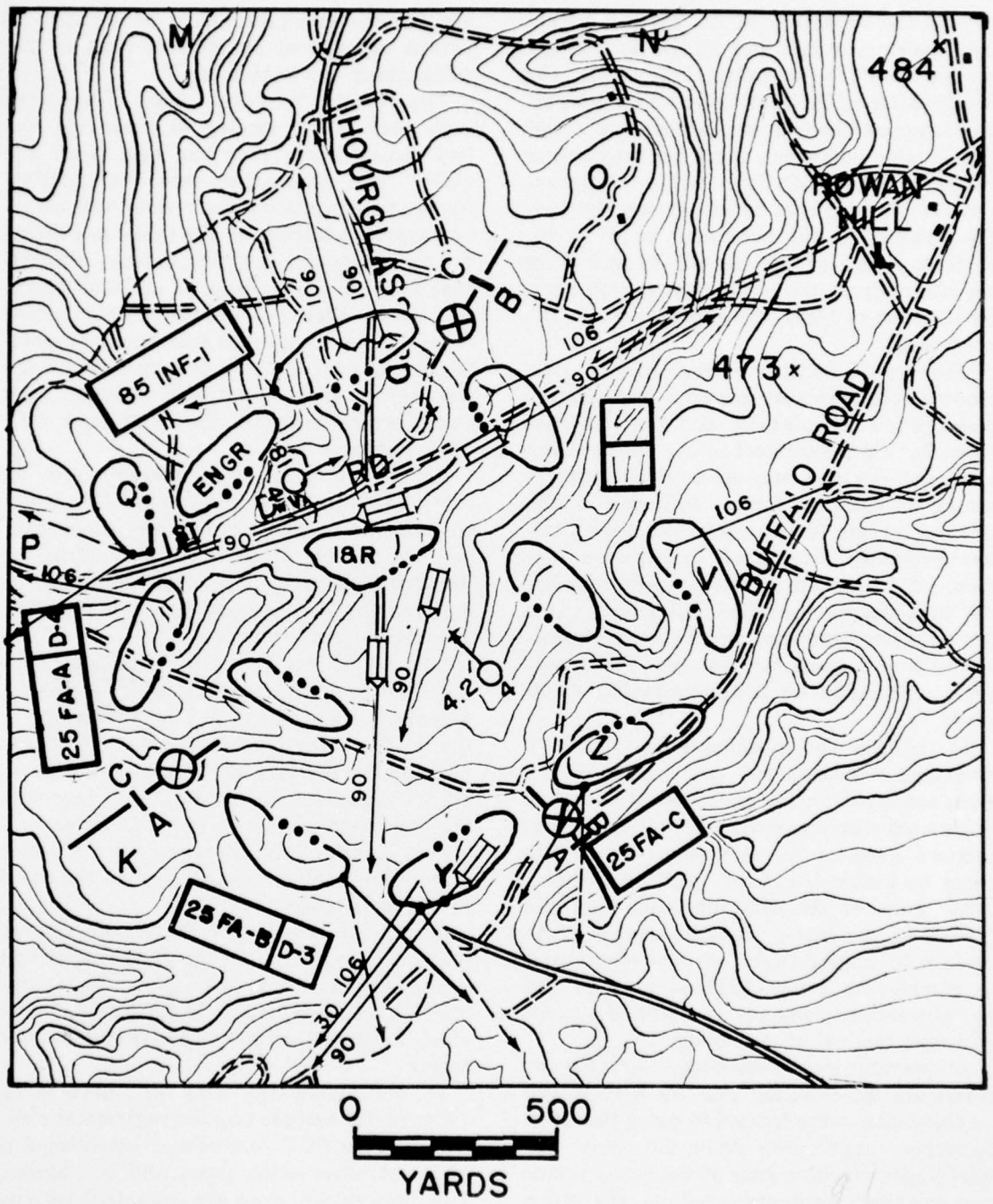


Figure 29. Solution map.

the expected initial attack, and to the east and west because of the excellent avenues of approach from these directions. The most dangerous avenues of approach to Hill 521 are along RED DIAMOND Road, HOURGLASS Road from the south and north, FIRST DIVISION Road from the west and from ROWAN Hill to the east. From a study of the map and terrain, the BCT commander recognized the desirability of defending all the terrain features which control these approaches; however, he decided that it was

beyond the capability of his force to establish a perimeter in which all the dominating terrain would be occupied. Conversely, the organization of Hill 521 alone would not permit adequate depth in the defense and would not provide sufficient space for supporting weapons and installations within the perimeter. He decided that by employing eight rifle platoons on the perimeter he could include the high ground at W, Y, and Z on the south, Q on the west, and the hill at V on the east to block the approach from the northeast.

This would leave a reserve of one rifle platoon, the engineer platoon, the pioneer and ammunition platoon, and the I&R Platoon. During the conduct of the defense, any units not engaged may be used as counterattack or blocking forces. Inclusion of the selected terrain features provides the battalion perimeter with good observation and fields of fire in all directions. Additionally, the organization provides sufficient space for reserves, command and logistical installations and supporting weapons. The frontage of the perimeter is approximately 4,500 yards.

In locating the machine guns, the BCT commander determined that some of the guns employed on the perimeter would have to be sited singly to cover adequately the numerous avenues of approach. Since this could be accomplished by splitting the machine guns of the rifle platoons, and the LMG's of the heavy weapons company, he decided to employ these weapons singly and to employ the heavy machine guns of the heavy weapons company in pairs, the more desirable method of employment.

All machine guns were sited to provide the maximum interlocking, grazing fire. Heavy machine guns were located to cover the more dangerous approaches from the south and west. Light machine guns of the heavy weapons company were employed on the other most likely avenues of approach.

The barrages were placed to cover the defiladed areas of the more dangerous approaches. Although barrages are priority missions, the BCT commander may find it necessary to alter these priorities to meet enemy attack from varying directions. Fires are flexible and plans must be detailed to permit massing of all indirect fires at any point along the perimeter.

The 106-mm recoilless rifles of the antitank platoon are located in front-line platoon areas where they can best cover the major tank approaches into the position. From these positions, their fires will be coordinated with those of the tanks to provide the most effective antitank defense. Consideration is given to siting all antitank weapons where they can engage enemy armor from the flanks or rear; this may be accomplished by forcing tanks to turn to avoid the fires of one or more antitank weapons, then engaging the tanks in flanks or rear with other antitank fires.

Tanks are positioned laterally and in depth throughout the position. From these positions, the tanks are mutually supporting and are capable of reinforcing the fires of the front-line units. The tanks add depth to the antitank defense and are available for use in counterattacks.

The 4.2 mortar firing position is in defilade and is far enough inside the perimeter to permit the platoon to fire a barrage in the northern portion of the area. From this position the mortars are able to fire concentrations all around the position; however, the minimum range of the 4.2 mortar restricts close-in concentrations on the south to approximately 300 yards beyond the main line of resistance.

The firing position of the 81-mm mortar platoon permits the firing of barrages and concentrations in any area along the perimeter. This position is also in defilade and provides cover and concealment for the mortar crews.

In organizing the area of surveillance (Figure 30) assigned by the regimental commander, the BCT commander established a series of observation posts and roadblocks. The observation posts are organized as outguards varying in strength from a few men to a reinforced squad. Forward observers for artillery and mortars are located in these observation posts to insure maximum fires at long range. The mission of the observation posts is to provide early warning of enemy approach, prevent close observation of

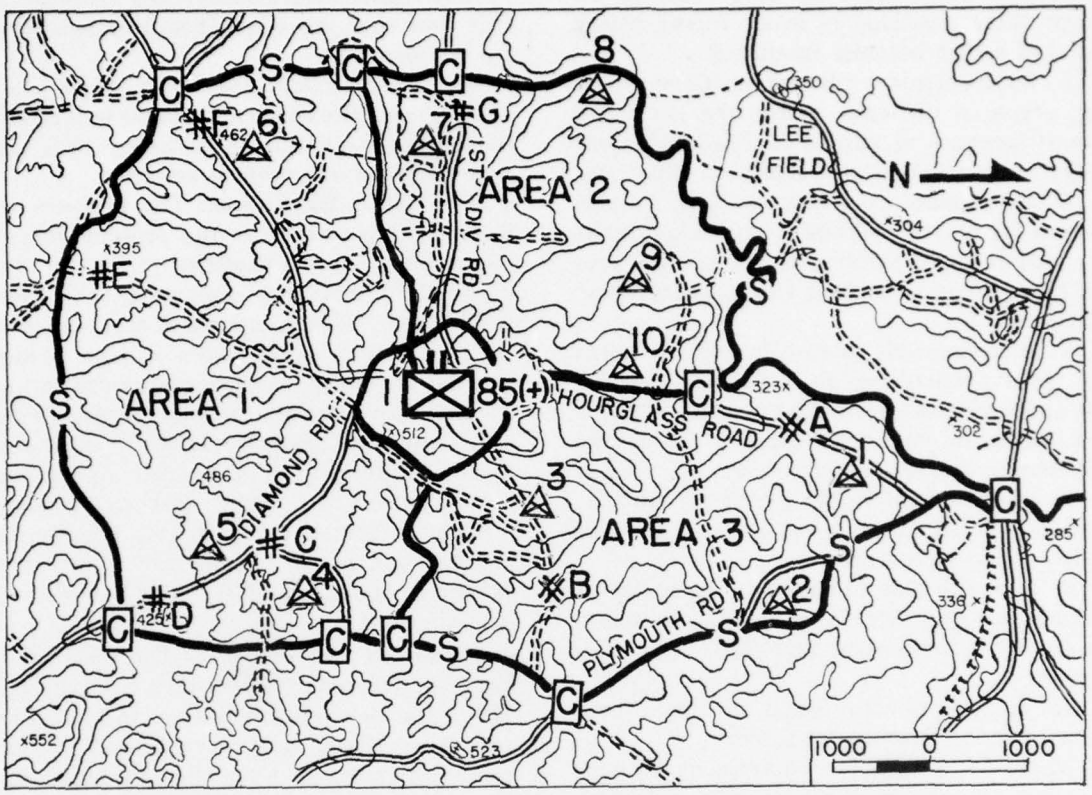


Figure 30. Area of surveillance.

friendly positions, and to delay, deceive and disorganize the enemy.

Roadblocks and contact points are established on routes leading into the strongpoint. Contact patrols, both foot and motorized, must be utilized to insure more effective surveillance of the entire area. The I&R Platoon, because of its mobility and excellent communications, is well suited for this type mission. Army aircraft will be requested to supplement the efforts of the patrols and observation posts, particularly during early daylight hours to locate infiltrators who have entered the area during hours of darkness.

Observation posts and roadblocks will be withdrawn at night to positions nearer the perimeter. Communications are established with each element operating in the area of surveillance, and the surveillance is coordinated and controlled at battalion level.

Based on the field test and continuing study of BCT perimeter type defenses, it is concluded that the following points are applicable to the organization of a battalion strongpoint in the forward defensive area of a mobile defense and to other reinforced battalion perimeter defenses:

1. Perimeter frontages of approximately 4,500 yards may be defended in open terrain. Sufficient terrain must be included in the position to provide depth and permit flexibility in the defense when attacked by strong enemy forces. Crowding of installations within the position will result in excessive losses to massed enemy fires.

2. Critical terrain on the MLR and within the position must be organized and should be occupied to the extent that forces are available.

3. The part of the position most likely to receive the initial attack should be most heavily defended.

4. As a minimum, all portions of the MLR not occupied in strength should be partially

occupied. Units must be designated to occupy these positions in event enemy attack in that sector becomes imminent.

5. Supplementary platoon positions should be prepared in depth within the perimeter on all avenues of approach. These positions may be occupied to meet changing situations.

6. Supplementary positions should be prepared for all crew-served weapons and tanks to permit rapid shifting to various avenues of approach so as to meet an attack from any direction.

7. It is desirable to employ machine guns in pairs particularly on dangerous avenues of approach; however, they must be employed singly in many instances to cover the numerous avenues of approach.

8. Vehicles kept in the perimeter must be reduced to the absolute minimum consistent with tactical requirements.

9. It is desirable to have landing facilities within the perimeter to permit landing and take off of helicopters and fixed wing aircraft.

10. An Air Control Team should be provided for the strongpoint force.

Modern war with its requirement for separation of units makes continous defensive fronts unlikely. The perimeter type defense provides a solution to the problem of open flanks.

QUESTION: *Maj Barnum, Adjutant General's School:* You were referring to the fact that the minimum of vehicles would be within the perimeter. Are you considering that your organic vehicles will be outside of the perimeter?

ANSWER: *Maj Folsom:* Most of them. When I say the minimum vehicles, let's limit that to command vehicles, communication vehicles, and vehicles necessary to move weapons. The 2½-ton trucks that are normally with the battalion trains should be out of the position even though the battalion is operating at a great distance from the regiment. We want them completely out of this position and back with regiment where they will be dispersed because of enemy atomic capability.

QUESTION: *Capt Sanderson, Army Aviation School:* The aircraft that will be employed there in this type of defense—will it be furnished by regiment or division?

ANSWER: *Maj Folsom:* We visualize at this time that the aircraft will be furnished by division.

QUESTION: *Capt Sanderson, Army Aviation School:* The concept that this will be employed under—will it be the new ATFA concept or under our present set-up?

ANSWER: *Maj Folsom:* This problem has been written to include the present organization but it can be modified to fit any type organization that they come up with in these ATFA tests. This is capable of working with the nine battalions that we now have. It may also be employed on any reorganization of the infantry division. As you can see, the requirement for transportation to motorize these infantry battalions is quite mandatory.

QUESTION: *Lt Col Baker, Artillery School:* In connection with this reserve, do you envision putting the battalion executive officer in command of it? Just how do you plan to use it?

ANSWER: *Maj Folsom:* The responsibility for organization of the reserve area should be delegated to either the battalion executive officer or the headquarters company commander. Even though the heavy weapons company has considerable personnel in the reserve area, the heavy weapons company commander will still be busy on the main line of resistance putting his weapons in. We don't think that he is a good man for it. Either the battalion executive officer or the headquarters company commander should be told to organize that reserve area. Now for who will command the counterattack force: the battalion executive officer, the headquarters company commander, maybe one of the 3's, maybe one of the platoon leaders. It depends on the amount of force you want to employ.

QUESTION: *Lt Col McKean, Ordnance School:* I am still not clear on this vehicle business. The statement has been made that all these battalions should be motorized. But when we organize into these perimeter defenses we move all these vehicles off somewhere. Now that would be quite a stock pile of vehicles somewhere in some area. Another point is that this battalion is supposed to move to help in the counterattack effort. What do we do, move vehicles up to this area

to load up and then move out again when we only have the command vehicles there?

ANSWER: *Maj Folsom:* The vehicles that we visualize as having to be employed to move forces will be kept outside of any strongpoint across the forward defensive area, possibly in strong points in the striking force area. Vehicles may be retained within the strong point position itself but certainly across the forward defensive area we want to get rid of those vehicles to the maximum extent possible, and we visualize dispersing them. They may well be dispersed in the striking force area also. But the vehicles should be dispersed wherever they are and certainly we will have to call back for transportation when the time comes to move. If we were required to have vehicles in this perimeter area, you can see how congested it would be. In an emergency, we could possibly disperse the vehicles within the area of surveillance that we have been given and certainly when the position is organized and an enemy threat is not yet prevalent we can disperse the troops within that area too and bring them back only during hours of darkness or when enemy attack is imminent.

Section IV. NIGHT OPERATIONS

LT COL HARRY A. DOSCH, JR.
Regimental Tactics Committee

The value of night operations has been a controversial subject for many years not only in our Army but in the armies of other nations as well. It is the purpose of this discussion to set forth the background and current thinking and teaching on this subject at The Infantry School.

Early in World War II and in the beginning stages of the Korean War the lack of training of the American soldier in night operations became so apparent that enemy forces quickly capitalized on this weakness. Whether we like to admit it or not, the United States Army has preferred to fight its battles during daylight hours when the maximum benefits can be gained from air superiority, massed supporting fires, and mobile forces. In de-emphasizing night operations in our training, in the past, we have ignored the great and special advantages inherent in this form of combat. Some of these are: surprise; low casualties as compared to daylight attacks, particularly when moving across difficult terrain under observed enemy fires; and the psychological advantage which is inherently the attacker's in the night operation.

During the latter phases of World War II our units began to use searchlights and other night illuminating devices extensively and to great advantage in their combat operations. In one of the final battles of the campaign in the Philippines, the 43d Infantry Division attacked the Japanese in the IPO DAM area of Luzon in a night attack which included a double envelopment. This attack, which lasted for ten days and nights, was supported by elements of the 227th Searchlight Battalion which used both direct and indirect lighting techniques to maintain high visibility for the attacking troops. Once the troops had experienced the full benefits of attacking at night, they preferred this form of fighting to all others. That this battle was a complete success was attributed in large measures to the high degree of proficiency which that command had attained in night combat.

Again, in Korea the value of night operations was brought out early in the campaign when the Reds initiated many major attacks under cover of darkness. The lessons we learned in the dark days of 1950 were bitter ones. The communist troops operating at night with very little fire support and with inferior equipment outmaneuvered and outfought American troops whose commanders and staffs were reluctant to initiate plans for any operations which required offensive action after twilight.

As the increased importance of night operations became apparent, additional emphasis was placed on night training throughout the Army. This emphasis on training in

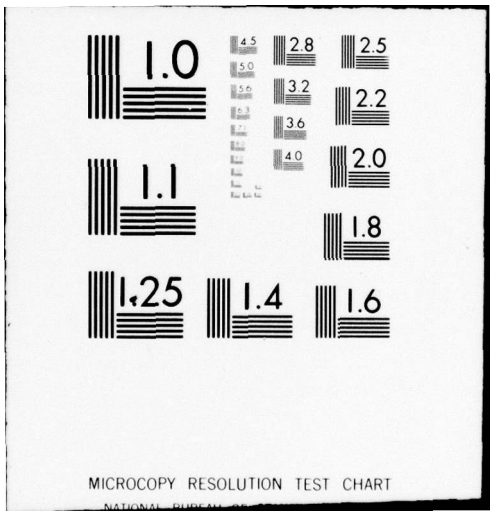
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night operations must continue in our schools, our training centers, and our units. This training should cover not only individual and small unit training but also training for commanders and staffs of large units, for as a night operation increases in size, the problems of command and staff multiply greatly.

In this discussion I should like to mention briefly the effect of new weapons and equipment on night operations. With the introduction of the tactical use of mass destruction weapons, operations at night and during other periods of low visibility become not just a supplement to our tactical doctrine but a vital and essential part of it. In the rapid moving warfare of tomorrow the commander who can best adapt himself and his troops to the tactical facts of life in a nuclear age will emerge victorious. This commander will recognize the need for concentration in time as well as space so that he may mass his forces to defeat the enemy at times and places of his own choosing. To achieve this concentration in time he must be capable of rapid movement from one area of combat to another. He must utilize all available means of transportation, wheeled and tracked, and, of course, the airplane and helicopter. This latter vehicle is destined to play a vital role in tomorrow's war.

In contemplating the use of modern concepts and new techniques, one factor becomes apparent. To be successful in modern war the commander must achieve surprise. To achieve surprise, detailed attention in his operations plans must be given to deceptive measures. The deception plan utilizes fully the advantages offered by darkness and periods of low visibility for troop movements and combat operations. While most persons today apparently think of the helicopter as a daylight vehicle, there are occasions when this flexible carrier can be used in night operations. In contemplating the use of the helicopter in his plans, the commander may consider its role in night operations and under conditions of limited visibility to reduce the effects of enemy ground and air fires and to make it more difficult for the enemy to locate the main landing.

It should be apparent that the use of the helicopter can increase greatly the scope and effect of night operations, as well as facilitate the deception plan of the commander.

In line with the continuing emphasis on night operations, many of the problems conducted here at The Infantry School stress the planning and conduct of night combat. Approximately 40% of the tactical training accomplished by our basic classes is devoted to this subject. Of equal importance is the emphasis now placed on night operations in the instruction presented to our advanced students. Several of the problems at the regimental level given to advanced classes contain, in part, reference to and instruction in night operations. Possibly the best example of this type is a problem initiated this year entitled, "Regiment in Day and Night Tactical Operations," Infantry School Problem Nr 2353. This problem, which was first conducted from 2-4 Feb 55, for the Regular Advanced Class, was designed to provide the student practice in the applications of the fundamentals of offensive combat with an actual infantry regiment in continuous night and daylight operations under conditions of Atomic Warfare. The exercise, while stressing the application of tactical fundamentals in continuous operations, provided concurrent training in fire support planning, night and day motor movements, staff procedures, communication systems, air-ground operations, troop leading procedures, CP displacement, and coordinated action of combined arms.

To support this problem, Combat Training Command, here at The Infantry School, provided the 29th Infantry Regiment with complete TOE and a small mobile Aggressor force armed with machine guns, tanks, searchlights, and a variety of noise makers, trip flares, and other simulators. The students of the Regular Advanced Class provided the officers of the regiment from regimental commander to platoon leaders. Students also furnished a limited number of umpire personnel both to director headquarters and to the regiment.

On the day prior to the problem, the stu-

dents were briefed on the exercise. They then joined their units and organized for the exercise. During that night the regimental commander, his staff and subordinate commanders and staffs acquainted themselves with the general situation and prepared their plans for movement to the field the next morning.

At 0930 on 3 February, the student regimental commander received a division warning order which directed him to attack with his regiment during the night 3-4 February, seize a series of widely separated battalion objectives, reorganize during darkness, and continue the attack at daylight.

Throughout the exercise neither force possessed air superiority.

The use of atomic weapons and atomic capabilities was played for both sides throughout the problem.

Helicopters and light fixed wing aircraft were available for use by commanders and key staff officers for reconnaissance. Unfortunately there were insufficient helicopters based at Fort Benning available for troop movements. The use of helicopters for troop movement would have added much to the exercise.

Shortly after receipt of the division order, the regiment moved by vehicle to four assembly areas previously reconnoitered and selected for maximum dispersion and protection from nuclear attacks yet permitting adequate control by the Regimental Commander. As the units closed in their assembly areas, the student commanders and their staffs were working out detailed plans for the attack which was to take place during the night of 3-4 Feb. Concurrently, with this planning, limited patrol action and other reconnaissance was initiated to determine size, location, and strength of enemy forces in contact as well as to reconnoiter routes forward to the line of contact.

Throughout the afternoon and early evening of 3 February, plans were completed, orders were issued, and limited reconnaissance conducted by subordinate units. At 2200 hours, the regiment moved by motor and on foot to forward assembly areas. Here, after a minimum period for reorganization the regiment attacked with three battalions abreast and a simulated West German battalion in regimental reserve. Immediately the difficulties of night operations were pointed up to the student commanders. Communications became a major problem. Once he had committed the regiment, the regimental commander spent most of his time trying to maintain contact with and some semblance of control over his command. Contact was lost between front-line units. Some units moved far ahead of others and thus exposed flanks. These and many other problems presented themselves to the student officers. The lapses and errors on the part of the students were many. Possibly it was more by coincidence than design that the force reached the battalion objectives and consolidated forward of them in order to reduce vulnerability to enemy atomic attacks. Only a portion of the regiment was able to continue the attack to the southeast at daylight. The problem was terminated shortly after daylight. I should make it clear that we did not expect the students to conduct a perfect night operation. What was intended was to instill the student with the fundamentals and techniques of night combat operations. These can only be perfected through practice in unit training.

The problem which has just been discussed presents generally the teaching fundamentals covering regimental size units in night combat which, when properly applied by commanders and staffs, will produce successful night operations under modern conditions. We feel that this exercise is one of the more important teaching vehicles which we present at The Infantry School. It causes the student to realize the importance of continuous operations as a means of furthering mobility and minimizing the effectiveness of enemy atomic weapons. It brings out clearly the marked differences in time and space factors between day and night operations. It also causes the student to appreciate fully the training obstacles which he must overcome in his unit to cope with the problems of

coordination and control during periods of darkness. It is contemplated that this problem will be expanded in the coming year to a full fledged two-sided maneuver involving two regimental combat teams with complete equipment and all necessary supporting units required to permit sustained operations. It is planned to lengthen the exercise to four full days in order to give the students the opportunity to operate around the clock, particularly at night, under a variety of different situations both in the attack and defense. All of the latest devices including troop carrying helicopters, battlefield surveillance teams, battlefield illumination, infrared equipment and other electronic devices will be introduced as they become available in order to make this exercise as realistic as possible and at the same time introduce the latest in battlefield equipment and techniques to the student.

To insure that proper stress is placed on the subject of night operations here at The Infantry School, the Tactical Department is currently reviewing all of its problems with a view towards emphasizing those portions which pertain to planning and conduct of operations under conditions of low visibility and darkness. Additional requirements will be incorporated where applicable into existing problems and as required new problems covering this important subject will be presented to our students.

In this brief period, we have endeavored to stress the value which we attach to training in night operations, not only in individuals but also to commanders and staffs at all echelons.

We have pointed out that night operations are essential in an age of atomic warfare. The increasing need is for operations at night and during periods of low visibility as a means of minimizing the effect of enemy atomic weapons. By night operations we refer not only to the night attack but also to the movement of troops and supplies as well. It is true that combat during the hours of darkness does present major problems not present in daylight operations, particularly those of coordination and control, but night operations will pay dividends to the commander who plans in detail and makes full use of the special advantages inherent in night combat.

Section V. EMPLOYMENT OF THE BATTALION ANTITANK PLATOON

CAPTAIN GRACE G. THOMAS, JR.
Platoon Tactics Committee

The employment of the new antitank platoon of the Infantry battalion is of interest to all Infantry officers. During the 1954 Infantry Instructor's Conference, the Weapons Department presented various characteristics of the 106-mm recoilless rifle. (Figure 31) Since that time, this weapon has been adopted as the primary antitank weapon organic to the Infantry battalion. The recoilless rifle platoon of the heavy weapons company has been renamed the antitank platoon. The 105-mm recoilless rifle and the 75-mm recoilless rifle have been deleted from the TOE and the 106-mm recoilless rifle has been standardized as the principal weapon of the antitank platoon. The organization of the platoon has changed considerably. (Figure 32) The new platoon is characterized by excellent mobility and communications.

The mission of the antitank platoon since the adoption of the 106-mm recoilless rifle is, primarily, providing antitank protection for the battalion, both in offense and defense and, secondarily, providing close and continuous support to the rifle units in the attack and supplementing the fires of the other weapons on the main line of resistance in the defense.

The platoon should be employed in general support in the attack when possible. This platoon is the battalion commander's organic antitank protection and, if at all possible, he uses it to support the entire battalion. Due

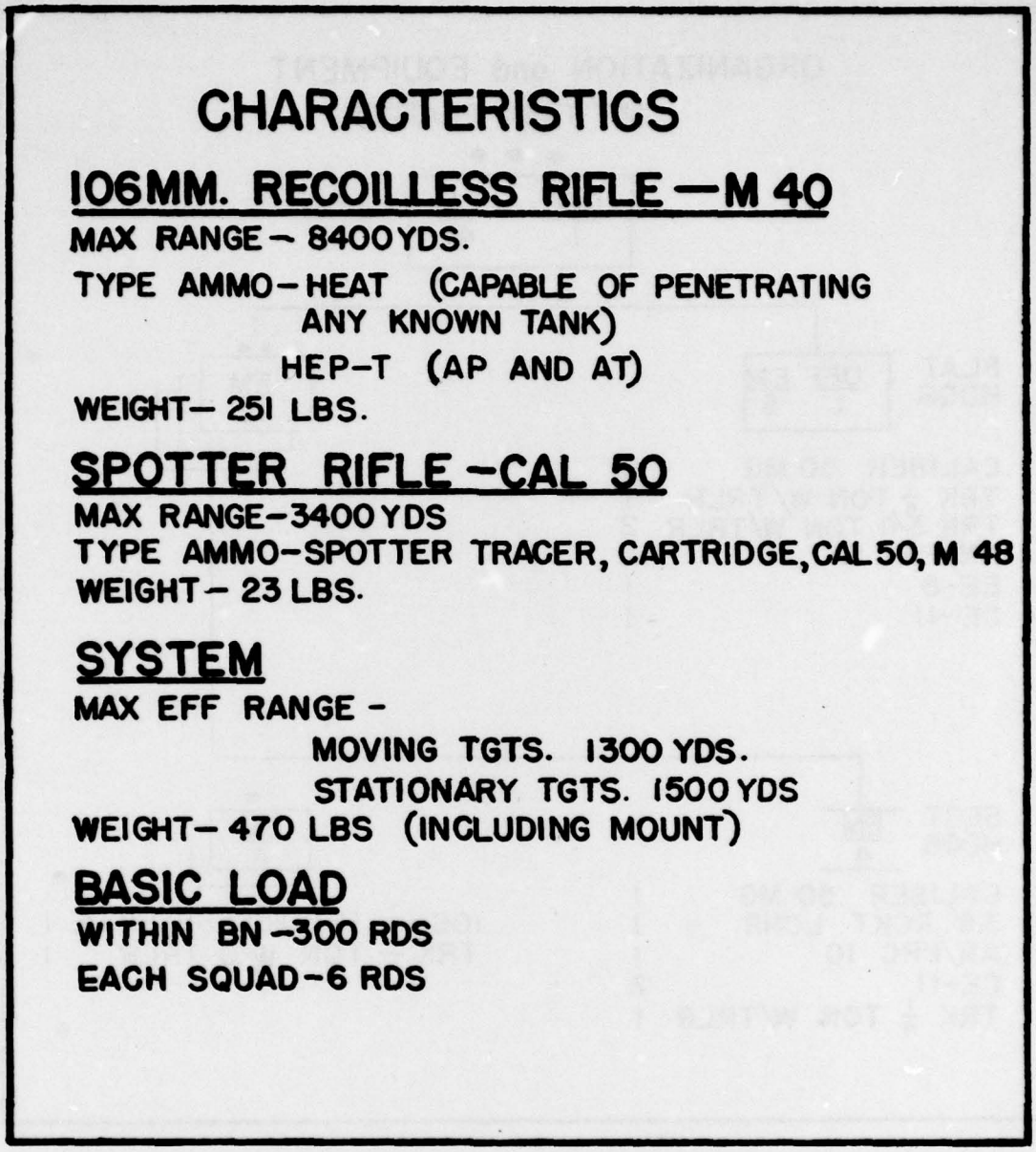


Figure 31. Characteristics of 106-mm rifle.

to the platoon's excellent mobility and communications, it can normally meet the requirements for general support. By employing it in this manner, we also obtain more flexibility, better control, ease of ammunition resupply, and continuity of fire during displacement in the attack.

When employed in this manner, the platoon must be able to accomplish its primary mission of covering all likely tank approaches within the battalion zone of action. If the platoon or a portion of the platoon is used to cover likely armored approaches within the battalion zone of action, then it is providing antitank protection to the entire battalion and is, therefore, being used in general support.

In order for the platoon to accomplish its secondary mission in a general support role, it must be able to observe and mass its fires

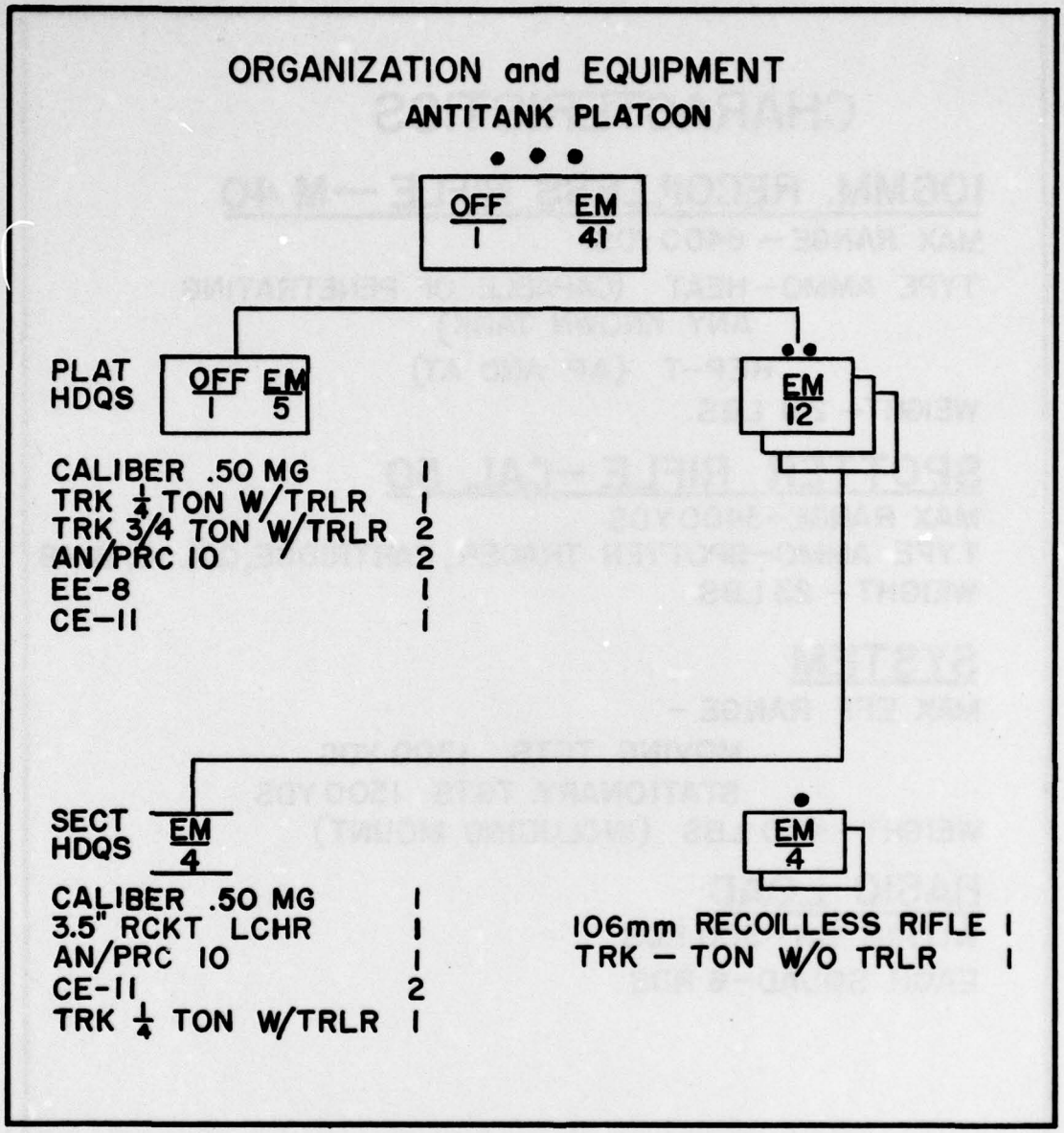


Figure 32. Antitank platoon.

on the major portion of the battalion's initial objectives and the critical terrain within the zone. This is a secondary mission, however, and is not a requirement for general support unless there are no likely tank approaches existing in the battalion zone and the platoon or portion of the platoon is being used solely in its secondary mission.

Figure 33 shows a schematic of a battalion zone of action with the direction of attack being to the north. The left antitank section is in a position to cover the likely armored approach running south along the left of the battalion zone; the center section is in a position to cover the likely armored approach running diagonally across the battalion zone; and the right section is in a position to cover the road running off into the adjacent battalion's zone of action. All three sections are being used to provide antitank protection to the battalion. Therefore, the entire platoon is being employed in general

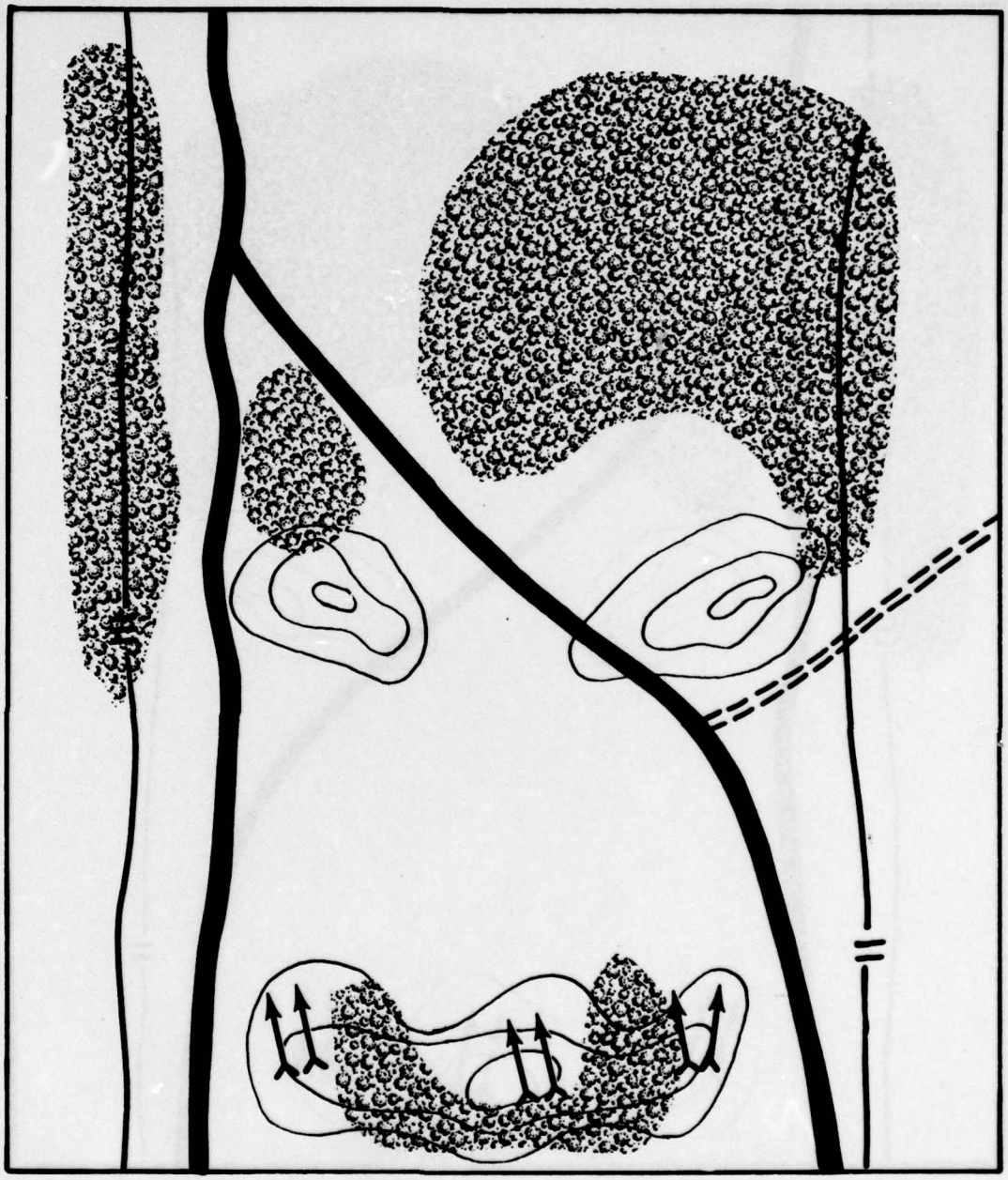


Figure 33. Employment of platoon in the attack (general support).

support. The center section is in a position from which it can also accomplish its secondary mission of providing close and continuous support to both the attacking rifle companies. The primary mission takes preference, however, and the section would be given a principal direction of fire down the armored approach in the center and would fire on the battalion's initial objectives on order.

There are situations where general support is not possible and the battalion commander must revert to the other two methods of utilization: direct support and attachment. Figure 34 shows the same battalion zone of action with only two likely armored approaches into the zone. If the left and center antitank sections can adequately cover these two approaches then it is logical to as-

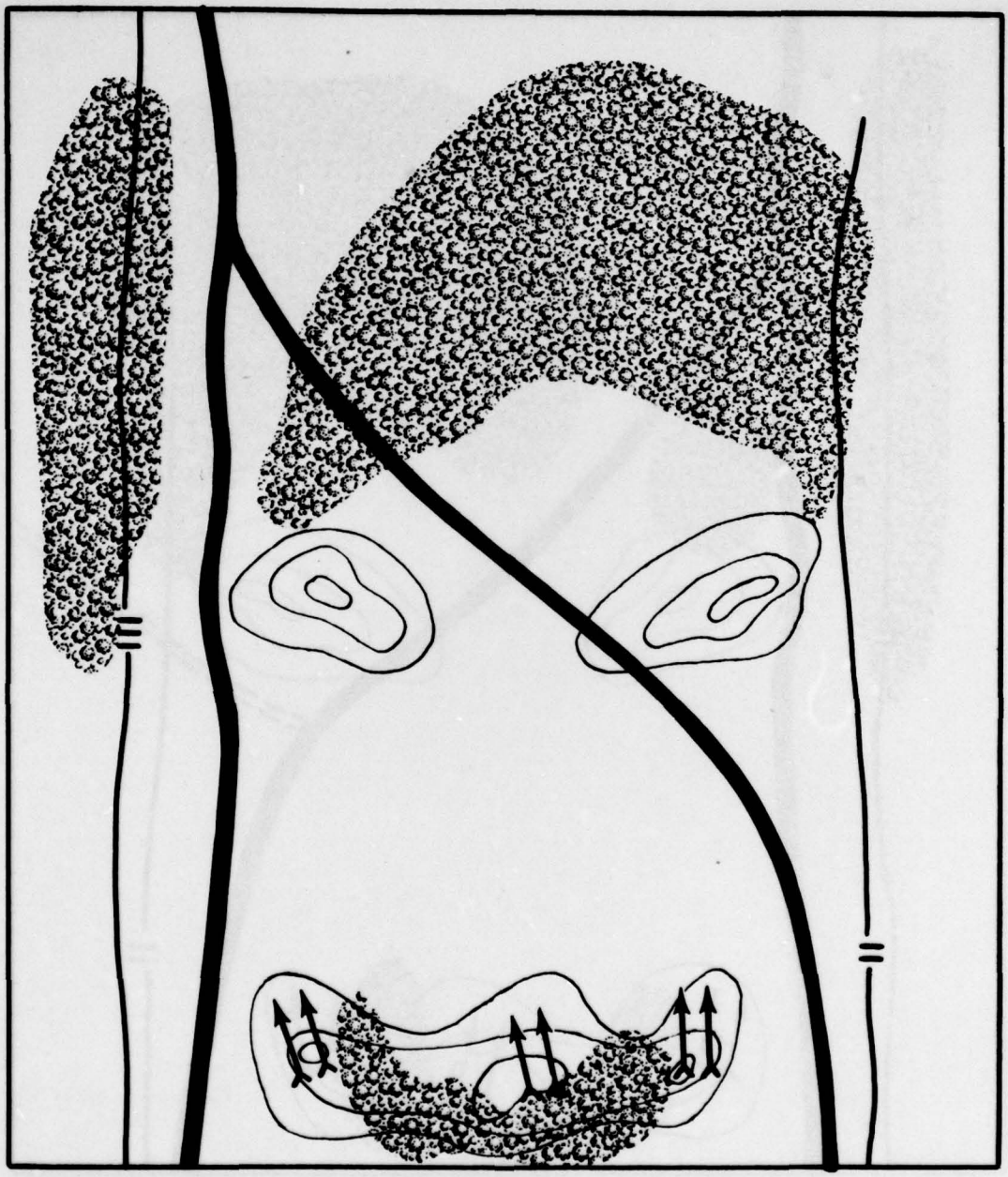


Figure 34. Employment of platoon in the attack (direct support).

sume that the right section will be employed in its secondary mission. Due to the heavily wooded area just to its left, the right section cannot observe and fire on the left battalion objective. Hence, this section could be employed in direct support of the attacking rifle company on the right. The section would be placed under the control of the section leader.

Attachment will be used only if no other method of utilization is feasible. In operations where control is so decentralized that the battalion commander cannot control all or a portion of the platoon, attachment might be required. Such operations might be: fighting in built-up areas; movement to contact; and initial stages of airborne operations. In such situations, the platoon or por-

tion of the platoon would be attached to the rifle companies and would be under control of the rifle company commander.

The 106-mm recoilless rifles should not be placed in static positions to support the attack. Numerous alternate positions should be located for each weapon to enable rapid movement of gun and crew from one position to the other. The 106-mm recoilless rifle is a large caliber, direct fire weapon and, as such, is a prime target for enemy crew served weapons. Due to the backblast of the weapon, its position can be picked up rather easily by enemy observers. For this reason, we want the weapons to be capable of moving to alternate positions and to be mutually supporting. Mutual support is obtained by employing the rifles by section when possible. Another important reason for using mutual support and numerous alternate positions is to increase the possibility of flanking and oblique fire on hostile armor. This type of fire is most effective due to the thinness of tank armor on the sides and in the rear.

Whenever possible, positions that provide partial defilade for both gun and carrier are selected; however, when there is no cover available for the gun and carrier, the weapon may be taken off the carrier and employed on the ground mount. The vehicle is left in a covered and concealed position to the rear. Fields of fire must be clear forward of each position to preclude premature explosion of the rounds and the backblast area of the position must be located so that the minimum of dust and debris will be raised when the weapon is fired.

Coordination should be effected by battalion commanders of adjacent battalions for mutual antitank protection. In this event, it is also necessary to select firing positions that will permit fire on enemy armor in the adjacent battalion zones. In many situations, flanking and oblique fire may be more easily obtained by antitank sections located on the flanks of adjacent units.

How is the antitank platoon employed in the defense? Here, it is reasonable to assume that more armored threats will exist than in the attack. The enemy is moving forward and there is less cover and concealment for his armor than that available in the defense. The primary mission of providing antitank protection to the rifle units is the key for employment of this platoon in the defense. The battalion commander is going to use the antitank platoon so as to best fit into the antitank defense of the battalion. The greatest effect will be obtained by employing all three sections well forward in the battalion area whenever possible. This will provide for destruction of enemy armor as far in front of the main line of resistance as the range capability of the 106-mm recoilless rifle will permit. It will also enable the antitank platoon to accomplish its secondary mission of suppementing the fires of the other weapons along the MLR.

Figure 35 shows a battalion sector in the defense. There are three likely tank approaches into the front-line positions; one through the open area in front of the left company, one down the road in the center, and one through the open area in front of the right company. Figure 35 shows an antitank section placed to cover each of the tank approaches into the battalion sector. The rifles are placed somewhere in the perimeter of the front-line or reserve platoons to receive the added protection of the riflemen located in these areas. The rifles are employed by section so as to provide mutual support for one another for the same reasons we discussed in the attack. It is entirely possible that more likely tank approaches will exist than we have sections to cover. In such a case it may be necessary to split one or more sections and employ the guns singly.

Normally, the front-line battalion will have at least one platoon of tanks attached in a defensive situation. The tanks, with their longer range and greater mobility, will be used to provide the depth to our antitank defense. In a situation where no tanks are attached, the antitank section will have to be employed so as to provide this depth to our antitank defense.

Both rifles in the section are employed on the carrier when possible. If defiladed positions cannot be found for the vehicle, the rifle may be employed on the ground mount in a well dug-in position. There should be at least thirty yards between guns so that one

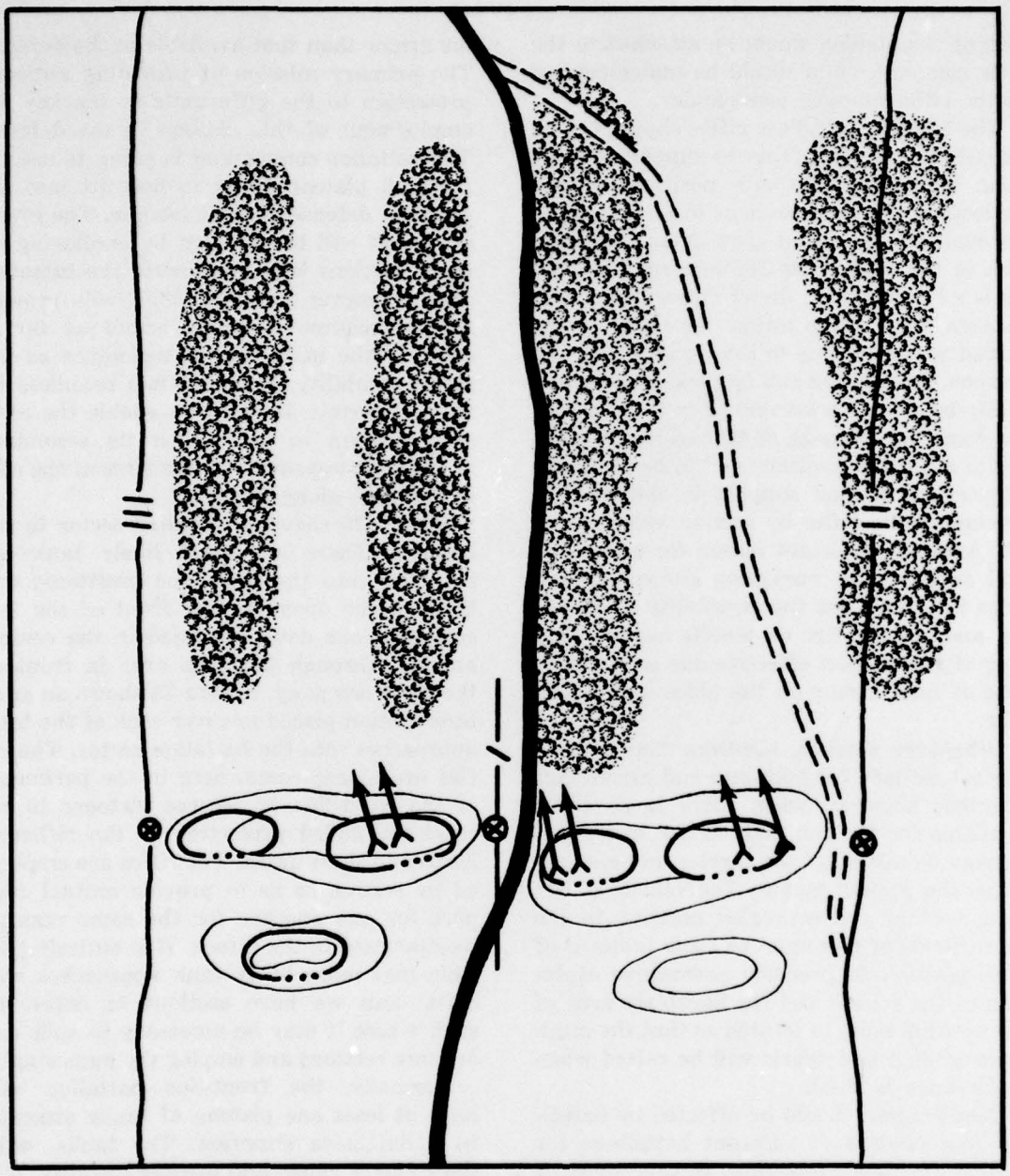


Figure 35. Employment of platoon in the defense.

incoming round will not knock out both weapons. We use this only as a guide figure to teach students proper dispersion between the weapons.

The 106-mm recoilless rifles take enemy armor under fire as soon as it comes within range. Hence, the primary positions are usually close enough to the center of the tank approach to allow the weapons to pick up targets as far out as possible. As hostile armor moves nearer the battle position, the possibility of getting flanking and oblique fire becomes greater. Therefore, alternate positions are picked near the flanks of the approach so that the weapons can be moved to fire flanking shots across the approach. Supplementary positions are picked to enable the rifles to cover other tank approaches.

When picking positions in the defense, we again must consider clear fields of fire and the backblast charasteristics of the 106-mm recoilless rifle.

Ammunition should be placed on position and should also be kept on the carriers to the rear so that resupply may be quickly accomplished. With the number of ammunition vehicles organic to the platoon and the ability of the rifles to obtain first round hits, ammunition resupply is not the tremendous problem that it might seem in either the attack or the defense.

With the new antitank platoon the battalion commander now has a great deal more antitank protection and additional firepower organic to his battalion. The platoon has excellent mobility and communications, and can be employed with more flexibility than the old recoilless rifle platoon. The primary mission of providing antitank protection is the first consideration in the employment of this platoon. However, when hostile armored threats do not exist in sufficient numbers, all or part of the platoon can be extremely effective in offering close and continuous support to the rifle units.

QUESTION: *Lt Col Clark, The Artillery School:* What is the purpose of the four .50 caliber machine guns in the platoon?

ANSWER: *Capt Thomas:* The purpose is to provide protection for the platoon itself and to have that extra firepower available if the platoon is operating somewhere where it doesn't have protection from the other units within the infantry battalion.

QUESTION: *Lt Col Clark:* It is not an antiaircraft weapon, then?

ANSWER: *Capt Thomas:* No, sir, it is not.

Lt Col Clark: I would like to pass on information to all of you in connection with that. Fort Bliss has taken the stand that the .50 caliber is no longer an effective antiaircraft weapon and has recommended that it be deleted from all of the antiaircraft units. They have also gone this far in their recommendations: they recommend that the ring mounts on all of our trucks be taken off, even in the Infantry division. That is the reason I asked the question whether it was an antiaircraft weapon or a close support weapon. They recommend that the .50s be replaced with .30 caliber machine guns in the antiaircraft unit. The M16 quad .50s are being done away with entirely, replaced by M42s, the dual .40s.

Section VI. RIFLE COMPANY OPERATIONS

CAPTAIN WILLIAM C. SIMPSON
Company Tactics Committee

At the end of the Basic Officer and Officer Candidate Courses the Company Committee of the Tactical Department presents a thirty hour field exercise on rifle company operations. It is designed to consolidate all of their previous instruction and to give them first-hand experience in meeting the varied situations which may confront rifle company leaders in day-to-day operations. The problem interlaces their previous instruction in tactics—supply, intelligence, communications, evacuation—techniques in use of weapons and stresses the importance of each in field operations. Since emphasis is on practical work, the situation is tactical throughout except for minimum periods of time for orientations and critiques. The students are assigned to fill all TO vacancies in the rifle company except for the company commander position which is filled by a committee officer. A student is not assigned as company commander because the course objective for participating classes is to prepare these men to be Infantry platoon leaders.

The problem consists of three phases: movement to contact; defense and night attack; and coordinated day attack. At the completion of each phase a critique is held. The company is then completely reorganized to give a maximum number of students an opportunity to gain command experience. The situations provide continuity, thereby making the problem a normal rifle company operation in spite of necessary administrative interludes.

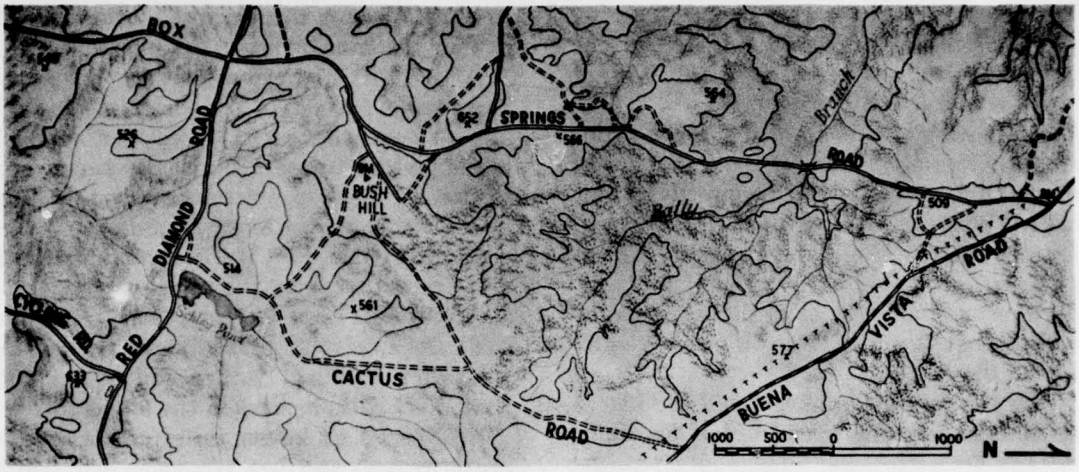


Figure 36. Initial situation.

MOVEMENT TO CONTACT PHASE

The problem begins at the junction of BUENA VISTA and BOX SPRINGS Roads (Figure 36). The initial situation indicates that the 1st Battalion, advance guard of 85th Infantry, crossed BUENA VISTA Road last night and now occupies an assembly area near the road junction. The battalion commander received orders to continue the attack to seize BUSH HILL, and he decided that Company A, the student unit, will be support company. A tank platoon is attached to Company A, and the force advances south astride BOX SPRINGS Road against scattered but stubborn Aggressor resistance which eventually requires commitment of the entire force to seize HILL 652. Information of the enemy received from observers in a liaison aircraft and from prisoners greatly facilitates the company commander's decisions during the advance. HILL 652 is captured at approximately 1230 hours. This concludes the first phase.

DEFENSIVE AND NIGHT ATTACK PHASE

The situation for the second phase indicates that after Company A captured HILL 652, Company C was committed to seize BUSH HILL. Also, information of the enemy revealed that Aggressor forces have built up to approximately regimental strength some 10 miles south. The 1st Battalion was ordered to defend in place tonight in order to cover the forward movement and assembly of these division elements and to be prepared to continue the attack at first light tomorrow. Company A is relieved on HILL 652 by Company B and is directed to occupy and defend the forward slope of BUSH HILL (Figure 37). In accordance with proper troop leading procedures, the company occupies its assigned sector. During the afternoon positions are constructed; fire support, security and alert plans are devised and executed; automatic weapons' positions are sandbagged; range cards and sketches of platoon positions are prepared; and a hot meal is fed tactically. Also, as the company is supported by two searchlights, platoon leaders are briefed on their use and the procedure for requesting concentrations. Later in the afternoon a non-tactical period is declared during which time the platoon umpires conduct a tactical walk to discuss the pros and cons of the platoon position. During the night, Aggressor probes the position with two reconnaissance patrols and four searchlight-supported combat patrols and culminates his night activities with a platoon size attack on the company position.

Concurrent with the afternoon occupation and organization of the position, planning and preparation for the night attack take place. The situation reveals that an Aggressor force estimated at reinforced platoon

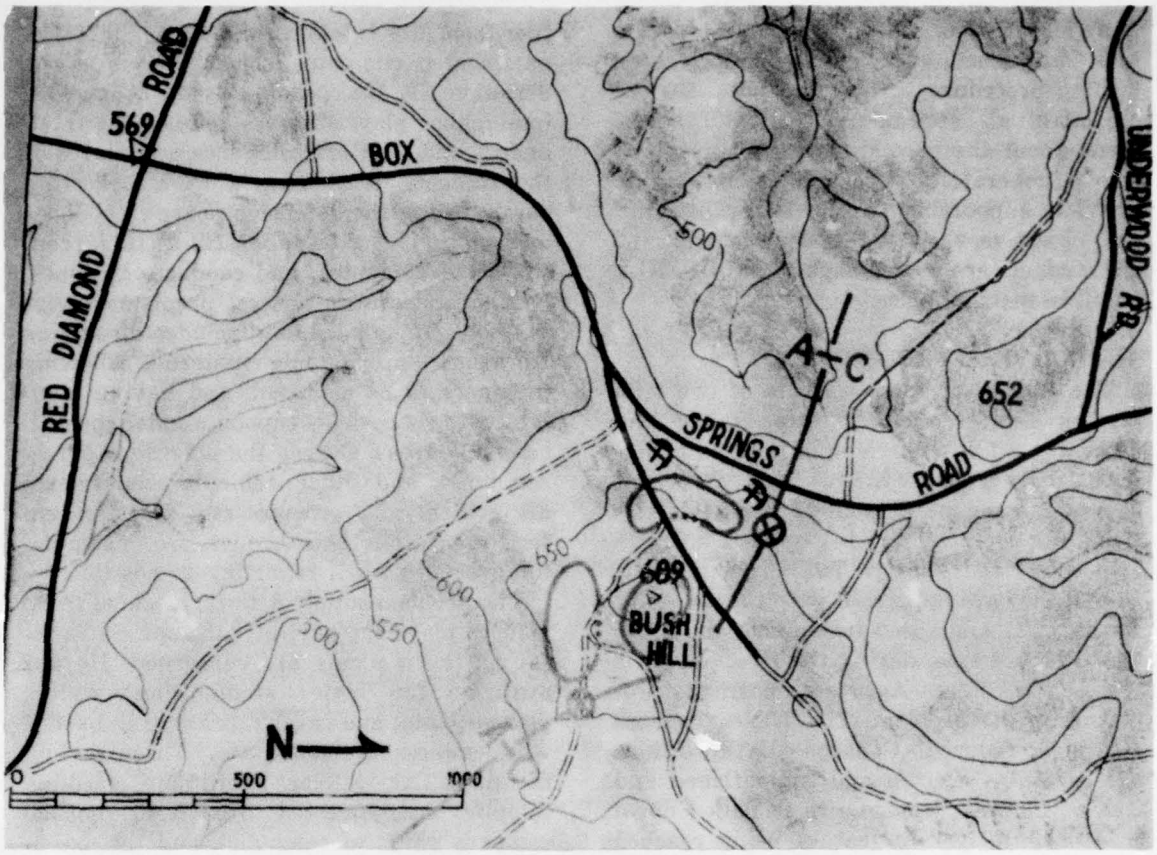


Figure 37. Bush Hill area.

strength is reported preparing a road block at the crossing of RED DIAMOND and BOX SPRINGS Roads. Company A is ordered to launch a night attack at 0330 hours (allowing time to complete exercise prior to daybreak) to seize the cross roads, thereby, facilitating the continuation of the battalion attack at daybreak. Early in the afternoon the attack order is issued to four students who are selected to be platoon leaders. They assume command on completion of the defensive portion of this phase and are the only personnel changes within the organization. Later in the afternoon, platoon, squad, and patrol leaders make a daylight and dusk helicopter reconnaissance. On order of the company commander (about two hours prior to H-Hour) the night attack platoon leaders take command, a resupply of ammunition is effected, and the night patrols are dispatched. At H-Hour the company moves out, advances guiding to the west of BOX SPRINGS Road, attacks, and seizes the objective. On order, Aggressor counterattacks west on RED DIAMOND Road then withdraws. This concludes the second phase.

COORDINATED DAY ATTACK PHASE

The situation indicates that an Aggressor force advanced north along CYCLONE Road and now occupies a position on the high ground just east of RJ RED DIAMOND-CYCLONE Roads (Figure 37). Elements of the division reconnaissance company received heavy fire from the area and are, at present, establishing a road block on RED DIAMOND Road 400 yards west of CYCLONE Road. The 1st Battalion is relieved of its advance guard mission and is ordered to eliminate this threat to the regiment's flank. Companies A and B will attack astride RED DIAMOND Road. Company A on the south side, to seize this position. The student com-

pany moves to an assembly area, a tank platoon is attached, and stressing proper troop leading procedures it attacks and seizes the objective at approximately 1230 hours. Throughout the attack, demolition pits and smoke generators are used extensively to simulate supporting fires. After capture of this objective, the final critique is held, and the students are moved back to BUSH HILL to fill in their foxholes.

SUPPORTING TROOPS

The Aggressor force consists of one rifle platoon reinforced with three tanks and necessary additional communications equipment and transportation. This force, of course, is completely isolated from the participating company and is responsible for its own mess and supply. To insure realistic action, they are impressed with the necessity for surprise and speed throughout the problem. For example, during the first phase, if the students locate Aggressor positions prematurely, the problem effectiveness is considerably reduced. Consequently, positions are carefully selected and camouflaged and concealed, time to open fire is nailed down to a definite terrain feature being reached by student leading elements, routes of withdrawal are selected, getaway vehicles are advantageously placed, and smoke pots are used to screen their withdrawal, This enables Aggressor to achieve complete surprise, hold his positions until the student assault begins and execute a withdrawal without being seen. Similarly, detailed prior planning and silent and effective execution of these plans are prevalent during the night operations. The key to success for Aggressor operations hinges upon rehearsals; consequently, they are rehearsed for three days prior to the problem. Needless to say, this is excellent training for a rifle platoon. Though the Aggressor detail maintains a fast pace, the men enjoy being in the field for two days and having ample opportunities to continuously harass the students; hence, it is a popular problem with troops of the 29th Infantry.

Every effort is made to realistically portray the intelligence play in rifle company operations. For this reason, a representative from the Intelligence Group, Staff Department participates in the problem as the battalion S2. He coordinates the Aggressor intelligence play, observes the combat intelligence and counterintelligence procedures of the students, establishes a POW collecting point, during the defensive phase establishes and supervises a battalion S2 section (consisting of students), and conducts critiques. During the attack phases, preplanned Aggressor intelligence play includes dispersing Aggressor propaganda material, allowing prisoners to be captured, and having civilians with concealed weapons wander through assembly areas. During the defense, Aggressor tanks and other vehicular movements are evident, line crossers and deserters enter the position, and through use of simulator grenades, shell reporting is possible.

The problem supply officer, a school troop officer, plays the part of battalion S4 in-so-far as the students are concerned. He has available for issue: ammunition; water; pioneer tools; and cards representing barbed wire, mines, grenades, etc. Through him the executive officer coordinates feeding. Supplies are requested through the normal company chain of command, and the executive officer takes the necessary action to draw them. During the attack, ammunition resupply is carried out to the fullest extent through the use of carrying parties and organic ¼-ton trucks.

Medical support is furnished by one half of a medical platoon equipped with battalion aid station equipment. The platoon leader represents the battalion surgeon. Evacuation is played to the fullest extent and is initiated by platoon umpires declaring casualties. They indicate to the student the extent of this injury, the aid man tags him and he is evacuated by foot or litter jeep; on reaching the aid station, the medical officer revives him and returns him to the company as a replacement. Students who are declared KIA stand aside and observe until the completion of the phase.

The friendly tank platoon, a school troop unit, is attached to the student company during the first and third phases. In so far as rehearsals are concerned, they fall in the same category as Aggressor for their actions

are preplanned. This is necessary in order to avoid complications that may be created by an unrehearsed tank platoon. However, the platoon leader participates in reconnaissance, planning, receiving company orders, and in general conducts himself as he would in a real situation.

CONTROL

The Aggressor, tank platoon, and supply and medical personnel are all controlled through prior plans perfected at rehearsals and through radio communications with the chief umpire. Firing of demolitions and use of smoke generators are similarly controlled.

The student company poses a different problem, for it is desired to give the student maximum latitude in the employment of his unit and hold control to the minimum consistent with the application of sound tactical principles and necessary measures to insure safety. He may proceed with any sound tactical maneuver, logical plan for employment of organic or attached supporting weapons, or normal administrative action without undue interruption.

A committee officer is assigned as umpire for each platoon (an additional officer umpires the point squad in the first phase and commands the company during the defensive portion of the second phase) for the purpose of supervising the unit, insuring that the company commander's orders are executed, and critiquing the platoon's activities on completion of each phase. He is thoroughly familiar with the problem and knows exactly where his platoon should be located at all times, what is expected of it, and when, where, and for how long to stop its advance due to Aggressor fire superiority (flags are used for this purpose). At the same time, he is available to give the student platoon leader assistance in formulating and executing his plan of attack.

The company commander, a committee officer, executes the duties of a normal rifle company commander and is responsible to the chief umpire for conducting the company in accordance with the approved plan of operation. He, too, is thoroughly familiar with all aspects of the problem. However, the committee company commander is primarily concerned with administration and tactical operation of the student company and is completely divorced from control of the problem.

The Principal Instructor (or chief umpire) is responsible for the over-all problem presentation. Prior to the problem day he effects coordination and administrative arrangements necessary to properly organize the problem. In addition, he rehearses and orients all participating officers and school troops. During the problem he plays the part of *battalion commander, forward observer, and chief umpire.*

As *battalion commander,* he issues orders to the company commander, controls movement of problem supply or battalion rear, and receives reports from the rifle company.

As *forward observer,* he causes demolition pits to be fired or Aggressor to throw simulator grenades to represent supporting fires requested by the company commander. In the same respect he controls the smoke generators in phase three.

As the *chief umpire,* he is responsible for administering the problem, conducting the orientation for each phase, controlling the aggressor actions, maintaining close liaison with the company commander, and controlling the umpires.

To facilitate proper performance of his duties, the chief umpire must have excellent radio communications (Figure 38).

From experience gained in conducting this problem, the following important control factor warrants special emphasis. In a hastily organized student company, it is very easy for important orders to be misunderstood or misdirected; to prevent this from occurring and jeopardizing the problem, it is necessary for the chief umpire to maintain close contact with the company commander and to relay all of his orders and instructions to the platoon umpire concerned. Conversely, this gives the company commander access to an authentic report on locations and activities of his platoons.

This is undoubtedly one of the most effective problems presented to the Officer Candidate and Basic Officer classes, because it definitely accomplishes its mission of tying-in all previous instruction and giving the students an insight to field operations with a rifle company. The favorable student

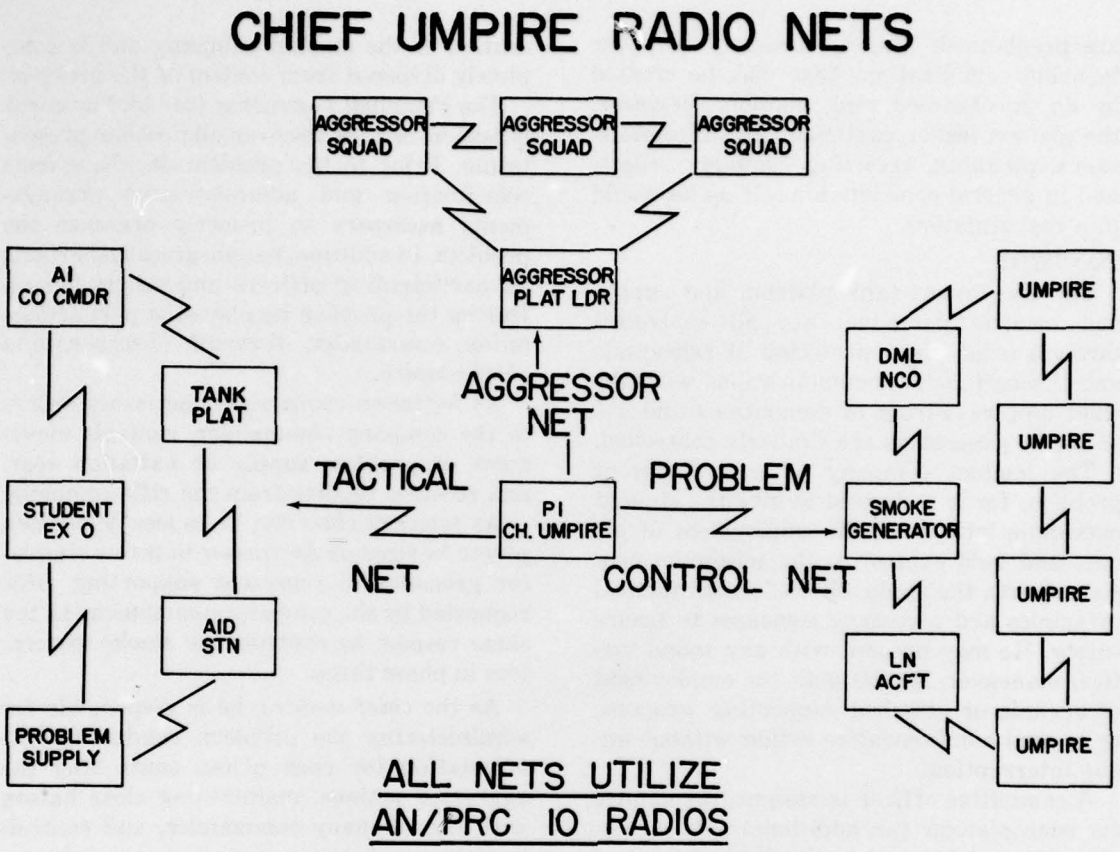


Figure 38. Chief umpire radio nets.

comments substantiate this. From a fatigue point of view, the problem activities and time-length have proven to be correct. Also, this problem was the basis of a rifle company test prepared by the company committee and applied during Exercise Follow Me to determine the proficiency of selected companies from the 3d Division. It proved to be very successful. We will pass out a copy of this test for reference in the event your local conditions permit the implementation of a similar field exercise.

Section VII. EMPLOYMENT OF THE SCOUT DOG PLATOON

CAPTAIN JOHN C. RENNIE
Platoon Tactics Committee

On the left of the stage you see an infantry scout dog and his handler. This scout dog and handler team are the basic tactical element of the infantry scout dog platoon. This team can be considered a highly sensitive and alert scouting and detective agency. It is probably one of the most highly coordinated teams in the United States Army today. There must be complete mutual trust, understanding, affection, loyalty, and confidence between dog and handler in order that they may perform with the utmost proficiency. Ideally, this dog and handler team should be assigned and work together through their entire service. The handler should train the dog in the initial basic training period. There he will teach the dog to obey certain fundamental commands. These

commands will include on a leash to heel, sit, stay, down, and crawl. While off the leash the dog is trained to sit, stay, come, drop and is taught to jump various types of obstacles.

The extraordinary characteristics of the dog: the acuteness of his senses, his affection for man, his watchfulness, his speed, and his aggressiveness, have made him a valuable asset to the soldier for many military purposes.

The War Dog was first used by the Assyrians as far back as 2300 B. C. They employed the Molossis, a prototype of the modern mastiff, as an attack element and a guard. These enormous dogs were trained to fight at the side of their master in battle, and wore heavy protective armor. The ancient Greeks and Romans also drafted the same species for attack work, the Romans recognizing them as a definite unit.

Dogs have been used constantly, since those days, in a variety of military roles. Frederick the Great is first credited to have used messenger dogs employing them in the same way as we use them today in our modern armies.

Frederick was by no means the only great general of the past to advocate the use of war dogs. Napoleon himself urged his generals to employ dogs as outposts in the Egyptian Campaign. They were picketed some 200-300 yards in front of their own sentries in dugouts in order to give an early warning of enemy activity.

Some other military jobs performed by dogs include: ammunition carriers, sled dog teams and draft work, rescue work, mine detectors, sentry work, trailing. Their newest role, with which we are concerned today, is the Infantry Scout Dog.

The purpose of this conference is to acquaint you with the organization and administration of the scout dog platoon and to familiarize you with the capabilities, limitations and tactical employment of the scout dog.

Scout dog platoons are tactical units only, and have no means of providing administration; they are, therefore, necessarily attached to a major unit from the time they are activated until their de-activation. The platoon consists of 1 officer, 20 EM, and 27 dogs and is organized as shown in Figure 39. The drivers for the three 2½-ton trucks are scout observers from the squads. At present, there are 9 Scout Dog Platoons in the United States Army.

During World War II dogs were secured for the Quartermaster Corps by public donation through "Dogs for Defense, Inc," a non-profit agency. The public's response to this organization was very gratifying and a little over 19,000 dogs were processed through training centers. After the war the rehabilitation program became quite a formidable and costly one. Dogs are now purchased outright by the Army from kennels and private owners at a cost of $1.00 to $150.00.

The day following the arrival of a dog at the reception and training center, a careful record is made concerning its background. The veterinarian then gives each dog a physical examination and rabies and anti-hepatitis innoculation; then tattoes the dog's assigned number on his left flank.

At the training center the dog begins a rigid military routine. Close attention is given to grooming and care, and its diet is carefully regulated. The present daily ration of the army dog is 1½ pounds of horse meat and 1½ pounds of forage.

In theatres of operations where this ration is not available the dog is fed the Army C ration in the amount of two (2) cans of meat and vegetables and one (1) can of biscuits per dog per day. This ration may be supplemented by kitchen scraps. Dogs are not fed before training or before going on a mission. A basic training period is then initiated during which the dog is trained to carry out certain fundamental commands. He is also accustomed to wearing muzzles, protective masks, and riding in a variety of vehicles. The basic training serves to develop in dogs the fundamentals of a more specified training as well as to determine for which function each dog might be best suited. The handler should receive training in atomic warfare and learn how to best protect himself and his dog in the event of an atomic blast.

In order to employ the scout dog to a maxi-

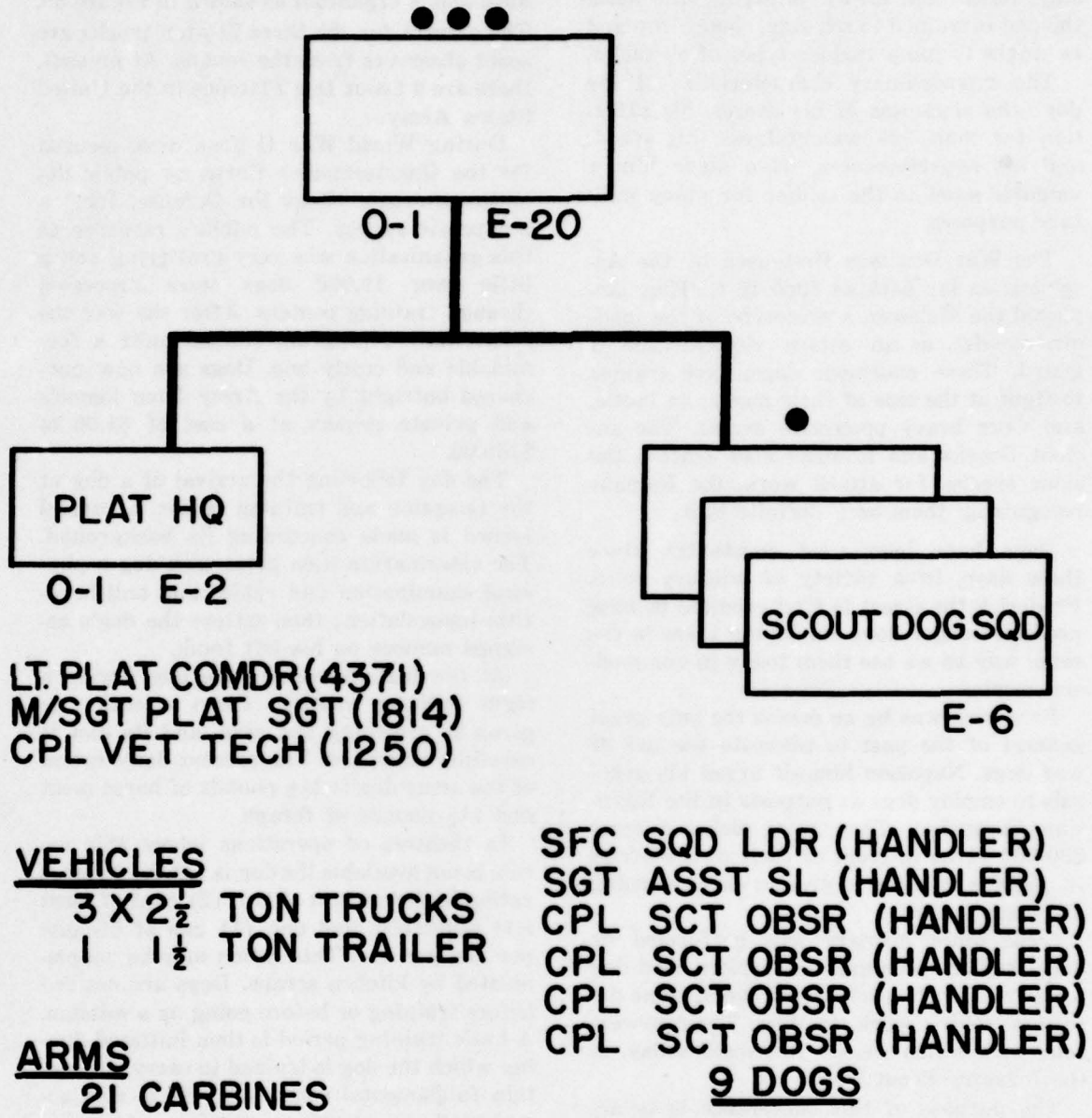


Figure 39. Organization of the scout dog platoon

mum advantage his characteristics, capabilities, and limitations must be thoroughly understood. The scout dog is trained to detect and give a silent warning of the presence of any strange individual or group. The dog is "worked" on a seven foot leash by one man, the handler, who is especially trained in this type of work. This dog and handler team can work in daylight or darkness, in any kind of weather, and in jungle or open country. To exploit his peculiar capabilities, his keen faculties of smell and hearing, the scout dog is best used when circumstances and conditions are such that the dog can smell or hear farther than the man can see. At night or in areas of limited visibility, in-

cluding thick jungle or other dense growth, the scout dog can silently warn his handler of a hidden enemy long before such a presence could be detected by a human. The distance at which such a warning is given depends upon a number of factors which must be considered in relation to a contemplated mission. Knowledge of these factors will prevent the assignment of the dogs to missions which are beyond their ability and will insure their use where they will be of considerable assistance. This is comparable to the use of supporting weapons in a tactical operation. These factors are discussed below.

Ability of handler to "read" his dog. Through his constant association with the dog, the handler, by closely watching him, can interpret his reaction when he detects a scent other than that of the members of the group with whom he is working. The reaction of the dog is likely to be a general tenseness of the whole body, with hackles raised, ears pricked; and other forms of alertness easily recognizable by a keen observer such as keenness to investigate, a slight inclination to whimper or growl, tail active or distinctly rigid.

In a well-trained dog and handler team, when the dog has taken an "alert," by carefully scrutiny of the dog, the handler can estimate the direction, range, and approximate location of the enemy. He can also tell whether it is an individual or group of enemy, and, if moving, the direction and speed of movement.

Wind Direction and Velocity. The wind is probably the most important factor to the scout dog and handler. The best way to learn how human body odors are affected by the wind is to watch smoke drift away from a smoke pot. Smoke is borne by the wind in the same manner as the body scent of a person. Wind hitting a hilltop or crest is prone to break into 2 or 3 smaller streams much like water in a stream bed striking a rock in its path. In a case of this kind, there are several places where a dog is more likely to pick up the scent of a man.

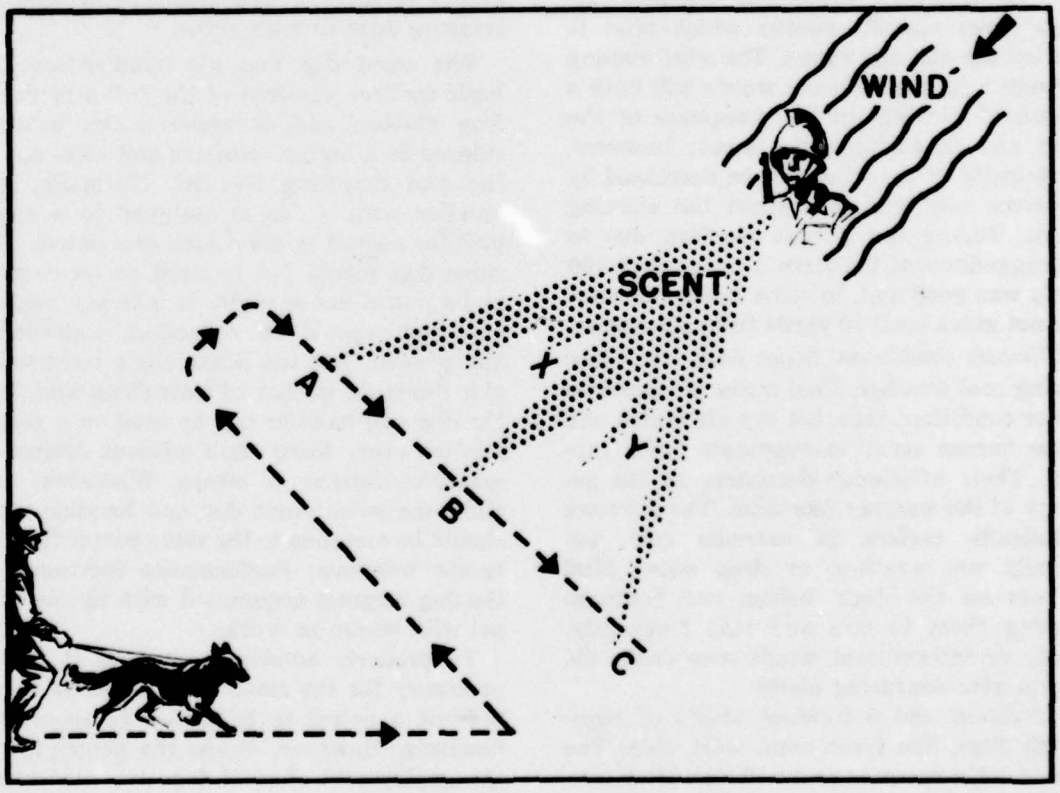


Figure 40. Effect of wind on scent.

A dog is most sensitive to scents upwind and least sensitive to scents downwind. The scout dog is worked by "cutting" the wind whenever possible so as to get the most wind from the area being searched. Distances at which dogs can pick up the scent of humans vary with conditions, circumstances, and dogs. Quartering winds will have varying effects on this distance, depending upon velocity and direction. Under ideal conditions a dog can pick up the scent of a man at a distance of 500 yards or more.

Strength of scent. The dog will detect large groups of persons sooner than small groups or individuals and, in general, his reaction will be greater. Recently used bivouac area containing human scent will cause a dog to alert. The scout dog will react to friend as well as foe, and therefore, he will give the same attention to friendly outposts or patrols as to those of the enemy. Most dogs do not become alerted by dead bodies.

Terrain. Flat open terrain gives the dog a longer scent range, whereas hilly terrain with its changing winds and thermal currents gives varying results which tend to shorten the alerting range. The wind coming through a jungle or heavy woods will have a chance of picking up the dampness of the trees and magnifying the scent; however, the velocity of the wind will be decreased by the trees and tend to restrict the alerting range. During the Korean conflict, due to the ruggedness of the terrain, an alert at 100 yards was good and, in some cases, the alert was not given until 10 yards from the enemy.

Climatic conditions. Scout dogs work best during cool weather. Cool moist air provides better conditions than hot dry air which will cause human scent to evaporate quite rapidly. Their efficiency decreases as the severity of the weather increases. The dogs are practically useless in extreme cold, extremely wet weather, or deep snow. Mud collects on the dogs' bellies and footpads causing them to tire and stop frequently. Gusty or intermittent winds may cause the dog to give confusing alerts.

Condition and individual ability of dogs. Fresh dogs, like fresh men, work best. The dog is not a machine and will tire after continuous service, for extended periods of time. When a dog tires his effectiveness will decrease sharply. When he is tired, he is dog tired. Cross-country ability varies with the dog and, in general, compares with that of man. Each scout dog has certain individual ability tolerances depending on conditions. Combat duty provides the best training, with just enough rest to keep him in good condition. However, he requires continuous training when not engaged in combat duty as ability and discipline decrease rapidly during periods of idleness or continued patrolling without alerting contacts (a month or more). A period of retraining is necessary before the dog is of further use in combat.

Noise. All dogs are sensitive to intense noises. A moderate amount of noise, such as small arms fire and grenades, will not distract the dog from his work. However, a noisy, laughing or talking patrol will divert his attention. The effect of close-in artillery and mortar fire will vary with individual dogs. Generally, it will make dogs extremely nervous, and day after day continuous exposure to battle noises should be avoided by rotating dogs to rear areas.

The scout dog and his handler are the basic tactical elements of the Infantry Scout Dog Platoon and, in general, can be considered as a highly sensitive and alert scouting and detecting element. Normally, one handler with a dog is assigned to a small unit for a short mission such as a patrol. The same dog should not be used on an outpost and a patrol in one night. If both are needed, two dogs should be requested. Experience has proven that the scout dog's most valuable function is that of patrolling and that the dog and handler can be used on a patrol mission every third night without danger of excessive fatigue or strain. Whenever possible, the same scout dog and handler team should be assigned to the same patrol for different missions. Performance increases as the dog becomes acquainted with the personnel with whom he works.

To properly employ scout dogs it is not necessary for the small unit leader or members of a patrol to be skilled in scout dog handling. However, unless the principles of the employment of scout dogs are understood by all members of the using unit, the neces-

sary coordination and support cannot be given to the dog and handler to assure their maximum assistance in the accomplishment of the mission.

The scout dog is trained to detect the presence of the enemy, by using his keen faculties of smelling and hearing. There are certain factors which must be considered in order to use the scout dog to the best advantage. These factors will determine the method of employment and the manner in which the dog will work with the patrol. For example, the wind direction and velocity will cause the dog and handler to occupy various positions in the patrol's formation. If the wind is blowing steadily from the direction of the enemy, the best position for the dog is in front of the patrol where he will receive the uninterrupted scent of the enemy. If the wind is blowing towards the enemy, the dog should be at the rear of the patrol where he would be of little use on the outward journey. However, the dog should still accompany the patrol as there may be a change of wind direction or the patrol may change its route. Also, he may prove to be most useful on the return journey. In the case of the wind blowing diagonally across the patrol's route the dog and handler will be most effectively used by being placed on the flank of the patrol from which the wind is blowing. Generally, whenever possible the patrol leader should let the handler take his choice of positions in the patrol as he is trained to this type of work and knows how to work his dog best.

On a patrol the scout dog works on a leash in front of the handler. A German Shepherd dog, when following a scent, requires all of a man's strength to control; therefore, the handler cannot control the dog and at the same time use a weapon. The mission of protecting the dog and handler is given specifically to one member of the patrol. This "bodyguard" responsibility will be thoroughly impressed upon the patrol member to whom the mission is given. He should preferably be armed with an automatic weapon such as a carbine.

When the Infantry scout dog platoon is attached to an Infantry division or regiment, the scout dog platoon commander will recommend, to the G2 or S2, those patrols in the Patrolling Plan which can best be assisted by a scout dog and handler team. Upon approval of the Patrolling Plan, the attachment of the dog and handler to the patrol is made.

The scout dog platoon commander should, when possible, know two or three days in advance the number and type of patrols he is required to support. This will allow him time to select the dog and handler team which will be most effective with each anticipated mission and will also allow the handler sufficient time to prepare himself and the dog for the mission.

The dog and handler should be completely integrated into the patrol at all stages: planning, rehearsals, execution, and debriefing. In the planning stage, the patrol leader should ask the handler for recommendations for the employment of the dog and allow him enough flexibility to effectively work the dog in a manner to obtain the best results.

The presence of a dog in a patrol has created varied reactions in personnel unfamiliar with scout dogs. Some feel an exaggerated sense of security, expecting too much from the dog, while other patrol members become agitated and apprehensive. To avert these extremes of timidity and enthusiasm, the handler should thoroughly brief the patrol during rehearsals as to the dog and his capabilities. Rehearsals will enable the patrol members to become familiar with the manner in which the dog and handler operate and will also allow the dog time to become accustomed to the scents of the individual patrol members and the noises and actions of the patrol on the move.

On the day of the patrol the handler should give the dog a workout to test his alertness and readiness to work. If for some reason he is having an "off-day," another dog should be used, even at the sacrifice of rehearsal time.

The handler and dog should leave the scout dog platoon bivouac in sufficient time to arrive at the patrol's assembly position at least one hour prior to the patrol's scheduled departure time. This hour is needed for final coordination between the patrol members and the handler, and for orientation of any new members of the patrol as to the dog

and his capabilities and also scent familiarize the dog with all the patrol members. If the handler and the dog require transportation from the bivouac area to the unit, it will normally be furnished by the using unit.

Since patrolling is considered the scout dog's most valuable function, let us first consider his employment in a reconnaissance patrol.

The scout dog and handler, whenever practicable, precede the patrol, keeping generally in the assigned direction, utilizing cover and concealment, and moving to take the best advantage of the wind and other conditions favoring the dog's power of scenting. During the hours of daylight and bright moonlight, the entire patrol will move by bounds.

The patrol leader may, from time to time, change the direction of the patrol's advance. However, it is advisable to allow the scout dog and handler to move at will in front of the patrol, keeping, generally to the assigned route.

If the wind is blowing directly from the enemy, the dog should be able to locate them from 150-300 yards distance. If the wind is blowing obliquely from the direction of the enemy, the process of detection will take longer since traversing will be necessary. In daylight this traversing can be done by the dog and handler with bodyguard while the patrol moves along a direct route.

When the dog "alerts," the patrol leader should immediately move forward to the handler. From the nature of the dog's "alert," whether "hard" or not, the handler can tell the patrol leader the approximate direction, distance and location of the enemy. The patrol leader should then decide whether to make a closer reconnaissance with other members of the patrol or bypass the enemy. The dog and handler should not be pushed too close to the enemy. Failure of the patrol leader to take decisive action on an "alert" or to take the dog and handler off the point position may result in the dog and handler becoming casualties. The dog and handler do not participate in any engagement with the enemy; they move to a flank or to the rear acting as a security element until the action has ceased, at which time they rejoin the patrol.

Combat patrols in which the dog and handler team participate use the same procedure as the reconnaissance patrol during movement. If speed of movement is more essential than security, the dog and handler may not be used at the point position until relatively close to the objective. They can be used to detect the enemy positions at the objective area. As soon as the handler has informed the patrol leader of the definite location of the suspected enemy position, the dog and handler will be withdrawn completely to the rear of the patrol. After any opposition is eliminated or prisoners taken, depending on the mission, the patrol will continue to move as before.

A patrol accompanied by a dog and handler must be impressed with the fact that they must maintain their usual patrol alertness and not rely solely on the dog.

Night attacks and raids in which the scout dog and handler participate are conducted substantially in the same manner as outlined for a combat patrol.

In an outpost position, the main value of the scout dog is to give timely warning of the enemy's approach or attempts by the enemy to infiltrate through friendly lines. By carefully observing the nature of the dog's "alert" the handler can inform the outpost commander of the approximate direction and speed at which the enemy is approaching. If the wind is favorable, the dog should be able to give warning of the enemy at a distance of up to 300 yards.

The scout dog and handler are placed at a short distance in front of the outpost to which they are attached. Care must be taken that the handler and dog do not mask the fires of the members of the outpost. In daylight the distance should be within easy visual signal range and even closer at night. A simple means of communication between the handler and the outpost commander at night is to use a cord or string which is jerked to alert the outpost.

Upon being alerted, the outpost commander proceeds immediately to the handler to receive information concerning the direction, distance and speed of the enemy.

The dog and handler should then withdraw to a previously designated location or,

if occupying a prepared position, remain in the cover of their foxhole so as not to interfere with the dispositions decided upon by the outpost commander.

After the situation has been cleared up, the scout dog and handler are again posted in their original position.

A favorable wind is not essential as the dog will be able to indicate the presence of the enemy at various distances, in all conditions except during heavy rain, blizzards, or exceptionally high winds.

The use of the scout dog on ambush patrols, static security groups, and isolated defensive positions is substantially the same as that for outpost duty. In all cases local commanders should realize that the dog's handler must be relied upon for advice on the correct use of his dog for an assigned mission.

Gentlemen, we have acquainted you with the organization and administration of the scout dog platoon and discussed some of the techniques and tactical principles involved in the employment of scout dogs. The Infantry School has recently completed a draft of a training circular concerning the scout dog, and a problem with demonstrations, involving the tactical employment of scout dogs is presented to resident advance classes.

As a final thought concerning this afternoon's conference I would like to mention a few DO's and DON'T's which may help guide you in the future with regard to the employment of scout dogs.

DO remember the scout dog is not a machine and is not infallible.

DO let the handler have a free hand in the employment of his dog and listen to his recommendations.

DON'T allow anyone but the handler to feed or pet an army dog.

DON'T allow your troops, through fantastic stories of scout dogs, to build overconfidence in the dog to the extent of neglecting normal security.

And lastly, DON'T forget that through past experiences and the evidence of an ever increasing demand for scout dogs by units in theatres of operations, the scout dog has proven that he is a capable and valuable *adjunct to the Infantry front-line soldier.*

Section VIII. TACTICAL DEPARTMENT SEMINAR

COLONEL JOSEPH W. STILWELL, JR.
Director, Tactical Department

Col Stilwell: In this short period we will cover any questions that you may have that we did not have time for during the previous periods. I will cover two point right now, first the question on dispersion of vehicles in perimeter defense. The vehicles normally will be in the perimeter or to the rear somewhere and not spread around in the area of surveillance. That area is available for dispersal of troops, but normally the perimeter itself will be fairly well dispersed over the yardages mentioned. But the vehicles will not normally be around the perimeter; they will either be in it or well to the rear. Now the point about the vehicles is that when we tested this with actual troops on the ground, we found that the organic vehicles needed in this reinforced battalion to handle the weapons and the communications and the sick and the injured, and so on, totaled 97. So there is a question there as to whether we are mobile or whether we are swamped with mobility. The ATFA Division will have in such a perimeter 106 vehicles. This does not move the riflemen; they are still walking until you send for additional vehicles. In these days of metal detectors, infrared equipment, and so on, it is possible to pick up such a concentration at some range, or soon will be, perhaps in the helicopterborne or airborne units, and when you have that mass of iron around your area you are making a target of yourself. What we will do I don't know. Perhaps the solution is what we called for—the lightly armored, cross country type vehicle which can stay with the troops, perhaps dug-in.

The second question was: why do we have a mobile defense and what is it based on? Is it based on the fact that we now have atomic weapons? Is it based on the fact that we lack troops? In a sense both, and in a sense— neither. Basically, until we started teaching mobile defense in the past year it had never been taught for Infantry use except in one problem where we used a reserve battalion more or less in mobile action on a river crossing. If you will look into that problem you will find that this battalion, moving around to plug the gap on a river defense line, was actually engaged in mobile defense. In the past when we reached the 20,000 yard figure for defense (which is based on ranges of weapons giving you mutual support between battalions) and started beyond it, we were automatically retrograding. This mobile defense then, is to fill a gap between 20,000 up to 45-50 thousand yards in an attempt to defend and hold without withdrawing, retreating, or retrograding. Of course it has other applications around slightly less than 20,000 yards and you can get into a fine hassle when you start arguing tactics as to when you are mobile and when you aren't. Perhaps you are mobile in any type of defense or try to be. But the strictly mobile defense you adopt is generally above 20,000 yards provided you have the depth to operate it. Now, the atomic side of this thing. Suppose we don't use atomic weapons and then suppose we are faced with a mass of enemy artillery fire that can be delivered. They have demonstrated the capability of putting their guns in hub to hub and putting down carpets of fire. This mass of fire requires dispersion. Perhaps the atomic weapon has merely re-emphasized something we should have done a long time ago.

Do you have any questions, Gentlemen?

QUESTION: *Maj Barnum, AG School:* It is accepted doctrine in the conduct of the position defense that before an enemy penetration is counterattacked that it first be contained. Does that same thing apply in the conduct of a mobile defense?

ANSWER: *Lt Col Magruder:* I would say generally it is more desirable when you attack any force that you have fixed that force. However, in the concept of mobile defense with our great depth to the position, many times we will actually hit a fleeting target. It is certainly desirable to stop the penetration, fix it before we begin our counterattack as we state in our current doctrine on position defense. However, we envision in the mobile defense that many times we will hit a moving target.

QUESTION: *Col Johnson, Army War College:* I would like to be reassured of our ability to canalize the enemy as you outlined there. Now, here is what I had in mind. It is his plan, he is attacking and you have committed yourself to a defense. He has made a plan of attack, he has his weapons plan to take his objective. If he meets opposition in taking one of his objectives then he is going to use the weapons necessary, a nuclear weapon if necessary. Now, what does that do to you? In other words, I think he is calling the shot; he is going to use it whether he is confronted *with a battalion or maybe a squad if it* interferes with his accomplishing his mission.

ANSWER: *Lt Col Magruder:* There are two schools of thought, as far as canalization is concerned. One school of thought says that the smallest unit that can canalize is the Infantry Regiment. Now we get to this idea, what is a remunerative target as far as a nuclear weapon is concerned? We say that the largest force that we should present to the enemy is that of a battalion as currently organized. That being the case, we think that conversely the company is too small to carry out a canalization program. As you know the armored concept of the strong point system involves reinforced companies in strong points. However, we feel from an infantry viewpoint it should be a battalion. You ask, what if he hits that with a nuclear weapon? Well, with a tight organization which we have, we will be destroyed. But we feel that if we will disperse our battalions across more likely or better avenues of approach which the enemy desires to have, then, taking the calculated risk which we cannot avoid, then we think

that we have a better defense than by either putting a regiment there or putting a line across developing a compact or position defense as we knew in the past. If he is going to fight and try to seize that piece of terrain that we have organized with our battalion, then we think we are carrying out our point of canalization, or at least stopping him and making him present to us a lucrative target there.

Col Stilwell: We admit to you first, Col Johnson, that when we are defending in any local area the enemy will have the initiative, as you have stated. Second, no matter what type of defense we use, if he swamps us with atomic weapons he will make a hole in it. In other words, whether it is mobile or otherwise.

QUESTION: *Col Johnson:* Yes, I understand that. My point is this. It seems to me in atomic warfare that attacking strength is a good point rather that attacking weakness and the enemy is going to make plans to attack strength. Now, that is the point, rather than his going where you want him to go.

ANSWER: *Lt Col Magruder:* If he attacks strength, and let's say we have 3 or 4 battalions well dispersed, then if he is going to do that, and we select critical terrain, then haven't we better accomplished our mission than trying to completely dominate with a position defense?

Col Johnson: I don't know whether you have accomplished your mission or not, but it has changed your plan. That's the point I am making.

Lt Col Magruder: I think probably we should think of mobile defense as destruction by offensive action and not by holding terrain. Now certainly two battalions seven miles apart cannot stop an infantry division. But these two battalions have helped to canalize the enemy and have aided in his destruction by the striking force perhaps in conjunction with mass destruction weapons.

QUESTION: *Maj Molloy, AAA School:* We have FM 100-5 which talked about islands of resistance. This is in the hands of the troops and we are sort of stymied as to how to get around that. We want to know if you agree with Leavenworth's stand on it or are you working something out on it.

ANSWER: *Col Stilwell:* We do not agree with the Leavenworth solution as far as some of those terms go. This was the reference made earlier today to the CONARC solution. They have apparently accepted ours in most details and that is what we presented. That is now being circulated to the various schools to be shot down or argued about and presumably when they get those back they will arrive at some decision on the subject. But this term is one of the big points of argument. Another one is that in FM 100-5 they say that the mobile striking force is back yonder somewhere. We say why not dig it in, why not use it while it is waiting to go. They don't say that. It may be that there is a misunderstanding as to what is really meant in FM 100-5, I don't know. Can anyone from CONARC go any further on that at the moment?

Lt Col Newland, C&GS: I am speaking for Leavenworth. I won't comment on islands of resistance. On the other hand, as far as using the striking force in blocking positions is concerned, when FM 100-5 was prepared it certainly wasn't meant for Leavenworth to preclude the use of the striking force in blocking positions and I think there is complete agreement. The one slight difference, I think, we have in our concept of the mobile defense is where we employ the bulk of these forces. In other words, our concept is that the front will be very lightly held by one regiment and the remainder of the division, the bulk of the force as it calls it in FM 100-5, will be employed as the striking force. We feel that it can either be employed all at once or possibly one regiment at a time, but we feel in addition, that it is almost necessary to attach another tank battalion to the division in order to appropriately conduct the mobile defense and probably a battalion of artillery to help out in the forward defensive positions.

Col Stilwell: I think we agree on the tanks, certainly on the artillery, and possibly on the extra reconnaissance elements. Maybe we are in pretty close agreement and just don't realize it.

QUESTION: *Lt Col McKean, Ord School:* I have two questions, sir. I wasn't quite clear on this CONARC ruling on security echelons in front of the division. Does a division commander's responsibility end at his front-line battalion and corps take up the responsibility from there? Did I understand it that way?

ANSWER: *Lt Col Magruder:* The revision of the concept for Infantry units in mobile defense we received yesterday stated this. Rather than security echelon they have changed the word to security forces. CONARC states that the security force is a highly mobile force to be provided by a higher headquarters. In their concept there will be no general outpost which as you know is the division commander's responsibility in our present concept. They feel that the strong points across a forward defensive area will take on a connotation of a general outpost, deceiving and delaying the enemy. Rather than having a combat outpost along our forward areas of our line of surveillance we will have the outposts which Maj Folsom covered this morning in discussing areas of surveillance. In this concept we will not have a general outpost or a combat outpost as we have known it in the past. Certainly, that will not mean that with our own reconnaissance capabilities we are not going to move forward and contact the enemy. We are going to do that but not using a fixed general outpost.

QUESTION: *Lt Col McKean, Ord School:* I think that answers the question. The next question is on a point of technique. In a penetration, naturally, the enemy would be building up momentum; there is a time element in the use of atomic type weapons to destroy this enemy prior to counterattacking. What is the time element now? Of course this comes back to who controls the weapon.

ANSWER: *Col Stilwell:* Of course, at the present time, the President of the United States. Then you go from there and I understand it goes down to corps when it is finally approved. We want it down at the battalion level; we figure we might get it at the division level if we keep arguing for it at the battalion.

Lt Col Magruder: Our resident problem has it that the division commander controls when H-hour will be for use of atomic weapons in our maneuver of the striking force.

QUESTION: *Lt Col Clark, Air Ground Opns School:* I would like to know more about the role of the regimental commander or the combat command commander in the mobile defense set-up. From your explanations I gather it is more a division commander's concept and a division commander's area in which the division commander more or less locates the battalions where he wants them and adds or attaches units as he sees fit. Very little mention has been made of the role played by the regimental commander outside of the fact that he more or less exercises the control or the supervision of the counterattacking force.

ANSWER: *Lt Col Magruder:* Certainly in this type of defense we think that the regimental commander and staff should be subordinated as far as the over-all concept is concerned. Still, however, in the plan of surveillance the regimental commander is most important and even more so in the actual locating (working with his battalion commanders) of these strong points. You cannot deny the fact that in this over-all situation that the regimental commander has lost a lot of authority as far as fighting his battalions is concerned, because we do not think the division commander is going to delegate the authority for the regimental commander to move his battalions from one place to the other. Certainly they will be controlled through the regimental commanders but the ultimate authority, we think, should be given to the division commander. Therefore, you can see that the combat command concept is much better and allows more flexibility.

QUESTION: *Lt Col Milotta, CONARC:* I would like to hear a few minutes discussion on how you are going to force the enemy to mass when he attacks us thereby providing us with a good atomic target?

ANSWER: *Lt Col Magruder:* I think we should first make the assumption that it would take at least a regiment to seize a battalion strong point. In answering how is he going to, why should he mass, we think that a battalion strong point properly supplied and given proper fire support is going to be in a position to stay there some time. The Aggressor is going to have to prepare for that attack and move in. We are hoping our surveillance will pick up his assembly areas. We think that a spoiling attack, in other words an attack prior to the enemy attack, is certainly applicable in this type situation, Again, we feel that the enemy is going to have to mass to get set to hit a particular perimeter and that is why we feel that he is going to give us a target there.

Col Stilwell: Gentlemen, I am sorry, but our time has run out. We would like to thank you for your interest and attention.

Section IX. NEW TACTICS AND TECHNIQUES

ATOMIC WARFARE

MAJOR WILLIAM L. HUNTER
Advanced Tactics Group

In recent months much discussion and controversy has appeared in the press of not only our own nation but also of other nations: controversy about whether we or anyone else will ever use atomic weapons in war. It is said that since the most powerful nations of the world now possess atomic capabilities these capabilities will never be used. It is further stated that perhaps this near parity will restrict the capability to tactical employment of the weapons. Regardless of what is said or written there should be no confusion about one thing: the armed forces of our nation must be prepared to employ the mass destruction weapons available now and those which will be available in the future —to employ them and employ them effectively. We must not only know how to fight with them and how to fight without them; we must know how to fight against them. Much thought has already been given here at The Infantry School, as well as at other service schools, on how to best accomplish this. Much more thought and study is still necessary.

Until recently much of the information concerning atomic weapons effects was classified to the extent that it was impossible to use for widespread instruction. In addition the classification reduced the number of personnel within the Army who had sufficient knowledge concerning effects to integrate the capabilities into everyday training. This obstacle has been eliminated by the publication of several fine *unclassified* texts concerning tactical employment of atomic weapons. Among the best of these is ST 100-31-8 published by C&GSC at Fort Leavenworth. The most widely used portions of this publication have now been made available in a Department of the Army Pamphlet 39-1, March 1955, available through normal publications channels. In addition, service schools have prepared unclassified publications of real value. The Infantry School's Atomic Handbook, which has been made available to you, contains in one consolidated text most of the information concerning atomic weapons, required by the field commander for training purposes. This doesn't mean of course that the ASO, the atomic staff officer, or the special weapons officer if you prefer, with his technical manuals and his ability to compute detailed target analyses can be discarded, at least not yet. What it does mean is that commanders and staffs at all levels now have available simple working tools capable of giving them sufficient guidance concerning atomic weapons to form a basis for intelligent, logical, and workable recommendations or decisions. Let's look at an example of just how this can work. Troop safety requirements have in the past been only partially understood and uncertainly computed by untrained personnel. Now, with the aid of an unclassified text and an understanding of two basic terms, troop safety may be computed accurately enough for sound planning in training. First, the basic terms are "threshold effects radius" and "circular

error probable." Threshold effects radius is defined as that radius corresponding to the minimum effects radius insufficient to cause light damage. In other words, that distance from ground zero at which there will be no damage to our own forces. Threshold effects radius for various weapons under varying conditions may be found on page 53 of your atomic handbook. Will this distance then be our troop safety distance? It would be if we could be assured that the weapons would be detonated at the exact place we intended such as is true for a prepositioned weapon. However our delivery means aren't now quite that accurate. Just as there is some error in every weapon, so there are errors in the delivery means available for atomic weapons whether that means be atomic artillery, free rocket, guided missile, or aircraft. There is, however, a saving grace to these errors: their probability of occurrence can be predetermined. Each delivery means has a constant probable error in the form of a circle which has been termed *Circular Error Probable* (CEP). The 280-mm artillery piece, for example, has a circular error probable of 100 yards. This means that 50% of an infinite number of rounds fired at the intended point of impact will probably land in a circle 100 yds in radius around the intended point of impact, 93.75% will probably land in a circle 200 yds (2 CEPs) in radius, and 99.8% in a circle 300 yds (3 CEPs) in radius. This gives us a clue as to how to quickly find required safety distances. If we look up the threshold effects radius and add 3 CEPs to it we will determine the troop safety distance required to achieve a probability of less than 0.2% of inflicting any damage to our own forces. Therefore, if our delivery means is artillery, we find the threshold effects radius and add 300 yds (3 CEPs of 100 yds each) in order to quickly determine the distance our own troops must be from the intended ground zero to have a very high assurance of complete safety. Use of another delivery means only requires substitution of the proper CEP. The CEP for free rocket shown in the unclassified texts is 500 yards, therefore, add 1500 yards to the threshold effects radius to determine troop safety distance. It should be emphasized that this method only provides a guide figure. The atomic staff officer will compute exact safety distances in a somewhat more complicated manner. As a matter of fact your atomic handbook contains the buffer distance chart he would use and instructions on how to make the computations. However, the 3 CEP method provides a good guide figure for planning purposes; if anything, it will provide a figure usually in excess of the figure computed by the atomic staff officer.

When we think about damage to the enemy it is fairly obvious that we cannot draw circles on a map and say we will have severe damage out to this line, moderate damage to this line and so on. If we could, consider the absurd situation of soldiers on one side of a line being in a severe damage zone while those across the line several feet away were only exposed to moderate damage. Better methods of determining what damage will be achieved are: (1) *within a certain radius we may expect 50% casualties;* (2) at a certain distance from ground zero there will be at least a *50% probability* of achieving severe damage. Neither of these methods implies that the damage area will stop short at a certain line; therefore, either method is more practical in this regard than the old "cookie cutter" methods.

These examples of simple computations show that commanders at all levels may quickly obtain sufficiently accurate information upon which to base sound decisions or recommendations. It is necessary that these commanders and their staffs thoroughly understand the capabilities and limitations of atomic weapons. Problems presented here at The Infantry School show that too many of our officers do not possess this understanding. Speaking of these problems, although a great number of problems presented at TIS deal with atomic weapons in one form or another, two problems presented by the Tactical Department give the basic considerations of the employment of atomic weapons in offensive and defensive operations. Copies of these problems, numbers 2360 and 2560, will be issued at the conclusion of this period.

Now that this information is available to all echelons what use will we make of it? For one thing commanders will have to place less reliance on a few highy specialized staff

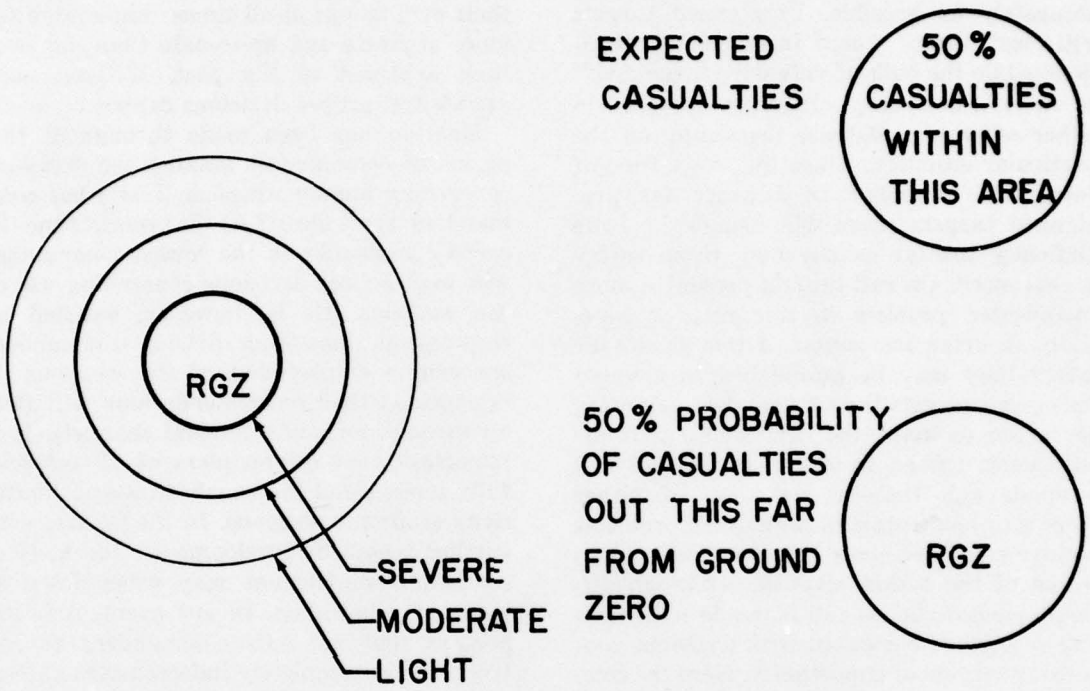


Figure 41. Damage estimation.

officers in arriving at their tactical decisions. This is definitely something we are striving for: to give the commander the necessary tools to work with, free him of absolute dependence upon the technical knowledge of a few individuals. He will probably always have to use these individuals for the detailed computations and final safety checks, but then Infantry commanders aren't interested in the computations required to place a 20 battalion artillery concentration on a selected target; yet they are expected to make decisions to call for such fires.

The atomic weapon has affected tactical doctrine and the application of that doctrine. Consider the penetration now in many instances the more desirable form of maneuver in situations where atomic weapons may be employed. In the defense atomic weapons have helped the Infantry to cover vastly increased frontages by the use of mobile defense tactics which you discussed yesterday. The weapon has by necessity pushed the development of our air mobility capabilities and forced accelerated thought on how we will use these capabilities. There will be a more detailed discussion of this later today.

Dispersion has become a byword in speaking of atomic warfare; yet we know that the principle of MASS must still apply. Units must have the ability to mass rapidly, accomplish their missions, and disperse just as rapidly. Intelligence and security have increased in importance. If we do not have rapid, accurate, and usable information concerning the enemy and enemy targets we can not use our atomic weapons to advantage. If we cannot achieve the necessary security to keep our intended use of the weapons from the enemy, or if we present him with information of friendly targets, we give him valuable weapons to use against our own forces.

When we speak of targets for atomic weapons we divide them into two types: preplanned targets and anticipated on call tar-

gets. The only difference between the two types is that the time of detonation is announced in advance for preplanned targets. Detailed data for both types is computed as accurately as possible. Preplanned targets will most often be used in offensive operations while the bulk of defensive targets will be on call; however, both types are used in either offense or defense depending on the particular situation. Since the exact time of detonation is known in advance for preplanned targets there will usually be little difficulty insofar as our own troop safety is concerned. On call targets present a more complicated problem in this respect, especially in offensive action. Although atomic safety lines may be established in advance for on call targets the commander may often be forced to make the decision to halt his advancing troops in order to use on call weapons and thereby risk loss of either secrecy or momentum or both. Such problems require rapid decisions and immediate application of the action planned. Although difficult, such decisions can be made with relative ease when compared with decisions concerning targets of opportunity. Here the commander is faced with a number of factors foremost of which is the requirement for rapid reporting of information and prompt dissemination of orders. First, of course, the commander must obtain information concerning the presence of a suitable target. Second, he must have accurate information concerning the location of his own troops with reference to the target. If the decision is then made to use an atomic weapon on the target, the most difficult problem still lies ahead: how to notify his troops of the detonation, prevent them from advancing into the target area, and yet at the same time not tip his hand to the enemy on the contemplated use of the weapon. This is only one of the many problems facing us in the tactical employment of these weapons; however, it serves to point up the great need for continuous thought and study on the subject.

Since atomic weapons effects tend to be very much alike, whether the weapon be friendly or enemy, our commander should be able to rapidly evaluate these effects on either our own or enemy troops. Here again we see the need for rapid, accurately reported information necessary to make this evaluation. In atomic warfare all commanders must have precise knowledge of the location of their own troops at all times: knowledge far more accurate and up-to-date than has ever been achieved in the past. Without such knowledge, proper decisions cannot be made.

Mention has been made throughout this period of commanders making the decisions concerning atomic weapons. Just what commanders do we mean? At the present time the corps commander is the lowest commander who makes final decisions concerning use of the weapons. He is, however, assisted by recommendations from division commanders concerning employment of the weapons. It is expected that recommendations will flow up through normal command channels. It is important that commanders *at all echelons* fully understand the capabilities and limitations of atomic weapons. In the future, with further technical developments, the level of command employment may come down as low as the battalion. In any event, it is important that not only commanders but all troops be as completely indoctrinated as possible concerning these weapons.

A few moments ago I spoke of the lack of understanding concerning the capabilities and limitations of atomic weapons on the part of some student officers. Let's take a few minutes to look at one of the most misunderstood characteristics of the weapon: nuclear radiation (Figure 42).

When an atomic detonation occurs, the fireball is formed and as it is reaching the maximum diameter rises rapidly. A vacuum is created directly beneath the fireball and dust particles and other objects on the surface are forced upward into the vacuum, helping to form the familiar mushroom shaped cloud. During the entire period nuclear radiation is being emitted. For the first 90 seconds we term the radiation that strikes the ground initial radiation; thereafter it is called residual radiation. When the cloud is formed it contains unfissioned material, fission products, dust particles, and other surface objects sucked up into the cloud. It emits alpha and beta particles, gamma rays and neutrons.

The cloud eventually will reach an altitude

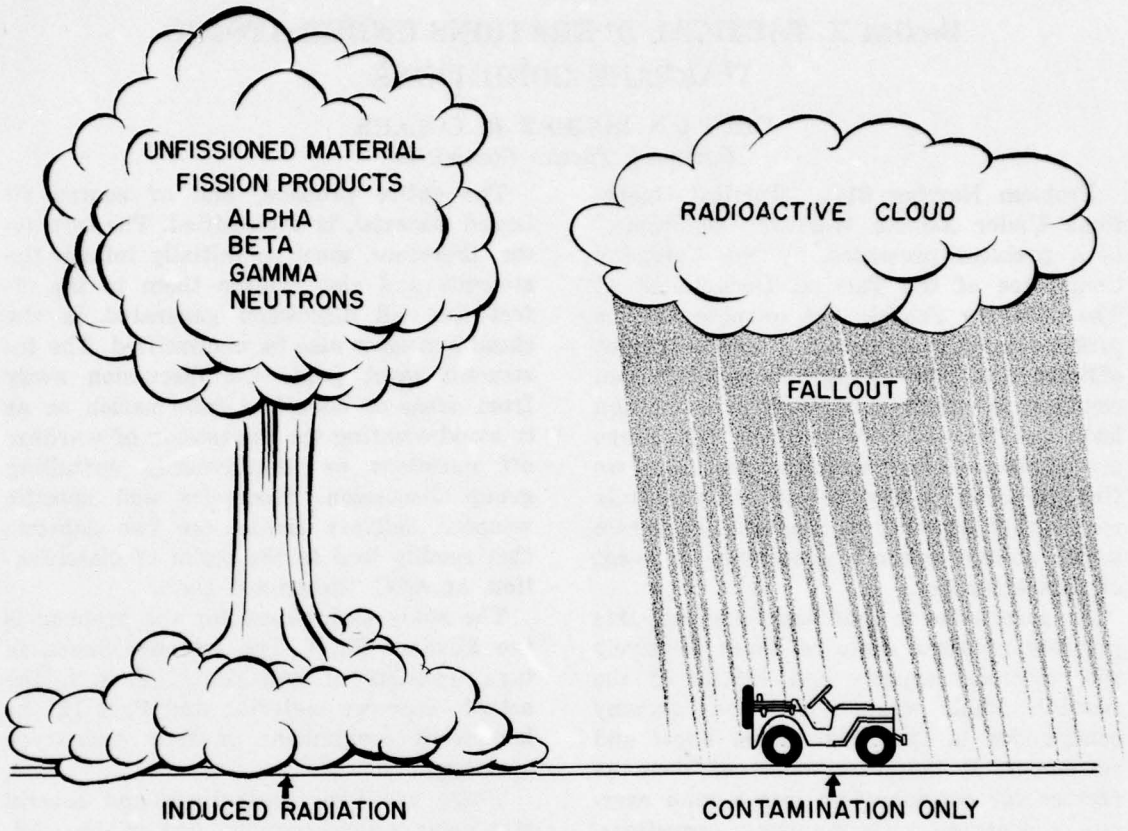


Figure 42. Nuclear radiation.

at which the wind will separate it from its stem and start to dissipate it. As the cloud cools, dust particles which are contaminated by the radioactive products of the explosion will tend to fall to the ground. This is the fallout!

If a jeep is in the area of fallout, it will become contaminated but *not* radioactive. By simply removing the contaminated dust and other particles from the vehicle one may remove the contamination; there is nothing permanent about this contamination. If necessary, the vehicle could be driven immediately although the driver might suffer sickness later. We've all heard talk about things becoming radioactive. Was that information wrong then? No. If we place the jeep near ground zero within range of the neutrons released we will gain induced radiation, but we'll also lose the jeep. There will never be a question as to whether it is safe to drive. Only the concentrated release of neutrons at the time of the detonation can induce radioactivity. The range of these neutrons is so short that most military equipment would be rendered unusable from other effects if it were close enough to become radioactive.

It is important for us to understand the facts concerning nuclear radiation. We must realize that a determined enemy can cross a contaminated area or an area containing material which has been rendered radioactive or use contaminated equipment if he wants to pay the price.

It's up to all of us to insure that our Army understands this and the other capabilities and limitations of atomic weapons. We must know and know well how to fight with these weapons, how to fight without them, and how to fight against them.

Section X. TACTICAL OPERATIONS UNDER ATOMIC WARFARE CONDITIONS

CAPTAIN ROBERT R. COLLER
Company Tactics Committee

Problem Number 2170, "Tactical Operations Under Atomic Warfare Conditions," is a problem presented by the Company Committee of the Tactical Department at The Infantry School. The purpose of this problem is to teach company grade student officers that even though there have been changes in tactical doctrine at battalion level and higher, rifle company operations are *fundamentally* unchanged now that we find ourselves in the atomic era and fully realize that we must be prepared to operate under atomic warfare conditions in event of future conflict.

As corollaries to that basic purpose, this problem presents some of those relatively few technical aspects and effects of the tactical atomic weapon that the company commander in the field should know and remember. It integrates some of them as factors for consideration into a map exercise concerning rifle company operations. In this manner it is impressed upon the students that the battlefield detonation of the tactical atomic weapon will most certainly pose some unique problems to the company commander as well as to all commanders. The fact is brought out that there will be situations calling for the formulation of new techniques, more often for increased emphasis on present methods, and, most certainly for more effective supervision.

This is a three hour problem and it is presented to the Officer Candidate, The Basic Infantry Officer, and to the Associate Company Officer Classes. It appears relatively late in the respective Programs of Instruction; prior to this problem, the student receives instruction in some of the mechanics of the various forms of atomic weapons, delivery means, and weapons effects. In addition to instruction on other forms of mass destruction weapons, protective measures that can be implemented by soldiers in the field are also covered.

The entire problem, and of course all issued material, is unclassified. The instructor, therefore, must so initially inform the students and also caution them to the effect that all discussion generated in the classroom must also be unclassified. The instructor must guide the discussion away from areas of classified information so as to avoid creating the impression of warding off questions or unnecessarily curtailing group discussion. Stockpiles and specific weapons delivery means are two subjects that readily lead to the realm of classification, or AEC "Restricted Data."

The study assignment for the problem is the Advance Sheet. The Advance Sheet, in turn, consists of two parts; Part I, the actual reference material, and Part II, the homework assignment of four essay-type questions.

There are two illustrations and several statistical references included in the Advance Sheet having to do with effects of a 20 KT air burst atomic weapon. The instructor must make it very clear to the student that it is impossible to actually draw an arc of a circle (part of an effects circle) on the ground, or on a map, for that matter, and state with certainty that there will be a certain degree of effects on one side of this line and definitely different effects immediately on the other side. The student must also not be allowed to get the impression that all preparations on the atomic battlefield are geared to achieving protection from a specific size weapon, detonated in a given manner, at a predetermined position.

The point is also made in the study assignment that the atomic weapon is a versatile new conventional weapon and can be used effectively in conjunction with the attack or defensive actions.

The effects of the atomic weapon discussed in the study assignment are four in number. First the thermal, or heat, effect

is discussed. It is pointed out that casualties will result from both the actual searing effect of the detonation itself and also from the common fires caused by the fireball heat. Perhaps the most effective use of the tactical atomic weapon can be found in detonating the weapon at such an altitude so as to maximize the primary thermal effects against enemy troops caught exposed, and unawares, in the open.

The blast effects, both primary and secondary, are discussed. The injuries resulting from blast will be mostly those mechanical injuries suffered from the secondary effects, or flying missiles. It is actually amazing to see what degree of over-pressure the human body can be subjected if there is no collision of body and missile.

Nuclear radiation is of two basic types: the initial gamma radiation that stems from the actual detonation and is all over in a matter of some ninety seconds from time of detonation and residual, or lingering, radiation that comes about mainly from the vast number of particles of unexpended fissionable material found in clouds of contaminated dust, or on the ground, after a surface or underground burst. Troops that are so protected that they avoid severe injury from thermal or blast effects will, in the vast majority of cases, have no worries concerning initial gamma radiation. All personnel, however, must be aware of the relatively elementary methods to be employed in coping with residual radiation.

The fourth effect of the atomic weapon we include is panic, or hysteria. This is, actually, a very real effect of the weapon and one that must be understood by all and offset by the strong and fearless examples set by all of our junior officers. They must demonstrate the finest possible leadership in seeing to it that all of our troops continue to perform their mission in an effective manner.

During the map exercise, each student is required to think and act as a rifle company commander. The instructor, therefore, must keep in mind the experience level of the particular class he is instructing and so guide the classroom discussion as to keep the complexity of the problem commensurate with the students' knowledge and ability.

In the actual introduction to the problem that is presented to the students, they are reminded that all indications are to the effect that the tactical atomic weapon will most likely be used in case of war. The atomic capability of our potential enemy is also stressed. Actual war notwithstanding, it is pointed out to the students that all of them leaving The Infantry School for service with tactical organizations in the field will most certainly be participating in field exercises simulating atomic warfare conditions.

There is no introductory conference in this problem; for a few minutes after the short introduction, question and comments on the study assignment are entertained, after which the map exercise is begun.

For this problem we use but one chart and several pin-ups. The chart is an eight by eight blow up of a section of the German Map LAUTERHOFEN that has been layer contoured.

For the first four requirements the students are to consider themselves Captain Company A, 85th Infantry Regiment. The 1st Battalion has been attacking to the northwest and has been held up as shown. The battalion commander orders Captain Company A to move his company out to organize and defend Hill 622, to outpost Hill 626 with a reinforced rifle platoon, to function as a patrol base, and to be prepared to reoccupy Hill 611 on order. Immediately prior to issuing his defense order, Capt Co A decides to discuss seven matters with his subordinates in the light of atomic warfare conditions; the company commander has had only Continental United States (Camp Desert Rock) indoctrination.

The students are encouraged to work in groups as they decide what points they, as the subject rifle company commander, would take up regarding each of the seven topics that Capt Co A chose to elaborate upon. Under the subject of preparation of individual shelters, it must be made clear that the two-man foxhole is still the preferred rifleman emplacement and that all other

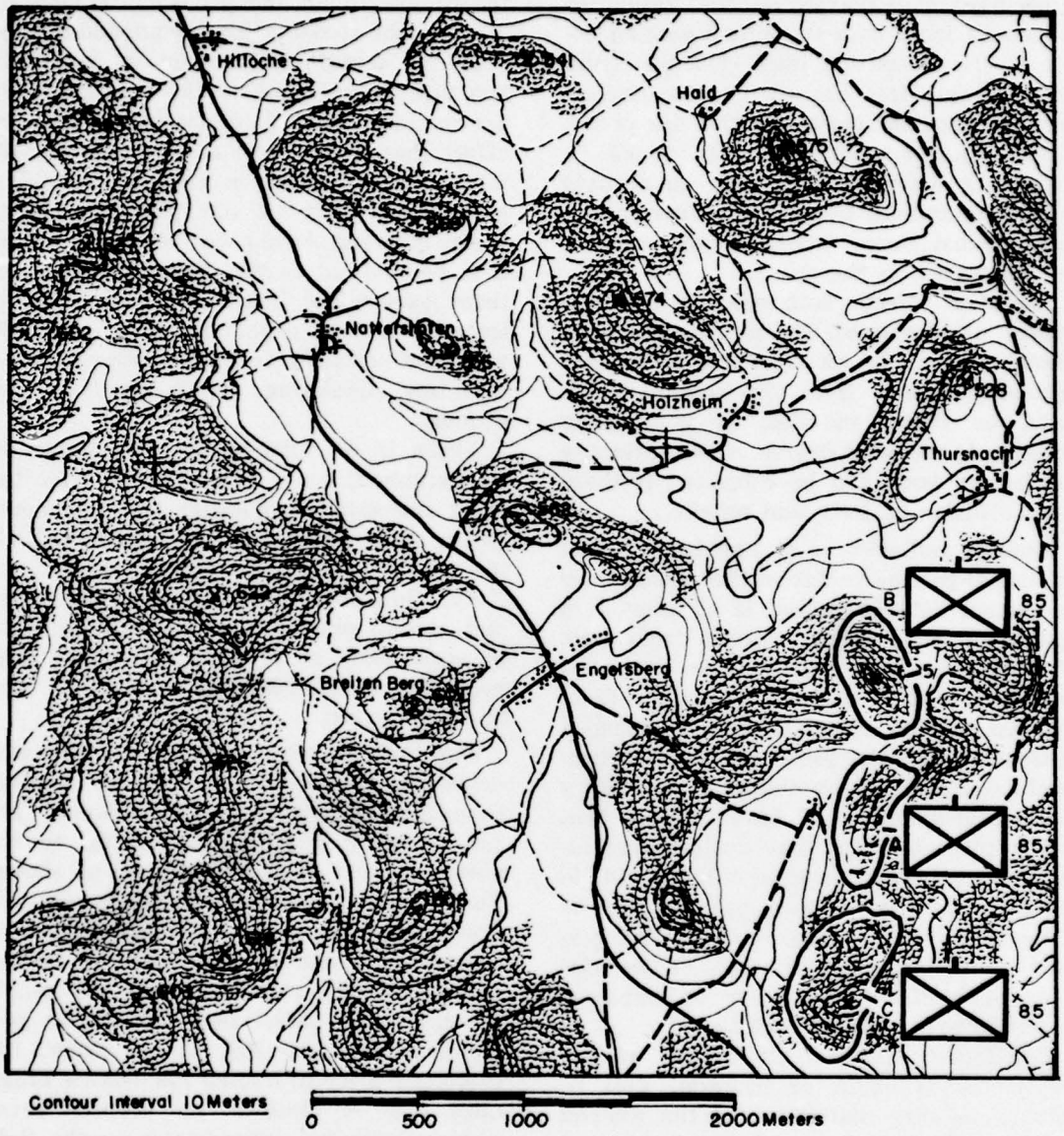


Figure 43. Initial situation.

type positions on the battlefield are to be developed and improved upon in a similar manner. The common sense, efficient approach is taken in the classroom as well as in the field and it is emphasized that the end product is achieved by a progressive development of the position. This progress first appears as a hole in the ground which is improved to a deeper-than-ordinary, two-man foxhole that finally gets overhead cover. The overhead cover cannot hinder the rifleman from effectively firing his assigned sector of fire; nor can the overhead be flimsy or slipshod. Protection must be provided from high-explosive shell fragments as well as atomic detonation effects. Nor do we want to build in a potentially dangerous source of flying missiles that could cause secondary blast or mechanical injuries. The overhead cover itself must be protected from the primary blast effects by constructing it low and silhouetted with

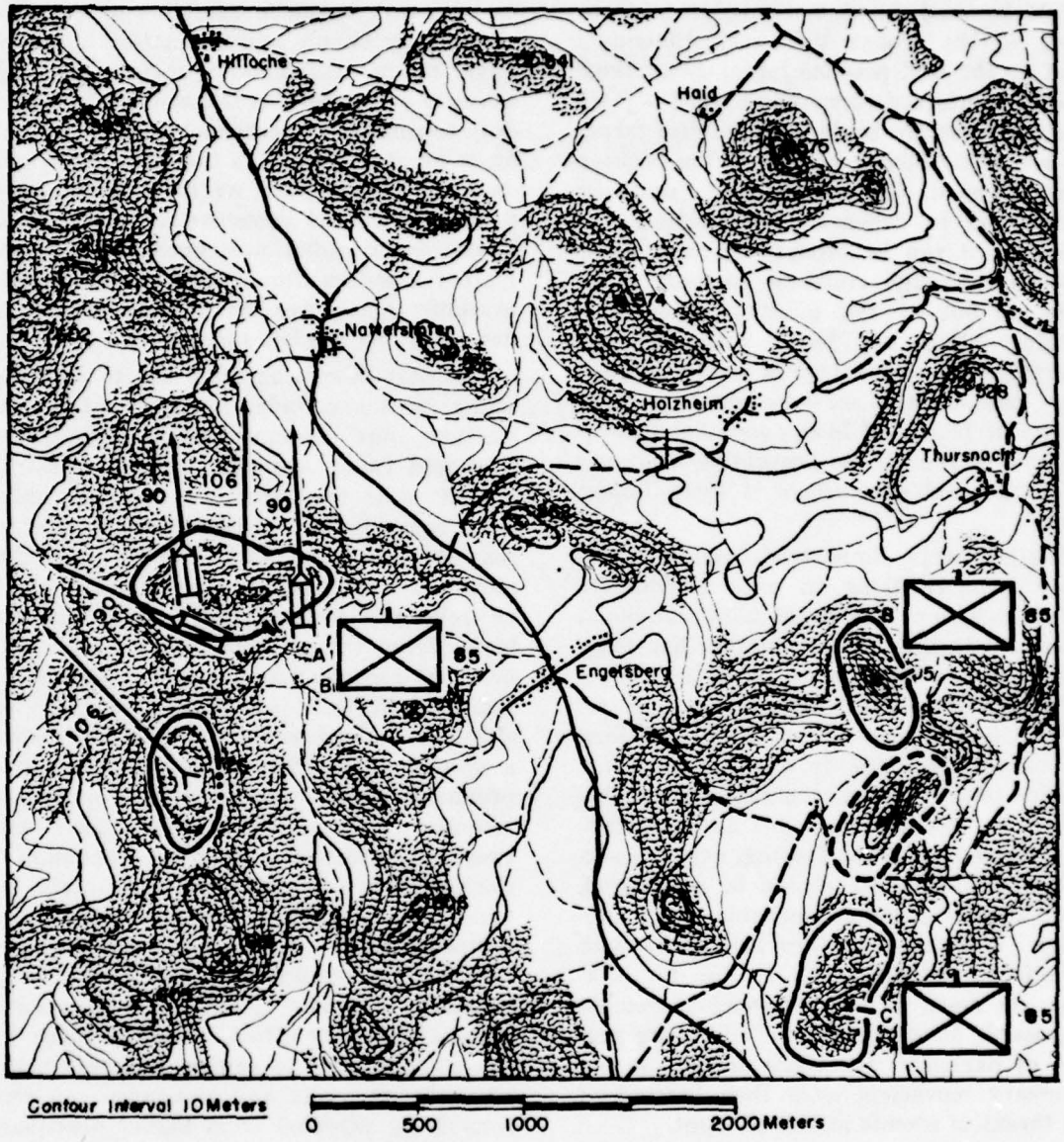


Figure 44. Occupation of Hill 622.

the ground. With regard to automatic weapons positions, it must be remembered to position the weapon so that it can fire effectively at any instant during the progress of the position preparation. Consideration should be given to methods for temporary protection against thermal effects of the atomic weapon during position preparation; propped up shelter-halves could be used, for example. All precautionary measures notwithstanding, the most rapid preparation of the defensive position and the effective conduct of the defense both constitute our mission. The mission, as always, is the overriding consideration!

After emplacements, the student discussion is switched to a closely allied subject, concealment and camouflage. The point that is made on this subject is that a well trained company with good camouflage discipline will certainly possess the standards demanded under atomic warfare conditions. If there

should be need for it, a reminder could be made to the troops that each individual must do the best possible job of camouflage since a reinforced company on such a piece of critical terrain could be a specific target for an enemy atomic weapon if the position were detected. The subordinates must be encouraged to supervise very closely. At this time it can be brought up that white clothing, although resistant to thermal effects, is out of the question since such clothing would not blend with the surroundings. As camouflage is placed on positions, consideration must be lent to possible effects of blast and heat upon that camouflage; even though the preventive insurance effect of good camouflage is more important.

Another very important counterintelligence measure tying in with camouflage and concealment has to do with individual movement in and around the position. Once again, the common sense approach is in order. All movement will certainly be restricted to the very minimum, just as long as that minimum is in keeping with the policies of the company commander in his efforts to best carry out his assigned mission. Special plans for feeding, supply issue, and even latrine use should be considered. One special technique applicable under conditions of atomic warfare has to do with periods of reduced visibility due to darkness. As much of the *necessary* movement as possible should be conducted during periods of darkness, but there can be no unnecessary movement even then because of the threat of atomic attack at night.

The training of the troops in first-aid is something that has been accomplished beforehand and nothing of significance can be done at this time to enhance the state of training. The state of mind, however, is another thing; at this time definite orientations are apropos. All personnel must know and understand that under atomic warfare conditions our forces may have to rely upon the self-aid or buddy-team aid concept. A previously established blanket increase in numbers of medical personnel is not the answer. Aircraft and armored personnel carriers will be made available as soon as possible for supply and evacuation but they might not be available due to more pressing situations elsewhere. It is the junior officers' duty to remind all personnel that our nation has a greater interest in the individual than does the enemy, that we must ignore any medically-inspired propoganda inducements. Treatment of radiation sickness is not anticipatory since maximum efficient use of all available manpower on the battlefield is necessary for combat success.

The next discussion topic has to do with communications. Under conditions of atomic warfare our communications, especially wire and radio, are ever more important. Higher units than company will be habitually separated by distances much greater than those existing before the advent of the atomic weapon and even a company could be relatively isolated; as in our case at hand. Even though communications equipment, to include wire, is very resistant to thermal effects, it should be dug in. Wire should be buried as soon as possible (using a system of priorities) to a depth of approximately six inches as protection against secondary blast effects; blast effects will exact the greatest toll on all communications equipment. Consideration must also be given to safe storage of extra antennae and batteries. Plans must be made for alternate means of communication and best use of *all* means of contact. After an enemy atomic detonation, every effort should be made by the stricken unit to contact higher echelon even though visits and assistance can reasonably be expected from higher headquarters without delay.

After communications, the subject of supplies and equipment is discussed. The best way to insure adherence to maintenance levels and condition of supply is to prescribe and enforce basic load requirements for the individual. Our package field rations are, for all practical purposes, invulnerable to radioactive contamination if they are sealed as manufactured. Supplies of any sort should not be discarded or destroyed merely because of suspicion of contamination.

The last part of the first requirement deals with SOPs and warning systems. At the time of issuance of the company defense order, it certainly would be advisable to review pertinent codewords and warning systems, especially those intended to give early warning of friendly use of the atomic weapon. It is problematical whether or not any warning could be given of enemy use of the weapon but warning systems for such notification must also be in existence.

The second requirement consists of four parts; four questions are asked of the company commander by platoon leaders after he issues the defense order. In answer to these questions, the discussion develops certain considerations with which we shall deal objectively at this time rather than to actually reproduce the problem material by reiterating the questions.

There will be no rallying points, as such, designated in a situation such as exists at this time. It is possible, of course, to have rallying points for some special purpose, but not for all personnel to stream to automatically after an atomic detonation. A studied reorganization and consolidation will be carried out on order of the commander. The chain of command from company commander right down through the last man in each squad takes on new importance and must be known by all personnel.

Protective masks are of vital importance as one of our best means of functional protection from many of the effects of all types of mass destruction weapons. If some few personnel should suddenly be found without protective masks, however, they cannot be allowed to avoid participating in accomplishing the mission of the unit. All possible steps will be taken immediately to replace the masks and to insure that such a situation does not recur.

Next, picture the company on the prepared position at a later time. The normal conduct of the defense is complicated by receipt of the prearranged warning of impending friendly use of the atomic weapon. The troops safety measures prescribed under such a situation cannot be allowed to cancel out our own system of warning of attack of the position by enemy troops. The position must be defended, of course. That is our mission! Student discussions bring to light many interesting techniques that could be employed in such a case. Use of the periscope is a workable idea. If necessary, FPL fires can be effected until the very instant of the flash of our friendly weapon; then the men could duck down for those few seconds between flash and the blast effects, at which time the enemy could again be taken under fire.

The last portion of the second requirement brings to light once again the need for maximum use of all available personnel to organize and defend the position. Should there be some few men with a slight case of a simple illness (common diarrhea, in this case) we cannot be unduly solicitious and evacuate them. Consider the bad effect on the morale of the other troops if such men were sent to the rear. Steps must be taken to seek out the source of such illness and to eradicate it. Medical personnel must be notified. Such illness could be symptomatic of possible sickness from some form of biological or radiological agent.

We move on to the third requirement and find that the enemy detonates an airburst atomic weapon equivalent to our two KT (ABLE) weapon over the position on Hill 626, thereby rendering that reinforced platoon ineffective. Because of the effects of the atomic weapon, combined with high explosive effects, enemy jamming of the airwaves, and hysteria among some communication personnel, all wire and radio communications with higher headquarters are temporarily out. The students are required to choose between one of the 90-mm gun tanks or the only available ¼-ton truck as a means to send a messenger back to battalion. Since we would be weakening our already badly shaken defense on Hill 622 by pulling out a tank, the ¼-ton truck is the logical choice. There are, of course, many arguments in favor of using the tank but, once again, it is demonstrated that in the absence of orders to the contrary, our mission is still to defend. The third re-

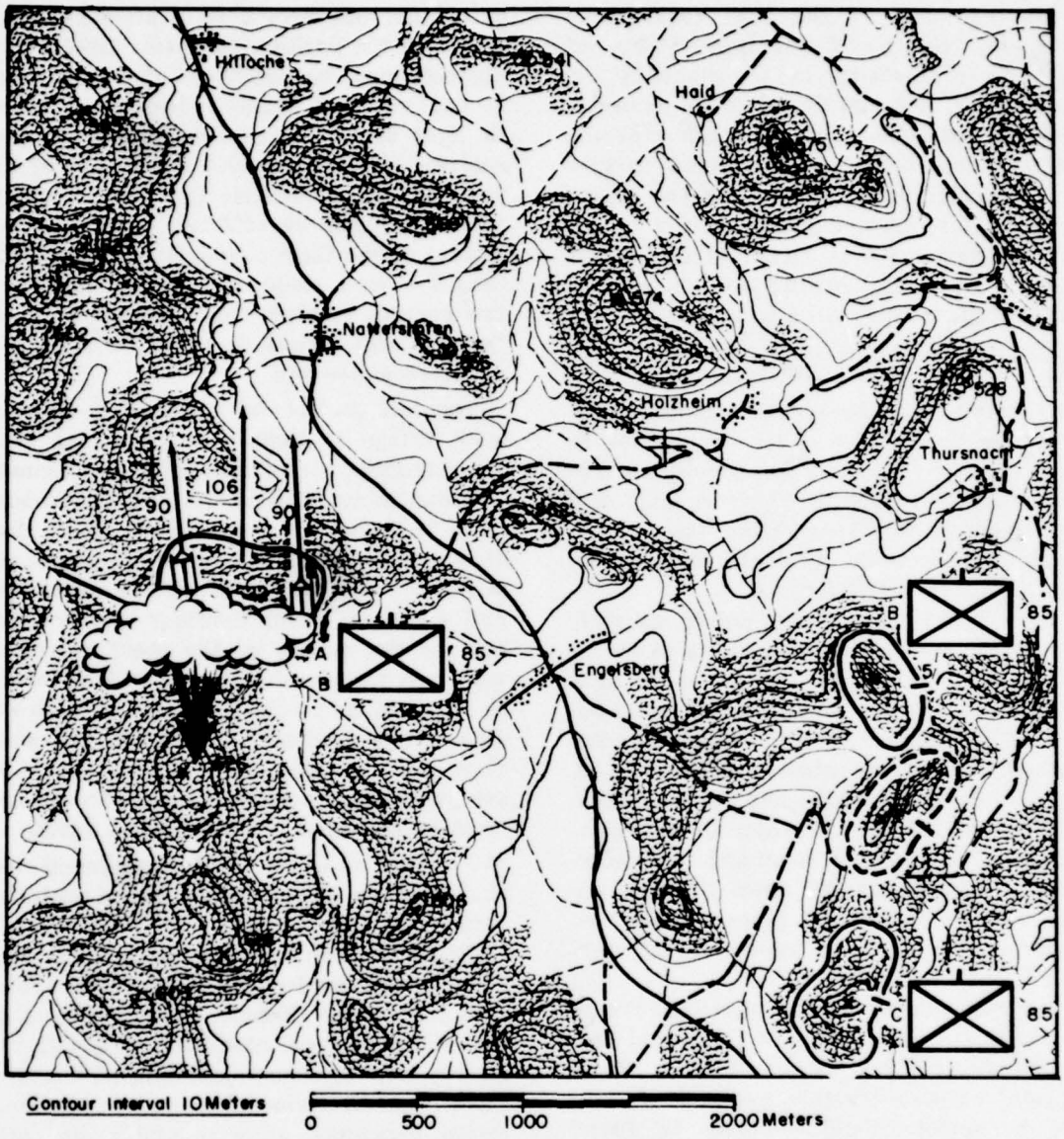


Figure 45. Atomic strike on hill 626.

quirement also develops the teaching point that from the tactical, battlefield standpoint the effects of residual radiation or "fallout" are negligible since the detonation was an airburst. Even if the burst had been a surface burst with resultant contamination of equipment in the area, the ¼-ton truck would still have been used if the company commander deemed it necessary. The vehicle could have been decontaminated by removing the dust containing radioactive particles; the metal of the vehicle itself would not have been rendered radioactive.

The fourth requirement presents to the students four logically phrased but not all soundly constituted courses of action that could be taken at this time by way of consolidation after the blast. The one most acceptable solution envisions a prompt and positive consolidation on Hill 622, outposting of Hill 626 with a squad sized force to provide early warning of enemy attack from

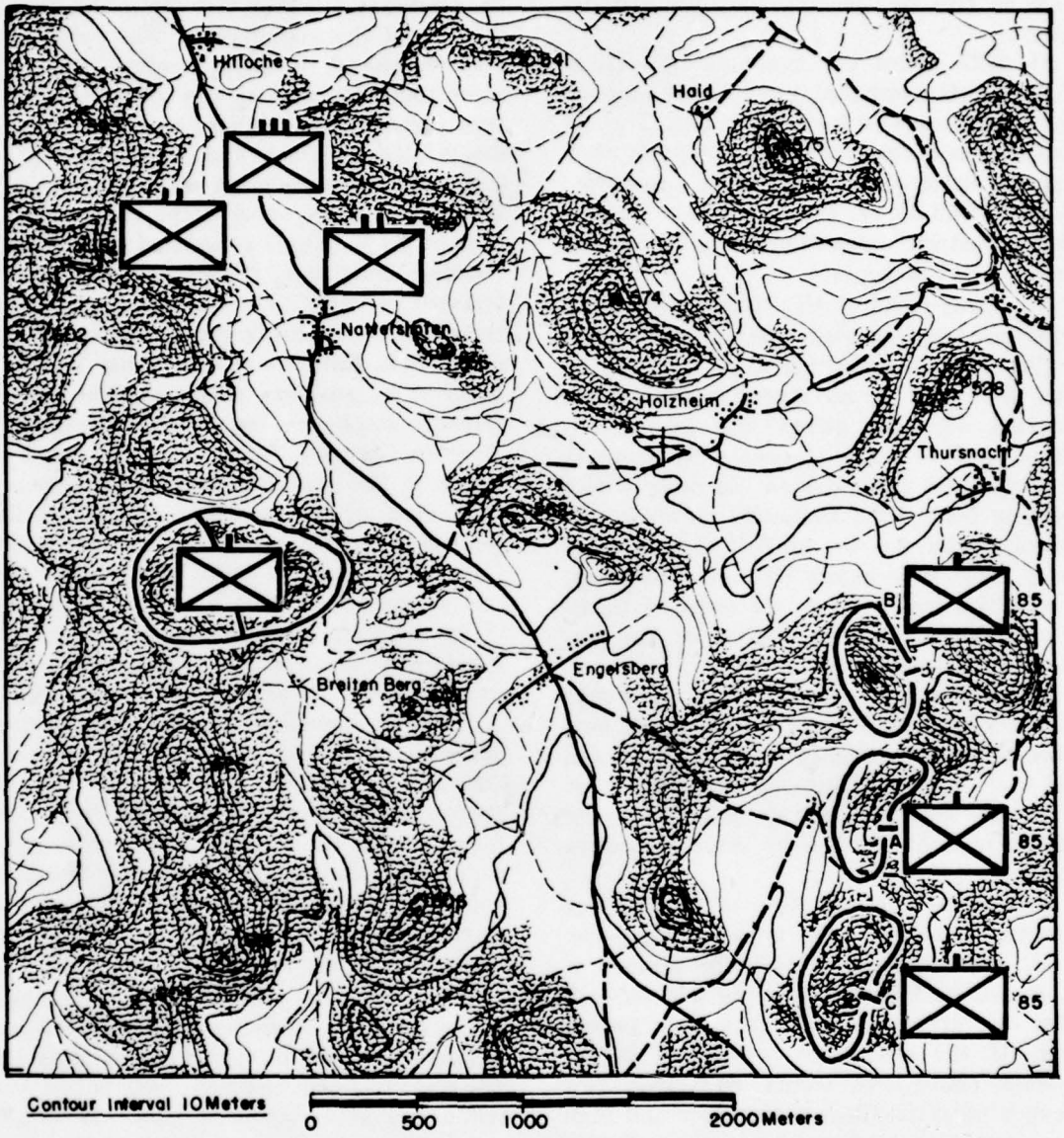


Figure 46. Co B situation.

that direction, and maximum care of the wounded. The main purpose of this requirement is to demonstrate to the students that sound tactical actions, based on well calculated estimates and interpretation of the higher commander's policies in the absence of actual orders, are just as important as ever, if not more so, under atomic warfare conditions.

With the end of the fourth requirement, what we might call the defensive phase of the map exercise is ended. Now the students are to consider themselves to be Capt Co B. The company is located as originally shown.

Note that the enemy situation has developed as shown, with an aggressor company occupying Hill 622. Company A has been withdrawn from Hill 622 after communications with battalion were re-established. Although Company A was not on that hill to defend it, the aggressor company encountered some resistance in the

form of fire by friendly mortars and artillery.

At 0723 hours the commanding officer of Co B gets word that a previously planned counteroffensive is to be launched. The 1st Battalion will conduct a two company coordinated attack on the objective as shown; H-hour, 0800 hours. There will be a friendly atomic weapon detonation on a deeper objective at 0758 hours.

The three parts of the fifth requirement bring out the following points. In this particular case, all personnel would be notified that there will be an atomic blast in conjunction with the attack and this notification, will be made at once since there is but little time until H-hour. In cases where there is more time available, however, the troops should not be notified until a relatively short time before time of detonation; notification beginning in the order of thirty minutes ahead of time, because of the possibility of security leaks.

All leaders must see to it that the troops have their steel helmets on, clothing buttoned securely, protective masks with them, and their eyes shielded. All personnel must be certain that there are no potential flying missile hazards in or near their respective positions.

With regard to the time of moving out into the attack, H-hour is when we move. If all goes well and the atomic weapon is detonated on schedule, H-hour will be well after the effects of the blast have passed over. If the detonation were just before H-hour (late), we would wait that few seconds until the blast passes over and then move out with no fear of nuclear radiation if the blast were an airburst. If the atomic weapon should prove to be a dud, we would move out as originally scheduled.

At 0753 hours, Capt Co B is aware of the flash of an atomic weapon detonated at the location as shown.

The first part of the sixth requirement causes the students to apply some knowledge they have gained from the study assignment and from previous instruction as they make certain sensings concerning this atomic detonation. Because of the fact that the flash and the heat was somewhat smothered and the rising cloud was very dirty and discolored, it is determined that, for some unknown reason, the blast was not a true airburst. Since there was a 15 second delay between flash and blast effect it is known that the explosion was approximately three miles away—and to the northwest.

Capt Co B is now concerned with certain weather conditions. Specifically he is interested in wind direction and velocity, and their effects on the great cloud of contaminated dust. Rain would also cause a special problem of residual radiation. The use of friendly smoke on the objective will make it more difficult for Capt Co B to keep track of the contaminated dust clouds.

In view of the problems created by this unexpected surface, or near surface burst, Capt Co B must be prepared to order protective masks donned; but only if radioactivity is encountered. He must also keep in mind the dangers of residual radiation brought about by exposed cuts and wounds.

With the company there will be trained personnel equipped with radiation detection instruments. These personnel must be decentralized and so positioned in the attack formation as to provide early warning of radiation dangers. This warning must be kept in command channels so as to avoid starting panic among the troops as they move out in the attack.

There must be no hesitation on the part of the company commander to keep the battalion commander informed of any situation. The objective will be taken, yes, but at battalion any atomic-induced situation will be quickly evaluated in the light of the overall tactical situation and relief from any atomic hazards will be granted to any unit as soon as possible.

The seventh and eight requirements come about after the end of the successful campaign and Capt Co B is with his unit in a reserve area. First he is called upon to enumerate some of the indications of enemy use of an atomic weapon that might be observed on the battlefield. The role of the front-line rifleman as an information gathering source is the same under atomic war-

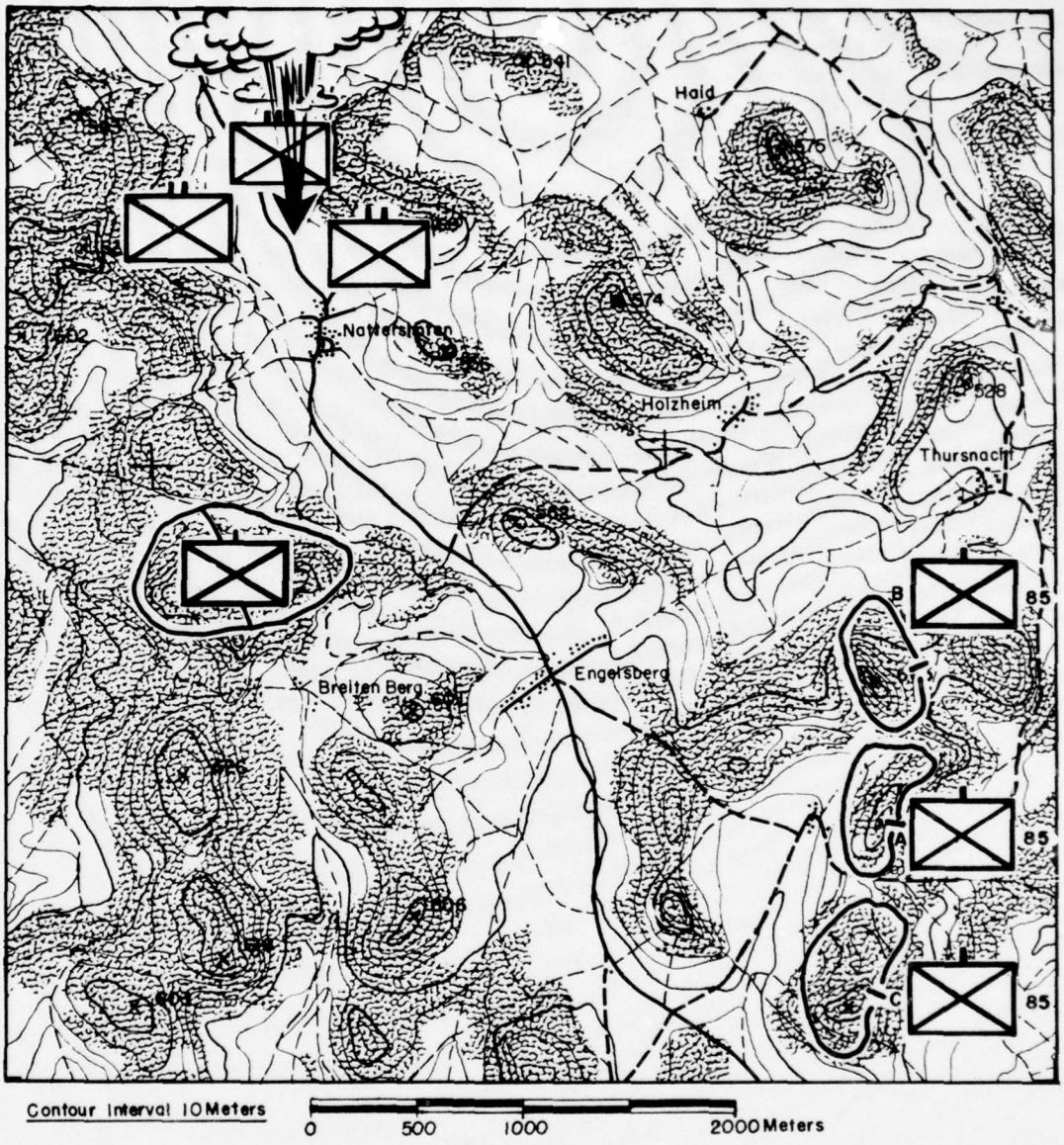


Figure 47. Atomic strike.

fare conditions as it was in the days of Indian fighting; he must observe and report. It is brought out here that some technical background knowledge on the part of all personnel in the rifle unit will be a most important factor in making sure that no information or sighting that could have anything to do with enemy use of the atomic weapon will be overlooked.

Lastly the students are caused to discuss their views on an atomic portion of a Standing Operating Procedure at rifle company level. Here it is brought out that almost all of the problems with which Capt Co A and Co B were confronted during the map exercise could have been made much easier if such an SOP had been in existence. Two other possible items not touched upon in the map exercise are covered in the solution to the last requirement; SOPs for handling and processing of both civilians and POWs.

In the problem summary the tactical atomic weapon is compared with gunpowder and the machine gun; another great step forward in the development of more powerful conventional weapons. A powerful weapon that is to be respected but not feared: it is not an absolute weapon!

The students are encouraged in the most sincere manner possible to retain the problem material and to use it for future reference. It is readily acknowledged that the problem is but, at best, a step in the right direction and it is hoped that the discussion of the various decision problems was at least thought provoking; it is hoped that the students will use this problem as a stepping stone, or departure point, towards improved atomic instruction of their own.

Each officer attending the 1955 Infantry Instructors' Conference will receive one complete issue of the problem material for "Tactical Operations Under Atomic Warfare Conditions." We here at the Tactical Department have already received encouragement for improvement plus material assistance from Lt Col John B. Clark and his associates in the Combat Arms Section at Fort Bliss, Texas, and since the problem still is new, we hope to hear from other instructor groups; any suggestions for revision and improvement will certainly be welcomed.

QUESTION: *Maj Barnum, AG School:* As Company Commander, in point of time, how soon would I know of an impending friendly atomic strike and how much detailed information would be given me?

ANSWER: *Capt Coller:* It is prescribed as optimum to warn all subordinates at each echelon in a reasonable amount of time so that they can warn all of their subordinates and still not run the risk of security leaks. We give as a horseback or thumbnail figure, perhaps 30 minutes in a rifle company, if that is the amount of time that you feel is required to get the word out to all your people. Of course it would increase as the echelon increases.

CHAPTER 9
THE ARMY AIR MOBILITY EFFORT

Section I. INTRODUCTION

COLONEL JOHN J. TOLSON
Director, Airborne-Army Aviation Department

Gentlemen: it is a pleasure to have you with the Airborne-Army Aviation Department for the remainder of the morning and part of this afternoon. On the 14th of February, the Airborne Department was reorganized and redesignated the Airborne-Army Aviation Department. One of the direct factors in bringing about this reorganization is the Army's increasing interest in airborne operations, air transportability, and Army Aviation matters. As a result of directives from The Department of Army and CONARC in the latter part of '54, the role of The Infantry School in these fields has been increasingly stressed and enlarged. Specifically, The Infantry School has been directed to exploit all means available to increase the mobility of combat units. Naturally, our efforts must be coordinated with the other service schools and we have been encouraged to coordinate directly with these schools in developing new doctrine, tactics and techniques for improving the Army's tactical mobility. We have been working extremely close with the Army Aviation School at Camp Rucker.

Figure 48 gives the current organization and mission of the Airborne-Army Aviation Department. You can see at Department Headquarters, the Director is advisor to the Commandant and the Assistant Commandant on all Airborne and Army Aviation matters. On the left of the chart, we have the Airborne School. Colonel Leland Cagwin is Director. The Airborne School has basically the same organization and continues to operate as the Airborne Department formerly did. Realizing that most of you received a detailed briefing on the functions of this part of my department last year, I will not go into details on this this morning.

This afternoon you will see some of the activities that they are engaged in.

One new addition to the curriculum in the Advanced Airborne Training Committee is the Pathfinder Course. We are now engaged in our third class of six weeks' duration. The first class started last fall. Although the role of pathfinders in joint airborne operations became a responsibility of the Air Force on 1 January 1953, we have a very definite requirement for a pathfinder element in all of our Armored, Infantry and Airborne divisions. You will hear more of this later.

On the right of figure 48 you see the new part of the department, the Air Mobility Group, which is headed by Lieutenant Colonel Homan. It has three basic committees with the missions indicated.

It is obvious to everyone that we have a challenging job to do here at Benning in the field of air mobility. Although we have been experiencing the normal problems of forming the new activity and getting our organization under way, I feel that we have already begun to make some valuable contributions to the Army and trust that we will produce much more. Unquestionably, we are imbued with the thought that the future of the Army lies in the air.

At this time I would like to present Captain Wintersteen, who will cover our activities in the Air Mobility Group. I wish to point out that his presentation is not given to classes here at the School. In fact, the Air Mobility Group does not participate in any instruction.

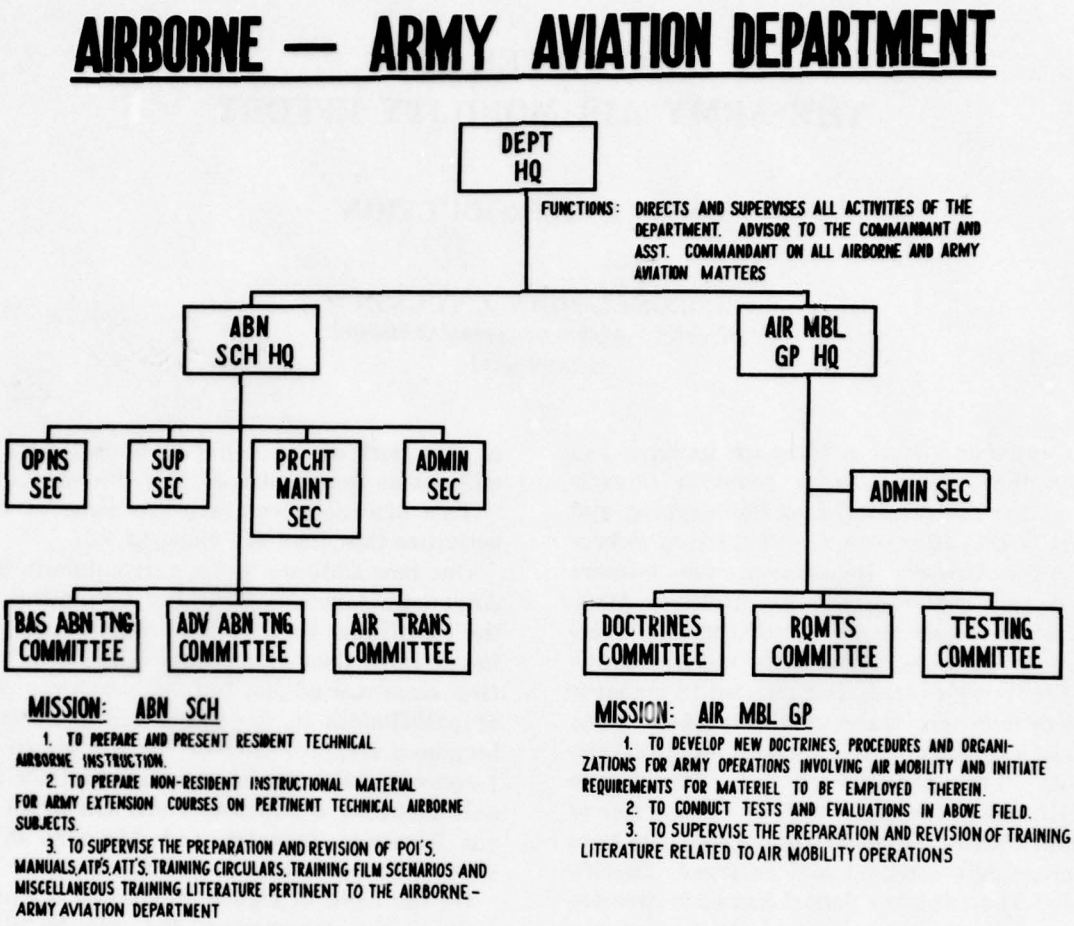


Figure 48.

Section II. CHARACTERISTICS AND CAPABILITIES OF ARMY AVIATION

LIEUTENANT IVAN L. SLAVICH
Instructor, Air Transport Committee,
Airborne School

With the tremendous emphasis being placed on extreme mobility, it is desirable that you know what you have available as commanders of Infantry units to assist in aerial transport and aerial resupply using aircraft which comprise army aviation today.

The flexibility of the airplane and its freedom to move without regard to obstacles on the ground gives it an extremely important role in land warfare. In the past, both fixed wing and rotary wing aircraft have been the eyes of the artillery, the reconnaissance and logistical support vehicle of the troop commander, and the rescuer and life saver of the wounded. The problem which faces the army today is to take further advantage of present and future types of aircraft to improve the tactical, strategic, and logistical mobility of our battle formations.

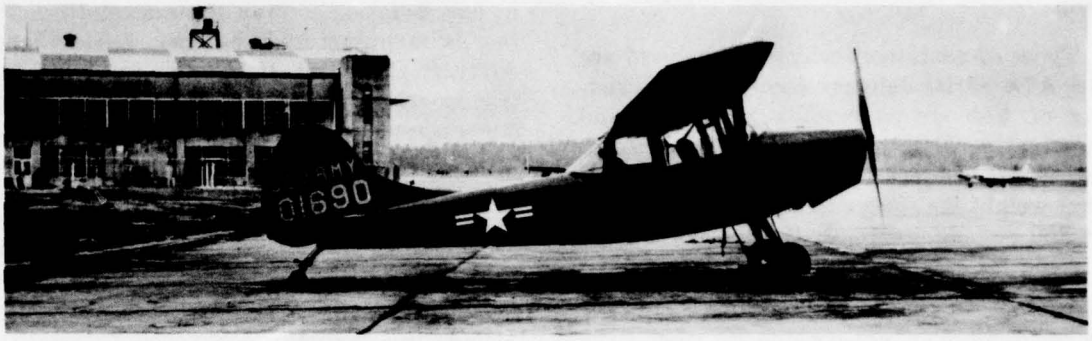


Figure 49.

First consider the light fixed wing aircraft which are represented by the L-19, L-20 and L-23. The L-19 (Figure 49) is the current two-place observation and reconnaissance aircraft, manufactured by the Cessna Aircraft Company. Its one piece, steel spring landing gear and all metal construction make it rugged enough to withstand continued use on short, unimproved fields. It has a cruising speed of 100 miles per hour, and an operating radius of 100 miles. We have always considered this aircraft a reconnaissance craft; however, the thirteen of these aircraft organic to the Infantry Division can transport 6,500 pounds of cargo approximately 200 miles in one lift. This cargo-carrying capability is made possible by the use of bomb shackles under each wing; each shackle is capable of carrying 250 pounds. The L-19 takes off and lands in short distances on unimproved strips.

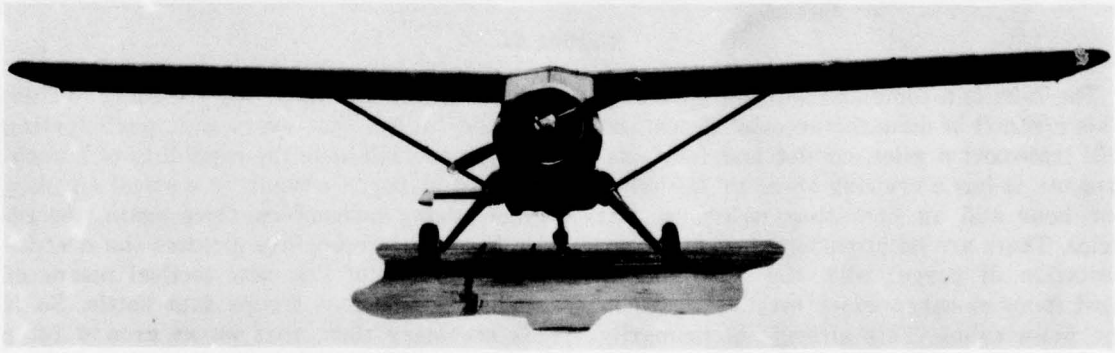


Figure 50.

The L-20, or more commonly referred to as the "Beaver," (Figure 50) is a utility aircraft manufactured by the DeHavilland Aircraft Company. It will transport a pilot and five passengers, or has an allowable cargo load of approximately 1,800 pounds. It has a cruising speed of approximately 130 miles per hour and a radius of 200 miles.

There are 3 of these aircraft organic to the Infantry Division. They have the capability of transporting 15 fully equipped troops, or, when used as light cargo aircraft, can transport 5,400 pounds of cargo 200 miles in one lift.

Bomb shackles may support up to 500 pounds of cargo in containers under each

wing. These containers can be ejected during flight to descend by parachute or free drop.

Types of containers which can be used are the A7A aerial delivery containers, consisting of web straps binding the cargo and culminating in "D" rings, or any other standard aerial delivery container, provided their load weight does not exceed the weight limit of 250 pounds for the L-19 and 500 pounds for the L-20.

Another in the family of Army aircraft today, similar in appearance to the L-20 "Beaver," is the U-1, or "Otter." It is now being procured by the Army and should be in our Aviation unit in the near future. It, too, is manufactured by the DeHavilland Aircraft Company. It has the capability of transporting 14 passengers or approximately 5,000 pounds of cargo. This aircraft will materially assist us in the transportation of troops and light cargo. It cruises at approximately 150 miles per hour and has an operating radius of 300 miles. There are presently no provisions for bomb shackles; however, later modifications of the aircraft may include this feature.



Figure 51.

The L-23 is a command ship (Figure 51). This aircraft is manufactured by Beech and will transport a pilot, copilot and four passengers. It has a cruising speed of 160 miles per hour and an operating radius of 300 miles. There are no provisions for the transportation of cargo, with the exception of light items of cargo which may be placed in the main cabin. This aircraft is primarily produced as a passenger ship and is assigned to Corps or higher headquarters.

Consider now another family of Army aircraft. During World War II, we finally realized the concept of the vertical envelopment with the parachutists. Parachute operations have, however, several limitations: first, it is a very costly operation; secondly, the individual parachutist requires specialized training; and lastly, once the parachute has dropped over the objective, considerable time is required for assembly. We are going to find, in the future, that every unit participating in combat will have the capability of launching an airborne assault or vertical envelopment using helicopters. Once again, the requirement for mobility dictates the ever-increasing use of this new tactical means of delivering combat troops into battle. So it is necessary then, that we as ground force commanders know some of the capabilities and limitations of the helicopters, how to effectively use them in an operation, and some of the characteristics of this aircraft which we say is capable of ascending and descending at steep angles. The first class of helicopters to be considered is the reconnaissance class. It is represented by the H-13, manufactured by the Bell Aircraft Corporation, and the H-23, (See Figure 52) manufactured by the Hiller Aircraft Corporation.



Figure 52.

Both of these helicopters have generally the same characteristics and capabilities.

These helicopters have the capacity of a pilot and an observer or a pilot and two litters placed externally on the landing skids. They were uséd extensively in Korea to evacuate wounded from the main line of resistance back to a surgical hospital. Today, their primary mission is that of a command, reconnaissance, and liaison type aircraft.

There are 10 of these reconnaissance helicopters organic to the Infantry Division. One is organic to each infantry regiment, three are in division headquarters company, two in the signal company, one in the engineer battalion, and one in division artillery. Their speeds range from 0 - 100 miles per hour and they have an operating radius of 100 miles.

We know that the factors necessary for flight in fixed wing aircraft are the propellers, the wing surfaces, and tail assembly; however, in a helicopter, its propulsion, its lift, its directional control must all be derived from the main rotar blade or blades. Helicopters operating at sea level will have a much greater lifting capability than helicopters operating 5,000 feet above sea level



Figure 53.

Air temperature and air density materially affect their lifting capabilities. The allowable cargo load of a helicopter is dependent upon atmospheric conditions.

Another class of helicopters is the utility class. This class is represented by the H-19, (Figure 53) manufactured by Sikorsky, and the H-25, (Figure 54) manufactured by Piasecki.

The H-19 has been the work horse of the present day helicopter program. It has the capability of a pilot, copilot and from 5 to 8 fully equipped troops. It has an allowable cargo load of approximately 1,600 pounds and is capable of transporting cargo externally by means of a cargo sling. As an example of the troop carrying capability of this helicopter, eleven H-19's moved a U. N.



Figure 54.

Battalion of 826 men in Korea a distance of 20 airline miles in 2 hours and 15 minutes to affect the relief of a front-line Infantry battalion. It would have taken 40, two and a half ton trucks 9½ hours to affect this same relief due to the terrain and road network.

Another helicopter in the utility class is the H-25, manufactured by Piasecki. This is a tandem rotored helicopter capable of transporting a pilot and copilot and 2 to 4 fully equipped troops, or an allowable cargo load of 655 pounds. The primary mission of this helicopter today is that of a transition trainer for pilots going from single rotored to tandem rotored helicopters.



Figure 55.

Consider briefly the methods of transporting cargo with helicopters. We know that with fixed wing aircraft it is necessary to load items of cargo inside the cargo compartment and then to lash that cargo down. However, with helicopters all that is necessary is to evenly distribute the cargo throughout the floor of the cargo compartment and the helicopter will normally be safe for flight. This is only one of two methods of transporting cargo in helicopters. The second method is with an external sling organic to all utility and transport helicopters. An H-25 helicopter can pick up cargo situated on the ground, move it, and drop it while still hovering.

The remaining class of helicopters is the transport. In the transport class we have three types: the light transport helicopter with the military requirement of lifting 1½ tons; the medium transport helicopter with the military requirement of lifting 3 tons; and the heavy transport helicopter, with the military requirement of lifting 5 tons.

The H-34 (Figure 55) is a single rotored, 4-blade helicopter manufactured by Sikorsky. It has the capacity of a pilot, co-pilot and from 12 to 15 fully equipped combat troops, or an allowable cargo load of 3,000 pounds. It has a speed of from 0 - 120 knots and a radius of 100 miles.

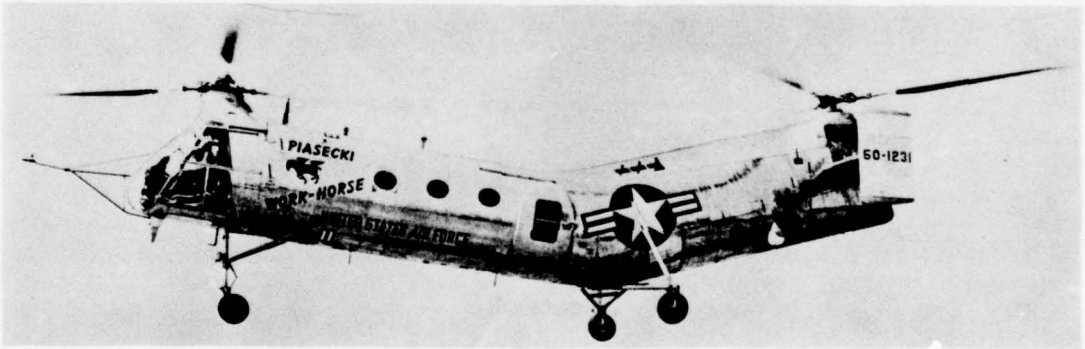


Figure 56.

The H-21, manufactured by Piasecki (Figure 56) has the capacity of 15 to 20 fully equipped combat troops or an allowable cargo load of approximately 3,000 pounds, and can transport cargo externally with a sling device. Its speed ranges from 0 - 120 knots and has a radius of 100 miles.

In the medium class, with the military requirement of lifting 3 tons, is the H-37 (Figure 57). This is a single rotored helicopter with a capacity of transporting 25 to 30 fully equipped troops or an allowable cargo load of approximately 6,000 pounds. It has approximately the same size cargo compartment as the C-47. It is the first helicopter developed with retractable landing gear and twin engine reliability. This helicopter is in limited production, and is expected in our helicopter units in the near future.

In the heavy class with the military requirement of lifting 5 tons, is the H-41 (Figure 58). Notice the similarity between the H-41 and the H-21. The H-41, a later model of the H-21, has an allowable cargo load of 13,500 pounds or 35 to 40 fully equipped troops. Its speed ranges from 0 - 130 knots and has a radius of 175 miles. It is presently undergoing field tests and will probably not be available for at least two years.

The transport helicopters are organic to the Transport Helicopter Company. Each helicopter platoon of the Company has seven helicopters of a single transport type, i. e., light, medium or heavy. Company Headquarters has two organic reconnaissance helicopters.

The Company is organic to the Helicopter Battalion and the Battalion may have from two to four companies. The companies within the Battalion may vary in that one may be medium transports while the others are light or they may be all light, and so on.

Within the type field Army there is intended to be four battalions.

We feel that in the future, Army Aviation, with its new family of helicopters, will give the ground commanders of a combat army a degree of mobility only recently conceived and not yet fully realized.



Figure 57.



Figure 58.

Section III. PATHFINDERS

CAPTAIN JOHN E. STANNARD
Pathfinder Sub Committee, Advanced
Airborne Committee, Airborne School

Gentlemen, during this period, I shall discuss: the history of pathfinders, the program of instruction contained in the present Pathfinder Course at The Infantry School; the organization of the pathfinder platoon, some of its organic equipment, and the general techniques of employment.

Pathfinders first came into existence in 1943 after the airborne operation in Sicily. Airborne assaults in North Africa and Sicily brought out two needs: one was ground aids to assist aircraft in locating the proper delivery areas, the other for an advance party to aid in the assembly of parachute or air-landed troops. Prior to the Normandy Invasion a Pathfinder unit was organized for each airborne division. Pathfinders were employed in Italy and Normandy, and in the subsequent airborne operations conducted during World War II. Pathfinders were also employed to assist troop carrier aircraft during the two airborne operations of the 187th RCT in Korea.

During the period 1951-1953, the Air Force assumed the pathfinder responsibility for troop carrier aircraft. The Pathfinder School trained the initial group of Air Force personnel and suspended operations in early 1953. In the fall of 1954 the Pathfinder Course of Instruction reopened here at Fort Benning by direction of G3, Department of the Army.

The mission of the pathfinder course is to train Army personnel to assist Army aircraft, both fixed wing and helicopters, in parachute and air-landed delivery. Pathfinder personnel are trained to operate navigation aids, and control Army aircraft during these deliveries. They also reconnoiter areas to determine their suitability for airborne deliveries. Special emphasis is given to the operation of radiation detection devices in areas which have been subjected to atomic attack. Lastly, the pathfinders assist in the assembly and reorganization of parachute and/or air-landed troops.

The prerequisites for officer attendance at the Pathfinder Course are that the officer be of Company Grade, a member of the Regular Army or a Reserve Officer on active duty, qualified as a parachutist, and have an anticipated assignment which requires knowledge of pathfinder duties. Enlisted men must be qualified parachutists with twelve months or more of service remaining after completion of the course and possess a standard score of 100 or higher in Aptitude Area I. All students must have a security clearance to include Confidential.

The Pathfinder Course covers a period of six weeks and consists of 138 hours of airborne training, 35 hours of Communication training, 30 hours of Map and Aerial Photograph Reading, 12 hours of Radiological training, 4 hours of Mine Warfare, and 4 hours on Demolition techniques. Included in the airborne training are three day and one night parachute operations and a one day helicopter operation.

At the present time pathfinders are found only in our airborne units. The airborne division is authorized one Pathfinder Platoon consisting of four teams of one officer and 13 enlisted men each. Administratively, the platoon functions under the division headquarters company. Tactically, the platoon operates under the commanding general of the division, through G3. Each team leader is authorized the rank of captain. The ranking team leader is the platoon leader and the Division Pathfinder Officer. He is also a member of the division special staff and advises the commanding general on the capabilities and limitations of pathfinders in airborne operations.

Pathfinders act as the nucleus of an advance party for airborne operations. As such, they may precede or accompany the lead element of the main body that is transported in Army aircraft. To assist the Army aircraft in transporting the main body, pathfinders precede these aircraft to establish the

necessary navigation aids. In the immediate future, pathfinders will precede large scale airborne operations, especially those conducted at night. The amount of time by which pathfinders must precede the main body is dependent on many variables. It might be five minutes for day helicopter landings, or one hour for night parachute operations.

When pathfinders precede the main body, some degree of secrecy is lost. This fact must be considered by the commander in his planning. In transporting pathfinders to the objective area during airborne assaults, the best compromise between secrecy and speed is achieved. The most common means of transportation are by parachute and helicopter. Landings by parachute offer greater secrecy and flexibility as to the time and place of landing; however, more time is needed to assemble the pathfinder team and place aids in



Figure 59.

operation. Helicopters offer the fastest and easiest means of landing pathfinders and their equipment at the exact area of employment, but the loss of secrecy in landing by helicopter is greater than in parachute landings.

For employment with armored units during rapid advances or with isolated infantry units, pathfinders may be transported by motor vehicle, or move on foot. Then they would be employed to guide resupply aircraft to these units.

Within an objective area pathfinders furnish ground-to-air radio communication to in-flight aircraft. An initial ground radio communication net is established with and between landing areas and between landing areas and distant friendly positions. In addition, pathfinders reconnoiter the objective area and provide security.

Pathfinders are normally employed by being attached to regiments or battalions for an operation. Since the pathfinder team is a very small unit, it may be reinforced by attachments from the assault unit. These reinforcements can assist the pathfinders in accomplishing their missions and do not involve any additional loss of secrecy as they are transported in the pathfinder aircraft.

The major items of pathfinder equipment consist of navigation and assembly aids. Navigation and assembly aids consist of two general types—electronic, which employ radio waves to transmit their signals, and visual.

An electronic aid, the AN/PRC-14 Radio (Figure 59) is a 4 channel, ultra high frequency radio, capable of transmitting either voice or tone signals. At present, this radio can communicate with Air Force aircraft only, and has a dependable range of 30 miles. The radio weighs 31 pounds when ready for operation. This set is considered sub-standard and will probably be replaced by an improved set with better characteristics in the near future.

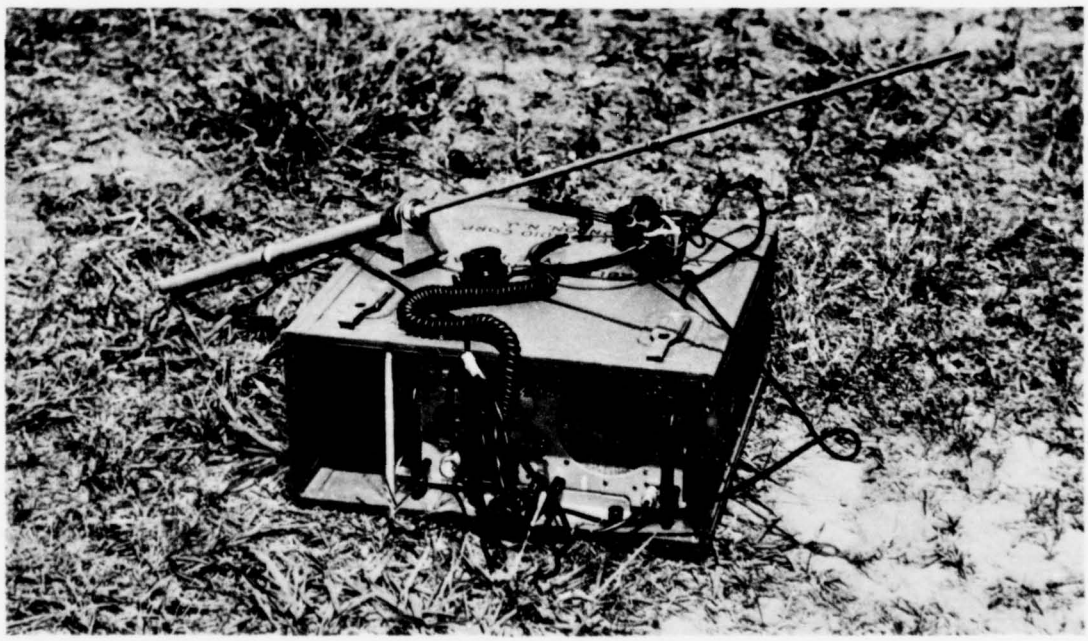


Figure 60.

Another electronic aid, the ARC Type-12 Radio (Figure 60) has 5 channels, operates in the very high frequency band, and is a voice radio only. The Type-12 can communicate with the helicopters or light fixed wing aircraft of any of the services. It has a dependable range of 30 miles, and weighs 93 pounds completely ready for operation. It is expected that in the near future, Army aircraft will be equipped with FM radios of this

type which will enable them to communicate directly with our Infantry, armored and artillery FM radios.

A third electronic aid is the AN/PPN-2 Responder Beacon (Figure 61). This set has five channels, operates in the very high frequency band, and transmits tone signals. This beacon responds to signals received from Air Force Troop Carrier Aircraft by transmitting a signal back to those aircraft. The return signal is received as a blip of light on a visual screen in the aircraft and indicates the distance and direction to the beacon. This beacon has a dependable range of 28 miles and weighs 33 pounds when ready for operation.

The only standard visual navigation aid in use today is the AN/CVX-1 Light Beacon. (Figure 62) It is a rotating beacon which transmits either infrared or visible light, for a range of 10 miles, and is employed to mark delivery areas for the pilots of aircraft. The complete set ready for operation weighs 60 pounds.

All pathfinder equipment is specially designed for maximum portability and ruggedness. Pathfinder personnel are trained in the techniques of landing by parachute with eqiupment containers attached to their body, to protect fragile items and enhance speed when landed by parachute.

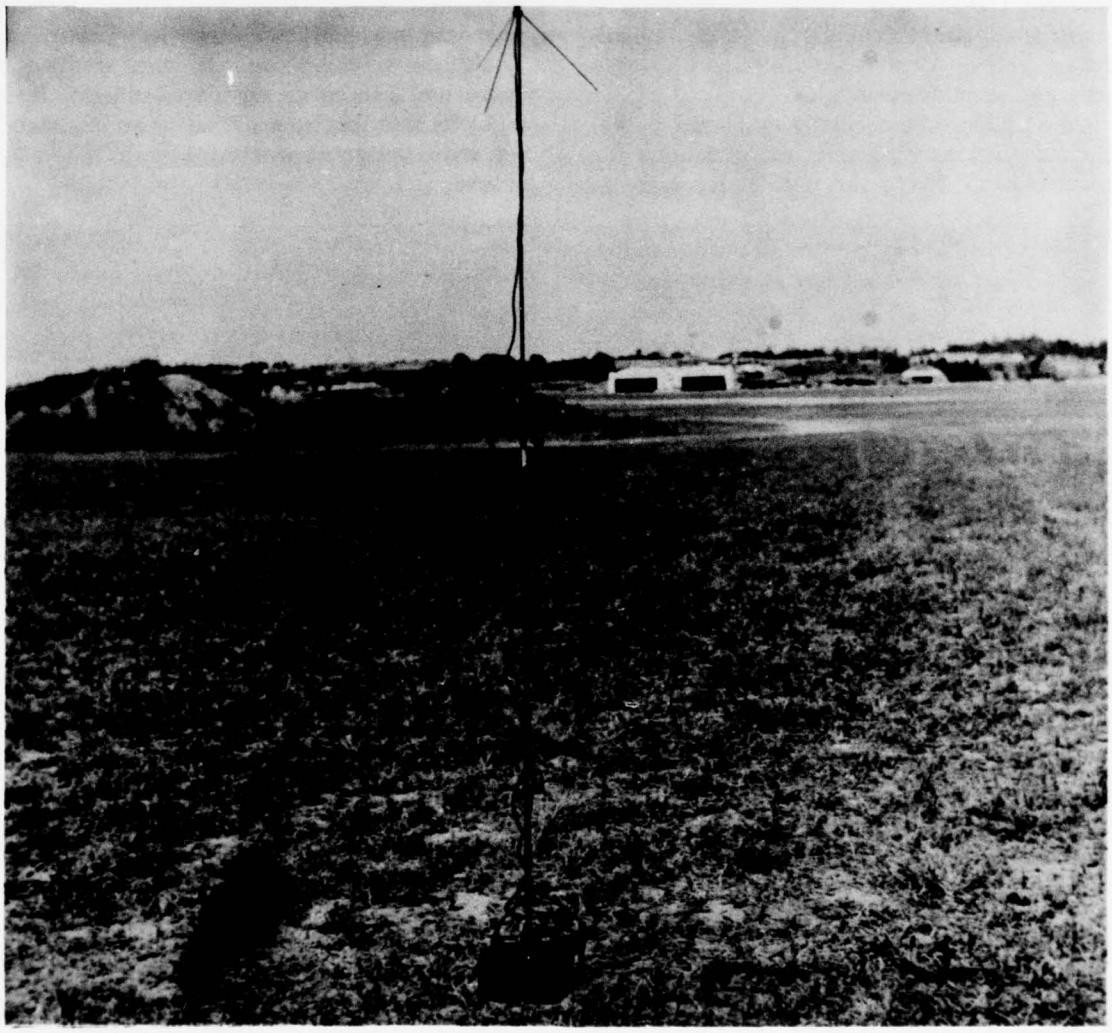


Figure 61.

In jumping with equipment, pathfinders employ personnel carried equipment containers. The most common type is the individual equipment bag (Figure 63). There are two methods of carrying the containers: one, when the container is lightly loaded, involves allowing it to remain attached to the jumper until on the ground; the other in-

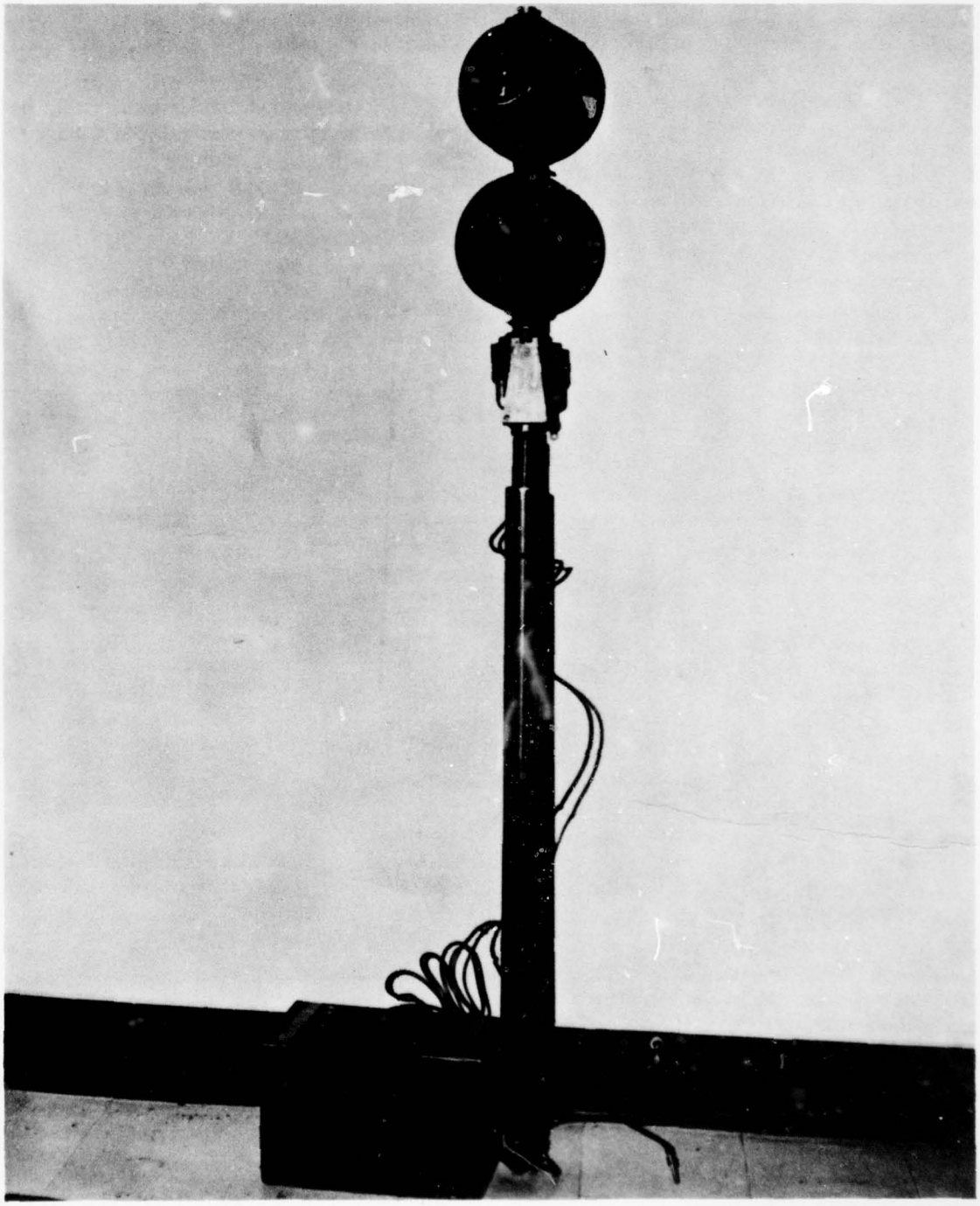


Figure 62.

volves, when the container is heavy, allowing the container to fall free from the jumper to the end of a control line, decreasing the landing shock, as the man and equipment land separately.



Figure 63.

Section IV. AIR LANDED AND AERIAL DELIVERY DEMONSTRATION

CAPTAIN ROBERT APT
Air Transport Committee, Airborne School

Captain Apt:

During this period, we are going to discuss the conduct of an airborne assault using army aircraft. We in the Airborne-Army Aviation Department are concerned primarily with the techniques and not the tactics involved.

We will talk of platoons landing, but will have only 10-25 men landing in two to five helicopters. While this may seem unrealistic, it brings out a technique and a teaching point which we feel is important.

We realize that at present there are usually not enough helicopters available to lift a large number of troops. Using as many helicopters as are available and rotating the troops flying we can train our units in the tactics and techniques and prepare our men psychologically for helicopter assaults. When Army aircraft become available in larger numbers we will be ready to use them.

If an Infantry battalion is to make a helicopterborne assault, the battalion requests the helicopters from higher headquarters. Helicopter units are assigned to Army and subsequently attached to Corps or subordinate units for an operation. Rarely will helicopter units be placed under operational control of headquarters below regimental level.

When an Infantry battalion is designated to conduct a helicopterborne assault, it selects a loading area which includes ready area with adjacent loading sites. Desirably, the ready area will be the present location of the assembled troops. This provides for the maximum utilization of the mobility of the aircraft.

In the ready area, units are organized into planeloads with the following considerations: that each helicopter, insofar as possible, contain a tactical unit that has retained tactical integrity; that key personnel will be distributed throughout the aircraft to insure that the loss of one helicopter does not destroy the chain of command of any unit. Other functions performed in the ready area include the final preparation of weapons and equipment for rapid loading and an adequate briefing of personnel on the routes to and from the helicopters when loading and unloading in both the loading area and the landing zone.

Loading sites are selected as close to the ready area as terrain will permit and must provide a level, stable platform on which the aircraft will be capable of landing, standing, and taxiing as required.

Aircraft parking plans in a loading site are arranged jointly between the helicopter unit commander and the Infantry unit commander to facilitate rapid loading upon arrival of the transporting unit. The parking plan is made more effective by designating chalk numbers for aircraft within each flight or serial and requiring the transporting unit commander to mark the arriving aircraft accordingly.

The efforts described above result in speed in loading which diminish the opportunities for detection and destruction of the participating units by enemy forces.

A wooded hill is the present assembly area and ready area of the company and an adjoining open field is their loading site. In this case, the helicopters found the loading site by prior reconnaissance, a parking plan has been made, the helicopters are chalk marked, and the company has designated one man to guide in the lead helicopter. The rest of the aircraft will then land according to the parking plan.

As soon as they land, the men double time to the helicopters and board. Men with crew served weapons hand them to men already in the aircraft and then board themselves. The last man into the helicopter closes the door and taps the pilot on the leg signifying that all men are loaded, seat belts fastened, and are ready for take off.

After take off, the helicopters fly a predesignated route, land on or near the objective, the troops debark, and the helicop-

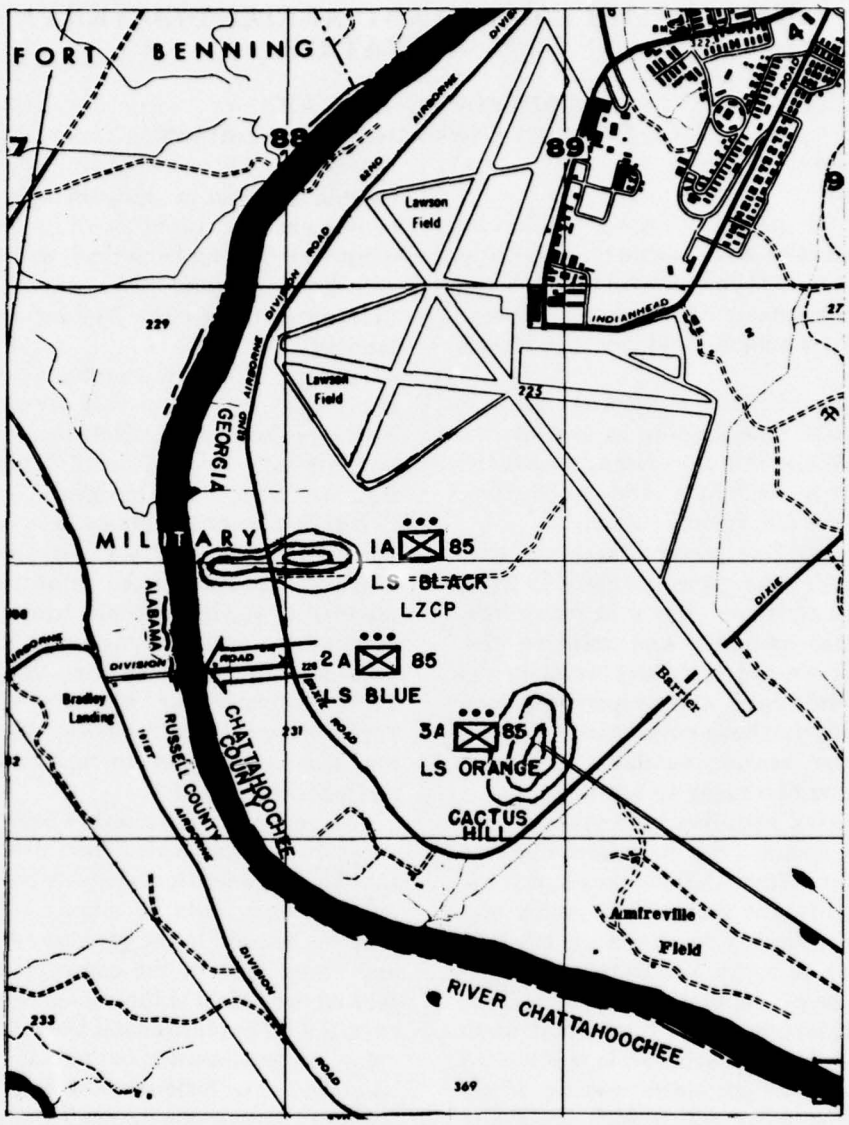


Figure 64.

ters return over the same or other preplanned routes. Pathfinders may be used to assist in these landings.

To demonstrate some of the techniques in the use of Army aircraft in assault operations, assume that 1st Battalion, 85th Infantry, is to seize Lawson Army Air Base and the bridge across the Chattahoochee by helicopter assault. (Fig 64). "A" Company secures the south portion of the air base and the bridge. "A" Company's order would read like this; Third Platoon (+) seizes Cactus Hill, 2d Platoon (+) seizes the bridge and the approaches to the bridge, and 1st Platoon seizes the hill to the north. Pathfinders will proceed the main assault by five minutes to mark and man the landing sites. Units making the ground attack are to link up with the 1st Battalion by H + 24 Hours.

Capt Stannard:

How can the pathfinders be used to aid us in an operation of this type? Although

pathfinder units have been in existence for the past twelve years, the techniques of employing them with helicopters are still in the process of being developed. A method pathfinders may use to assist and control massed helicopter landings has been established however. (Figure 65).

In the objective area are one or more landing zones. Within the landing zone are one or more landing sites. These are the areas at which the helicopter flights land. The command post which controls the activities on the landing zone and communicates with the helicopters is the landing zone control

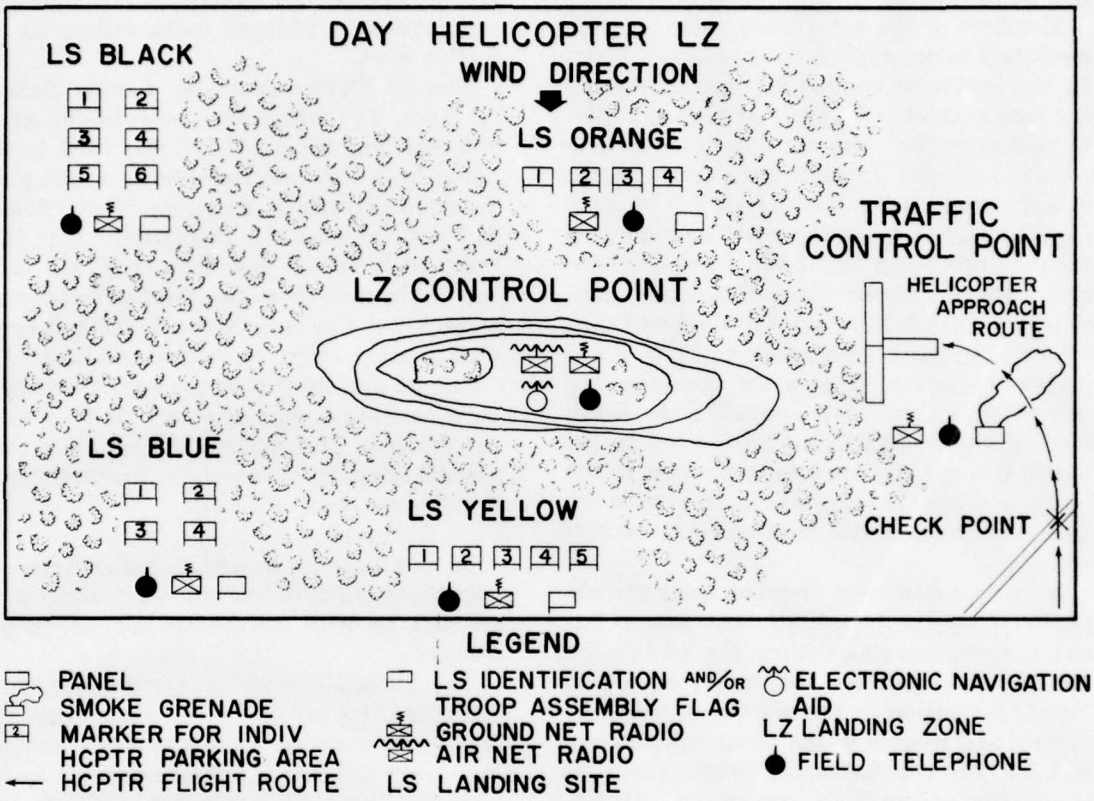


Figure 65.

point. Helicopters would move to this landing zone, by serials and flights, along a predesignated route which is protected from enemy and friendly fire. Serial and flight leaders initiate communications with the landing zone control point at a preselected check point on this route and continue along their assigned flight route until they reach the landing zone. At the beginning of the landing zone area, pathfinders may display visual aids to mark a traffic control point. Inbound helicopter flights pass over or near the traffic control point and then directly to their assigned landing sites. This insures an orderly flow of traffic both into and out of the landing zone. At the landing site the helicopters of a flight land simultaneously at a predesignated flag or flags of a specified number and color.

At the present time a pathfinder unit is en route to the objective area in H-19 helicopters. This pathfinder team will establish a helicopter landing zone in the area to your front. This particular landing zone will consist of three landing sites, Black, Orange, and Blue, and a landing zone control point. In this instance, a traffic control point will not be established since there are sufficient natural terrain features along the flight route to serve this purpose.

As the helicopters approach the landing zone, pathfinders could employ radiation detection equipment to determine the amount of radiation present. This reconnaissance would be continued after landing. Note as they arrive that the helicopters have been tactically loaded so that each party lands on the portion of the landing zone at which it will be employed.

Members of the pathfinder unit move immediately to accomplish their assigned tasks. In the center of the landing zone the landing zone control point party is placing radios in operation for communication with helicopter serial and flight leaders and with the other parties on the landing zone. The landing site parties select the exact landing area for each helicopter flight and mark the position with a colored flag. Flags are positioned so that helicopters will land and take off into the wind. One member of this party marks the assembly area for the incoming troops by means of a colored flag. Black landing site is established on the hill to the north, Orange landing site in an area to the south, and Blue landing site in an area to the southeast beyond the landing zone control point.

At a specified time distance from the objective area the helicopter unit leader initiates communications with the pathfinder officer who describes the enemy situation. This information is intercepted by all helicopters and relayed to the ground force commanders in the helicopter troop compartments. Helicopter flight leaders are also advised of the direction and velocity of the wind and the direction of landing. Lastly, the pathfinder control point will advise the helicopter flight leaders of the status of preparation of all landing sites.

Capt Apt:

Desirably all the helicopters land simultaneously, achieving in effect, a coordinated attack.

As each helicopter lands, the pilot sounds the bell in the troop compartment which is the signal for the troops to debark. The last man out holds up his hand as a signal to the pilot that he is the last man.

The 3d Platoon has landed at the base of Cactus Hill, the 2d Platoon near the road to the bridge, and the 1st Platoon on the hill to the north.

One of the helicopters landing at Black site remains in the objective area to lay wire. To avoid getting the wire entangled in the anti-torque rotor, the aircraft "crabs." Helicopters may be kept in the objective area to perform such missions as reconnaissance, observation, evacuation of wounded, and movement of small units within the objective area.

The 3d Platoon is to lay a mine field to its front. The mines have been loaded as an external load for an H-25. The H-25 is followed by a time interval and is waiting for the word to bring in the mines. Third platoon has just notified the pathfinders that they want their mines and that they will have one of the men from the third platoon wave a checkered flag to indicate to the helicopter pilot exactly where to release the load.

Second and third platoons report that they have expended approximately half of their ammunition. Fortunately, the battalion commander planned a parachute resupply using fixed wing Army aircraft.

Capt Stannard:

In addition to assisting helicopterborne operations, pathfinders aid Army fixed wing aircraft in both parachute and air-landed deliveries.

The Infantry division commander presently has the capability of conducting limited aerial resupply to his units by employing Army aircraft which are organic to the division. There are two types of fixed wing aircraft assigned to the Infantry division—L-19 and the L-20. By employing the thirteen L-19 aircraft and the three L-20 aircraft belonging to the division, it is possible to deliver more than 5½ tons of supplies by parachute in a single flight. This amount of supplies could constitute sufficient combat rations to feed 1695 men for one day or the basic load of rifle ammunition for three rifle companies plus the basic load of caliber .30 machine gun ammunition for an entire Infantry battalion.

In guiding aircraft over the proper area for a parachute delivery, pathfinders normally employ both electronic and visual aids. Here we employ yellow smoke to mark the

drop zone and a ground-to-air radio to guide the pilot.

When the aircraft do not know the exact delivery area, one method of guidance would be to have the aircraft orbit over a preplanned terrain feature and establish radio communications with the pathfinders. The pathfinders, knowing their own location and that of the aircraft, can tell the pilots what magnetic heading or "vector" to fly to reach the drop zone.

The aircraft will soon appear approaching the drop zone on the magnetic azimuth given them. When the pathfinder officer has the aircraft in sight, he will guide them by telling them to "Steer right or left." Near the drop point the aircraft are told to "Standby," and when over the drop point they are instructed to "Execute." At this signal, the parachute containers are ejected. By considering the speed and altitude of the aircraft, the direction and velocity of the wind, and the configuration of the drop zone, the pathfinder officer determines the point at which the aircraft should eject their loads in order to have them land in the desired area.

These particular L-20s carry four containers each which they will eject simultaneously from an altitude of five hundred feet and at a speed of 100 miles per hour. The combination of the relatively slow speed of the aircraft and the low altitude of the drop should give an accurate and compact pattern of containers on the ground.

In addition to the delivery of cargo, the L-20 may be employed for the parachute delivery of small groups of critically needed personnel to isolated units or objective areas. Using several of this type aircraft, a pathfinder team may be delivered to any objective area.

In assisting Army fixed wing aircraft to land, pathfinders employ methods which are basically the same as those at any air field. Visual aids are employed to outline the dimensions of the runway and electronic aids are used to guide and control the aircraft during landing and take off.

Aircraft can land on a small runway marked by panels. Smoke is displayed to mark the general location of the runway, and a ground-to-air radio is employed to give landing instructions to the pilot.

An L-20 and an L-19 aircraft are inbound to this area with supplies and passengers. The aircraft initiate radio communications with the pathfinder control point to request landing instructions.

Here, too, pathfinders advise the pilots as to the direction and velocity of the wind, and instruct them as to the direction of landing. Fixed wing aircraft should always land and take off into the wind. Pathfinders consider this fact in locating the runway.

Pathfinder personnel immediately guide the aircraft to parking areas clear of the runway. This leaves the runway available for the landing and take off of other aircraft.

Capt Apt:

Company "A" has now reorganized on its objective, has been adequately resupplied, and now settles down to hold positions until the link up. Now that Army aircraft can land in their area, this force should feel relatively secure as they have an active link of communication with other forces operating in the area.

During this period, we have discussed techniques used in employing Army aircraft in airborne operations. It is necessary to point out that some of the techniques used are applicable only for specific aircraft; like tapping the pilot on the leg. In other types of helicopters this is impractical. Our purpose was to point out: first, the great potential Army aircraft gives us for tactical mobility; secondly, some of the techniques used to insure a successful operation; and thirdly, to make you realize that despite the relatively small number of helicopters available good effective training in their use can be conducted.

We have also shown you some of the techniques employed by Army pathfinders during daylight operations. Pathfinders are even more essential for night parachute and air landed operations.

QUESTION: Would someone discuss the vulnerability of aircraft to enemy fire, during day and night operations?

ANSWER: Army aircraft are vulnerable to enemy fire but so are tanks, trucks, armored personnel carriers and other items of equipment used in combat. Army aircraft are not as vulnerable at night as they are in the day. If we think of the degree of vulnerability in comparison to Air Forces fixed-wing transport aircraft used during World War II, we find that we are no more vulnerable and probably less. Army aircraft, particularly helicopters, operate near the ground, have slow air speed and are very maneuverable. They will be difficult to detect by radar. Further, being close to the ground and flying at relatively high ground speeds, the opportunity for ground units to detect, observe and bring weapons fire to bear against these aircraft, is short. Also, do not forget the trend in fighter aircraft is to make them fly at supersonic speeds with best performance at extremely high altitudes. Their effectiveness against low flying Army aircraft becomes less as this trend in their development increases.

An important consideration related to vulnerability includes the proper preparation of an adequate fire support plan and careful selection of approach and return routes to objective areas when flights over enemy territory are involved. Our artillery, rockets and missiles can certainly be used for protection of our own aircraft. When opposing land armies are facing each other, there will always be areas through which helicopter formations could pass without excessive losses. Prior reconnaissance is a must. With the proposed availability of high performance Army reconnaissance aircraft, T-37s, we will have an increased capability of finding these areas and using them as avenues of approach and return. Maximum use must be made of darkness to assist us in moving helicopter formations without excessive losses. It is important to remember that war cannot be conducted without suffering losses and we must realize that although losses occur, operations will still be successful. If we had gone into World War II with the belief that because transport aircraft would be shot down, creating losses, and such losses were not acceptable, we would have had no airborne operations.

QUESTION: Is it the view of The Infantry School that Army Aviation should be centrally located in a Company at divisional level?

ANSWER: Yes. At the conclusion of Exercise "FOLLOW ME," the Infantry Commanders concerned expressed enthusiasm for the support of both fixed and rotary wing aircraft which was provided by the Combat Aviation Company. The organization and equipment of the Company provide the capability of furnishing more and better support than our present Infantry Division set up. The employment of flight groups from this Combat Aviation Company with Infantry Combat Commanders also appeared sound. However, it is believed that a more desirable solution than the present one where the pilots, mechanics and aircraft are assigned to a flight group, is to assign the pilots to a group but retain the mechanics and aircraft in a pool. This method insures that a particular group of pilots will normally work with the same ground unit. It provides the Aviation officer with a maximum of flexibility in meeting the requirements of the ground unit commanders and insures more efficient maintenance thereby increasing the availability rate of aircraft.

QUESTION: Has any thought been given or experiments conducted on Army helicopters as an assault aircraft?

ANSWER: Yes. We have not done any actual work along this line, but we have given it considerable thought. Particularly, we have seen great possibilities in the use of the armed helicopter as an additional tank-killer. Also, there is no reason why a light Army aircraft or helicopter could not be armed and used in suppressing hostile ground fire in protection of friendly helicopter formations. This latter thought has a close relation to the first question on vulnerability.

QUESTION: Do you think that the need for parachutists will be eliminated in view of the capabilities of the helicopter?

ANSWER: No. The parachute is certainly the only means available today for making any kind of a large scale airborne assault.

Although the parachute may be looked upon as inefficient and uneconomical, it continues to be the most efficient and economical means for putting the airborne soldier on the ground in fighting posture. Not until the distant future, can helicopters be expected to have the range that fixed-wing aircraft presently have. Therefore, we can safely assume that if we are to conduct large scale airborne operations over extended distances, medium fixed-wing transport aircraft and parachutists will still be required. Although helicopter design has progressed in the last few years, the lift capability of of the helicopter does not compare favorably with that of fixed-wing aircraft. As long as a requirement exists in war for mobility, every intelligent commander should exploit all means of transportation to gain the maximum advantage in battle. Helicopters, converti-planes, assault transports, and parachute delivery of troops and equipment from fixed-wing transports, will all have a place and may be used separately or combined. For example, a small helicopterborne force that has met with unexpected success, may be reinforced by parachute units which are located in reserve a considerable distance away, in order to rapidly exploit the initial success. We must continue to develop all means of air mobility. Right now you hear much of the Army's work with the helicopter in enhancing the ground commanders tactical ability, but that is chiefly because it is comparatively a new and unexplored field. That doesn't mean that we are forgetting the parachutist. He will play a very important role in the vertical envelopment for many years to come.

QUESTION: Are the Marines ahead of us in the development of techniques for the tactical use of helicopters?

ANSWER: As near as we can determine, they are not. In fact, upon intensifying our efforts in this field here at Fort Benning, we also entertained the same question. Shortly after reorganizing this department, one of our officers was sent to Quantico specifically to see how we stood and to bring back any data that the Marines had developed. As a result, we found that they were working on the same problems as we and that the state of the art was just about the same.

CHAPTER 10
TACTICAL EMPLOYMENT OF ARMY TRANSPORT AIRCRAFT

Section 1. STAFF PLANNING TECHNIQUES

LT. COL. H. S. CUNNINGHAM
Operations Committee, Staff Department

During the next sixty minutes we will discuss the employment of army transport aviation in support of Infantry units in air landed tactical operations. The first 25 minutes will be devoted to a discussion of some of the staff considerations and techniques involved in planning this type of operation and the remainder will be presented by the Tactical Department during which the tactical planning and concepts of employment will be covered.

First let's discuss the organization of army transport aviation units. (Figure 66)

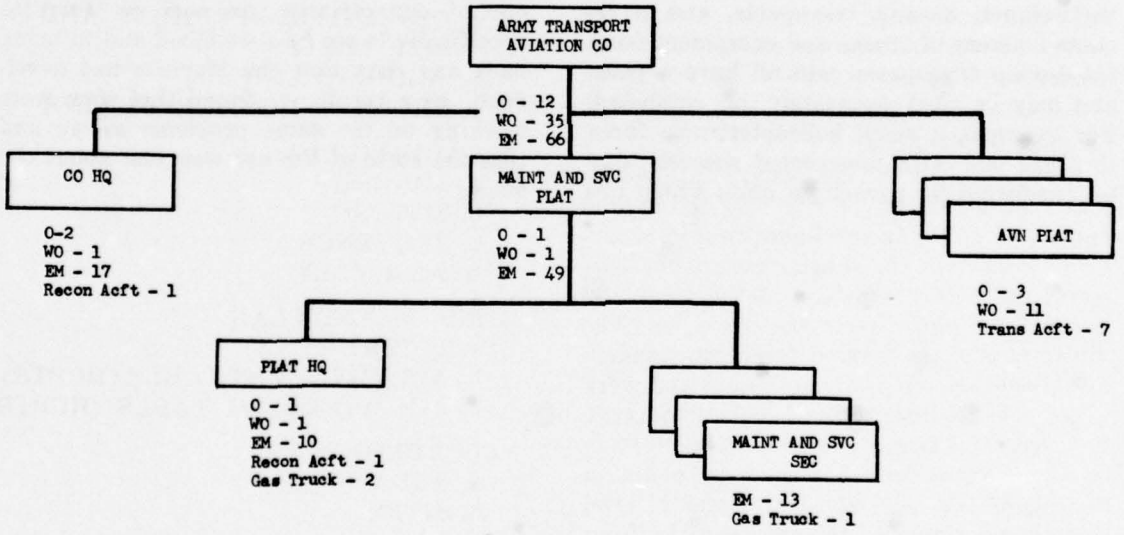


Figure 66.

The basic unit is the company, and the organization shown here reflects the general organizational structure of the light transport helicopter company. For purposes of our discussion we will assume that this structure will be applicable to all army aviation companies, regardless of the type aircraft with which equipped. Companies are organized into:

Three aircraft platoons with 3 officers and 11 warrant officers.

One maintenance and service platoon organized into 3 separate sections with a strength of 1 officer and 50 enlisted men.

Company headquarters with a strength of 2 officers, 1 warrant officer and 17 enlisted men.

Transport aviation companies are designated as light, medium, or heavy depending upon the type aircraft with which equipped.

The transport aviation battalion presently consists of a Bn Hq & Hq Det and from 2 to

4 companies. It is contemplated that transport aviation groups will eventually be formed to control 2 or more battalions.

Army transport aviation units will be assigned to field armies or separate corps. When assigned to a field army they will normally be attached to corps for employment as corps troops. Corps in turn may further attach these units to other subordinate units or place them under operational control. Normally they will not be attached to a unit smaller than a division; however, they will be placed under the operational control of division subordinate units.

Planning an air landed operation utilizing army transport aircraft is very similar to planning an operation involving a Joint Air/Army Force; however, there are some differences due to the characteristics of army transport aircraft themselves, the difference in the relationships which exist, and the added responsibilities placed on the transported force commanders.

Let's discuss these similarities and differences in planning.

First, consider the command relationships and responsibilities of the supporting and supported units. As you know, in a joint airborne operation the theater commander determines the organization of the joint airborne force and directs the operation. The air force and the ground force commanders are given their respective missions and work along parallel lines to reach a common goal, the successful execution of the mission. Each of the commanders has specific planning responsibilities, and at the regimental level there is no single commander for the joint air force/infantry team.

In an airborne operation involving army transport aviation units the picture has changed considerably. The Infantry unit commander is given the mission and the means (transport aircraft) under his complete, unequivocal control to accomplish the mission. The supporting transport aviation unit commander will operate as a special staff officer to the Infantry unit commander. He provides advice on technical matters which may affect the accomplishment of the mission. The Infantry commander becomes the commander of the air landed force consisting of army aviation and Infantry units.

How about the planning responsibilities as compared to joint airborne operations? In an army air landed operation the division will normally be the lowest level of command with authority to approve or direct an air landed operation because of the depth of the operation and relative complexity involved in coordinating such an operation. The Infantry regiment will normally be responsible for preparing the deailed plans required to execute the air landed mission.

The planning sequence is the same in planning any type of airborne operation, regardless of the type aircraft employed. Let's review this sequence (Figure 67).

PLANNING SEQUENCE

1. GROUND TACTICAL PLAN
   a. OBJECTIVES—PRIORITY AND SIZE FORCE
   b. AIRHEAD LINE
   c. RECON AND SECURITY LINE
2. LANDING PLAN
   a. ZONE(S)
   b. SITE(S)
   c. SEQUENCE
   d. ASSEMBLY
3. MOVEMENT PLAN
   a. FLIGHT PLAN
   b. AIR MOVEMENT TABLE (HCPTR)
   b. AIR MOVEMENT TABLE (HCPTR)
4. LOADING PLAN
   a. AREA
   b. SITES

Figure 67. Planning Sequence

First, a ground tactical plan is developed.

Next, a landing plan is developed to facilitate the execution of the ground tactical plan.

Third, an air movement plan is developed based on the landing plan.

Last, a loading plan is developed based on the air movement plan.

The first two plans will be discussed in greater detail by the Tactical Department; therefore, the remainder of the time allotted to the Staff Department will be spent on a

more detailed discussion of the movement and loading plans.

Before getting into the details of the movement plan let's consider how we determine aircraft requirements. You will recall that we have had two methods in the past which we used to determine troop carrier aircraft requirements. These two, the type load and weight methods, may also be used to determine army transport aircraft requirements.

The weight method is dividing total weight of personnel, equipment, and supplies to be transported by the allowable cargo weight of the type aircraft being employed. This method is used to estimate aircraft requirements and is based upon the fact that total weights to be transported are the major consideration. It is normally not used below division level.

Example: $\frac{2,336,880}{13,500} = 165 +$ or 166 aircraft.

The type load method is merely the arrangement of personnel, equipment, and supplies into typical loads computed to be safe for flight.

There is a third method which has been developed here at TIS for computing army transport aircraft requirements. This method is a simplification of the weight and type load method and is referred to as "The Space Method." The weight of an air transported, fully equipped soldier, referred to as a "space," is used as a common denominator to convert weights to spaces. This reduces to a minimum the amount of arithmetic involved. The weight of a fully combat equipped soldier is considered to be 240 pounds. This figure includes the stripped weight of the soldier, his individual clothing and combat equipment, and his proportionate share of unit organic equipment to include crew served weapons up to, but not including the 106-mm RR and the heavy mortar.

After determining the major items of equipment that can be transported we convert the weight of this equipment into spaces by dividing the weight of the single item by the space factor (240 pounds) and multiply the results by the number of items.

Example:

$$\text{weight of } \tfrac{1}{4} \text{ ton trk } \frac{2640}{\text{space } 240} = 11 \text{ spaces}$$

Likewise, the allowable cargo load of a single aircraft is divided by 240 to determine the number of available spaces per aircraft.

Example: $\frac{\text{Allowable cargo } 6,000}{\text{space } 240} = 25.$

To facilitate computing aircraft requirements utilizing the space method we use a planning worksheet (Figure 68). The worksheet provides a means by which information is indicated and aircraft space requirements can be determined in a uniform manner.

PLANNING WORKSHEET

Operation *BUSTER*

HQ *85th Inf*

Date *2 Feb 60*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
UNIT	PERSONNEL	ADDITIONAL SUPPLIES		MAJOR ITEMS OF EQUIPMENT					TOTAL SPACES EA UNIT (TOTAL COL 2, 4, 9)	REMARKS
		WEIGHT (LBS)	SPACES	ITEM	WEIGHT (EA)	SPACES (EA)	NO OF ITEMS	TOTAL SPACES		
Hq Co 1st Bn	80	6,960	29	Trk ¼-ton	2,625	11	2	22	131	Includes Arty Ln Pty
Hv Mort Co	148	7,200	30	4.2 inch mortar	650	3	12	36	387	
				Trk ¼-ton	500	2.5	12	30		
				Tlr ¼-ton	2,625	11	13	153		

Figure 68.

We will now discuss movement planning, specifically the movement plan and means of exercising control over the movement.

The Infantry commander has greater responsibilities in movement planning with army transport aircraft than he normally has when employing troop carrier aircraft. He will determine the routes to be followed to and from the objective area, the altitude and flight speed, and the aircraft formation. He must also determine the control means to be employed. The supporting army transport aviation unit commander will provide the technical advice necessary which, with the tactical considerations of the commander, forms the basis for the air movement plan. This information may be disseminated by means of a diagram similar to a strip map for a motor move or by means of an overlay (Figure 69).

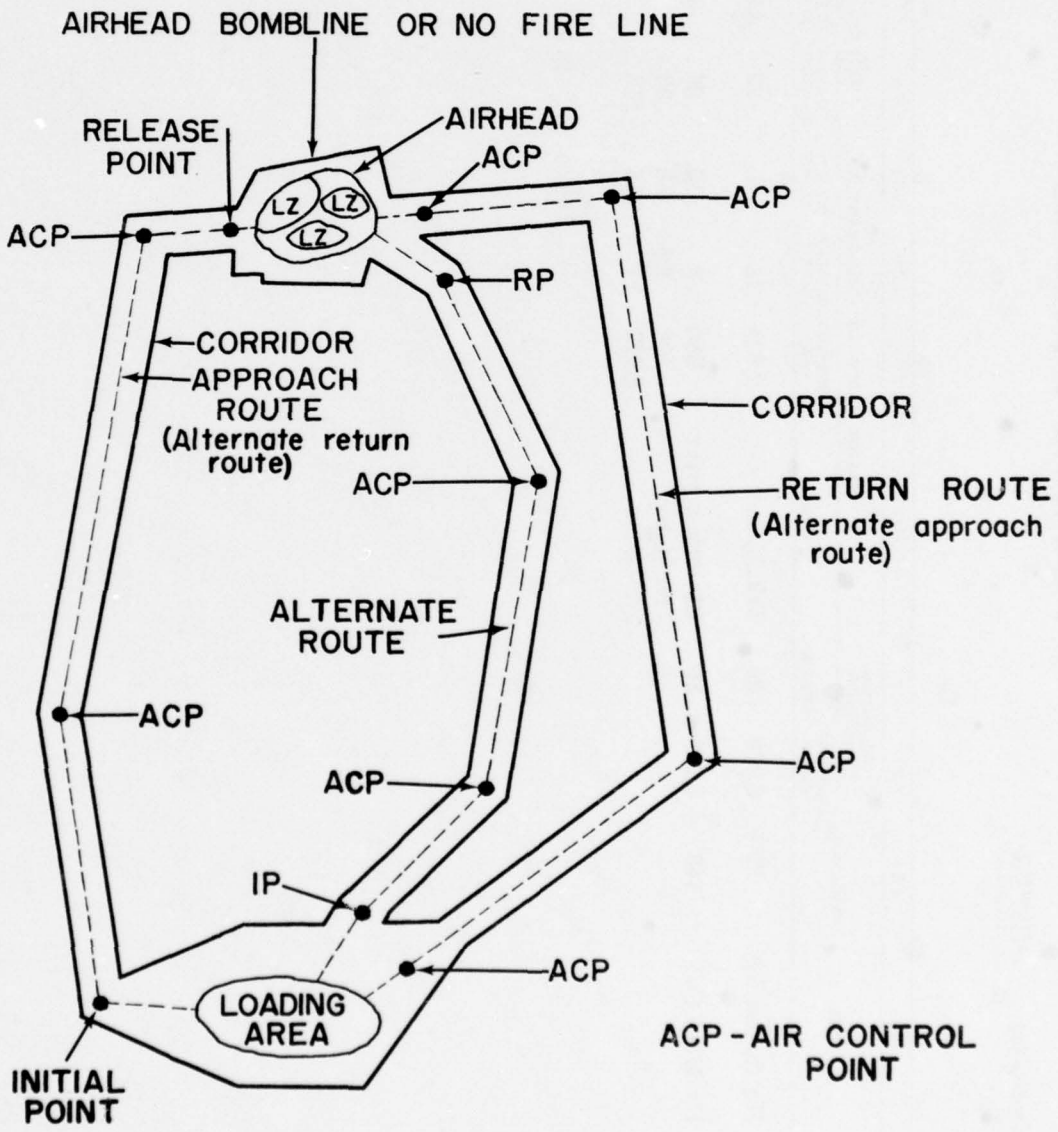


Figure 69.

To exercise control over the movement, the commander will indicate control points along the route. A minimum of two, an IP and RP, will always be designated for the approach route. They will normally consist of easily identifiable terrain features but may be indicated by visual or electronic devices. Additional ACPs as necessary will be selected. An air corridor will be designated to coordinate the fires along the flight routes.

In addition to those control means just covered the commander will establish a movement control center to disseminate movement instructions. We feel that the S3 will be designated as the movement control

AIR MOVEMENT CONTROL COMMUNICATION

COMMUNICATION IN AIRHEAD MAY
BE BY PATHFINDERS INITALLY.

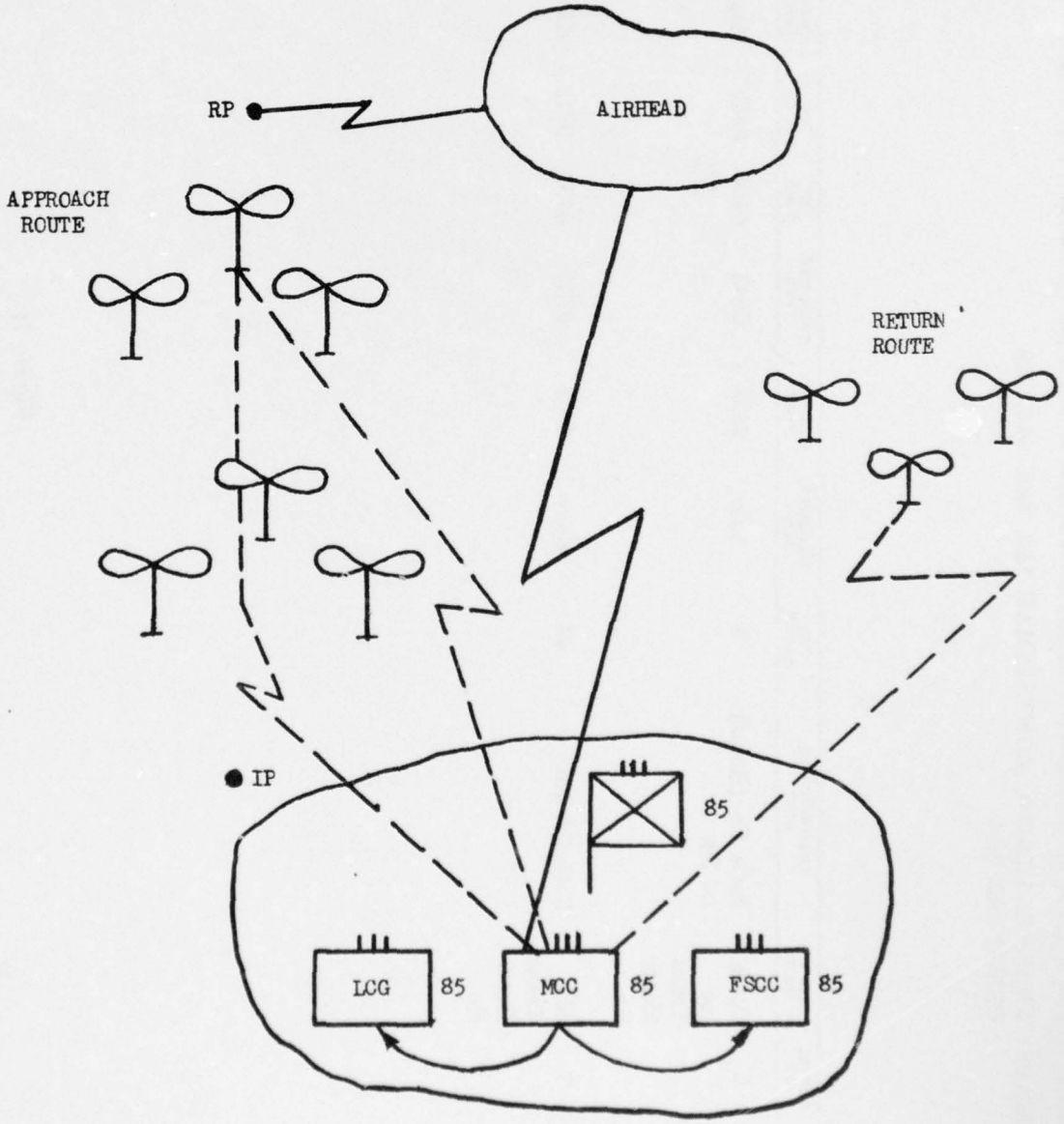


Figure 70.

APPENDIX *2* (AIR MOVEMENT TABLE) to ANNEX E (AIR MOVEMENT PLAN) to Opn O 12

MAPS: FRANCE, 1:25,000, MONTELIMAR 1&2, 3&4, 5&6, 7&8
CREST 1&2, 3&4

Copy No *3* of *15* Copies
HQ *CT 85*
Place *VICTOR (0432)*
Date & Time *11800 Oct 60*

SERIAL NO	HCPTR UNIT	TRANSPORTED UNIT	NO HCPTR	LOADING AREA	STATION TIME	TAKE-OFF TIME	IP TIME	RP TIME	LANDING ZONE	LANDING TIME	REMARKS
1	Co A 1st Trans Hcptr Bn	Rifle Co (Reinf) 1st Bn	8	Able	0538	0543	0550	0558	Easy	0600	
7	2d Trans Hcptr Bn	25th FA Bn	46	Easy	0655	0700	0707	0715	King	0716	Arty Ammo palletized for external transport.

Figure 71

officer. The control officer, an officer from the supporting army aviation unit, and communication personnel will comprise the MCC. Pathfinders may also be employed to assist in movement control (Figure 70).

The MCC will maintain communications and coordinate movement with the FSCC, LCG, Pathfinders, and the supporting army aviation unit.

For the same reason that we issue a march table for foot and motor marches and an air Movement table for joint air movements we have an air movement table for army supported air movements. It is a convenient means of disseminating detailed movement instructions and facilitates movement planning (Figure 71).

In an airborne operation employing army transport aviation it is not necessary for forces to marshal in areas containing special facilities such as airfields. Whenever possible the aircraft will be flown to the force to be transported. Marshalling camps, as we have known them in the past, are not established; however, since there is a need to physically separate the personnel and equipment participating in the assault from those remaining behind and to make final preparations a loading area is organized. Ready areas, within which the assault echelon makes final preparations, and loading sites adjacent thereto are designated. A loading control group is organized to insure the rapid, efficient execution of the loading plan. A loading table is normally prepared at battalion level which contains the detailed information necessary for the battalion to execute the loading and movements. The battalion may organize its serials into two or more flight units for control purposes. This organization is reflected in the air loading table (Figure 72).

Copy No *2* of *6* Copies
HQ *1st Bn 85th Inf*
PLACE *LA VERNE (0484)*
DATE & TIME *071300 Oct 60*

Annex *A* (Helicopter Loading Table) to Opn O *4*

Maps: FRANCE, 1:25,000, CREST 1&2, 3&4

SERIAL NO. 1 LOADING AREA *MIKE* STATION TIME *080430* LZ *CHARLIE*

FLIGHT	HCPTR UNIT	TRANSPORTED UNIT	CHALK NR	LOADED WITH	LANDING SITE	REMARKS
C-1	1st Plat Co A, 1st Trans Hcptr Bn	Co C	1	25 pers	C-1	
			2	1 Trk ¼-ton 1 Tlr ¼-ton 9 pers		
			3	1 Trk ¼-ton 1 106mm RR 12 pers		106mm RR mtd in trk ¼-ton

Figure 72

Section II. CONCEPT OF TACTICAL EMPLOYMENT OF ARMY AIRCRAFT

LT COL LLOYD E. PATCH
Chairman, Air Mobility Committee

In recognition of the added importance that air mobility will play in tactical operations, The Infantry School modified its program to provide for increased emphasis and instruction in the subject of air mobility. Last fall, the Tactical Department, in keeping with this new policy, organized an Air Mobility Committee with the mission of preparing and presenting instruction to all class levels, that is, Advance, Intermediate, and Basic, on airborne operations (both joint and uniservice). The initiative exercised by The Infantry School on this subject proved timely and sound, for, at a later date, directives from higher headquarters placed similar requirements upon The Infantry School.

Let's continue the discussion of planning an airlanded operation and then proceed to the tactical employment of Army transport aircraft.

As you recall, the sequence of planning is as indicated in Figure 73. This planning

SEQUENCE OF PLANNING
1. TACTICAL PLAN
2. LANDING PLAN
3. AIR MOVEMENT PLAN
4. LOADING PLAN

Figure 73.

sequence is applied in all airlanded operations whether it be for an airlanded patrol or a vertical envelopment of regimental size. Of course the details of this planning and the time required for this planning are influenced by the scope of the operation, the size of participating units, and the time available for such planning. You will note that all of the planning is based or built around the ground tactical plan. So let's consider the tactical plan first. What does this plan include? (Figure 74) The plan of maneuver is the commander's scheme for seizing the objective area. Here we apply the same tactics and techniques inherent to the conduct of normal ground operations once the forces have landed. However, some modifications are required due to the initial decentralization of command control. Although landing zones will be discussed later as a part of the landing plan, it is important to bear in mind that the nature and location of these landing zones must be considered concurrently with the development of the plan of maneuver.

The timing of the operation must be viewed in light of the advantages and disadvantages of day operations and night operations as well as the effects of weather, the enemy situation and capabilities, and the expected time of ground link-up. Daylight, dependent of course on good visibility, facilitates navigation, expedites accurate landings and assembly, and permits more effective air and artillery support. On the other hand, darkness or periods of poor visibility reduce the effectiveness of enemy fires and contribute to tactical surprise.

TACTICAL PLAN
PLAN OF MANEUVER
TIMING OF OPERATION
DEFENSE PLAN
FIRE SUPPORT PLAN
GROUND LINK-UP PLAN
ALTERNATE PLANS

Figure 74.

Having planned for the seizure of the objective area, the commander must then develop his plan of defense. Usually the defense of the objective area (airhead) employs a variation of the extended position defense. Particular emphasis is given to defense against armor attacks due to the limited ground vehicular mobility and firepower available within the objective area.

As to the fire support plan let's first consider the objective area or for the purpose of this conference the area within the airhead line. We want to neutralize the

enemy in this area prior to the airlanded assault. An atomic preassault preparation may require fewer forces to accomplish the assault mission. Having landed within the objective area, we want to plan supporting fires to assist in the seizure and defense of objectives within the airhead as well as plan fires to support our reconnaissance and security line. Atomic support during this phase may permit greater dispersion of friendly forces and this decrease their vulnerability to enemy atomic attack.

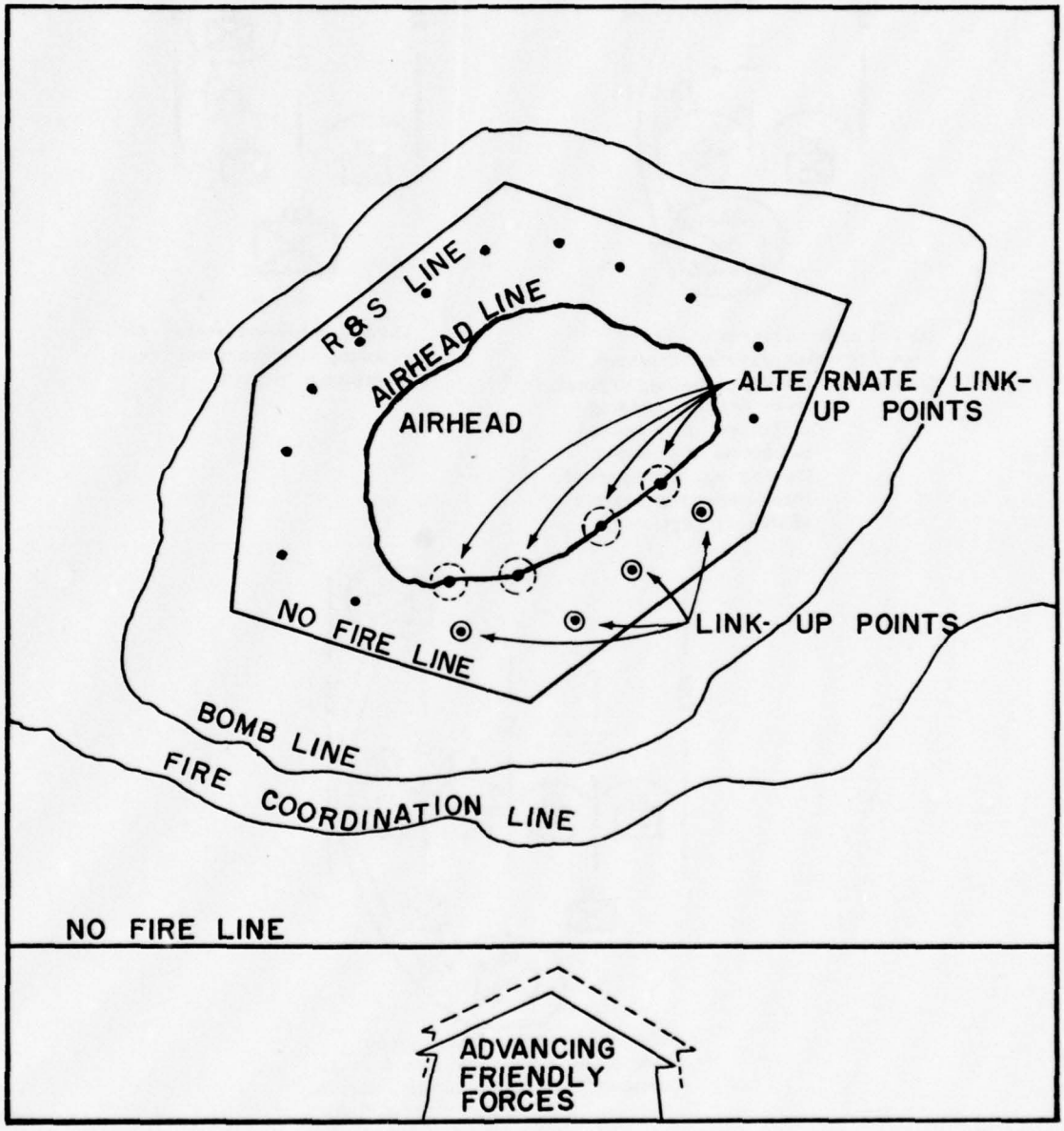
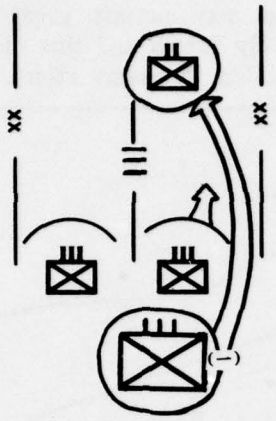
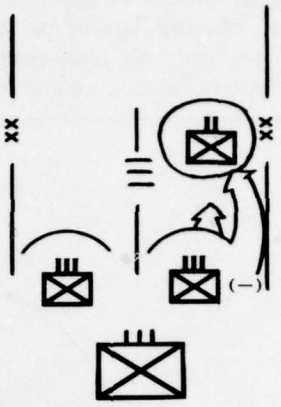


Figure 75. Coordination for link-up.

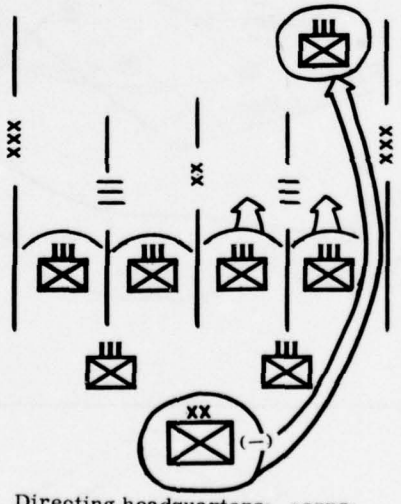
We have provided fire support for the objective area but what about support en route to the objective area? We must make plans to clear and isolate the approach route of aircraft transporting our assault forces. Likewise, provisions for fire support are necessary to assist in the safe return of aircraft. Fire support for airlanded



Directing headquarters: div;
Planning headquarters: res regt.
Command: During planning, normal;
On or prior to loading, airlanded force passes to control of division;
On link-up, transported force passes to control of link-up regt.



Directing headquarters: div;
Planning headquarters: regt.
Command: normal.



Directing headquarters: corps;
Planning headquarters: div & regt.
Command: During planning, normal;
On or prior to loading, airlanded force passes to control of corps;
On link-up, transported force passes to control of link-up div.

Figure 76. Examples of command in air-landed operations.

operations may include artillery both conventional and guided missiles, air, naval gunfire and atomic fires. Close and careful coordination are essential to planning effective fire support for airlanded operations.

Of equal importance in the tactical plan is the ground link-up plan. At this point I would like to state that all airlanded operations may not entail a ground link-up; an example being a raid. We have an advancing friendly force approaching a stationary friendly force. How does one force know the intentions of the other force? How do both forces avoid firing upon each other? when and where is the link-up expected? How do both forces recognize each other? Who commands what upon link-up? All of these questions must be resolved during the planning. Command and staff liaison before and during the operation are essential to a successful link-up. Let's discuss some of the coordination essential to link-up planning.

Perhaps the first thing that comes to mind in reference to Figure 75 is the necessity of coordination of fires to avoid inflicting casualties on friendly forces. The location of bomb lines and no fire lines of both forces must be exchanged. As an additional fire control measure, a fire coordination line may be established. Fires beyond this line by either force must be cleared by the other force.

To facilitate link-up, forces on the reconnaissance and security line should be briefed as to the expected time of link-up and the expected direction of approach of link-up forces. Link-up points and alternate link-up points must be designated on the R&S line and airhead line respectively. A system of mutual recognition is desirable such as using arm bands, pyrotechnics, vehicle markings, etc.

The exchange of information takes on an added importance when planning a link-up. Command visits, the exchange of liaison officers and the exchange of radio frequencies afford means of effecting the necessary interchange of information. Figure 76 illustrates examples of command upon link-up.

TACTICAL MISSIONS

PATROLLING
RAIDS
RECONNAISSANCE AND SECURITY
REINFORCEMENT, SUPPLY AND EVACUATION OF ISOLATED UNITS
DISPLACEMENT OF FIRE SUPPORT UNITS
REDISPOSITION OF FORCES (CONCENTRATION AND DISPERSION)
COMBATING GUERILLA FORCES
DECEPTION
RAPID EXPLOITATION OF EFFECTS OF MASS DESTRUCTION WEAPONS
VERTICAL ENVELOPMENT

Figure 77.

The necessity of preparing alternate plans should be apparent; a major consideration is providing communication facilities to enable the commander to disseminate the decision to execute alternate plans.

Next in our sequence of planning is the landing plan. This plan is based on the plan of maneuver inasmuch as the commander seeks to land his forces in positions favoring the execution of his plan of maneuver. Conversely, the number, location and nature of the landing zones as well as the number and types of aircraft available have an important bearing on the commander's plan of maneuver. An integral part of the landing plan is that of determining the sequence

and the time that assault forces and materiel will land. Simultaneous landings provide mass, surprise, and rapidity of execution. Following the selection of landing zones, the commander then selects particular location within the landing zone for the aircraft to land; these locations are termed "landing sites." In the event planned landing zones are a considerable distance from the objectives or landings are conducted at night it may be necessary to utilize assembly areas prior to launching the assault.

Referring to Figure 69 let's discuss the flight plan. This plan makes up part of the air movement plan. You will note in the illustration that there are three sets of lines connecting the loading area with the bomb line. The middle line within each set represents the flight route of the aircraft and the outer lines within each set represent the corridor. All friendly fires within the corridor are coordinated or restricted. The width of the corridor may vary with each mission dependent upon the aircraft formation, the type of aircraft employed, and the terrain along the route. An important consideration in the selection of multiple routes is the extent and time that friendly fires may be restricted. Routes which provide defilade and concealment and which avoid, where practicable, enemy antiaircraft weapons and troop concentrations will reduce the enemy's ability to detect and interfere with the air movement. The selection of routes which follow recognizable terrain such as rivers, railroads, etc., will assist in navigation. Another consideration centers around the capability of air and ground supporting weapons to counteract enemy attempts to interfere with the air movement.

In determining the flight formation, the altitude(s) and speed to be flown, the commander must consider both technical aspects and tactical aspects. Typical formations include vees in trail, vee of vees, and echelons, Normally aircraft will fly at low altitudes utilizing available defilade and concealment in order to avoid detection by long range radar and to reduce vulnerability to enemy long range, large caliber weapons fire. By flying at the rated cruising speed, the time over enemy occupied areas will be minimized.

In conjunction with the preceding instructor, we have now completed the four steps involved in the sequence of planning for an airlanded operation.

Let's procede to some of the tactical missions that can be performed with the support of Army transport aircraft. Bear in mind that uses of Army transport aircraft in a tactical role are limited only by the imagination of the commander. As an all inclusive capability, Army transport aircraft can be utilized advantageously in all types of operations, such as movement to contact, the offensive, the defensive, retrograde actions, and special operations.

Figure 77 shows tactical missions which can be accomplished through the employment of Army transport aircraft in conjunction with ground combat forces. A detailed discussion of patrolling will be presented later by another member of the Tactical Department. I would like to point out that the use of helicopters in patrolling here at TIS has been very successful.

The use of Army aircraft to transport a raiding force permits the conduct of deep raids and expedites the execution of the raid as well as the withdrawal.

As to reconnaissance and security measures, Army aircraft enable the commander to rapidly position, displace and withdraw his reconnaissance and security forces. By such employment, the commander may accomplish these missions with less force in a shorter period of time and yet cover a more extensive area. Army transport aircraft equipped with electronic devices such as radar, TV, infrared will improve the commander's surveillance measures and in turn may reduce the troop requirement to effect adequate surveillance of larger areas.

Units which are isolated from other friendly forces as a result of enemy action or units which are inaccessible due to distance or barriers can be reinforced, supplied or evacuated by means of Army transport aircraft.

Fire support units may be shifted from one position to another via aircraft to facilitate massing of fires or to avoid enemy counterfire. During the problem entitled, "Supporting Fires," helicopters are used to displace a battery of 75-mm pack howitzers.

A most important utilization of Army aircraft is to rapidly redispose our forces, thus furthering our maneuverability and permitting us to disperse or concentrate as dictated by the tactical situation.

Having been detected by aerial or ground reconnaissance, enemy guerilla forces can be readily engaged by airlanded combat forces.

Our deception capabilities may be furthered by the employment of Army transport aircraft in the conduct of feints and demonstrations. Air traffic between dummy positions offers another means of deception.

Transport aircraft provide the commander with the means of rapidly airlanding his forces into an objective area which has been exposed to friendly atomic fires. By so doing, the commander can capitalize on the damaging effects. Conversely, the commander can rapidly airland his forces into areas subjected to enemy atomic fires and thus forestall enemy exploitation of the atomic effects.

Conducting a battalion or regimental sized vertical envelopment utilizing Army transport aircraft is a capability heretofore limited to joint airborne operations. Such an organic airlanding capability facilitates coordination and planning, furthers the unity of command principle and affords all Army combat commanders a means to quickly exploit the situation at hand. We presently have two problems dealing primarily with the planning and conduct of helicopterborne operations at battalion level.

The concepts of tactical employment of Army transport aircraft in the conduct of airlanded operations (Figure 78) differ little from the concepts of joint airborne operations. Of particular interest in these concepts are items 2, 7, and 9.

CONCEPTS OF EMPLOYMENT

1. **OVERCOME DISTANCES AND BARRIERS; BYPASS ENEMY DEFENSES**
2. **POSE THREAT TO ENEMY**
3. **MASS, SURPRISE, AND RAPIDITY OF EXECUTION**
4. **MAXIMUM ASSISTANCE TO MAIN EFFORT**
5. **CONDUCTED IN LIGHTLY DEFENDED AREAS**
6. **CONDUCTED DAY OR NIGHT**
7. **RAPIDLY EXPLOIT EFFECTS OF MASS DESTRUCTION WEAPONS**
8. **AIR SUPERIORITY**
9. **EARLY LINK-UP**

Figure 78.

All of our forces in reserve will possess an immediate airlanded capability. Such a capability will pose a constant threat to the enemy and may force the enemy to further disperse his forces to protect key installations and terrain.

The capability at lower levels to rapidly exploit the effects of mass destruction weapons is a concept unique to uniservice airlanded operations.

Due to the present range and load carrying capability of Army transport aircraft, uniservice airlanded operations are limited to the early link-up type.

We have covered the tactical *planning* for an airlanded operation, the *tactical missions* that can be accomplished using Army transport aircraft and the concepts of *tactical employment* of Army transport aircraft.

I would like to reiterate the fact that Army transport aircraft provide the combat commander flexibility, mobility and means to expeditiously influence the tactical situation.

Section III. USE OF HELICOPTERS IN PATROLLING PROBLEMS AT THE INFANTRY SCHOOL

1ST LT DAVID M. ABSHIRE
Platoon Tactics Committee

At The Infantry School there are three patrolling problems using helicopters. These are an extremely important part of the student's training. They illustrate that with helicopters the mobility of patrols has been greatly increased, and that helicopterborne patrols can surmont difficult obstacles and operate over wide and deep areas in a relatively short period of time. From this instruction students further realize the numerous ways that helicopters can aid the patrolling effort. Through the use of helicopters in aerial reconnaissance, the patrol leader's planning becomes much more effective. Helicopters can transport a patrol near to its objective, the patrol than accomplishing its mission and return to friendly lines on foot or in helicopters. A patrol, on the other hand, could move from friendly lines to its objective on foot, and then rendezvous at a helicopter withdrawal loading site.

The opportunities for surprise—stressed in our classes as so important in combat patrolling—are multiplied if helicopterborne patrols are employed. Transported deep into enemy lines, patrols can hit in an unexpected manner in an unexpected place and be evacuated by air before the enemy has time to regain his equilibrium.

Another important reason for this instruction is the new demand created by the mobile defense for surveillance over wide areas. For such work helicopterborne patrols are ideal. The advantageous use of helicopterborne patrols over wide areas was demonstrated by the First Marine Division in Korea.

In late 1950 and in 1951 this division was confronted with many infiltrators and guerrillas within and behind their lines; the situation was quite serious since the rugged terrain with numerous high mountains and rivers in Eastern Korea limited the effectiveness of patrols operating entirely on foot. The solution to this enemy menace, however, was found in the use of numerous helicopterborne anti-infiltration and anti-guerrilla patrols.

All of these things make evident the importance of the three patrolling problems using helicopters. The first problem is the 12 hour Basic Patrolling problem presented by the Tactical Department to all Basic Officer, Officer Candidate, and Advanced NCO Classes. The practical exercise includes a daylight H-19 helicopter reconnaissance to assist the students as leaders preparing for a patrol. The second problem, "Night Reconnaissance Patrolling," is presented by the Tactical Department to Basic Infantry Officer and Officer Classes. In the problem seven man patrols conduct a night reconnaissance and then move to a helicopter withdrawal loading site for transportation to friendly lines. The third problem, the 72 hour Ranger Department's "Day and Night Combat Patrol" is presented to all Ranger students. A raid of an objective fifty miles within enemy lines is followed by the rendezvous of the patrol at a helicopter withdrawal loading site to be returned to friendly lines by H-19 helicopters.

The following explains the play of the first problem, which includes the aerial reconnaissance, as it is presented to all students acting as patrol leaders. They initially are briefed by the commander (acted by a Tactical Department officer), who gives the patrol leader the mission of conducting a daylight reconnaissance of an objective area to gain information for a night raid. To assist the patrol leader in preparing for the reconnaissance patrol, the commander has arranged for an aerial reconnaissance. Before conducting that reconnaissance, however, the patrol leader receives a thorough and important briefing by the battalion intelligence officer. He assists the patrol leader in making a map study of the area he will be flying over. He stresses that the patrol leader must fix in his mind certain successive key ter-

rain featurees to aid in orienting himself after he becomes airborne. From the reconnaissance the patrol leader must determine the accuracy of his map by comparison of map with ground. He should determine if there are any additional roads appearing on the ground. Lack of such knowledge could seriously mislead the night raiding patrol attempting to maintain its direction by guiding on roads. Also, note should be taken of any secondary growth of shrubs and trees in areas appearing on the map as cleared. In the objective area the patrol leader must be especially observant of enemy activity, installations, and restrictive obstacles—for the helicopter must be only briefly in that dangerous area. After this briefing, the patrol leader goes to the Division Air Strip, conducts the reconnaissance from the helicopter, then continues with the remainder of his troop leading procedures.

Next will be explained the organization of the portion of the problem involving helicopters. (Figure 79) illustrates how the simulated Division Air Strip is organized. The average size student company is divided into fourteen groups before arrival in the problem area, so that upon arrival each group immediately proceeds to one of the briefing areas just beyond the edge of the Air Strip.

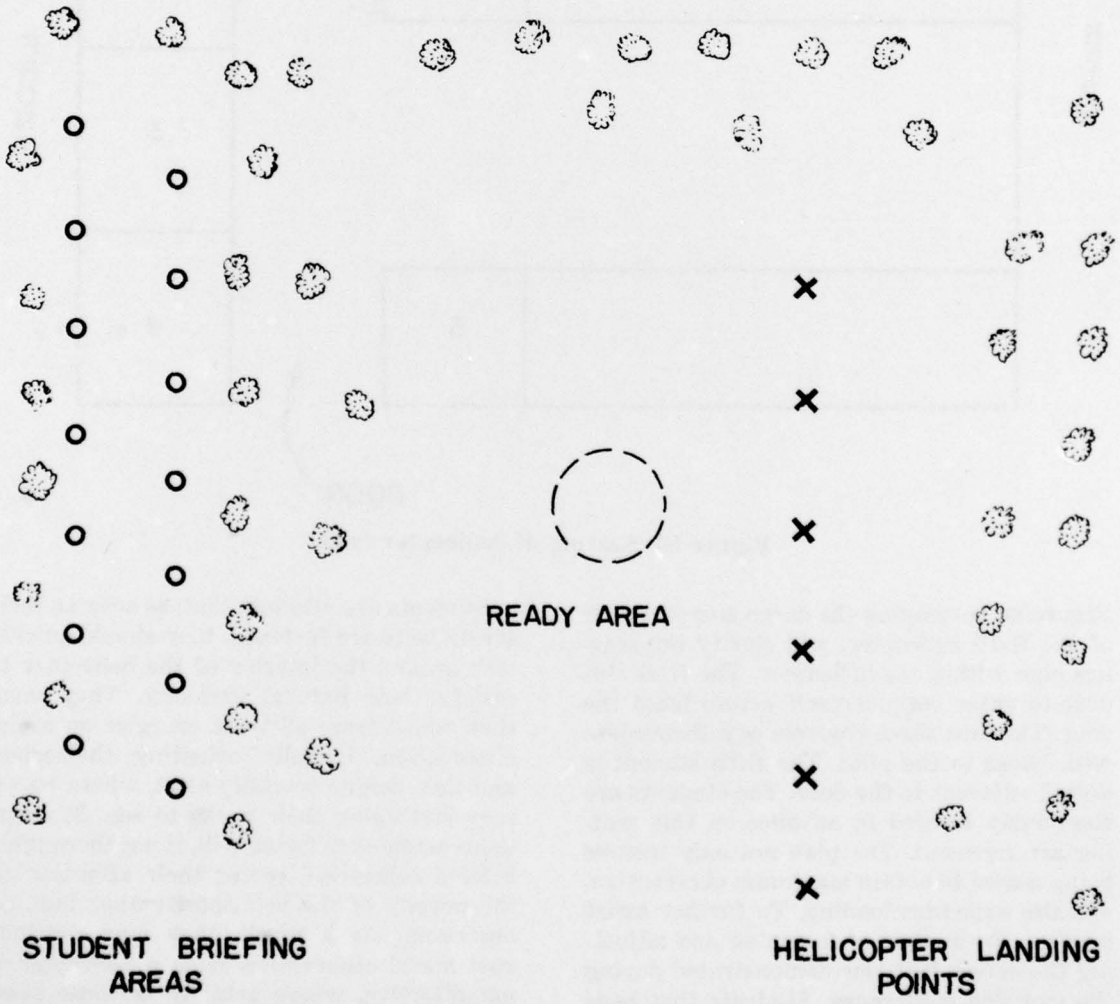


Figure 79. Organization of Air Strip

There each group receives from a Tactical Department officer the briefing that has been in part already mentioned, in which the department officer acts as the commander, and then as the S2.

As to the loading site itself, the six H-19 helicopters will land at the loading points. When the loading control officer is ready for one of the helicopters to be loaded, he radios to one of the briefing areas. The group double times to the ready area where the School Tactical Officer assists in subdividing the group into helicopter loads of five students each. Beside the name of each student on the class roster is placed the helicopter load number. This, of course, is for emergency purposes, so that at all times the location of each student is known.

From the ready area helicopter loads are dispatched to the loading point where loading the helicopter is supervised by the crew chief.

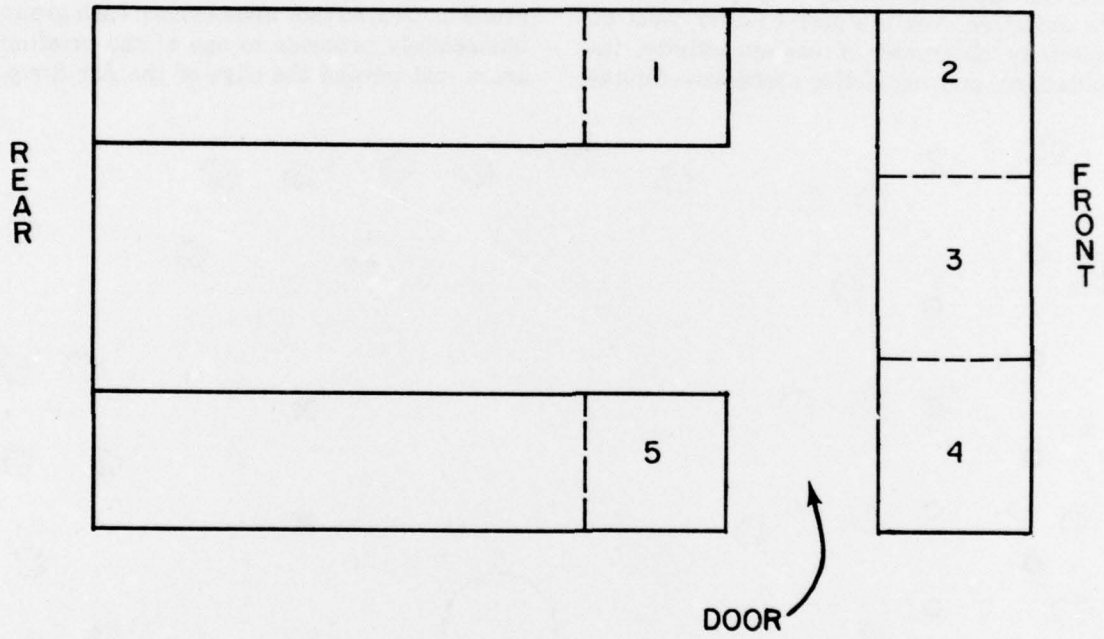


Figure 80. Seating of helicopter load.

Figure 80 portraying the cargo compartment of the H-19 helicopter, will clarify the seating plan within the helicopter. The first student to enter seats himself across from the door. The next three students seat themselves with backs to the pilot. The fifth student is seated adjacent to the door. The students are thoroughly briefed in advance on this seating arrangement. The plan not only insures being seated to obtain maximum observation, but also expedites loading. To further assist loading, the method of fastening and adjusting the safety belt was demonstrated during the morning conference. Students that have not flown very often experience considerable difficulty otherwise.

Students are also told that, as soon as their safety belts are fastened, they should quickly look around the interior of the helicopter to satisfy their natural curiosity. They must then concentrate all their energies on aerial observation, initially orienting themselves and then being especially alert, where necessary stretching their necks to see. Students unaccustomed to flying will, if not thoroughly briefed otherwise, center their attention on the novelty of the helicopter rather than on observing. As a result, they may conclude that aerial observation from a helicopter is not effective, where actually in those cases the difficulty was due to their improper methods of observation. The reconnaissance

lasts only eight minutes; hence, the briefing prior to the reconnaissance on how to load and to obtain maximum observation must be thorough. This situation exists because of limited availability of helicopters. It is well to point out, however, that in combat, troop units would also have personnel unfamiliar with helicopters, hence creating similar problems.

As to the second problem, entitled "Night Reconnaissance Patrolling," first shall be described the play of the problem as encountered by all students, who act as patrol leaders during the planning phases. The Commander gives the patrol leader the mission, which is to conduct a night reconnaissance patrol to a given objective area, moving from there to a helicopter withdrawal loading site for return to friendly lines. The patrol leader then coordinates with the Transport Helicopter Liaison Officer as to determining possible withdrawal loading sites. Of course, the liaison officer must consider sites from the point of view of landing and take off clearance, freedom from obstructions, and approach and return routes. The patrol leader, on the other hand, must be concerned over the area between the withdrawal loading site and objective affording routes conducive to silent movement, having key terrain features to guide on, avoiding enemy positions and obstacles, and that are short enough for the withdrawal to be accomplished before daylight.

After selecting the withdrawal loading site, there are other things that the liaison officer stresses to the patrol leader. For example, the time that the helicopter is on the ground loading must be minimized. This can be done through a very thorough rehearsal by the patrol on the loading plan. The liaison officer also gives the patrol leader certain information about the helicopter route.

The patrol leader next coordinates with the pathfinder officer who with the other members of the party would be dropped into the withdrawal loading site prior to the arrival of the patrol. The pathfinder officer will communicate with the patrol by radio as it approaches the site. The pathfinder officer will give specific instructions on his locations, after which the patrol leader and one other man will move to that area. By flashing an infrared light, the pathfinder officer can assist the patrol leader with metascope in determining his exact location.

When these discussions on the helicopter and pathfinder coordination have been completed, the students as patrol leaders finish their orders. A discussion is conducted by the Tactical Department officer to envolve a solution for the patrol order, after which a patrol leader is selected to conduct the patrol.

Let us next consider some features of safety and control related to the helicopter withdrawal loading site. The pathfinder officer in the problem play is also the safety and control officer for the site. When the patrol leader contacts him, he instructs him what members of the patrol will be in what helicopter loads, and he also maintains a flight manifest. He is responsible that guide lights are set out to assist landing and take off. Figure 81 shows the pattern of lanterns forming a "Tee," which assist the pilot in making his landing at the point where the green lantern is located. The two guide lanterns assist the helicopter when taking off. Lanterns will be set in slight indentations of the ground, so as to cast light upward, but not sideward. For additional safety purposes, more lanterns are used in this problem than would be used in combat.

When a patrol is ready to be withdrawn, the pathfinder officer will request the helicopter by radio. Upon the approach of the helicopter, he waves a green light from the point where the helicopter is to land. If conditions are unsafe for landing, the control officer signals away the helicopter with a red flashlight.

The Ranger Day and Night Combat Patrolling problem, to be discussed next, is extremely interesting and realistic. A thirty man patrol is given the mission of destroying a power plant of a dam 50 miles within enemy territory. They usually depart at 2000, infiltrating enemy lines. By the third night they have a rendezvous with a friendly agent who assists them in obtaining boats. After paddling across the lake to the dam, they raid the power plant. Afterward, the patrol members rendezous at a helicopter withdrawal loading site, where five H-19 helicopters will at-

tempt landing at 0700 the next morning. If unable to do so, the helicopters will try again at 1000.

As to the loading, thorough rehearsing is necessary. A "Tee" will be displayed to assist landing, using undershirts from the patrol members. Security is placed around the site; consequently, patrol members must know exactly when to leave their place in the security to form in a helicopter load. Each

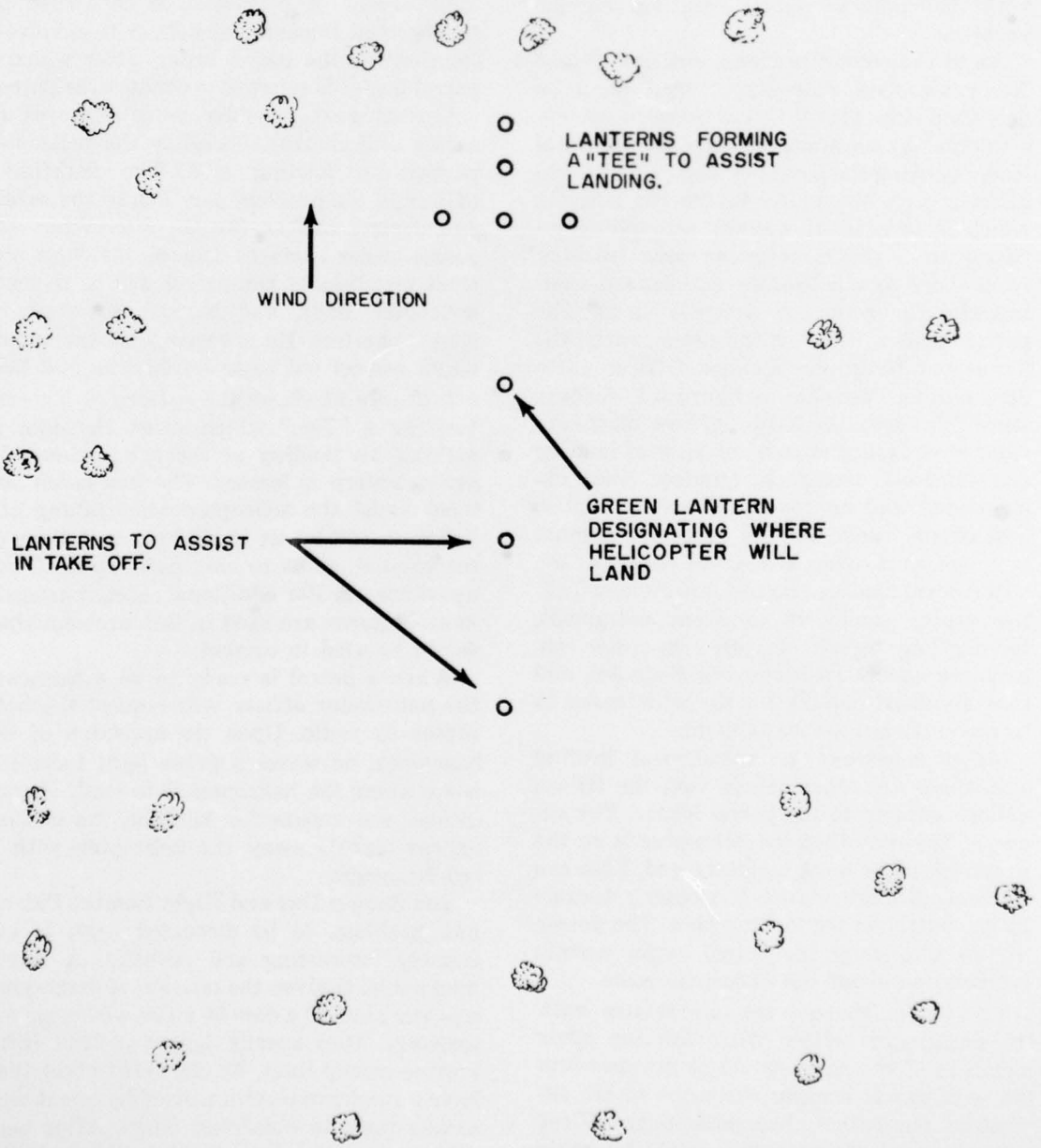


Figure 81. Withdrawal loading site.

helicopter load is a composite from different squads in the security formation so as not to create a gap in the formation by moving an entire squad at one time. Patrol members are instructed to carry in their hands equipment that may hinder loading so that it can be dropped on the floor as soon as they enter the helicopter.

These three problems emphatically illustrate to the students that helicopters have greatly increased foot patrol capabilities. This has occurred at a time when the battlefield dispersion resulting from mass destruction weapons necessitates an ever increasing importance for patrolling.

APPENDIX V

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