THE
UNITED STATES ARMY
MARKSMANSHIP TRAINING
UNIT

THE
MARKSMANSHIP INSTRUCTORS'
SERVICE RIFLE MARKSMANSHIP GUIDE

FOREWORD

This "Service Rifle Marksmanship Manual" is written with the primary objective of improving service rifle marksmanship at all levels of proficiency. The material contained herein has been compiled from observation and experience in the development of techniques. It is generally applicable to the instruction, training, and competitive firing of service rifle matches. The format is designed for quick reference. It also provides a standard reference for equipping and training of individuals for service, interservice and national competitions. Its greatest value can be realized through an understanding of the basic fundamentals and the advanced techniques presented herein. This text is not to be considered as containing the ultimate or final word, for one must recognize that the advancements and refinements in shooting techniques are a never-ending process.

The validity of the material presented herein is attested to in the results attained. In recent years US Army teams and individuals using the techniques and methods described herein have dominated the field of service rifle marksmanship in all levels of competition.

While the manual illustrates primarily the methods and techniques used by TUSAMTU personnel, it is subject to improvement by new developments. Suggestions for improvement are solicited and may be directed to the Commanding Officer, The United States Army Marksmanship Training Unit, Fort Benning, Georgia

This unit gratefully acknowledges the contributions made by the many persons whose advice and suggestions greatly assisted in the compilation of this text.

R. M. Piper

ROBERT M. PIPER
Colonel, Infantry
Commanding

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INTRODUCTION

The specific purpose of this guide is to outline and explain fundamentals and techniques in such a manner that they will assist the instructor and coach in his primary objective; to teach and in turn to produce expert marksmen who will uphold our heritage of marksmanship; to win competitively for the United States Army; and most important to use their rifle confidently and effectively under the trying conditions of combat.

The material contained in this guide pertains to the four main types of competitive firing: National Match, Infantry Trophy, Long Range, and the Combat Rifle Match. An explanation of each type of competition includes a description of the course of fire, selection of squad/team members, equipment, training, techniques of coaching, and conduct of the match.

The instructions pertaining to the Fundamentals of Marksmanship, especially positions, apply to right handed shooters. Left handed shooters must reverse the procedures.

A thorough knowledge of the principles outlined on Chapter One, National Match Firing, is required in order to understand the other three chapters, since these chapters include only that information unique to that type of firing.

To further clarify this guide, one must understand the relationship of the various terms used for competitive rifle marksmanship. These are outlined as follows:

RIFLE GROUP: All personnel selected from a given unit to participate in competitive rifle marksmanship.

SQUAD: A subdivision of a Group which contains from one to several teams trained for a specific type of competition.

TEAM: The base competitive firing unit consisting of a team captain, team coach, alternates, and a number of shooters as established by the ground rules of the match.

INSTRUCTOR: This individual is primarily concerned with the teaching of marksmanship fundamentals. He should be a qualified marksman and a trained teacher.

HEAD COACH: This individual has the responsibility for the organization, training, selection, and performance of the unit or organizational rifle squad. The individual selected for this duty is generally the most experienced instructor-shooter of the squad. In a sense, he is the commander, supervisor, instructor, and coach. The head coach supervises the team coaches to insure implementation of proper firing and coaching techniques.

TEAM CAPTAIN: This individual has the responsibility for all administrative duties of his team during the conduct of a team match. During the conduct of the Infantry Trophy or the Combat Rifle Match he also performs as a team coach.

TEAM LEADER: This individual has the same responsibilities as listed above for Team Captain during the conduct of the Combat Rifle Match.

TEAM COACH: This individual has the responsibility for the organization training and performance of his team under the guidance of the head coach. For small units or squads, the team coach may also be the head coach.

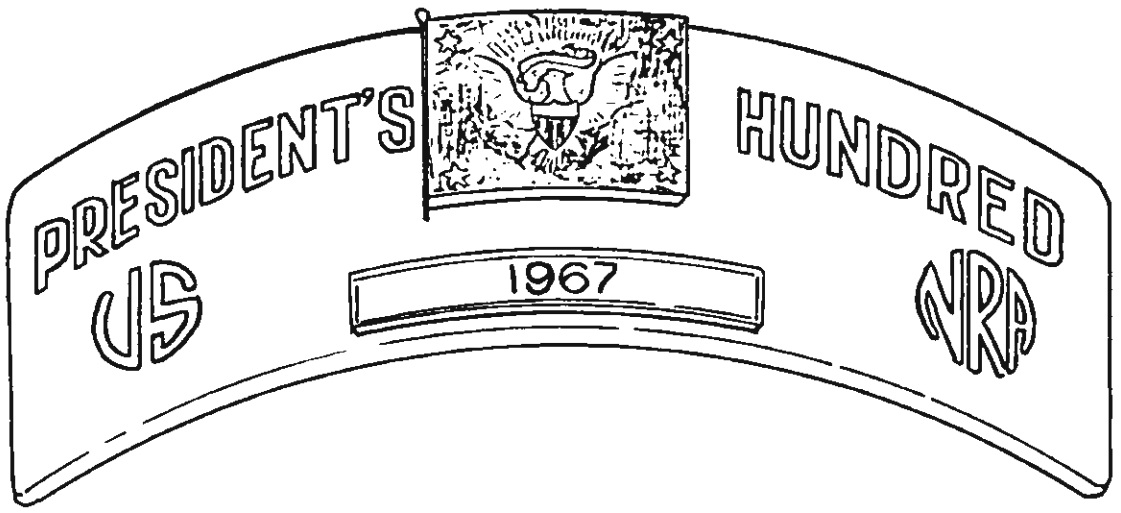
ASSISTANT TEAM LEADER: This individual has the same responsibilities as listed above for Team Coach during the conduct of the Combat Rifle Match.

INDIVIDUAL COACH: This individual is generally a shooter who during training is required to assist another shooter under the direction of the team or head coach. He is primarily concerned with insuring the proper application of marksmanship fundamentals and with the detection and correction of errors.

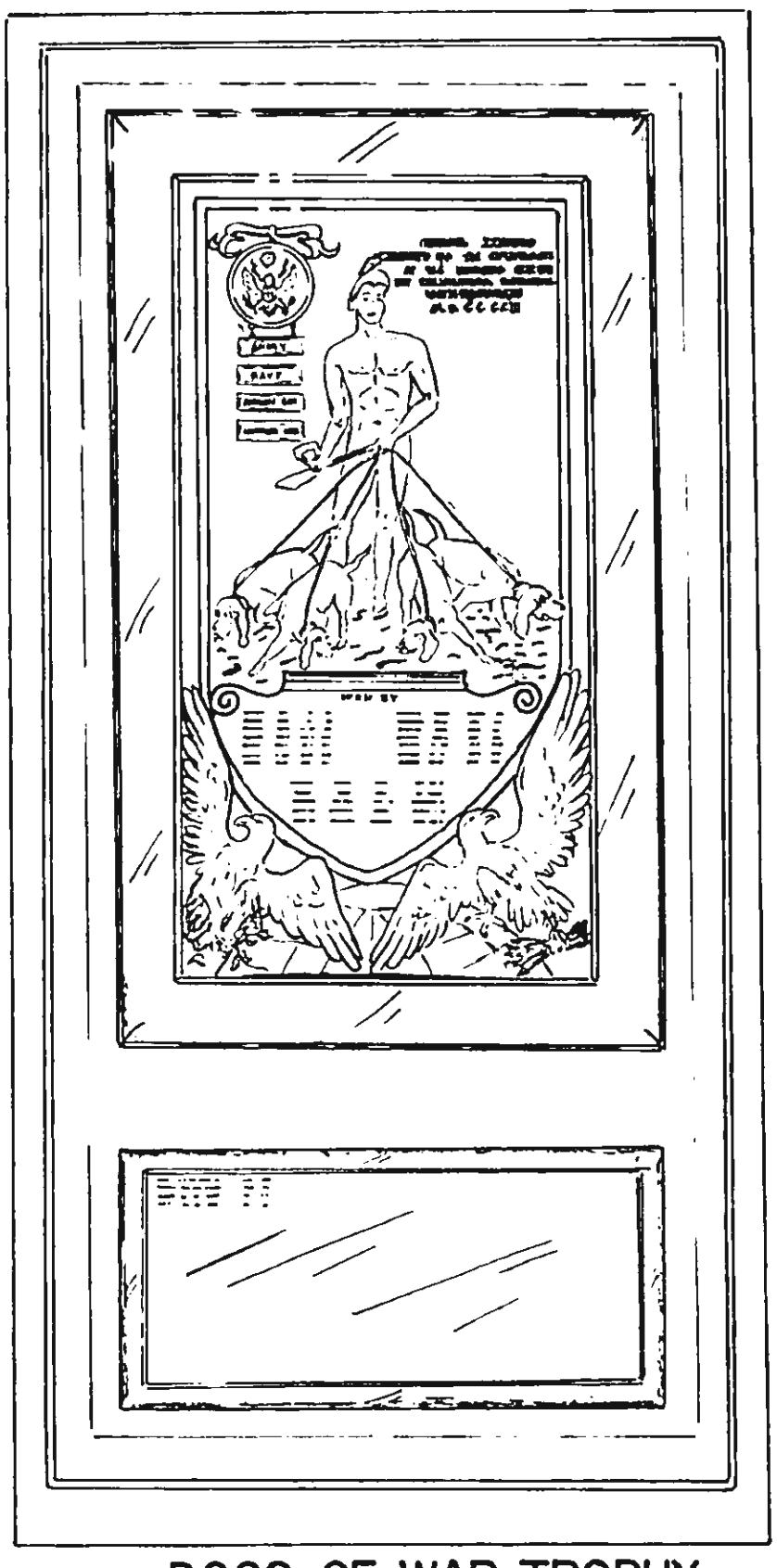
It must be understood that there is no substitute for knowledge and experience in marksmanship. An individual assigned the specific duties of teaching marksmanship fundamentals or coaching must be completely sold on the importance of marksmanship. A winning team is the pride of any commander--whereas a losing team, while performing to the best of its ability, may never receive the recognition it deserves. This fact in itself necessitates a dedication and a personal desire to excel. Good marksmanship and good coaching has never been conveyed quickly, nor can it be gained in a short period of time. Good marksmanship is the result of good coaching combined with mental and manual dexterity after long practice and hard work. A good instructor and coach will call on experience to aid him in his job and will give his men the advantage of everything he has learned. With proper application of the techniques discussed in this guide, the United States Army will continue producing championship teams.

Chapter One

NATIONAL MATCH FIRING



DANIEL BOONE TROPHY



DOGS OF WAR TROPHY

SECTION I - DESCRIPTION OF THE NATIONAL MATCH COURSE

Section 113 of the National Defense Act of 1916, as amended, provides that there shall be held an annual competition, known as the National Matches. The course fired during these matches became known as the National Match Course. From this course the Excellence in Competition and Distinguished badges are awarded. The National Match Course is fired both as an individual and as a team.

The National Match Course, as an individual, is fired in four stages.

FIRST STAGE: 200 yards, slow fire, standing, 10 rounds in ten minutes, Target "A".

SECOND STAGE: 200 yards, rapid fire, sitting or kneeling from standing, 10 rounds in fifty seconds, Target "A".

THIRD STAGE: 300 yards, rapid fire, prone from standing, 10 rounds in sixty seconds, Target "A".

FOURTH STAGE: 600 yards, slow fire, prone, 20 rounds in twenty minutes, Target "B".

The National Match Team Course is essentially the same as the individual; with a team normally consisting of four or six shooters, team captain, and a team coach. Each team is assigned a target and all shooters will fire at this target.

During slow fire stages, two shooters will be on the firing line simultaneously, alternating shots; with the team allotted one minute per round and three minute preparation periods for each pair of shooters. For example, at the 200 yards first stage, six shooters have 66 minutes and at the 600 yards fourth stage they have 126 minutes.

Rapid fire stages are identical, with the team shooters following in rotation on this same target.

SECTION II - SELECTION OF SQUAD MEMBERS

In the selection of squad members it is important to utilize the best talent available insuring that sufficient new talent is developed and utilized as required by the competitive new shooter rule as outlined in CONARC Regulation 622-2. The identification of marksmanship talent is directed by CONARC, as is the career advancement of personnel engaged in the competitive program.

A. Selection at the lowest level.

Selection of shooters at the company level or at the lowest level of participation is generally accomplished as follows:

1. The person responsible for organizing the team will generally ask for volunteers. These personnel may be experienced or may only have professed an interest in marksmanship. In the absence of volunteers, personnel firing the highest scores during the annual qualification should be used. Also, a review of individual qualification records will indicate personnel with prior competitive experience as well as those individuals who may possess natural ability.

2. All personnel considered should be interviewed to determine if they possess those personal characteristics or qualities that are important to become a good shooter. Some of the most important attributes are:

ATTRIBUTES OF A SHOOTER

a. Interest in marksmanship.

b. Previous experience.

c. Eligibility (as outlined in CONARC Regulation 622-2).

d. Availability.

e. Physically qualified.

f. Cooperative, Honest, Ambitious, and Reliable.

g. Competitive Spirit.

3. Those individuals selected should then be given instruction and practice to determine potential.

B. Selection at Higher Levels.

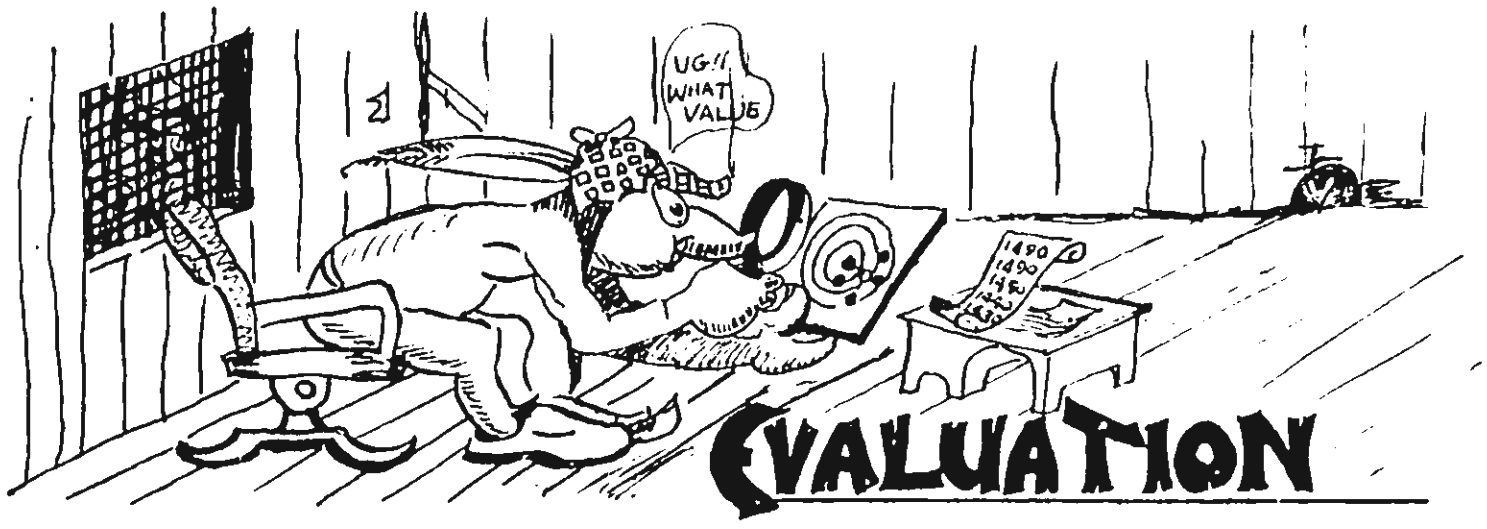
If faced with the task of selection of a squad subsequent to the selection at the lowest level, such as at the completion of inter-unit or inter-post matches, the problem is somewhat minimized and is accomplished generally as follows:

1. A senior member from among the selected individuals or an experienced shooter or coach will more than likely be assigned to organize the squad. This assignment should be accomplished prior to the completion of the subject match to enable the individual to contact team coaches of individuals firing in the match, as well as give him the opportunity to actually observe shooters on the firing line during competition.

2. As a result of his observation, contact with team coaches, and his utilization of the match bulletins, the squad coach will select his squad members. He will insure that he has sufficient old and new shooters for subsequent organization of his team(s) for the next level of competition. (As mentioned previously, refer to the new shooter rules outlined in CONARC Regulation 622-2).

3. While not indorsed, it is conceivable that selection of a certain individual might be based on potential displayed, or a specific need or requirement of the squad. Therefore an individual, an old shooter with past experience, or a new shooter with certain potential, may be selected over the proven competitor.

4. Selection of any squad, should as a rule, be based on proven ability in keeping with the spirit of the competitive directives.



C. Team Selection and Evaluation File.

1. After the selection and training of the shooters, the head coach is responsible for choosing those individuals who will fire in team matches. In order to select those shooters with the greatest capability, the coach must have a thorough knowledge of every individual in the squad. To accomplish this, it is necessary to rely on the observation of the team coaches.

2. To provide the team coach with a systematic method of recording data concerning each shooter, an evaluation file should be initiated for every individual. This file, if properly maintained, will not only reflect pertinent information to be used in selecting team members, but will assist in the planning of the training program.

3. The Evaluation File consists of a Personal Information Sheet, a Shooter's Graph and Daily Log Section. The Evaluation File used by the Army Team is printed on a manila type folder. The cover sheet (Figure 1) contains the instructions for the use of the file. The inside left of the folder (Figure 2) contains the Shooter's Graphs for 200 and 600 yards slow fire and 200 and 300 yards rapid fire. The inside right of the folder (Figure 3) is the National Match Course Graph followed by the Daily Log; which allows for quick reference between the Shooter's Graphs and the initial training period of the individual shooter. The file is completed with a continuation of the Daily Log on the back; and a mimeographed Personal Information Sheet (Figure 4) which is retained by the team coach for his own information. A sample evaluation file with examples inserted follows:

SHOOTER'S EVALUATION FILE

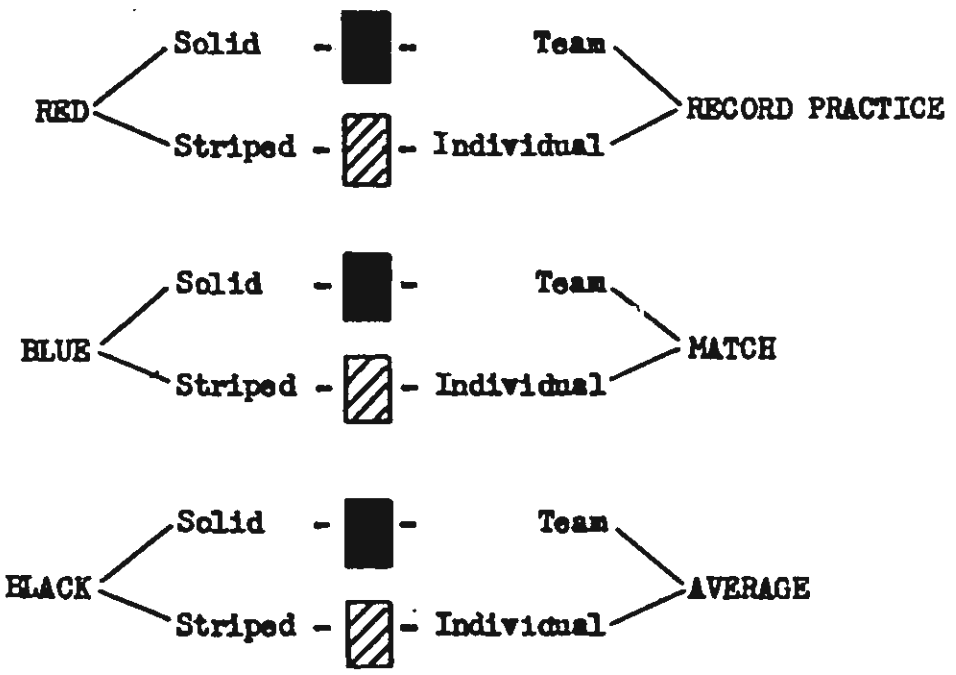
INSTRUCTIONS

Each competitor should have an evaluation file throughout his competitive season. The file contains a PERSONAL INFORMATION SHEET and a SHOOTER'S GRAPH and DAILY LOG SECTION. This file will be in the custody of the team coach at all times, except when needed by squad officials. The coach will make appropriate entries as events occur. He will also insure that all plotting sheets resulting from firing under his supervision are associated with this file before passing it on to the next coach.

PERSONAL INFORMATION SHEET: Is considered confidential and should be only for the use of the coach and squad officials. Each coach will make his remarks in such a manner as to reflect his considered OPINION and what action he has taken to orient the shooter concerning his particular problem if a problem is noted. Extreme care is indicated here, and it is suggested that this portion of the file be filled in after the shooter has been under observation for at least a week. Because of the subjective nature of these comments, they should be used only for corrective action by the coach who maintains the file. Critical remarks are worthless unless they are followed up with appropriate counseling. If improvement is noted, these remarks should be destroyed. This sheet should be destroyed when the shooter changes coaches.

SHOOTER'S GRAPH and DAILY LOG SECTION:

1. SHOOTER'S GRAPH: Is used for the entry of all practice, match, and average scores, whether they are fired as a member of a team or as an individual. All other factors being equal, this is the information which will provide the basis for the final selection of team members. The following color code is used to record and qualify scores.



2. DAILY LOG: Is used to record individual strengths and weaknesses of the shooters. Comments must be of a factual nature and used to qualify each score on the SHOOTER'S GRAPH. Examples are: effects of weather, coaching of firing errors, equipment failure, etc. These comments present a picture of the shooters progress and are particularly useful in programing instruction and remedial training.

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Figure 1. EVALUATION FILE (INSTRUCTIONS)

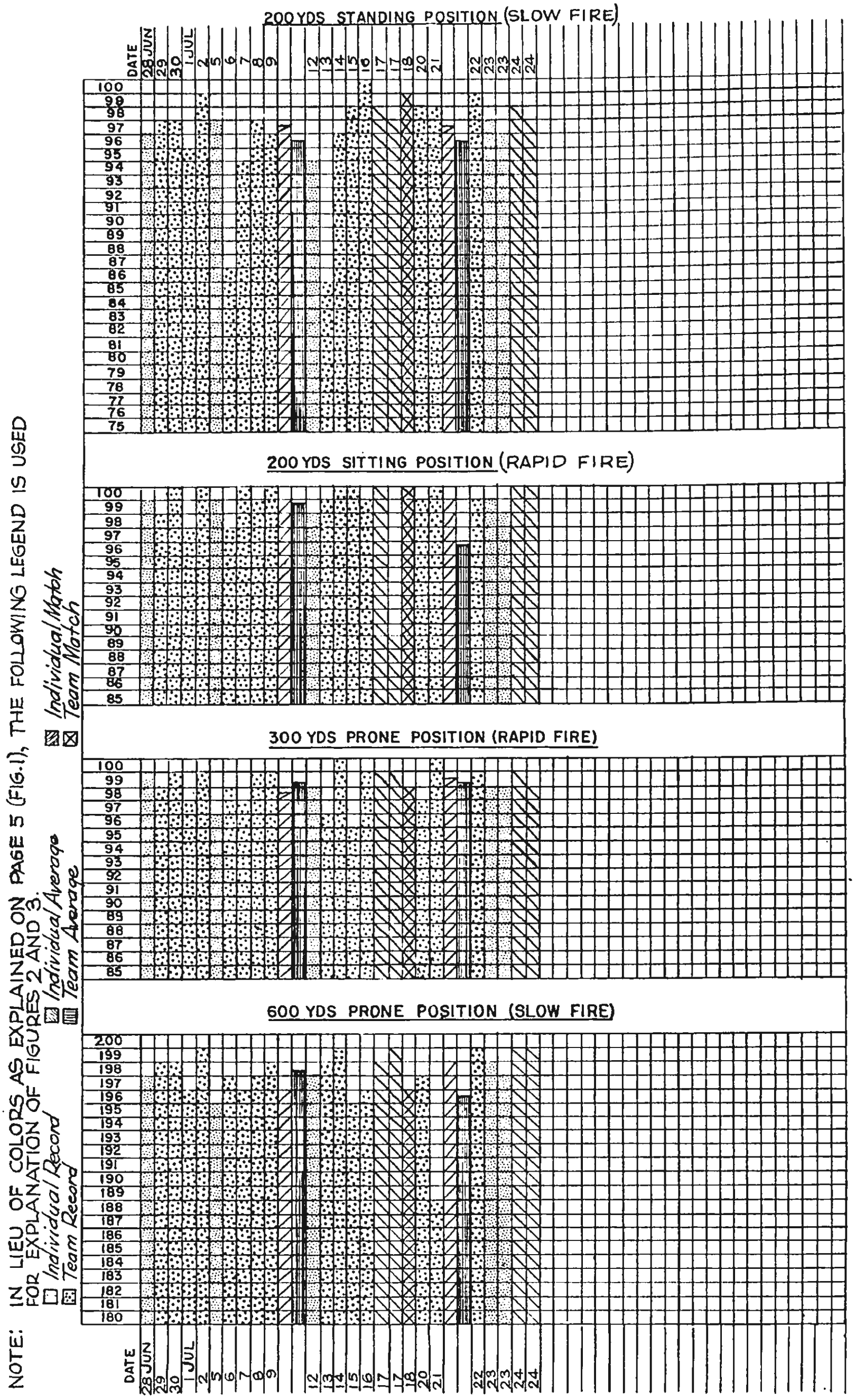
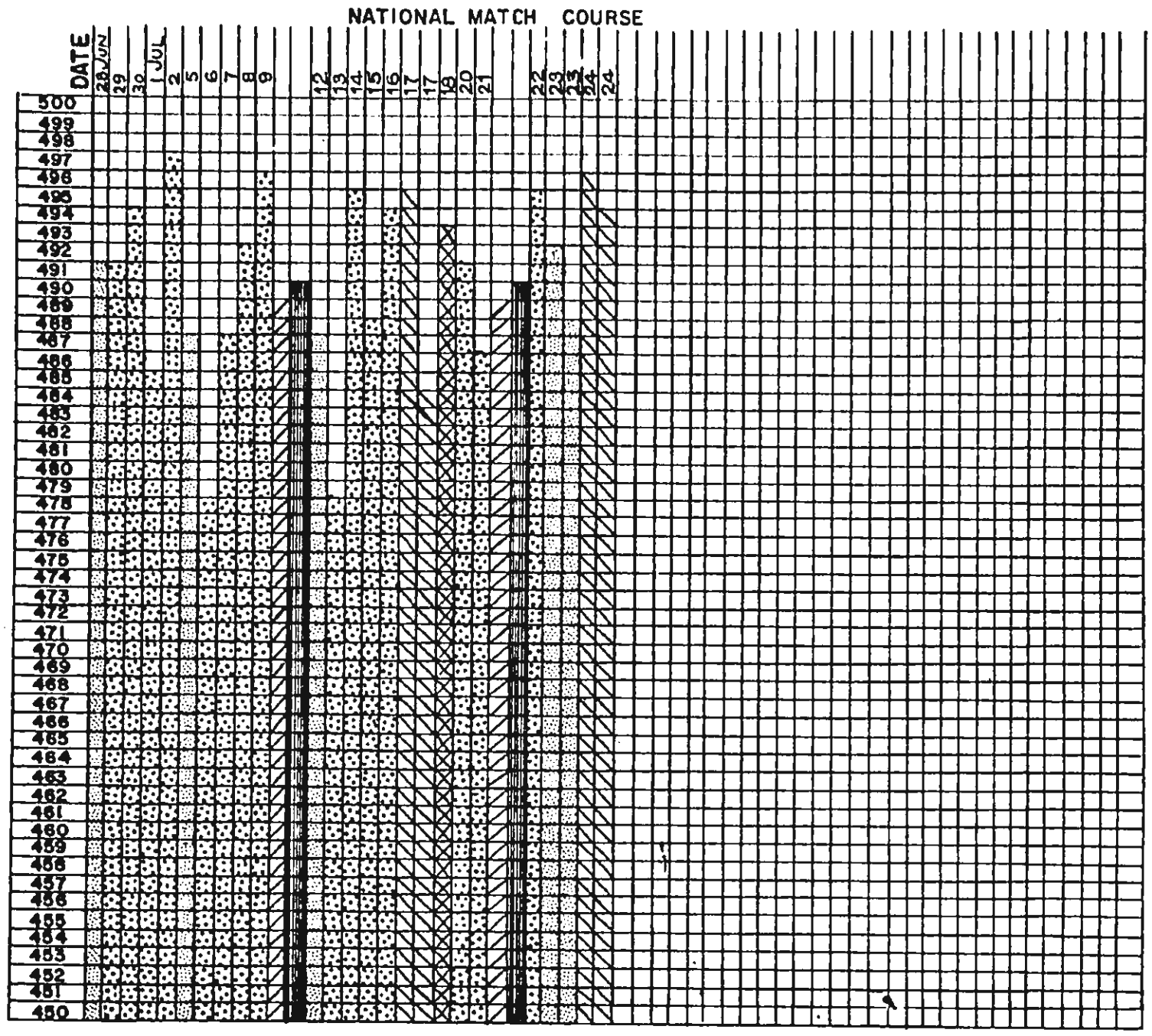


Figure 2. EVALUATION FILE (SHOOTER'S GRAPH)



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DAILY LOG

DATE	REMARKS
28 JUNE	FIRST DAY SUMMER TRAINING - GOOD GROUP AT 300 - GOOD VERTICAL AT 600
29	LOST 1ST SHOT AT 300
30	NEEDS A FASTER SHOOTING PARTNER FOR STANDING & 600
1 JULY	POOR SITTING POSITION
2	GOOD PERFORMANCE
5	LOST RT ELBOW AT 300 - HAVING DIFFICULTY READING WIND AT 600
6	VERY GUSTY WIND STANDING, POSITION DIFFICULTY SITTING
	EXPERIMENTING WITH 300 YD POSITION
7	SHOWED CONFIDENCE FIRING OFFHAND IN WIND. AGAIN POSITION DIFFICULTIES AT 300 YDS.
8	300 YD POSITION LOOKED GOOD
9	SHOWED EXCELLENT POTENTIAL FOR ANCHOR PAIR
12	MEDIUM GUSTS OFFHAND - WIND - POSITION DIFFICULTIES SITTING
13	VERY GUSTY OFFHAND - WIND SWITCHED AT 300 YDS.
14	GOOD PERFORMANCE - MEDIUM WIND STANDING
15	LATE ROUND AT 300 — CAUGHT A 6 AT 12 O'CLOCK
16	FISHTAIL WIND AT 600
17	SAVED A ROUND SITTING - 979 AGGREGATE PLACED 27TH
18	FIRED ANCHOR MAN 493 - PLACED 2D - TEAM SCORE 2952-112X
20	DARK DAY - NEEDED "HOLD CLOSER" AT 300
21	FIRED ON WRONG TARGET AT 600 YDS
22	COACHES ERROR AT 600 YDS
23	FIRED 980 AGGREGATE - LAST 1ST ROUND AT 600 YDS.
24	FIRED 990 - GOOD CONDITIONS - PLACED SECOND

Figure 3. EVALUATION FILE (NMC GRAPH AND DAILY LOG)

PERSONAL INFORMATION

NOTE: INFORMATION CONTAINED IN THIS PAGE IS CONFIDENTIAL

MENTAL ATTITUDE: Reflects the individual's ability to perform under the pressure of competition. In order to determine the quality of a shooter's mental attitude, answer these questions and explain affirmative answers.

1. Is he easily perturbed?
   No
2. Does he give up easily?
   No
3. Is he easily discouraged by unfavorable conditions?
   yes Sgt Gross needs a "pep" talk during bad weather. Otherwise he will not concentrate on his firing.
4. Is he susceptible to rumors?
   No
5. Is he disturbed by scores fired by other competitors?
   No
6. Does he worry about equipment?
   No
7. Does he lack the will to win?
   No
8. Other

PERSONAL BEHAVIOR: Indicates other traits of character which measure the capabilities and shortcomings of a potential team member. While thus evaluating the shooter, the wise coach will also evaluate himself, for he, as well as the shooter, will be a member of the team. Answer these questions and explain negative answers.

1. Is he cooperative?
   Very cooperative except when pushed. Recommend a "soft sell" approach
2. Is he ambitious?
   yes
3. Is he aggressive?
   yes
4. Is he honest?
   yes
5. Is he reliable?
   yes
6. Is he neat in appearance?
   yes

REMARKS: Describe the shooters abilities, characteristics and potential.
Much potential - makes "new-shooter" mistakes but will soon overcome these misfortunes. He fires best when allowed to sleep between relays

Figure 4. EVALUATION FILE (INSERT)

SECTION III - SQUAD EQUIPMENT

To facilitate training and development of rifle teams for ultimate participation in competition, Headquarters, Department of the Army has published a Table of Allowance, 60-18, that prescribes the equipment authorized, and a Table of Allowance 23-100, that prescribes the authorized annual match grade ammunition allowance. In addition to procurement, the coach and shooter must know how to select and care for this equipment.

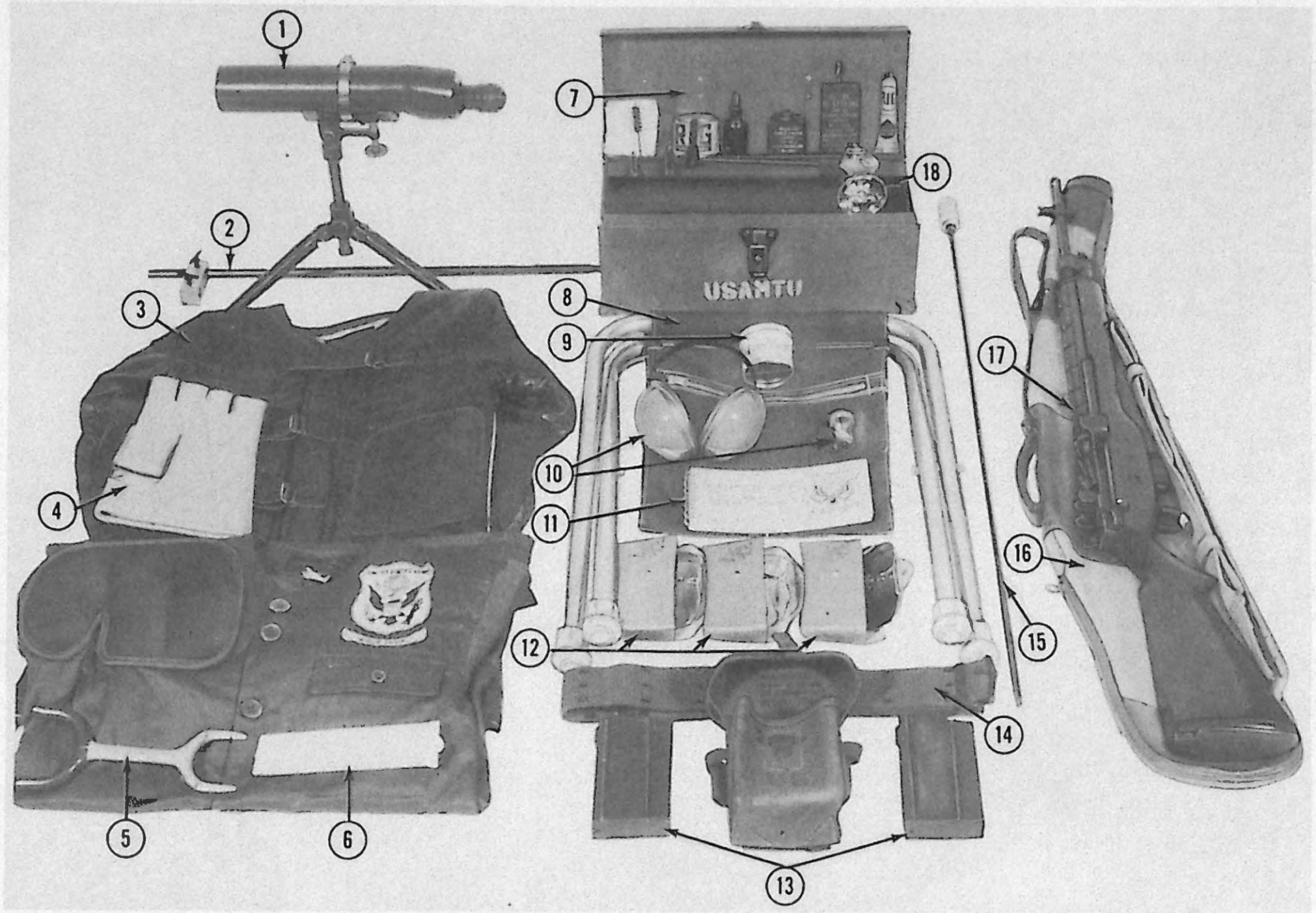


Figure 5. INDIVIDUAL EQUIPMENT.

A. Individual Equipment:

1. Spotting telescope
2. Telescope extension
3. Shooting jacket - (cloth or leather)
4. Shooting glove or mitt
5. Rifle fork
6. Sweat band

7. Cleaning equipment and box

8. Stool

9. Firm grip

10. Ear plugs or protectors

11. Scorebook

12. Shooting glasses

13. Magazines

14. Pistol belt with pouch

15. Cleaning rod

16. Rifle case

17. Rifle with sling

18. Carbide lamp

It is becoming increasingly apparent that fitting and selection of equipment has much to do with performance. A shooter having a jacket that is loose and sloppy will not produce his best scores. Where possible, items of wearing apparel should be issued on the basis of two per man. This allows for proper care and cleaning. For safety reasons it is recommended that all shooters wear glasses, however, certain color glasses are not particularly suited for some shooters and if used, will result in eye strain or poor scores.

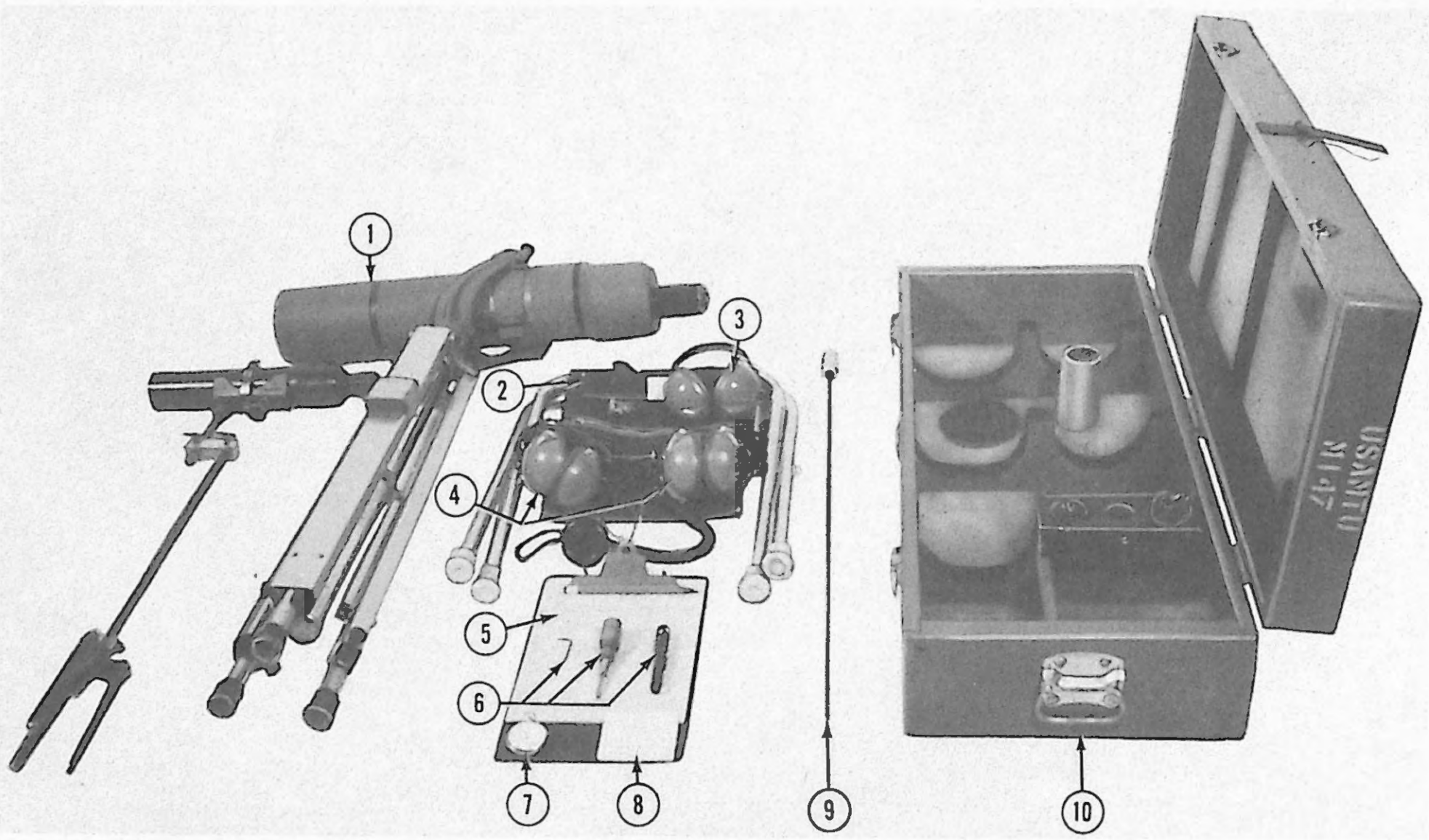


Figure 6. COACH'S EQUIPMENT.

B. Coach's Equipment:

1. Team spotting (100 MM) or individual scope (20-25 power) with extension

2. Stool

3. Ear plugs or protectors

4. Ear protectors communication set

This type communication set has been adopted by the Army Team to facilitate the giving of favors or commands by the coach during rapid fire and long range stages; and allows him to keep his eye to the telescope while the shooter is performing. Care must be taken in applying the ear protector-communication wire connection to the left ear of a right handed shooter. The shooter should not have interference with his right elbow or any part of his position and the wire should be attached to the center rear of the pistol belt so the system will not be disrupted while the shooter is getting into position.

5. Plotting sheets

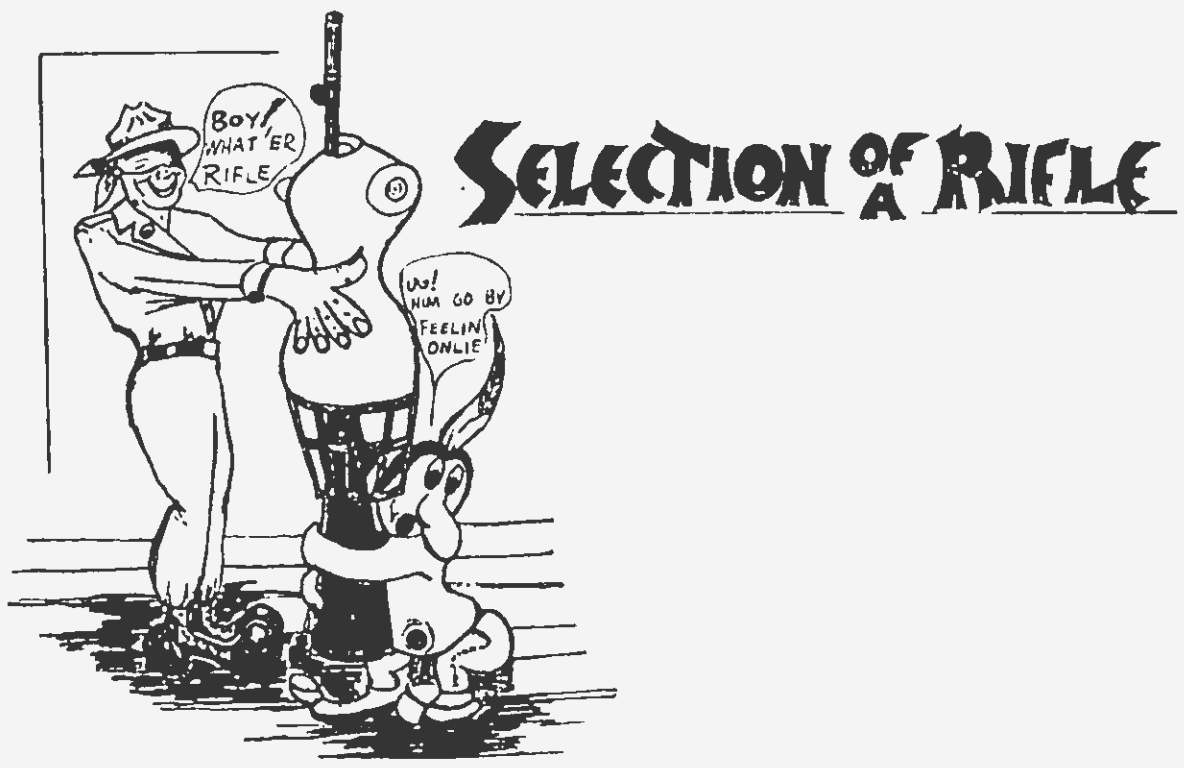
6. Allen wrench, screwdriver, and combination tool

7. Stop watch

8. Lens tissue

9. Cleaning rod

10. Scope carrying case with dust covers and alternate lenses



C. Selection of an M-14 Rifle:

There are many factors that must be considered when selecting a rifle for competitive use. Keep in mind that for Marksmanship competition below Division level, the Combat Rifle Match is prescribed. CONARC Regulations 622-2 limits the weapon to be used in the Combat Rifle Match to the issued service rifle.

1. The M14 service rifle (Figure 7) is manufactured in two types; the Standard Issue and the National Match. To comply with the rules of CONARC Regulations 622-2, the accuracy of the standard issue rifle may be improved upon only by interchanging issue parts until a smoother operating and tighter fitting rifle results.

The difference between the two types of rifles is that the National Match rifle has:

a. The selector welded on semi-automatic.

b. No chrome liner in the steel barrel.

c. A rear sight with 1/2 minute clicks in elevation and windage.

d. A tapered front sight .062 inch in width.

e. A rear aperture .520 or.595 inch in diameter.

f. A stock that has been factory glass bedded on the top rails, horse shoe, and bearing surfaces of the firing mechanism.

g. Closer tolerances on all component parts; many of which are stamped NM, indicating National Match grade.

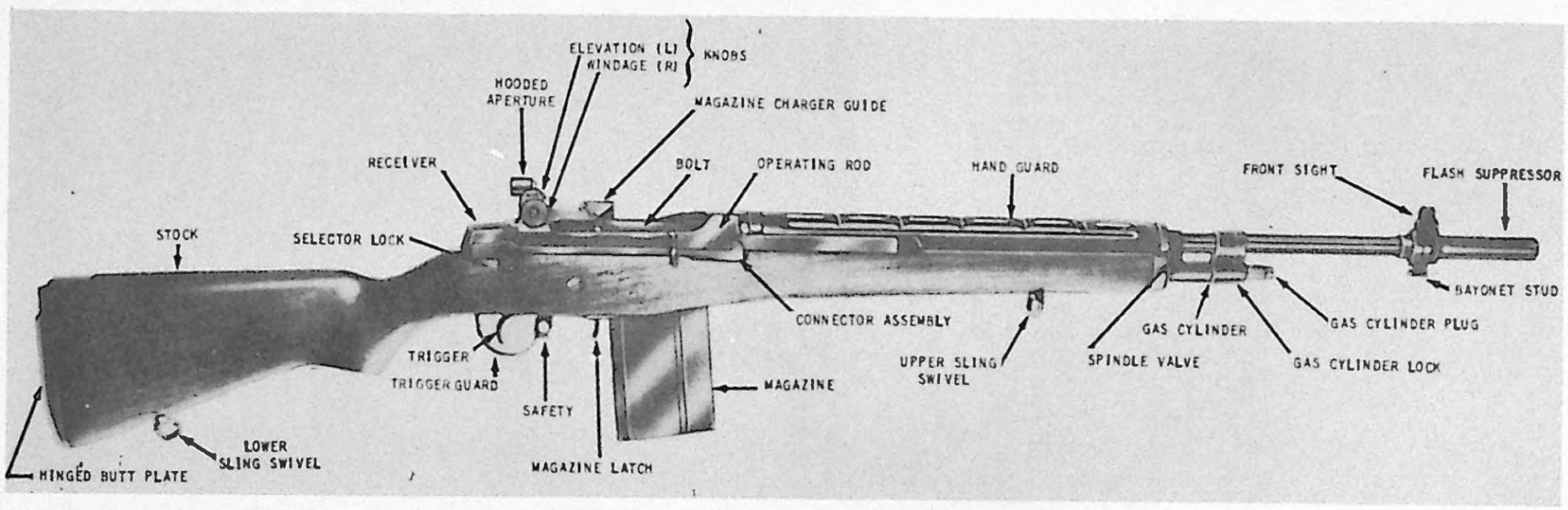


Figure 7. US RIFLE 7.62MM M14.

2. Much consideration should be given to the selection of a barrel and receiver.

a. Air gauge (maximum .3012 lands, .3085 grooves) and/or visually inspect the bore.

b. Breechbore gauge the throat of the bore. (.304 tolerance).

c. Check the headspace with gauge (1.631 to 1.636). The bolt is not interchanged without checking headspace.

d. The muzzle may be gauged with a dummy round (1/4" to 3/16" of the bullet exposed) and the crown freed of burrs by crowning and facing.

3. Once the barrel and receiver group has been selected, each part can be handfitted and modified to form a tighter fit.

a. Knurl the barrel and replace the operating rod guide.

b. Attach the front band to the gas cylinder with countersunk screws.

c. Peen gas cylinder barrel spleens.

d. Place brass spacer and gas cylinder onto barrel.

e. Gas cylinder lock is tightened to 6:30 o'clock position with the barrel, then backed off to allow for heat expansion.

f. Gas cylinder plug is tightened.

g. Flash suppressor is reamed to .406 inches.

h. Peen the flash suppressor barrel splines and align the suppressor onto the barrel.

i. Fit and modify hand guard with clearance between it and the stock.

j. Operating rod should ride close to the receiver (1/32 inch or less) without touching and must ride smooth and centered on the piston.

k. The connector is attached and must be free of burrs or bends.

l. The operating rod spring guide and spring are inserted, with the spring adjusted for tension, correct length, and free of kinks. The guide should be burr free or replaced with a round tapered type.

m. The firing mechanism should operate smoothly and be free of creep with the hammer hooks releasing simultaneously. The hooks should release with a trigger pull of approximately 4 3/4 pounds and a minimum of overtravel.

n. Stock should be free of cracks and not oil soaked; with the grain of the wood running parallel to the axis of the stock. There are two methods of modifying stocks so that free play is eliminated between the stock and receiver.

(1) Glass bedding - Rout and glass the top rails, horseshoe, recoil shoulders, and bearing surfaces of the firing mechanism.

(2) Shimming - Using manila paper, or material of like thickness, shim the top rails, horseshoe, and recoil shoulders. If additional shims are necessary, each succeeding piece should be reduced in length by one third.

4. The stock should be waterproofed inside and out with a high quality varnish or plastic finish.

5. A final check is given to a weapon by assuring that:

a. Pressure is required to lock the trigger guard into position.

b. Tension exists between the fore end of the stock and the receiver group.

c. The sights are tight and functioning correctly.

d. The piston moves freely.

e. The safety operates correctly.

6. The final basis for selection is to actually fire the rifle and determine its degree of accuracy.

D. Care and Cleaning of an M14 Rifle.

Just as extreme care is used in selection of an M14 rifle used in competition, a similar degree of attention should be devoted to its daily maintenance and inspection whenever fired. The materials and recommended method for cleaning will be discussed as follows:

1. Materials required for cleaning the rifle are:

a. Military Issue.

(1) Cleaning rod.

(2) Chamber brush.

(3) Lubricating oil.

(4) Bore cleaner.

(5) Patches.

(6) Bore brush.

(7) Linseed oil.

(8) Lubriplate grease.

(9) Neat's foot oil.

(10) Rag.

(11) .45 cal. cleaning rod.

(12) .45 cal. bore brush.

b. Purchased.

(1) Plastic coated cleaning rod.

(2) Satin silicone compound for stock.

(3) Rust inhibitive grease.

(4) Tooth brush.

(5) Shaving brush.

(6) Sight cleaning brush or rag.

(7) Artist brush.

(8) Plastic grease.

2. Cleaning the Match M14 rifle is accomplished in the following manner: Extra care must be taken to insure that the rifle is cleaned thoroughly. The first step is to clean the sights and wipe off all external dirt. The bore should be swabbed four or five times with a brass brush dipped in bore cleaner. Run the brush all the way through and all the way out to insure complete cleaning and to avoid crimping the bristles. The chamber is also swabbed with bore cleaner using a chamber brush. The bore cleaner should be left in the bore and chamber until the rest of the rifle is cleaned. The throat of the chamber, receiver, and other interior areas may be cleaned with a patch or a piece of cotton on the end of a stiff wire or thin stick. To remove the hardened carbon from the interior of the flash suppressor a .45 cal rod with a .45 cal bore brush and patches are used. Use the rod and brush to remove heavy carbon build-up. Follow this up with patches saturated with bore cleaner, being sure to clean between the prongs. At this point the bore and chamber are swabbed with clean patches. As the final step in the cleaning process, four or five drops of bore cleaner are placed in the lower gas port in the gas cylinder. Then elevate the muzzle, close, then open the bolt so the piston drops all the way to the rear; repeat this several times to insure complete saturation of the interior of the cylinder.

NOTE: The rifle will never be disassembled by the shooter for cleaning or lubrication. Disassembly should be performed only by a qualified gunsmith and should be cleaned thoroughly when it is disassembled for repairs.

3. Lubrication is performed in the following manner: lubricant must be removed and replaced everyday. All surfaces that have become shiny from metal to metal contact should be lubricated. The parts that must be lubricated are:

a. Lip of receiver.

b. Locking lugs.

c. Operating rod guide groove.

d. Operating rod.

e. Operating rod guide.

f. Bolt camming lug.

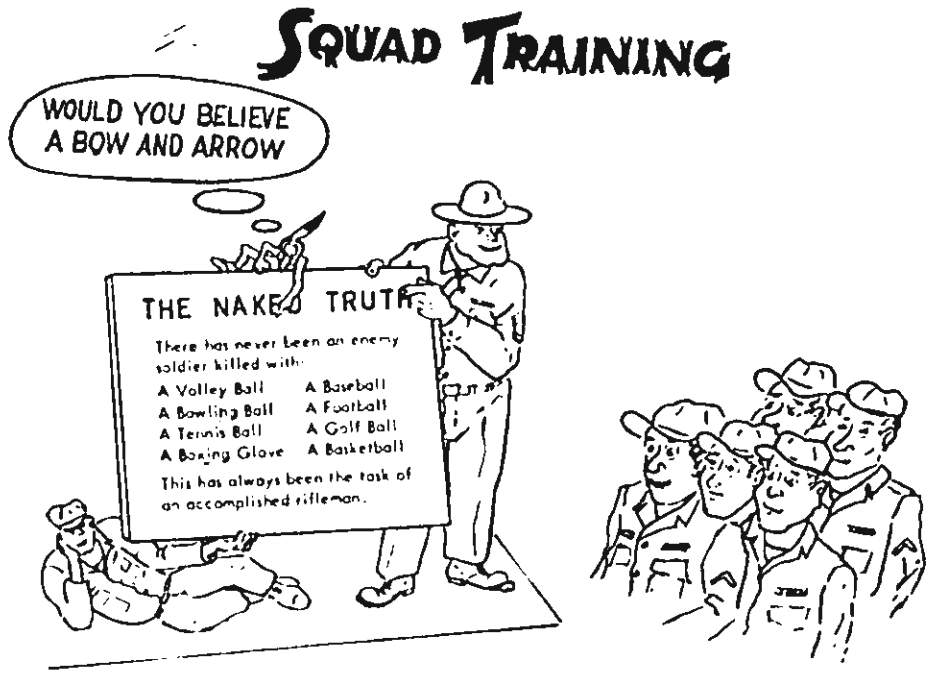
g. Bolt camming recess.

h. Bottom, right side of barrel immediately forward of the receiver.

4. Magazines must be inspected daily for cleanliness and damage as both may cause malfunction. When damaged, replace the magazine; when dirty, clean by disassembling or by depressing the follower and removing all foreign matter with a cotton swab. A light coat of oil should then be applied to the interior walls of the magazine.

5. When transported, the M14 rifle should be inclosed in its case and placed in the firing position (sights up); and when stored, it should be hung muzzle down, bolt forward, hammer released, and flash suppressor free from contact. If stored for an extended period, the trigger guard should be disengaged, and the bore coated with a rust inhibitive grease.

6. Any M14 rifle used in competition must be handled with care and properly maintained if accuracy is to remain consistent. Protective care on the range is of the utmost importance because it is here that the rifle is exposed to the careless handling of the shooter and the effects of weather. The shooter must be careful not to drop or excessively jar his weapon. When not used, it should be placed sights up on the rifle fork and protected from the elements of weather (rain, dust, and sun) as exposure to the weather will result in malfunctions and decreased accuracy. Prior to firing, the shooter must perform a visual inspection and clean or lubricate his weapon when necessary. It has been proven by testing that care and cleaning has a direct relationship to accuracy.



A. Training Program.

Once the selection of individuals has been made to comprise a squad, an organized training program should be laid out to mold the shooters into individual and team competitors. The goal of the program being to prepare each individual to adequately represent himself and the team at a given level of competition.

1. After selection of individuals for the squad, at least two weeks, time permitting, should be devoted to the instructional training phase. This instructional training should include physical conditioning, mental conditioning, rules and regulations, safety, fundamentals of marksmanship, detection and correction of errors, dry firing, and range firing.

2. The primary goal for the squad OIC and Head Coach is to win the team match at any level of competition. Therefore, at the conclusion of the instructional training phase, and based upon the progress of each individual as recorded in the evaluation file, teams should be formulated and a concentrated effort placed on team firing. However, time must be reserved for individual firing, since a good portion of all competition is of an individual nature.

a. Having formed the team(s) in reference to ability and organizational requirements, a training schedule which has proven successful over the last few years includes the following:

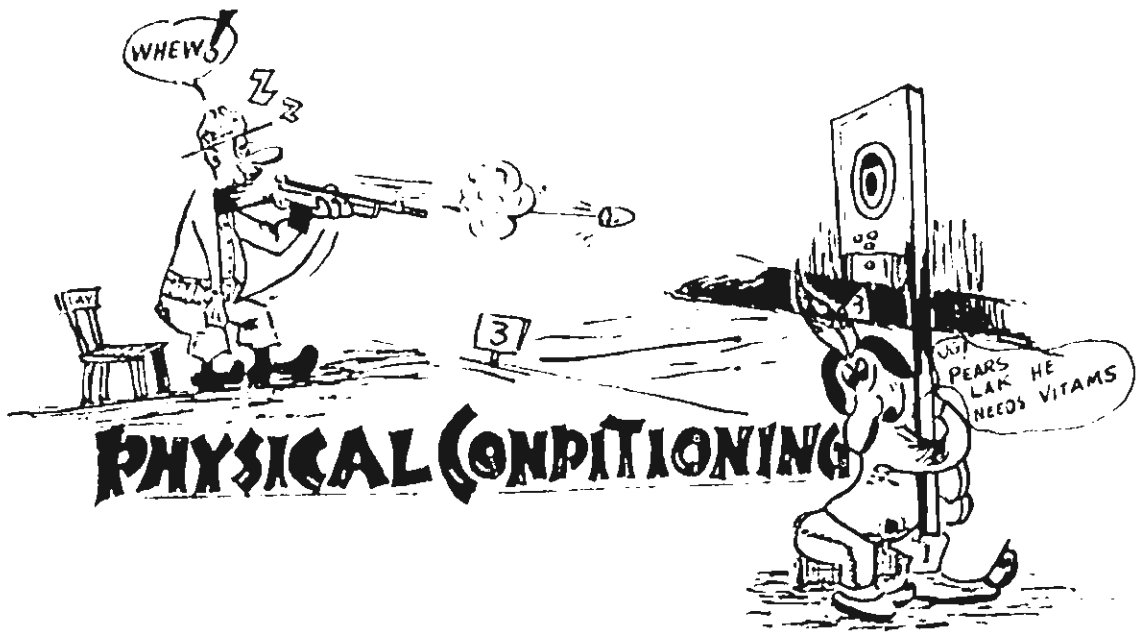
(1) Physical Conditioning, Limbering Up Exercise, and Organized Athletics: These exercises should be performed daily during practice and discontinued prior to and during competitive firing.

(2) Individual Firing: Monday and Thursday of each week should be devoted to individual firing. During this phase of training, those deficiencies noted by the coaches on team days, can and should be corrected.

(3) Team Firing: Tuesday and Wednesday should be devoted to team practice. Fridays should be devoted to team record firing. The shoulder to shoulder team record competitions on Friday will aid in the mental conditioning of the team shooter.

(4) Match Firing: All available competitive matches should be entered. There is no substitute for this type of training which offers the true competitive spirit of marksmanship. Here the individual is afforded the opportunity to build and develop the mental conditioning and discipline so necessary to the shooter.

b. When a weakness is noted, a review of the technique, fundamental, or subject is recommended. A detailed explanation of the training techniques used to successfully develop the individual and team, follows in this guide.



B. Physical Conditioning.

The objective of physical training in the marksmanship program is to condition the muscles, heart, and lungs; thereby increasing the shooters capability of controlling the body and rifle for sustained periods without experiencing fatigue. The ultimate level of endurance must be determined by the individual shooter. A general state of good health is beneficial for all shooters. This guide is designed to develop those areas of physical proficiency necessary to achieve championship form.

1. The following physical condition characteristics are desirable for the competitive rifleman.

a. Control of an adequately developed muscle system.

b. Endurance to fire over long periods of time without perceptible lowering of scores.

c. Highly efficient heart and lung system.

d. Good reflexes and coordination.

2. Physical training exercises, practice firing, and sports are the best means of developing these qualities in a shooter and will also aid in developing self control and confidence.

a. The shooter must understand that a physical training program is long range in nature and may not show immediate results. To benefit from such a program the shooter must diligently adhere to this program. Once he is satisfied with his level of physical proficiency he then must maintain this level.

b. Physical Training Exercise.

(1) Isometrics: Contraction of muscles under tension without moving the various parts of the body. These exercises will improve muscle tone and, to some extent, strength. Prolonged practice of Isometrics will also tighten and shorten ligaments that support joints and make them more susceptible to injury.

(2) Weight lifting: Beneficial as warmup exercises but does not materially strengthen the heart and lung systems. Being over-muscled is as detrimental to shooting as being overweight.

(3) Calisthenics: Beneficial as warmup exercises, but again does not materially strengthen the heart and lung systems.

(4) The following exercises are useful to develop strength and coordination in areas needed to aid a shooter and as warmup exercises. The number of repetitions are best determined by the individual needs of the shooter.

(a) BEND AND REACH

1. Starting Position--Side straddle, arms overhead, palms in.

2. Cadence--Moderate.

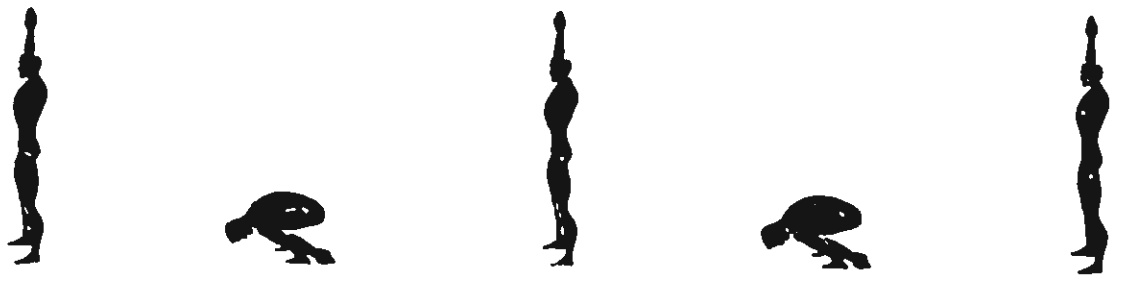
3. Movement:

a. Bend trunk forward and downward. At the same time swing arms between the legs, touching fingers to ground between and behind the heels. Knees are bent. Touch fingers as far behind heels as possible.

b. Recover to starting position.

c. Repeat count (1).

d. Recover to starting position.



START (1) (2) (3) (4)

(b) SQUAT BENDER

1. Starting Position--Standing with feet slightly separated, hands on hips.

2. Cadence--Moderate.

3. Movement:

a. Do a full knee bend, and thrust arms forward. Keep fingers extended, palms down, and trunk erect.

b. Recover to starting position.

c. Bend trunk forward, keeping knees straight, touch ground in front of toes.

d. Recover to starting position.

START (1) (2) (3) (4)

(c) SIDE BENDER

1. Starting Position--Side straddle, arms overhead, thumbs interlocked.

2. Cadence--Slow.

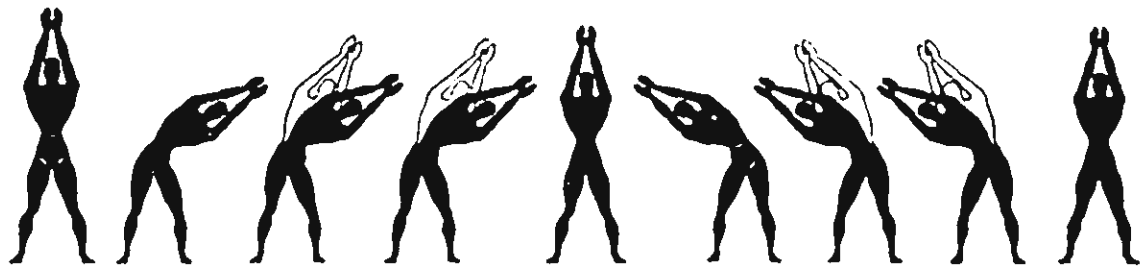
3. Movement:

a. Bend sidewards sharply to the left, bending the left knee. Bend straight to the side without twisting the trunk or shoulders.

b. Recover slightly and repeat with a bounce.

c. Repeat count (2).

d. Recover to starting position.
Repeat on right side for counts (5), (6), (7), and (8).



START (1) (2) (3) (4) (5) (6) (7) (8)

(d) TRUNK TWISTER

1. Starting Position--Side straddle, fingers laced behind head, elbows backward, chin in.

2. Cadence--Slow.

3. Movement:

a. Keeping knees straight, bend forward sharply, with a slight bouncing movement that causes slight recovery from the bend. This is a vigorous movement.

b. Bounce downward, and simultaneously turn the trunk sharply to the left so that the right elbow swings downward between the knees.

c. Repeat count (2) to the right. This time the left elbow swings down between knees.

d. Recover to starting position, pulling head backward and chin inward strongly.

START (1) (2) (3) (4)

(e) PUSH UP

1. Starting Position--Front leaning rest, body straight from head to heels, weight supported on hands and toes.

2. Cadence--Moderate.

3. Movement:

a. Bend elbows and touch chest to ground keeping body straight.

b. Straighten elbows, and recover to starting position.

c. Repeat count (1).

d. Repeat count (2).

START (1) (2) (3) (4)

(f) BODY TWIST

1. Starting Position--On back, arms on ground and extended sideward, palms down, legs vertical, feet together, knees straight.

2. Cadence--Slow.

3. Movement:

a. Lower legs to the left, twisting trunk and touching ground next to left hand. Keep knees straight, and both shoulders on ground. Legs must be lowered not dropped.

b. Recover to starting position without bending knees.

c. Lower legs to right, twisting trunk, and touching ground near right hand.

d. Recover to starting position.

START (1) (2) (3) (4)

(5) Dash events, such as those used in performance sports, require submaximal to maximal effort for periods of less than three or four minutes. When interspersed with frequent rest periods, such as speed running for one or two minutes, these exercises do not allow the body to attain a "steady state" or a "level off" period; and therefore lack endurance developing capabilities.

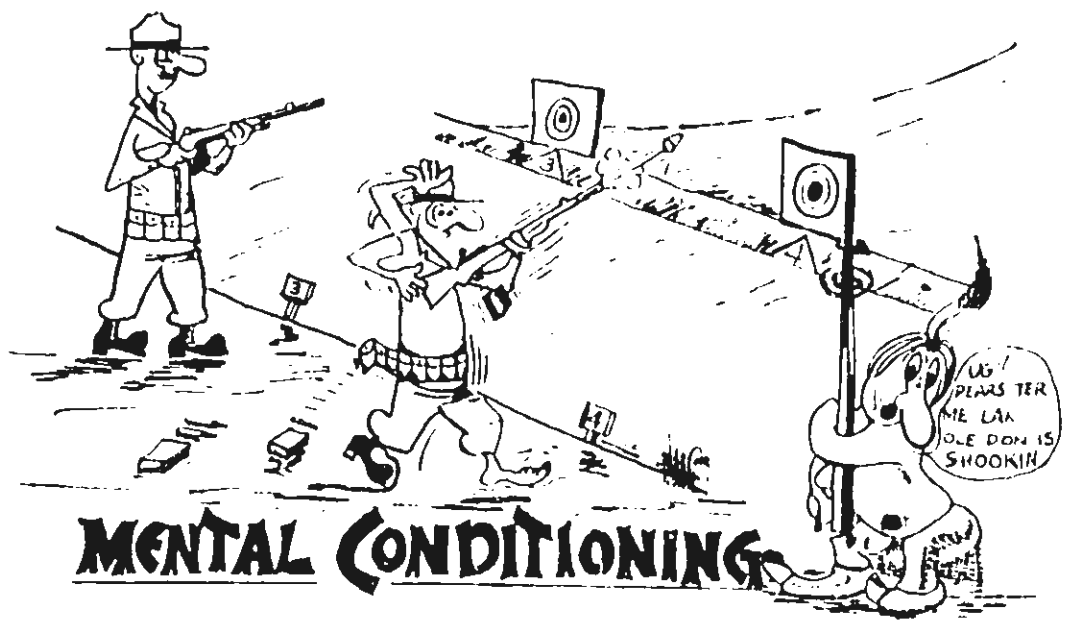
(6) Running, fast walking, swimming, and cycling require continual submaximal to maximal effort for periods of more than four minutes. Tests have shown that shooters so trained have higher developed heart and lung systems than those trained with other types of exercises. A shooter whose heart and lung systems are in good condition has better control of competitive pressure by being able to more fully relax in a shorter period of time. This type of exercise also develops self-control by forcing the shooter to endure long periods of body stress. If the maximum benefit is to be derived from conditioning, an endurance program should be followed. Care must be exercised not to overtrain, as this can defeat a positive Physical Training Program.

c. Practice Firing.

The actual practice of taking up the firing positions, whether for live or dry firing, exercises the firing muscles. To attain top firing performance, no matter how well conditioned the rest of the body is, the shooter must maintain the muscle tone of the muscles used primarily to sustain a stable firing position.

d. Sports.

Tennis, Vollyball, Softball, Handball, and Bowling offer the opportunity to develop mobility, reflexes, and precision. These exercises also offer a break in the body conditioning portion of the marksmanship training program and improve the esprit de corps of the shooters.



C. Mental Conditioning.

Mental conditioning can be defined as the developing or disciplining of a shooters emotions to prepare him for the act of firing. No matter how well a competitor has physically mastered the basic fundamentals of marksmanship, he will not do well on the competitive firing line if he has failed to develop mental discipline. Lack of mental discipline as evidenced by certain undesirable emotions, is manifested in certain physical reactions such as shaking, rapid breathing, etc. The coach can recognize these emotions or physical reactions by conversing with or observing the shooter; or studying the evaluation file.

1. All too little emphasis is placed on teaching and training the student of marksmanship on how and what to think. Of course nothing adds to mental conditioning and confidence more than practice and more practice. Everyone who has fired in a match is aware of the effects of emotional or mental strain. Those who have progressed to the higher levels of competitive firing have found that they must always strive to improve their ability to control these reactions.

a. The primary emotion felt by most competitors is fear or anxiety. To a certain degree, depending on the individual, this results in mental and physical reactions which are natural and involuntary. Of these effects, the most detrimental are rapid pulse, rapid breathing, muscular tension, and impairment of the reasoning power. Some of these symptoms may be suppressed to a certain degree. By breathing slowly and deeply, both the rapid breathing, and to some extent, the muscular tension will be reduced. Unfortunately, since the mind has lost some of its reasoning power, it has also lost a portion of its control over the body, making it very difficult to overcome these reactions. Therefore, the competitor must discipline his mind to enable it to control these otherwise involuntary reflexes. Several techniques which have been found to be successful in accomplishing this are as follows:

(1) Prior to and during the match, the competitor should avoid having thoughts that create anxiety. Many shooters have trained themselves to doze between relays in order to eliminate all conscious thoughts, (CAUTION: If a competitor uses this method he must first be certain that he will be awakened in time for his next relay). Another method is to think about some subject other than the match. A very effective technique is to establish a system of preparing equipment prior to the match and between relays. Disturbing thoughts have no chance to get started. This method has the added advantage of insuring that the equipment is in the best possible condition.

(2) If a shooter finds that he is easily disturbed by range rumor and other person's scores, he should make every effort to avoid hearing them. If necessary, he must keep himself separated from other shooters during the match, and he must stay away from the scoreboard.

(3) Muscular spasms caused by tension are best controlled by relaxation. Again, dozing between relays will promote this condition of relaxation. Also, by concentrating the full attention of the mind on each part of the body, a complete state of relaxation can be reached.

(4) While on the line in a match, the experienced shooter may find that the impairment of his reasoning powers may be to an advantage. If he has succeeded in relaxing and controlling his breathing, he will find that his well trained body will do the right thing at the right time without any conscious help from his mind. On the other hand, if his mind becomes fully aware of its surroundings, anxiety may appear with all its undesirable effects.

b. Other related emotions which are detrimental to the shooter are negative thinking and overconfidence.

(1) Negative thinking on the part of a shooter can, and usually does, affect his performance. It demonstrates that though the shooter has mastered all the physical skills of marksmanship, he has not accomplished the principle of mental discipline. For instance, if we think that we are going to be sick, we usually find ourselves being sick. By the same token, if we think that we may not do so well on the firing line, usually we don't. Because we do not discipline ourselves mentally, we permit ourselves to be to pessimistic about our firing.

(2) On the other hand, overconfidence on the part of the competitor has played havoc with many a would-be fine score. The competitor must strive to reach a happy compromise in developing the proper state of mental discipline. His state of conscious thinking must fall between that of overconfidence and negative thought. He should not, however push the positive element to the extent that it is converted into overconfidence.

2. In order to accomplish mental discipline, the shooter must know what situations and habits are good for him and avoid situations and habits that are bad for him. Following is a list of habits that the average competitor finds himself doing in most matches. These are a few of the many. You must understand yourself in order to ascertain whether they are good for you, or bad for you. They are listed as "Don'ts", but they may not all be so, depending on your individual characteristics.

a. Don't be perturbed. The very nature of the habit makes it a bad one, and it should be considered a don't for every shooter. It is certain that everyone will agree that a marksman cannot perform on the firing line if he is experiencing the emotional sensation of anger and bitterness. Further, it is by no means in the best interest of safety for a competitor on the firing line with a weapon in his hands to even approach the point of losing his temper.

b. Don't give up after making a bad shot. Many competitors have given up in disgust after firing a bad shot, but if he had not quit he might have won the match or at least posted a much higher score. Mentally discipline yourself to never give up or quit. A quitter never wins.

c. Don't get "shook up" by adverse weather or range conditions. Remember that all other competitors are under the same handicap. Practice mental discipline by positive thinking to the effect that you welcome an opportunity to try your skill under adverse conditions. Chances are that you will beat your competitors because you are not thinking in negative and pessimistic terms and they probably are.

d. Don't believe in boast and rumors uttered by other competitors. By your very nature, you may be susceptible to the influence exerted by another competitors "Flappin Jaws" and be pressured out of firing a good score. Practice mental discipline, do not allow yourself to believe or even listen to how good the other fellow is. The only thing you want to believe is what you see on the official bulletin board after the last round has been fired and the smoke has cleared away.

e. Don't watch the score board during the match. Of course this is one of the big thrills of the game, and may not bother some people. However, if you are one of those who cannot successfully cope with the pressure and anxiety that might build up within you by checking the scoreboard, then wait until after you have fired your last round. Then you may enjoy the pleasure and satisfaction of seeing how you compare with the rest of the competitors.

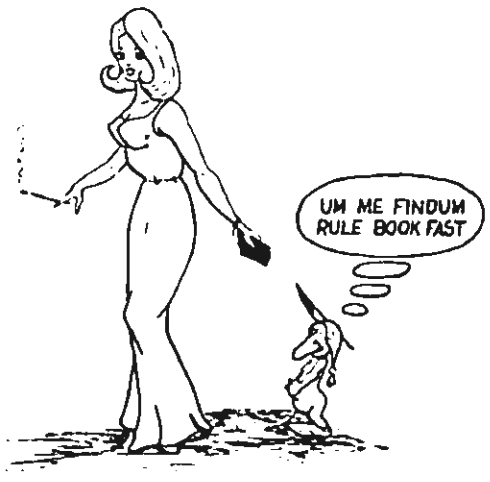
f. Don't score any target other than your own while firing. By their own admission, many top competitors have lost an important match simply by letting their curiosity get the best of them. If you are disciplining yourself to think in positive terms about your performance while on the firing line, you have no time to concern yourself with how well or how poor the other competitor is doing.

g. Don't worry about your total or aggregate score. The most important shot that you fire is always the one that you are in the process of firing, therefore, while you are in position on the firing line, that single shot is all that you should be consciously concerned with. Discipline yourself along that line and the score will take care of itself.

h. Don't dismay when competiting against superior equipment. Many a match has been won as a result of superb human performance employing equipment which was considered to be inferior compared to that used by other competitors.

3. The most important phase of mental conditioning is accomplished during training. It is in this period that the body is taught to function automatically. The shooter develops a high degree of confindence in himself and his equipment. He learns that he is capable of performing well even in bad weather. In general, he becomes physically and mentally fit.

RULES AND REGULATIONS



I GO FOR A MAN WHO KNOWS
HIS RULES AND REGULATIONS

D. Rules and Regulations.

Rules and regulations may vary from one match to another. A good guide for instructional purposes is the current NRA Rule Book and AR 920-30. These rules and regulations are supplemented by ground rules established by the Match Executive Officer's Bulletin.

1. In early stages of training it is recommended that the boredom of position drills and cadence exercises be broken with scheduled periods of instruction on rules and regulations. All of the hard work that goes into the training of a rifle squad may be of no avail if an individual or team is disqualified. It is the competitor's responsibility to understand and obey match rules and regulations. As a guide, the following outline can be used to instruct personnel. Those applicable portions of the NRA High Power Rifle Rules and AR 920-30 should be used.

a. Purpose of rules and their application during matches.

b. NRA Official Referee-duties and responsibilities.

c. Competitors duties and responsibilities.

d. Equipment and ammunition authorized for match competition.

e. Legal positions for match competition.

f. Competition regulations and range operations.

g. Range control and commands.

h. Marking and scoring system.

i. Procedures for initiating challenges and protest.

2. It is important for squad officials to be familiar with the regulations that affect the formation and operation of a squad. Some are:

a. CONARC Reg 622-2, "Competitive Small Arms Marksmanship Program."

b. "NRA High Power Rifle Rules."

c. AR 920-30, "Rules and Regulations for National Matches."

d. AR 622-10, "Competition in Small Arms."

e. AR 672-5-1, "Awards."

f. TA 60-18, "Army Rifle and Pistol Team."

g. TA 23-100, "Ammunition for Training."

h. FM 23-5, "U.S. Rifle Cal .30 M-1."

i. FM 23-8, "U.S. Rifle 7.62 MM, M14."

j. FM 23-71, "Rifle Marksmanship."

k. FM 23-9, "Rifle, 5.56-MM, XM16E1.

E. Safety.

Regardless of the degree of experience of the shooters on a team, they must all be oriented on safety regulations prior to their marksmanship training. Safety must be a primary consideration at all times, and even experienced competitors must be reminded periodically of their responsibilities on and off the range. The rules of safety can be divided into three groups: Those regulations which apply behind the firing line, those which apply on the firing line, and general safety regulations which apply to any situation on the range.

1. Rules to be observed on the range behind the firing line are as follows:

a. Rifle will be cleared at all times. The bolt will be open, magazine removed, and the safety locked.

b. When handling rifles, keep the muzzle pointed up in the air and down range.

c. There will be no aiming, dry firing, or position work behind the firing line.

d. Draw ammunition according to ground rules.

e. When called to the ready line, inspect the bore to insure that it is clear.

f. Do not run on the range.

2. Rules and precautions to be observed on the firing line are as follows:

a. Inspect ammunition for cleanliness, serviceability, and proper caliber.

b. Keep rifle clear and pointed down range until the range has been declared safe for firing.

c. Load only on the command of the range officer.

d. After firing, remain in position until the rifle is cleared and permission to leave the firing line has been granted. In many matches, shooters must remain in position until the firing line is clear.

e. After firing, each shooter, while still in position, must open the bolt, remove the magazine, inspect the chamber, and if appropriate, lock the safety.

f. No one will go forward of the firing line before the firing line is cleared by the Range Officer.

g. Upon hearing the command "Cease Fire", shooters will immediately lock and clear all rifles; except for those people who need alibis verified.

h. Everyone should wear shooting glasses and ear plugs while firing.

i. In addition, Range or Match SOP's will be followed.

3. General safety regulations and precautions are as follows:

a. Any person who observes an unsafe condition on or in front of the firing line will give the command "Cease Fire". Also, he will correct any unsafe condition observed behind the firing line.

b. Before use, dummy rounds must be inspected to insure that no live rounds are present. Dummy rounds should be stored separately from live rounds.

c. All rifles should be inspected before conducting dry firing exercises.

d. Before firing on any range, the Range Officer must insure that Range Regulations are observed which pertain to range fans, range guards, range flags, and range clearance.

Accidents result from violations of "common sense" safety rules. Any violation can result in the disqualification of the shooter or his team. Safety consciousness can only be developed if all squad officials and experienced shooters set the example and insist that everyone adheres to these same rules.

F. Fundamentals of Marksmanship.

To become an effective individual and team shooter, one must be thoroughly trained in the fundamentals of marksmanship. The purpose of teaching these fundamentals is to develop correct firing habits. This is accomplished during the training phase so that the fundamentals will be instinctively applied during the competitive matches.

It should be a requirement that every competitor periodically refamiliarize himself with these fundamentals regardless of his years of firing experience. Even the experienced shooter will develop a deficiency from time to time in the application of fundamentals that is often masked by perfection of other fundamentals.

The fundamentals taught to the competitive rifleman may vary from those taught to the average soldier only to the degree of expertise required. To achieve this degree of expertise we equip the competitive rifleman with a match weapon and match ammunition and fortify him with additional knowledge and improved techniques to enable him to cope with the various factors that affect the competitive shooter.

With the exception that trigger control may follow or be integrated into positions, the fundamentals are taught in the following sequence:

1. Aiming--instruction in the proper relationship of the eye, sight, and target.

2. Trigger Control--the act of firing the rifle without disturbing the aim.

3. Positions--proper application of all positions used in competitive firing and the act of firing a number of rounds quickly, within a specified time limit, from these positions.

4. Sight Adjustment--the proper manipulation of the sights to regulate the strike of the bullet.

5. Effects of the Weather--an explanation of the weather conditions that affect the shooter and bullet and how to compensate for these conditions.

6. Zeroing--the adjustment of the sights to hit a given point regardless of the range.

7. Use of the Scorebook--the recording of shots and the conditions that affect the bullet and shooter.

8. Use of the Spotting Telescope--the proper use of the scope in plotting hits and reading the mirage.

1. Aiming.

The first fundamental taught to the shooter is aiming. The importance of aiming cannot be overemphasized. Not only is it one of the most important fundamentals, but it provides a means whereby the shooter can check the effectiveness of his position and trigger control in later phases of training and firing. Instruction in aiming is divided into the five phases as follows:

Relationship between the eye and sights, sight alignment, sight picture, breathing and aiming process, and aiming exercises.

The explanation of each phase of aiming is designed to supplement that found in FM 23-5 (1958) and will vary to the extent of sequence and improved technique.

a. Relationship Between the Eye and Sights.

(1) In order to see what is required during the process of aiming, the shooter must know how to use his eye. Variations in the position of the eye with respect to the rear sight will cause variations in the image received by the eye. The placement of the eye in this respect is called "eye relief". Proper eye relief, subject to minor variations, is approximately 3 inches. The best method of fixing eye relief is with the "Spot Weld", which is explained in the third fundamental (positions).

(2) To clarify the use of the eye in the aiming process, one must understand that the eye is capable of instantaneous focus from one distance to another. It cannot, contrary to some belief, be focused at two distances simultaneously.

(3) To achieve an undistorted image while aiming, the shooter must position his head so that he looks straight out of his aiming eye and not out of the corner or top of the eye. If the head position causes the shooter to look across the bridge of his nose or out from under his eyebrow, the eye muscles will be strained. This strain will produce involuntary eye movements which reduce the reliability of vision. This will not only affect performance, but the inability to see will also have a damaging psychological effect upon the shooter. The eye will function best in its natural, forward position.

(4) Do not fix vision on the sight picture for more than several seconds. When the eyes are focused on a single image for a time, the image is "burned" into the area of perception. This can be illustrated by staring at a black spot on a piece of paper for 20-30 seconds and then shifting the eyes to a white wall or ceiling. A ghost image of the black spot will appear, with a corresponding loss of visual acuity in the area of the image. This effect upon the shooter's eyes is quite important. A burned in sight picture will dull visual acuity in the critical area of perception; and this image may possibly be mistaken for a true sight picture. Either effect will seriously damage performance.

(5) Many shooters are bothered by bushy eyebrows during the aiming process, resulting in a fuzzy or distorted sight image, and it is recommended that in such cases they be taped or trimmed.

b. Sight Alignment.

(1) Sight alignment is the relationship between the front and rear sight with respect to the eye. This is the most important aspect of aiming, as errors in alignment create angular changes in the position of the axis of the bore.

(2) When using an aperture rear sight and a post front sight, the correct sight alignment is as follows: The top of the front sight should be centered on a line with the horizontal axis of the aperture (Figure 8). Another explanation would be to center the top of the front sight horizontally and vertically, in the rear aperture. It has been found that this is the most natural method of aligning sights as the eye will instinctively accomplish this task with little training. This method also causes the least amount of inconsistency from shot to shot.

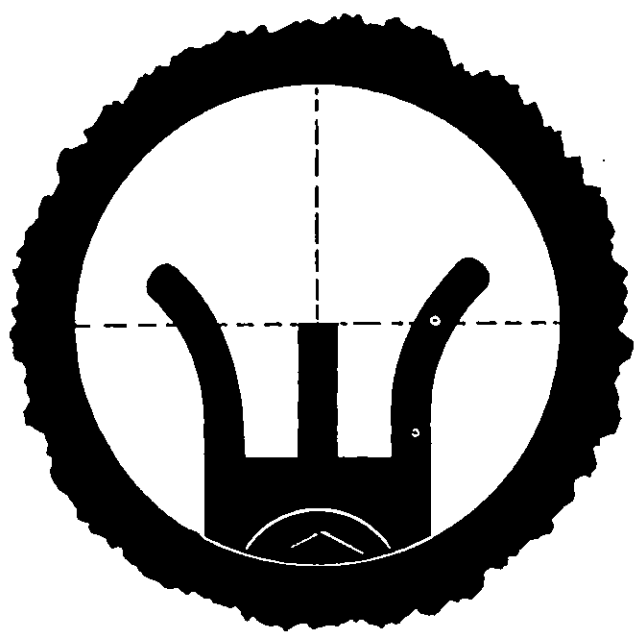


Figure 8. SIGHT ALIGNMENT.

c. Sight Picture.

(1) When sight alignment has been understood, the shooter is then taught where to aim at the target. This differs from sight alignment only with respect to adding the bull's-eye or aiming point to the front sight blade.

(2) The sight picutre used by most shooters is known as the "6 o'clock hold" (Figure 9). This sight picture should be taught to all new shooters as it is more readily understood and applied, in addition to offering a distinctive aiming point.

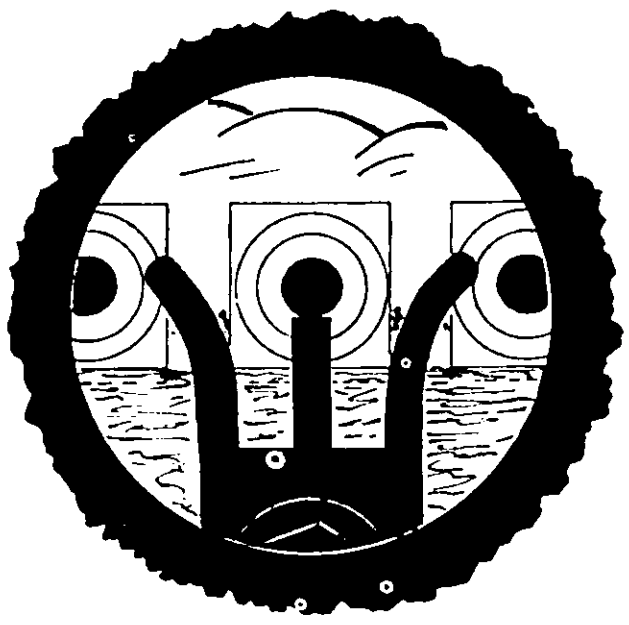


Figure 9. "6 O'CLOCK HOLD"

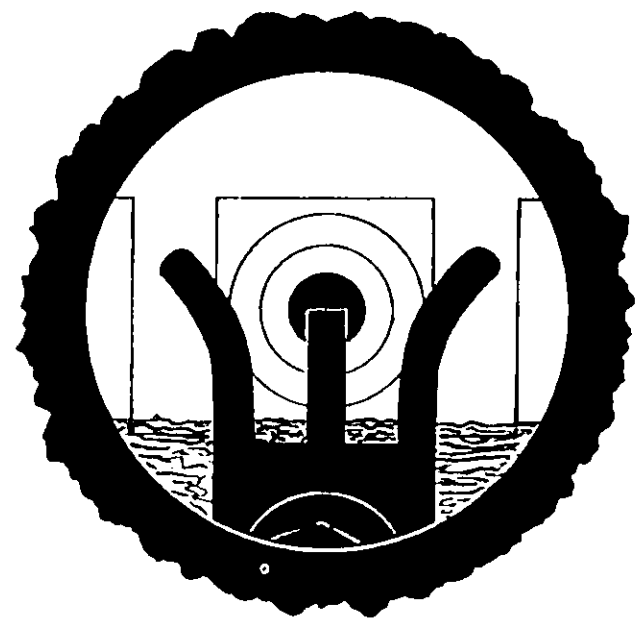


Figure 10. "NAVY HOLD"

(3) All experienced shooters do not use the same hold. But whatever sight picture is used, it must be uniform in order to obtain accuracy. Some other frequently used sight pictures are: The "Navy Hold" or "Point of aim" (Figure 10) which is used primarily for off hand firing; and the "Line of White" (Figure 11) or the "Frame Hold" (Figure 12) which are sometimes used in slow fire at 600 yards and 1000 yards during periods of reduced visibility.

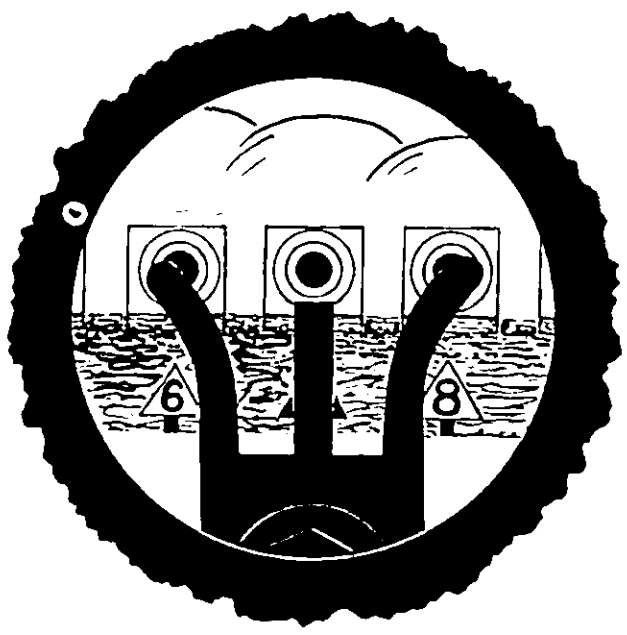


Figure 11. "LINE OF WHITE"

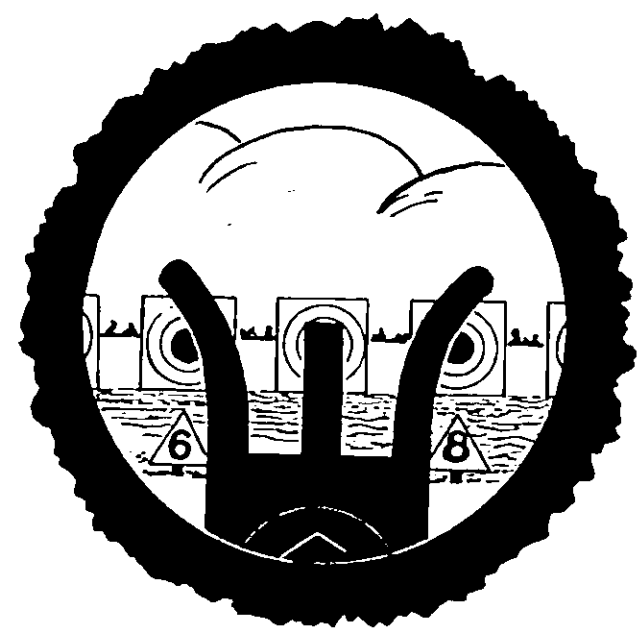


Figure 12. "FRAME HOLD"

d. Breathing and Aiming Process.

The control of the breath is important with respect to the aiming process. If the shooter breathes while trying to aim, the rise and fall of his chest causes the rifle to move vertically. Sight alignment is accomplished during breathing; but to complete the process of aiming, the shooter must be able to hold his breath. To properly hold his breath, the shooter inhales, then exhales normally and stops at the moment of natural respiratory pause. If the shooter does not have the correct sight picture, then the position must be changed to conform.

(1) Slow Fire.

(a) A respiratory cycle lasts four to five seconds. Inhalation and exhalation require only about two seconds. Thus between each respiratory cycle there is a pause of two to three seconds. This pause can be extended to 12-15 seconds without any special effort or unpleasant sensations. It is during an extended pause between breaths that the shooter should fire the shot. The reason: during the respiratory pause the breathing muscles are relaxed; the shooter thus avoids strain upon the diaphragm.

(b) A shooter should assume his position and breathe naturally until his hold begins to settle. Many shooters then take a slightly deeper breath; exhale; and pause, expecting to fire the shot during the pause. If the hold does not settle sufficiently to allow the shot to be fired, the shooter resumes normal breathing and repeats the process.

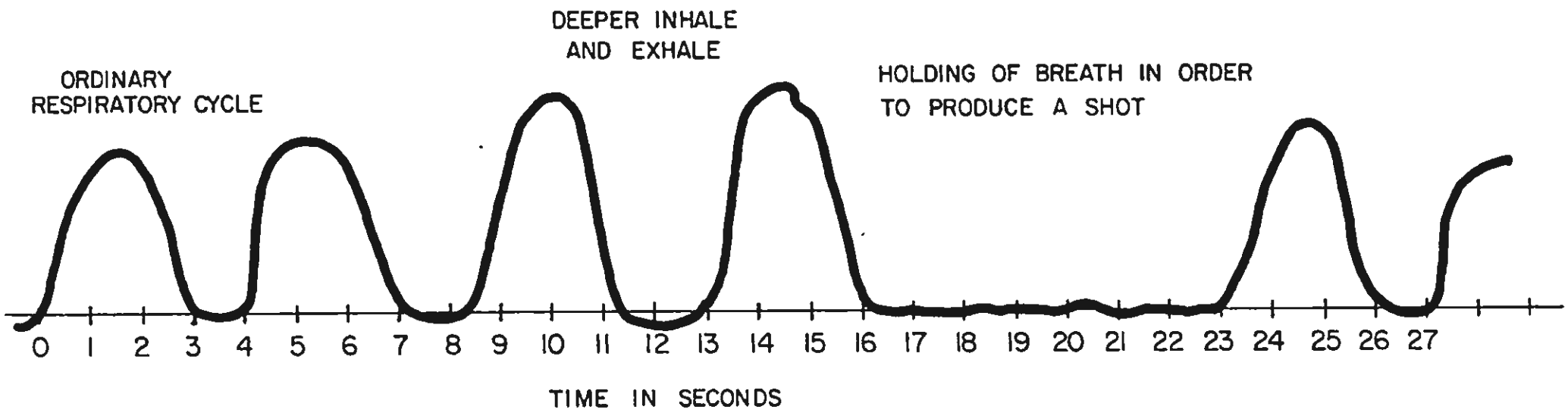


Figure 13. RESPIRATORY PAUSE.

(c) The respiratory pause should never feel unnatural. If the pause is extended for too long a period, the body suffers from oxygen deficiency and sends out signals to resume breathing. These signals produce slight involuntary movements in the diaphragm and interfere with the shooter's ability to concentrate. Generally speaking, eight to ten seconds is the maximum safe period for the respiratory pause.

(2) Rapid Fire.

In rapid fire the position is difficult to change while firing, so the breath must sometimes be held at some point other than the natural exhalation point.

(3) As previously mentioned, the eye plays an important part in the process of aiming. While exhaling the front sight up to the bull's-eye, focus should be repeatedly shifted from the front sight to the bull's-eye until the shooter determines that he has a correct sight picture. When the sight picture has been obtained, the focus should remain on the front sight

until the round has been fired. Final focus must be on the front sight to "call the shot" accurately and detect variations in sight picture and sight alignment.

(4) Some inexperienced shooters cannot accept the fact that final focus must be on the front sight; under adverse light conditions, when the bull's-eye appears indistinct, the inexperienced shooter has a tendency to focus beyond the front sight at the bull's-eye. Blank target firing may prove to the inexperienced shooter that focus on the front sight is most important.

e. Aiming Exercises.

The instruction in aiming is facilitated with the use of the Sight Picture Model (Figure 14). However, once the aiming process is learned, practical work in aiming exercises is most valuable.

(1) FM 23-5 and FM 23-71 recommend three aiming exercises:

(a) M15 Sighting Device: (Figure 15) Teaches the proper way to obtain the correct sight alignment and sight picture.

(b) Aiming Bar: (Figure 16) Teaches sight alignment and placement of the aiming point for correct picture.

(c) Rifle Rest and Aiming Box: (Figure 17) Teaches sight alignment, sight picture, and the importance of steady hold.

(2) The rifle rest and aiming box exercise has been modified for competitive shooters by increasing the range to 600 yards, which adds realism and magnifies aiming errors. This exercise eliminates the effects of weather, rifle and ammunition dispersion, trigger control, and position difficulties. It is accomplished in the following manner:

(a) Shooters will be organized into four-man teams, with two men on the firing line and two men at the target.

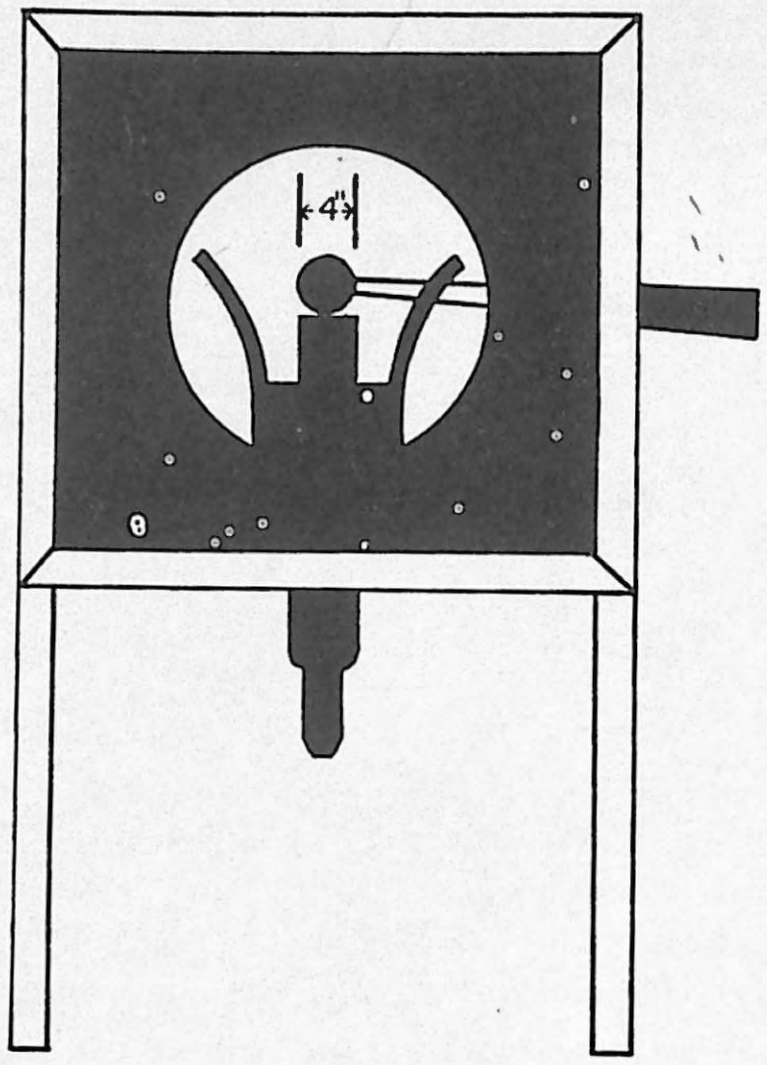
(b) At the firing line, one man will act as the student, using a rifle firmly fixed in the rifle aiming rest. In the prone position, with his head supported by his left hand, he will aim at the target frame, being very careful not to disturb the position of the rifle. Sight adjustments may be made in order to fix the point of aim in the target frame.

(c) The second man on the firing line will act as a signaler. By using arm signals, he will relay commands from the student in order to move the aiming disk to the desired point.

(d) One man at the target will observe the signaler through a telescope. He, in turn, will relay orally the commands to the disker.

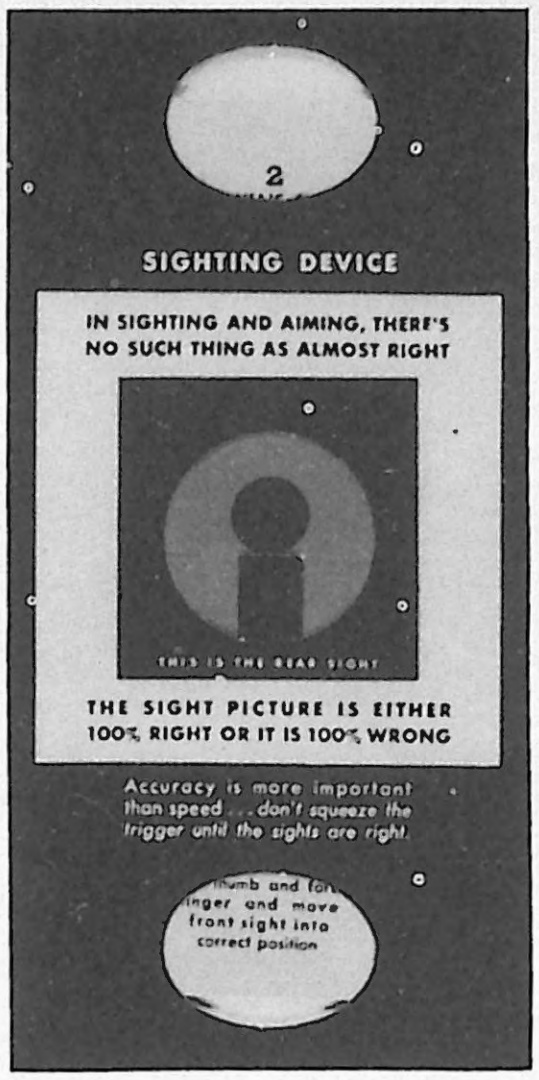
(e) The disk holder will then move the 20 inch disk on the face of the target frame in accordance with the commands received from the man on the telescope.

(f) The target frame should be faced with blank paper. When the signal, "Mark" is relayed from the student to the disk mover, the latter will hold the disk in its last position and mark this position by inserting a pencil through the hole in the center of the disk. The dot on the target face should then be numbered.



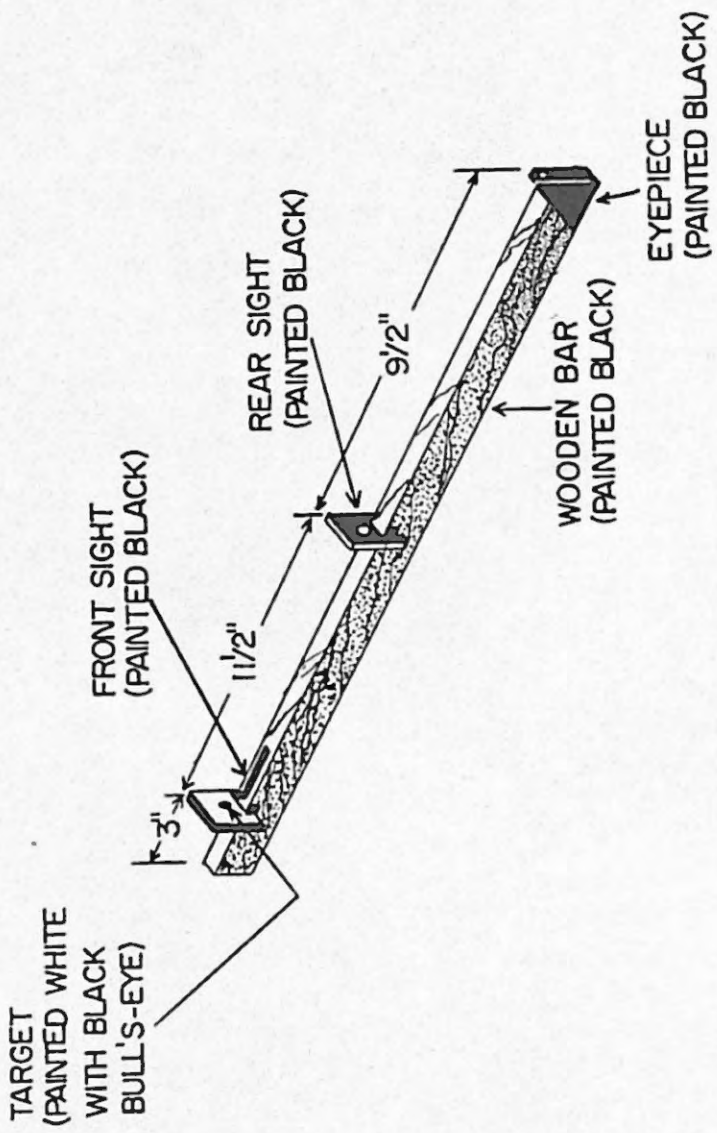
SIGHT PICTURE MODEL

Figure 14



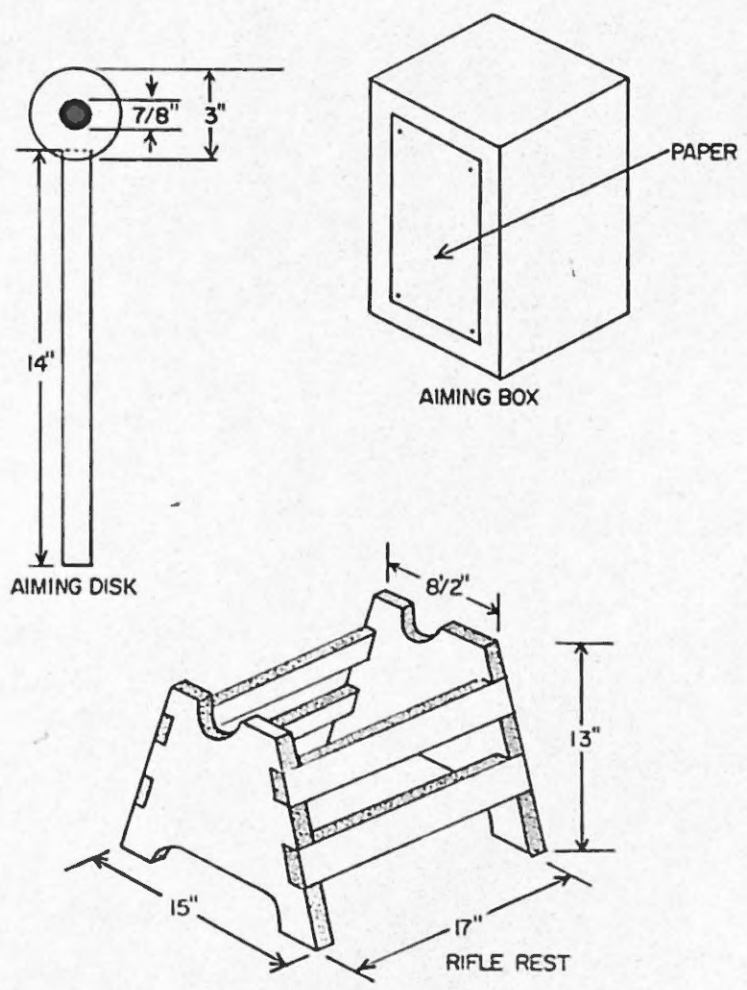
M15 SIGHTING DEVICE

Figure 15



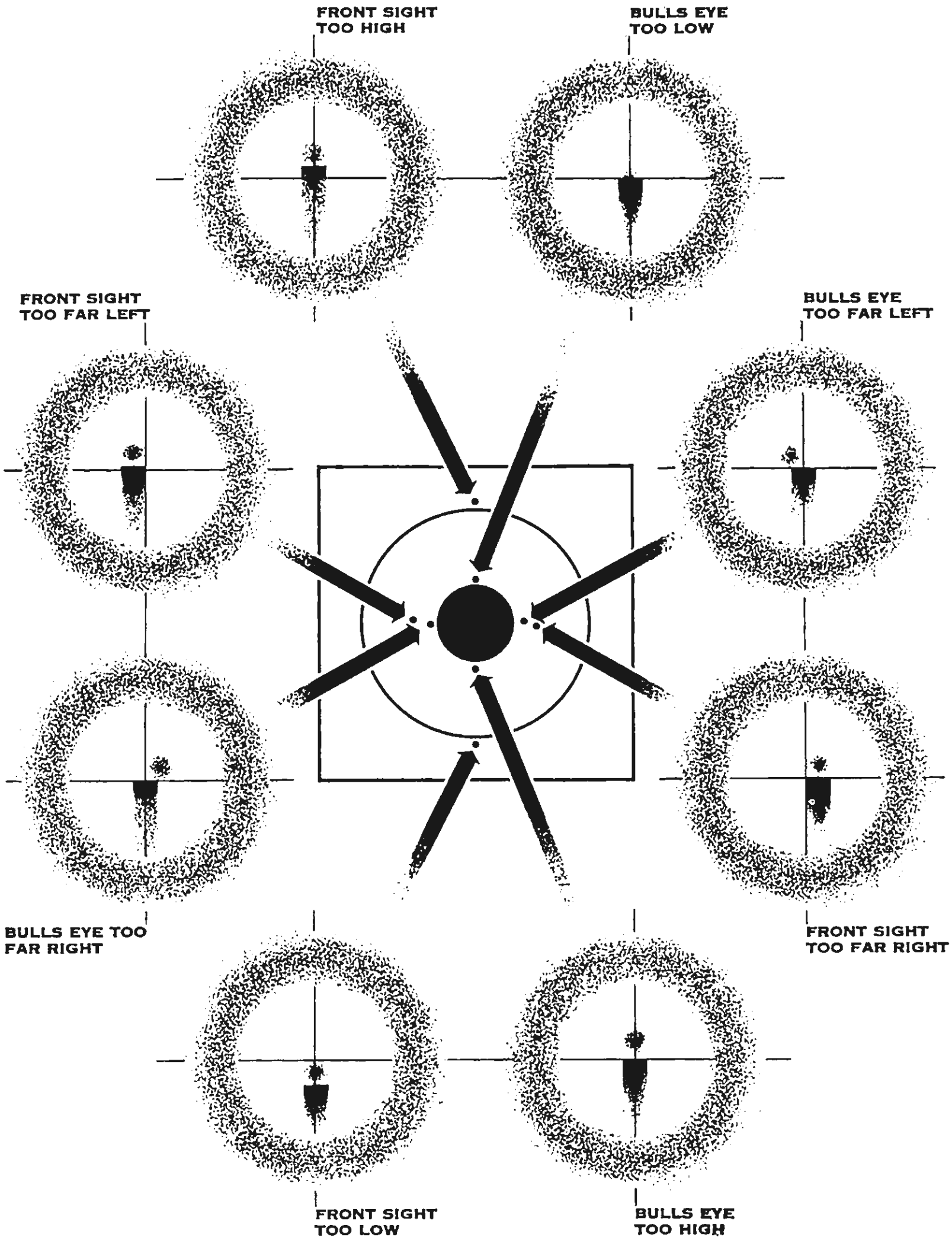
AIMING BAR

Figure 16



RIFLE REST, AIMING BOX, and DISK

Figure 17



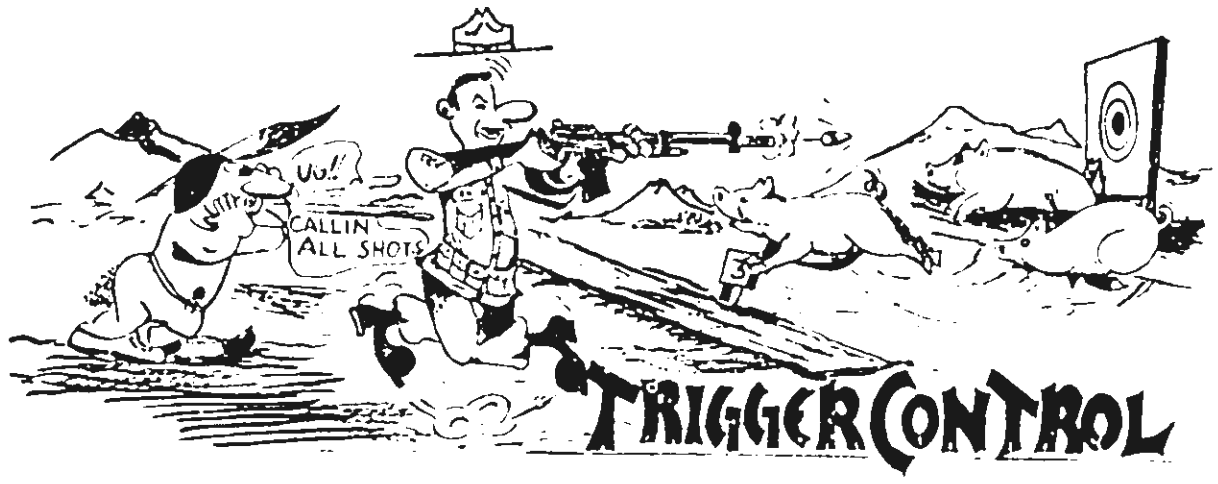
ERRORS IN AIMING

Figure 18

(g) It is suggested that each shooter make two groups of 10 shots each. For one group, the disk should be started from various positions on the frame; for the other, it should start at the top of the frame only. Often, this method will prove to the shooter that he will obtain the most consistent sight picture by always moving his front sight to the target from below.

(h) Shot groups should be traced on onion-skin paper in order to facilitate critique by the coach. A satisfactory group should be no more than three inches in diameter at 600 yards. Figure 18 shows possible errors in sight picture and sight alignment when the desired point of aim is six o'clock hold.

(3) Blank target firing is a live fire exercise fired on a target without an aiming point (target face pasted on backwards). This exercise can be used after the shooter has developed his positions and trigger control. Blank target firing is especially useful in proving the importance of focusing on the front sight at long range.



2. Trigger Control.

a. The act of firing the rifle without disturbing the aim is considered the most important fundamental of rifle marksmanship. Poor firing is usually caused by the aim being disturbed just before or as the bullet leaves the barrel and is the result of the shooter jerking the trigger or flinching. The trigger need not be jerked violently to spoil the aim; even a slight sudden pressure of the trigger finger is enough to cause the barrel to waver and spoil the sight alignment. Flinching is the involuntary movement of the body tensing the muscles of the arm, the neck, the shoulder, etc., in anticipation of the shock of recoil or the sound of the rifle firing. A shooter can correct these errors by understanding and applying trigger control.

b. Trigger control is defined as the independent action of the forefinger on the trigger, with a uniformly increasing pressure straight to the rear until the rifle fires. The slack or free play in the trigger is taken up first and as resistance is met, the shooter perfects his aim while continuing the steadily increasing pressure until the hammer falls.

c. Most successful shooters agree that the slack should be taken up with a heavy initial pressure. Concentration should be focused on the perfection of the sight picture as trigger control is automatically applied. Concentration is the greatest aid to prevent flinching and jerking.

d. The technique of trigger control may vary slightly for the standing position due to the lack of stability of the position. While the shooter applies the same principles, he applies in most cases what we refer to as a "controlled pull or pressure". This is necessary due to the "wobble area" or wavering of the sights around, through, or in the bull's-eye, due to the instability of the position. If, while controlling his pressure, an error occurs in the sight alignment or sight picture great enough to cause the shot to miss the bull's-eye, the shooter holds what pressure he has on the trigger until the correct sight alignment or sight picture is reestablished; then he continues the pressure or repeats this technique until the rifle fires.

(1) Trigger control can be developed into a reflex.

The shooter can develop his trigger control to the point that pulling the trigger requires no conscious effort. The shooter will be aware of the pull, but he will not be consciously directing it. Everyone exhibits this type of reflex activity in daily living. The individual who walks or drives a car while carrying on a conversation is an example. He is aware of his muscular activity, but not "planning" it. He is thinking about the conversation.

A closer analogy to firing is found in the typist. When first learning to type, she reads the alphabetic letters she wishes to type, mentally selects the corresponding key, and consciously directs her finger to strike the key. But after being trained, she can simply read the letter she wishes to type and her finger will strike the corresponding key automatically. She no longer has to consciously direct her finger. It is as if a nerve circuit had been formed between her eye and her hand, and the nerve impulse traveled directly from her eye to her finger. The activity resulting from this built in circuit is a conditioned reflex, conditioned because it is built in, reflex because it is not consciously directed.

The same type of reflex circuit can be developed by a shooter. When he initially begins firing, he must consciously direct his finger to pull the trigger when the rifle settles on the desired sight picture. As a result of training, however, a circuit will be established between the eye and the trigger finger. The eye, seeing the desired sight picture, will then cause the finger to pull the trigger, without a conscious mental effort from the shooter. The shooter, like the typist, is aware of the activity of the finger, but is not planning or consciously directing it.

The analogy with the typist was chosen because of the close parallel of coordination between eye and finger. But the same type of conditioned reflex is by no means limited to firing or typing. A more familiar example is the baseball player swinging at a pitch. He sees the ball coming, accepts the pitch as being within his batting zone (This acceptance does not necessarily involve thinking with words), and starts his swing. If the batter is well trained, and the swing is "in the groove", he sees the path of the ball and his swing adjusts to it automatically; automatic in the sense that the typist's finger movements are automatic. But if the batter suddenly sees that the pitch is a bad one he can stop the swing before it crosses the plate. He can "break the circuit", so to speak, that has been established between his eye and his body muscles.

A shooter can do the same thing. He accepts a sight picture and the trigger pull starts automatically, just as the batter's swing started when he accepted the pitch. But if the shooter suddenly realizes that his rifle is beginning to move out of the desired sight picture, he can "break the circuit" and stop the pull. He must then begin the entire firing cycle over again.

A progressing shooter will at first give a great deal of attention to trigger pull. Experienced shooters will also have difficulty with trigger control from time to time. But by making a repeated effort to develop a correct trigger pull, the pull itself will require less and less conscious effort and will eventually assume reflex characteristics.

(2) Methods of trigger pull.

Controlling the trigger is a mental process, while pulling the trigger is a mechanical process. Two methods of trigger pull used on the service rifle are smooth motion trigger pull and interrupted trigger pull.

(a) Smooth motion trigger pull.

The shooter takes up the slack with a heavy initial pressure and, when the sight picture settles, pulls the trigger with a single smooth motion.

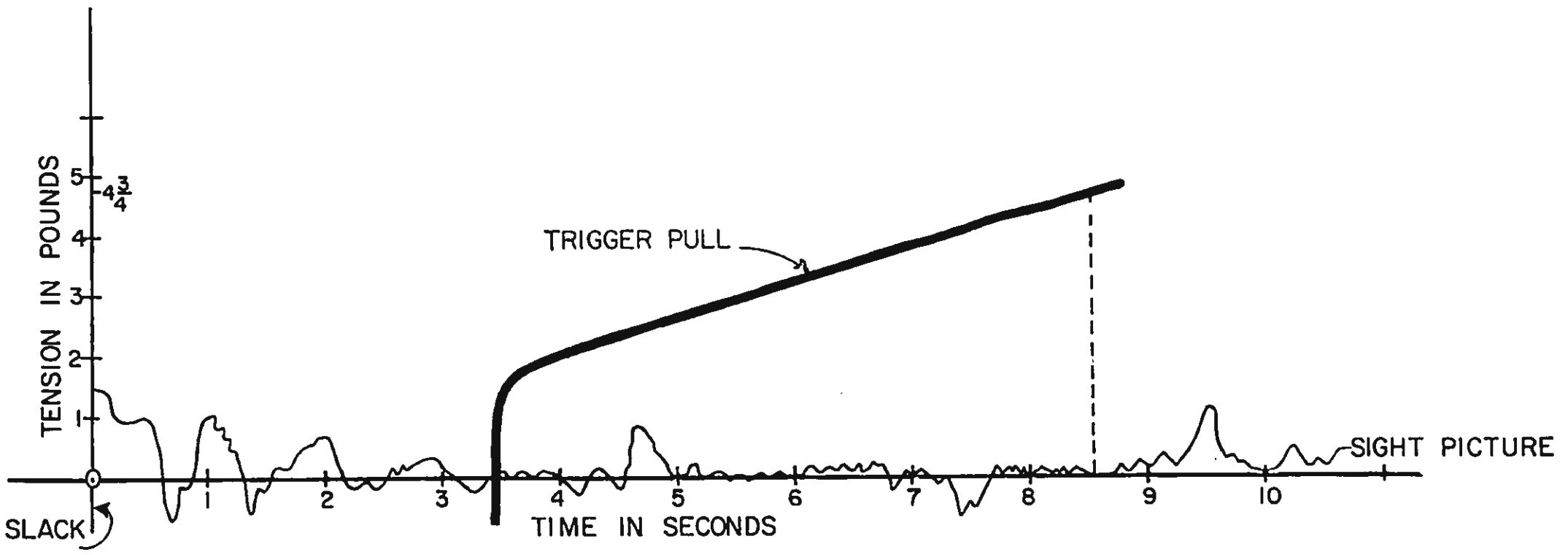


Figure 19. SMOOTH TRIGGER PULL.

(b) Interrupted trigger pull.

When the sight picture begins to settle, pressure is applied to the trigger as long as the sight picture looks good or continues to improve; if the sight picture deteriorates briefly, pressure is maintained at a constant level, and is increased when the picture again begins to improve.

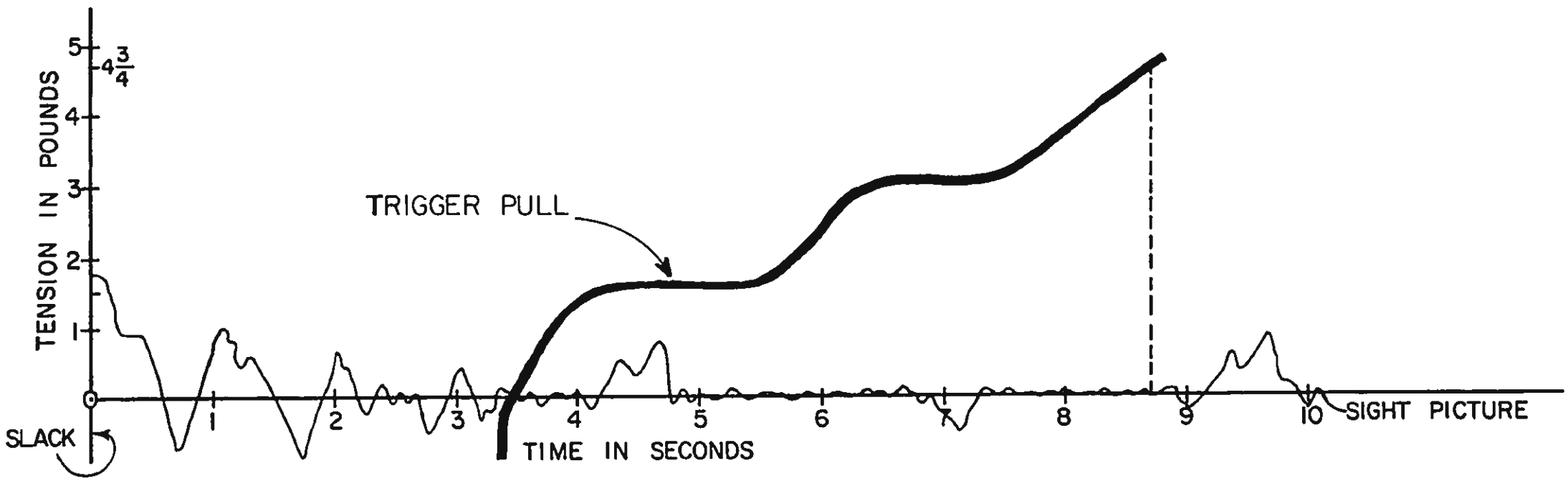
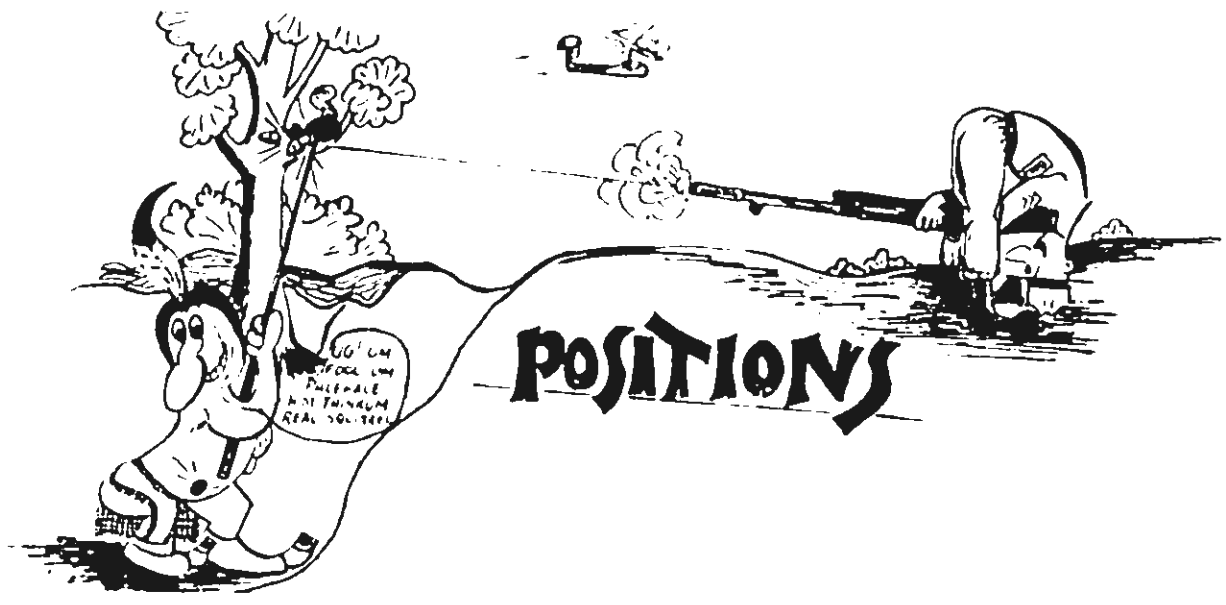


Figure 20. INTERRUPTED TRIGGER PULL.

e. If a shooter is firing poorly and it is suspected or observed that the poor firing is the result of improper trigger control, he must be convinced or shown that improper trigger control is the cause. Methods of determining improper trigger control are discussed in "Detection and Correction of Errors" of this chapter.

f. Trigger control is taught in conjunction with positions. When teaching positions and trigger control, an effective training aid for demonstrating the technique of trigger control with reference to the controlled pressure is the wobble sight and target simulator (Figure 21).

g. In all positions, one of the best methods of developing proper trigger control is through dry firing. In dry firing, not only is the coach able to detect errors, but the individual shooter is able to detect his own errors since there is no recoil to conceal the rifles undesirable movements. Where possible, trigger control practice should be integrated in all phases of marksmanship training. The art or mastery of proper trigger control takes patience, hard work, concentration, and a great deal of self-discipline.



3. Positions.

In firing the National Match Course, the three basic positions (standing, sitting, and prone) are used. These positions are governed by certain rules concerning uniformity which are sufficiently flexible to allow modifications according to the body conformation.

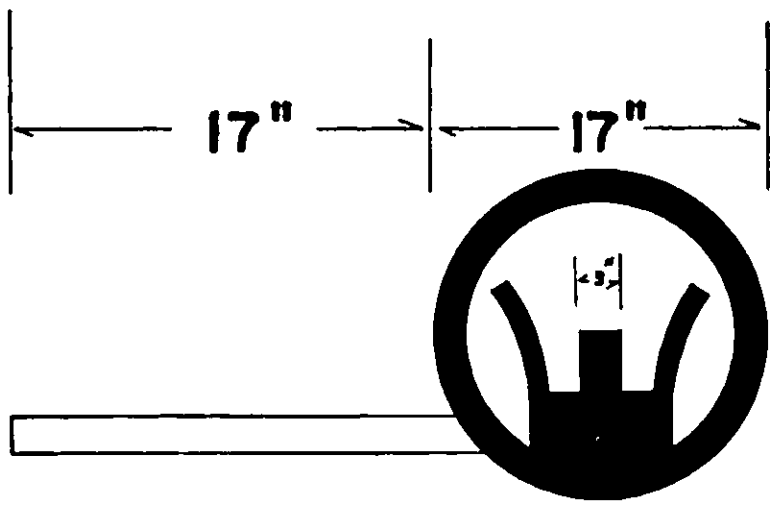
a. The three elements of a good position are bone support, muscular relaxation, and a natural point of aim on an aiming point.

(1) Bone Support: Positions are designed as foundations for the rifle. It should be stressed that a good foundation for the rifle is just as important as a good foundation is to a house. If a house is built on a weak foundation it will not stand erect. The same is true when a shooter establishes a weak foundation (position) for the rifle. It will not withstand the repeated recoil of the rifle in a string of rapid fire. Therefore, the shooter will not be able to apply the fundamentals.

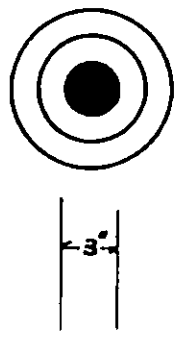
(2) Muscular Relaxation: The shooter must learn to relax as much as possible in the various firing positions. Undue muscle strain or tension causes trembling which is transmitted to the rifle. However, in all positions a certain amount of controlled muscular tension is needed. For instance, in a rapid fire position, there should be pressure on the spot weld. Only through practice and achieving a natural point of aim will the shooter learn muscular relaxation.

(3) Natural point of Aim: Since the rifle becomes an extension of the body, it is necessary to adjust the position until the rifle points naturally at the target. When the shooter takes his position he should close his eyes, relax, and then open his eyes. With proper sight alignment, the position of the front sight will indicate the natural point of aim. By moving his feet or body and by breath control, the shooter can shift the natural point of aim to the desired aiming point.

NOTE: The hand held wobble sight (Figure 21) may be used with a fixed target simulator when teaching positions to demonstrate wobble area, adjustment of natural point of aim, breathing process, and trigger control.



WOBBLE SIGHT M-57



TARGET SIMULATOR

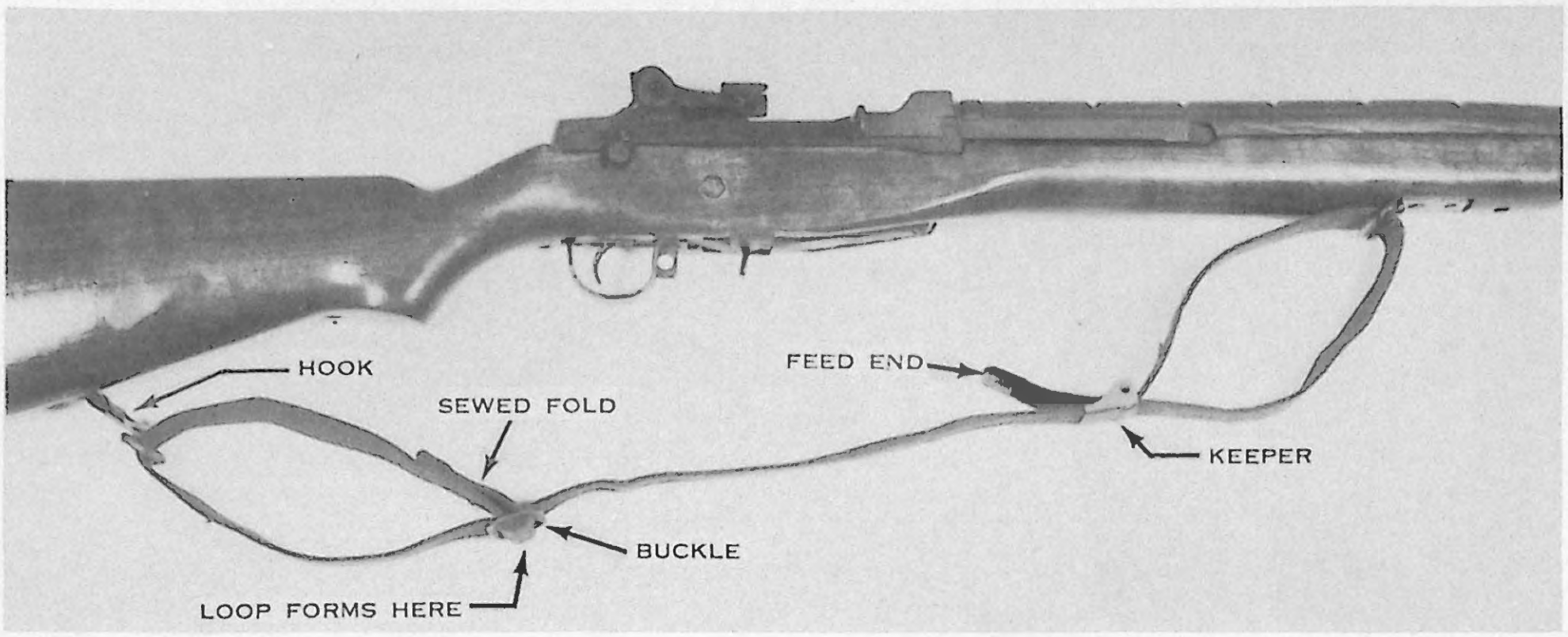
WOBBLE SIGHT AND TARGET SIMULATER

Figure 21

b. Sling Adjustment.

In standing, the sling must be affixed to the rifle and may not be used for support while in other positions the loop sling is used. If the loop sling is adjusted properly it will provide maximum stability and will instill confidence in the shooter. Two types of slings are utilized with the rifle, the web sling which is issued with the service rifle and the leather sling which is utilized extensively for competitive firing.

(1) Adjustment of the web sling (Figure 22).

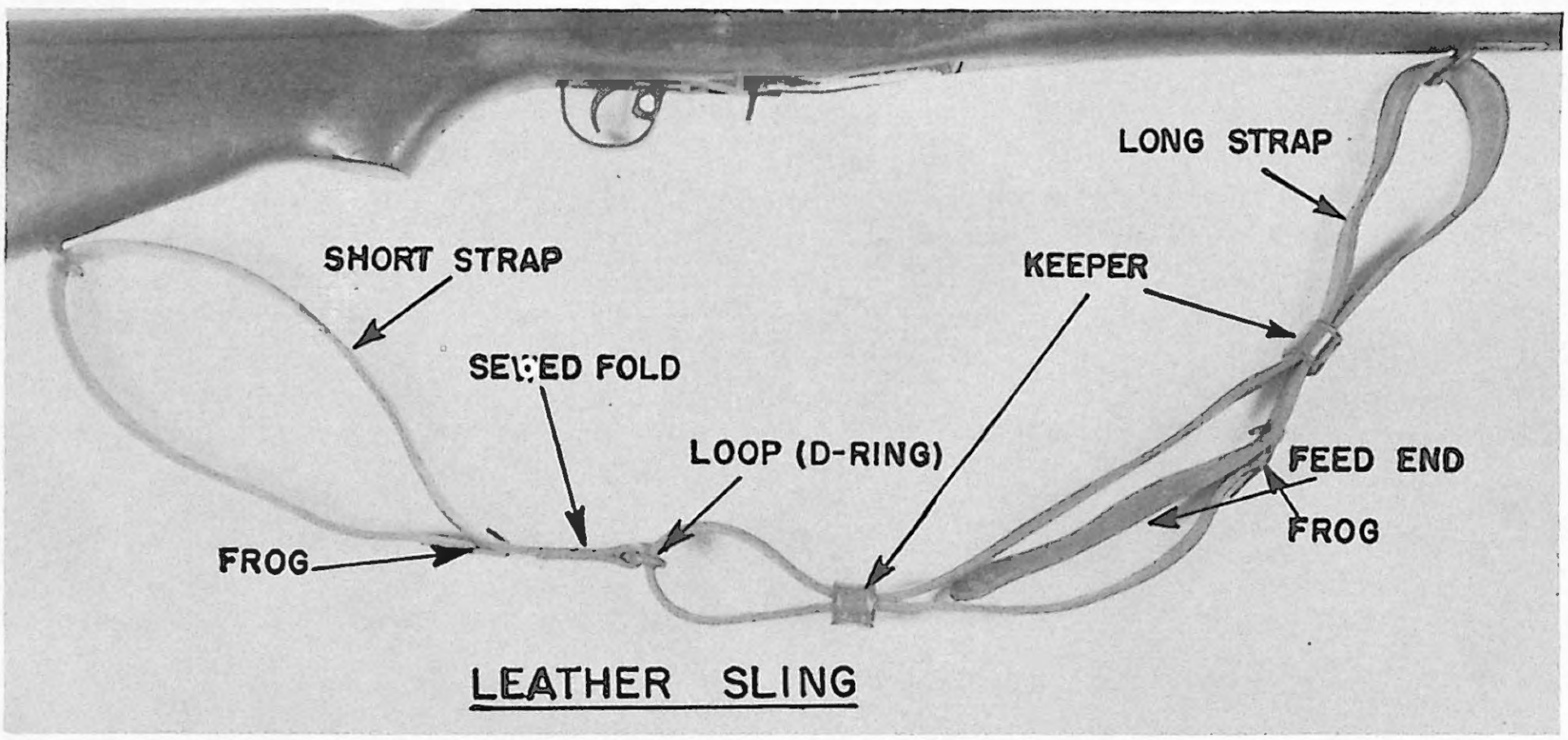


WEB SLING

Figure 22

To adjust the loop sling for a right-handed shooter, place the butt of the rifle on the right hip and cradle the rifle in the crook of the right arm. This leaves both hands free to adjust the sling. Unhook the sling from the lower sling swivel; then with the buckle down on the hook, feed the sling through the top of the buckle forming a loop. Give the loop a half turn to the left and insert the left arm through the loop, positioning it well up on the arm above the bicep. Tighten the loop while positioning the buckle on the outside of the arm. As tension is applied to the sling, the loop will tighten. To adjust the sling properly, loosen the keeper and pull the feed end down toward the loop until the proper adjustment is obtained. This adjustment varies with each individual and position. Move the keeper toward the left arm and tighten it. Place the left hand over the sling and under the rifle, move it forward to the upper sling swivel so that the rifle rests in the "V" formed by the thumb and forefinger.

(2) Adjustment of the leather sling. (Figure 23)



LEATHER SLING

Figure 23

To adjust the loop sling for a right-handed shooter, place the butt of the rifle on the right hip and cradle the rifle in the crook of the right arm. This leaves both hands free to adjust the sling. Disengage the frog of the short strap and pull the D-ring toward the muzzle until the frog of the short strap is near the lower sling swivel. Insert the frog in a pair of holes near the end of the short strap and form a loop around the lower sling swivel anchoring the free end of the short strap. The loop to be used is formed by that portion of the long strap between the D-ring and lower keeper. To increase the size of the loop, force the outside strap toward the muzzle while pulling the inside strap toward the butt of the rifle. Once the loop is formed, straighten the sling, twist the loop a half turn to the left and insert the left arm through the loop, position it well up on the arm above the bicep. To tighten the loop on the arm, pull the outside strap toward the arm while pushing the inside strap toward the muzzle. This should pull the inside keeper and frog of the long strap as close to the arm as possible. The outside keeper can be pulled down on top of the frog, locking the loop in place. The feed end of the long strap may be threaded through the top keeper or may be left hanging loose. Place the left hand over the sling and under the rifle, move it forward to the upper sling swivel so that the rifle rest in the "V" formed by the thumb and forefinger.

After the proper sling adjustment and loop placement has been determined for each position (Figure 25, 27, 30, 31 and 32) the shooter should mark his sling.

c. Spot Weld.

(1) As mentioned in aiming, the relationship between the eye and the rear sight must be consistent. This consistency is achieved through the use of the "spot weld". A correct spot weld insures that the face contacts the stock at the same place for each shot.

(2) In all positions the thumb of the right hand should be placed over the stock. To obtain the best spot weld in sitting and prone, the fleshy part of the cheek is rolled firmly against the top of the thumb. By experimentation the shooter will find the most comfortable position for his cheek. Once this has been done, the same position should be used for every shot. During the initial period of firing, the cheek may become tender or sore. To help prevent this and to keep from flinching, press the face firmly against the stock to enable the head to recoil as part of the rifle.

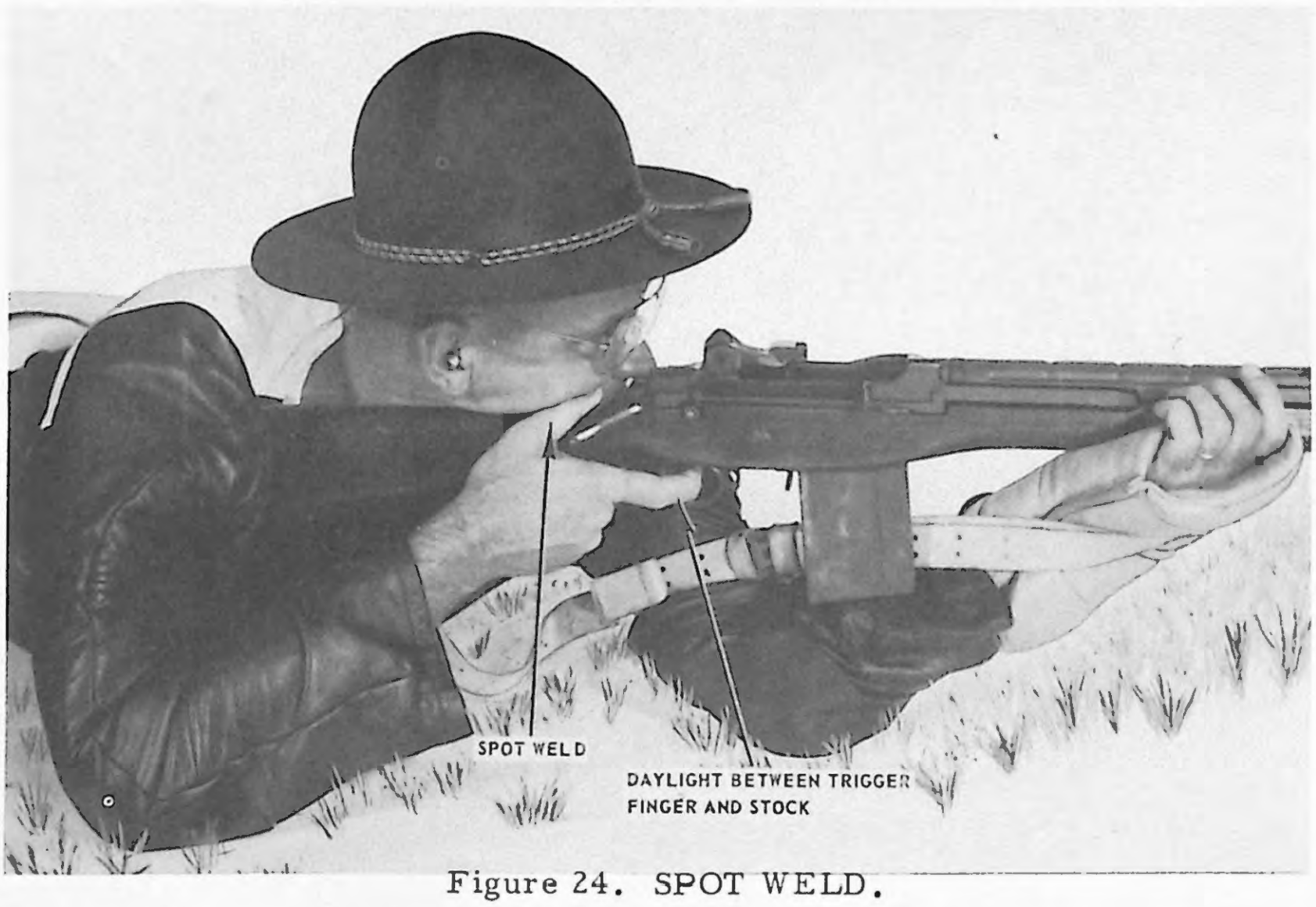


Figure 24. SPOT WELD.

d. Prone Slow Fire.

The prone slowfire position is normally fired from 600 yards, but the techniques remain the same for any range. The position can be built without regard to recovery of position following recoil, because the position is reassumed for each shot. A low position is used by most shooters for comfort and reduction of pulse beat.

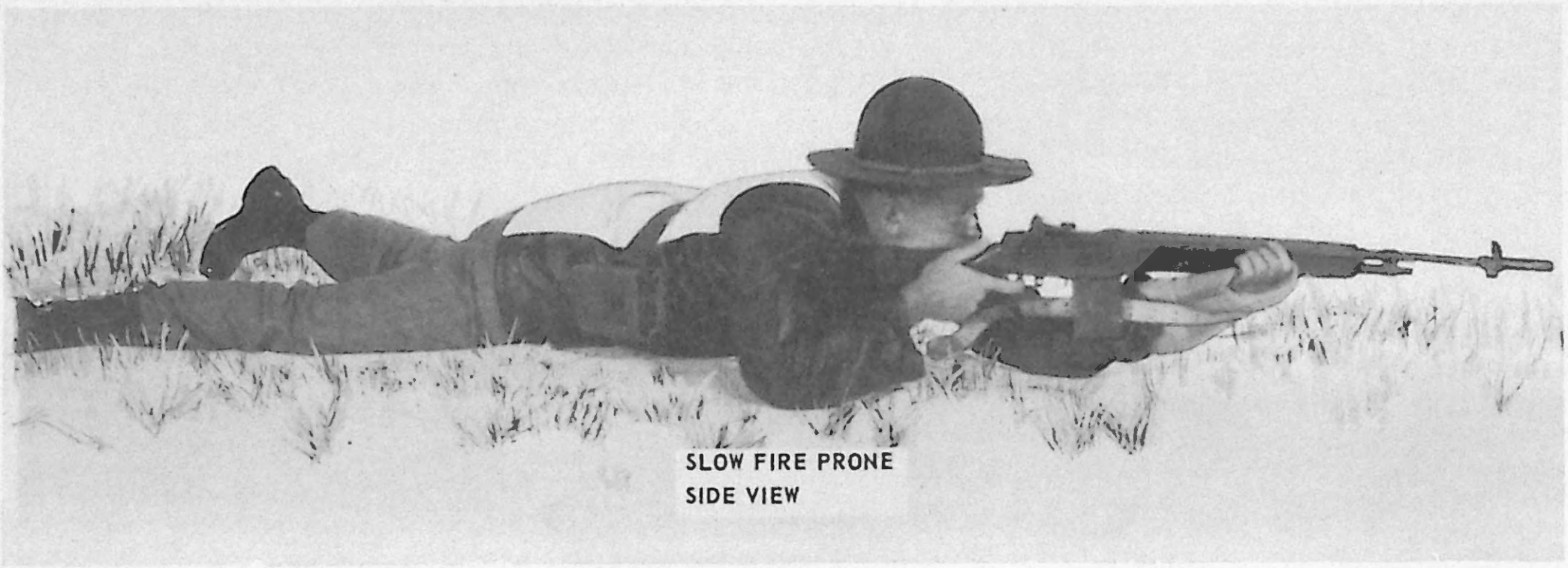


Figure 25. PRONE SLOW FIRE (Side view).

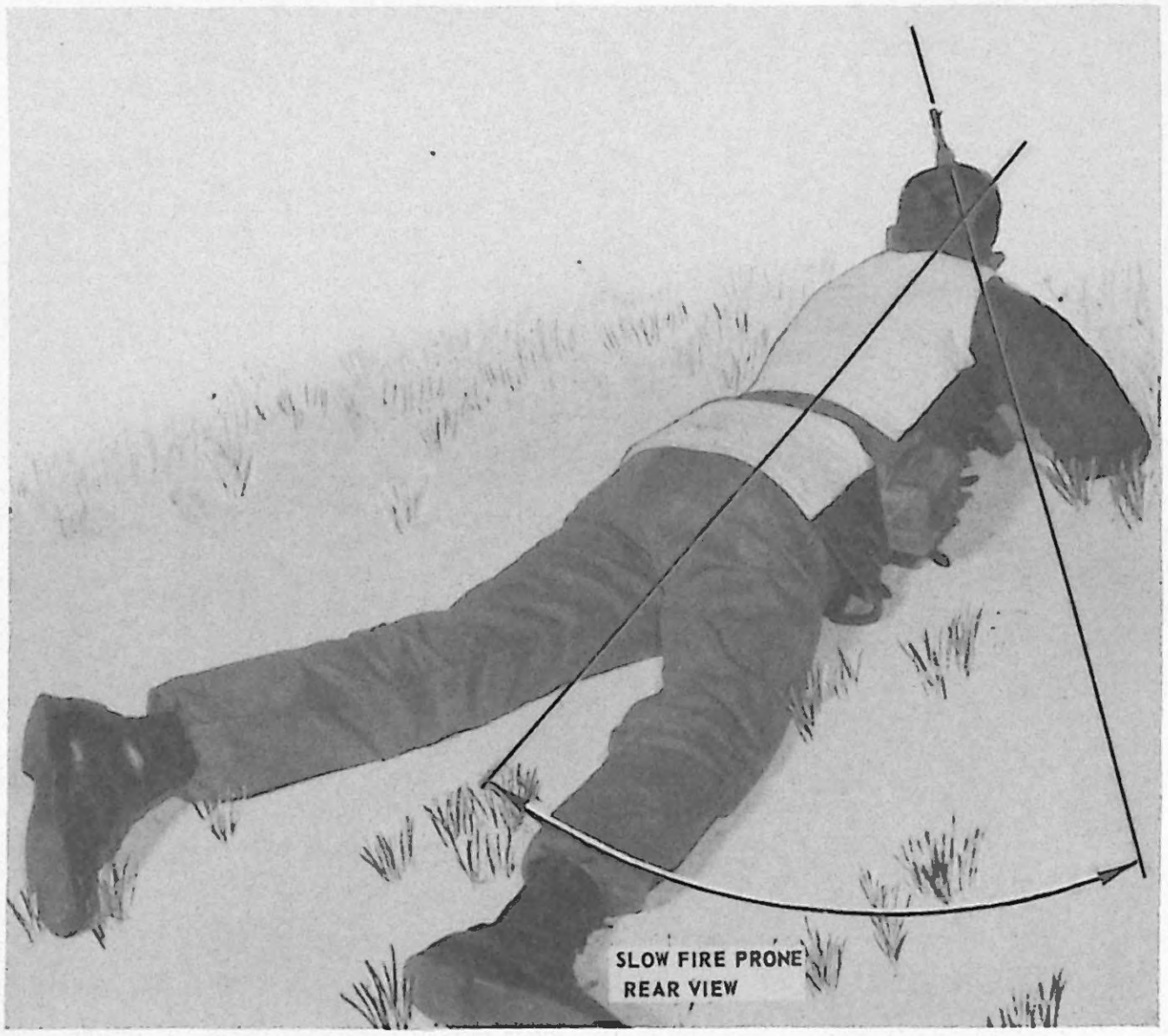


Figure 26. PRONE SLOW FIRE (Rear view).

(1) To assume a prone position.

The shooter selects a level portion of the firing point, and stands facing the target with his left hand forward to the upper sling swivel and his right hand grasping the stock at the heel of the butt. Spreading his feet a comfortable distance apart, he shifts his weight slightly to the rear and drops to his knees. He draws an imaginary line from his right knee to the target, and places the toe of his rifle butt well forward on this imaginary line. He pivots on the rifle down on his left side, placing his left elbow again well forward on the imaginary line. With his right hand at the rear of the stock, he places the butt of the rifle into his right shoulder. Grasping the small of the stock with his right hand, he lowers his right elbow to the ground, secures a spotweld (Figure 24) or stockweld (Figure 106), and relaxes into the sling.

(2) Checkpoints of the prone slow fire position.

(a) Rifle Vertical. (Sights level)

Any variation of the sights from the vertical can cause a displacement of the shot in elevation or windage.

(b) Left Hand.

Forward to the upper sling swivel. The rifle resting in the "V" formed by the thumb and forefinger and the weight supported by the heel of the hand. The left hand and wrist should be relaxed, fingers curled naturally, and not gripping the stock.

(c) Left Elbow.

Under the receiver, if body conformation permits. The magazine may rest against the arm with a uniform pressure from shot to shot. Excessive pressure may cause a malfunction or erratic shot.

(d) Sling.

Positioned above the bicep with the loop secure but not so tight that it increases pulse beat. Correct sling tension necessitates a slight forward pressure when placing the butt in the shoulder and results in a position that can be maintained without using muscle.

(e) Rifle Butt.

Close to the neck in the hollow of the shoulder to facilitate positioning the head.

(f) Right Elbow.

Placed where the position feels balanced and stable, and returned to the same spot for each shot.

(g) Torso.

Laying flat or rolled slightly left. The back straight and relaxed.

(h) Legs.

Comfortable and relaxed. The right leg may be straight or slightly cocked, but it should remain stationary.

(i) Head.

Placed firmly against the stock without straining the neck. The head should be erect, allowing the eye to look straight through the sights.

(j) Right Hand.

A uniform grip from shot to shot, firm enough to form an anchor for the trigger finger. Contact with the trigger should be made between the top and first joint of the trigger finger, with the trigger finger clear of the stock. The hand is positioned to allow a straight to the rear pressure with the trigger finger.

(3) Natural Point of Aim.

After assuming a balanced and stable position, the natural point of aim should be checked and adjusted.

(a) To check the natural point of aim; assume position, inhale, then exhale to the natural respiratory pause. If the front sight does not rise vertically while exhaling, or the sight picture is not correct with the breath held at the natural pause, the position must be adjusted.

(b) To adjust horizontally, shift the body right or left using the left elbow as a pivot point until the front sight is below the bullseye.

(c) To adjust vertically, shift the weight of the body forward or rearward using both elbows as pivot points until the front sight is below or above the bullseye. The breath must be held at the natural respiratory pause during this adjustment.

(4) Firing Procedures:

Prior to firing, several shots should be dry fired to insure that the shooter has completely settled into position with a natural point of aim on the bullseye, and to condition his mind for complete concentration. When ready to fire he loads, reassumes position, and perfects sight alignment. He then exhales normally, and as the sights dip, checks his target number. He exhales slowly and his front sight will rise. His focus must be on the front sight before correct sight picture is obtained. The correct sight picture and the natural respiratory pause should occur simultaneously. He next takes up the slack with a heavy initial pressure, maintains focus on the front sight, and applies trigger control while concentrating completely on perfecting sight picture. The shooter makes a mental note of the location of the front sight in relation to the target at the instant the rifle fires to call the shot. He follows through by maintaining pressure on the trigger and focus on the front sight until recoil is completed. Anticipation of recoil can be prevented by concentration and follow through.

e. Prone Rapid Fire.

The prone rapid fire position is normally fired from 300 yards and is basically the same as the slow fire position. The position should be constructed tight enough to promote quick recovery following each shot and position stability throughout the rapid fire string.

Figure 27. PRONE RAPID FIRE (Side view)

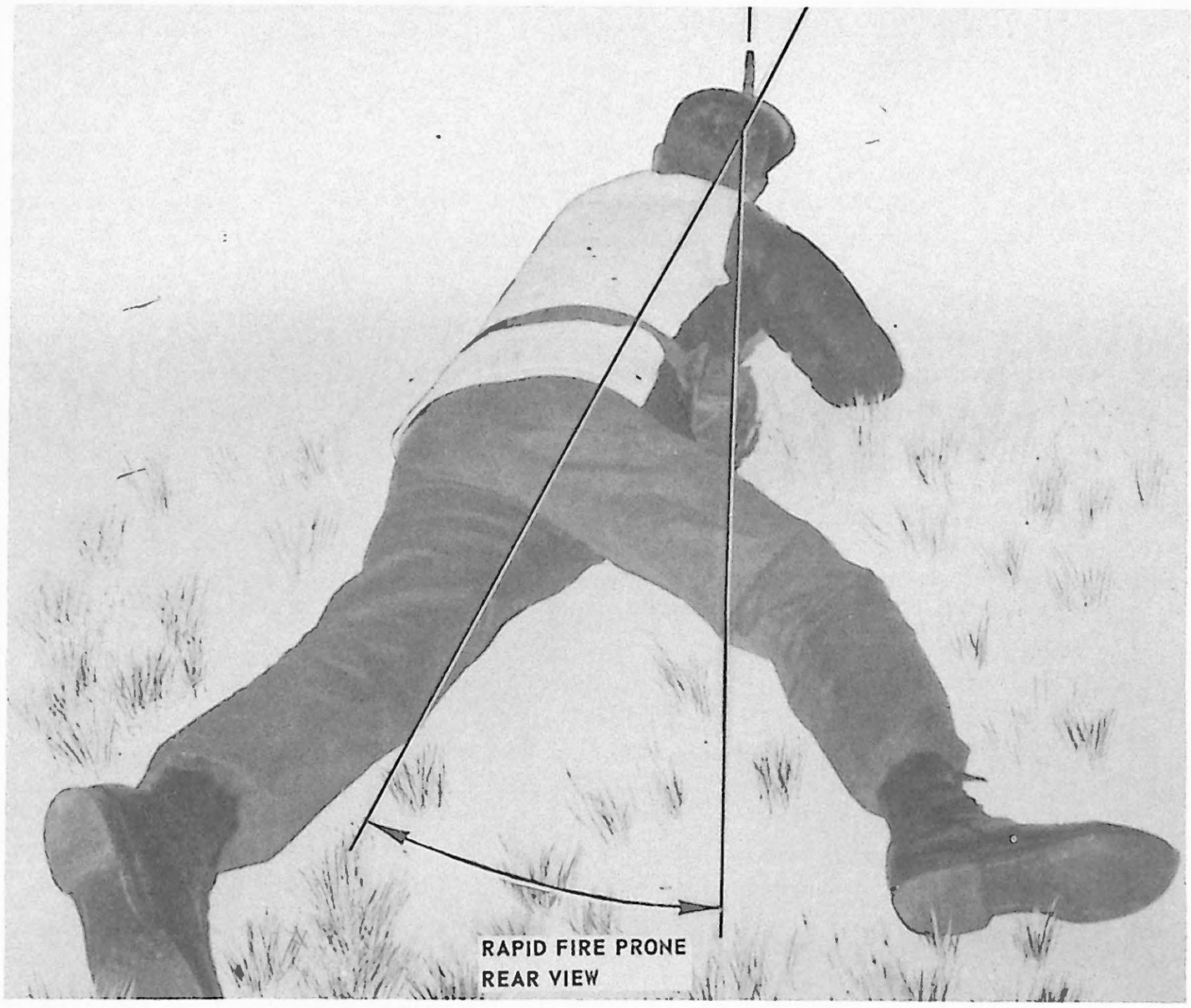


Figure 28. PRONE RAPID FIRE (Rear view)

(1) The prone rapid fire position is assumed in the same manner as the slow fire position.

(2) Checkpoints of the prone rapid fire position. Most checkpoints remain the same as slow fire, the exceptions are explained below:

(a) Rifle vertical.

(b) Left Hand.

Forward to the upper sling swivel to prevent the hand from slipping forward upon recoil and changing the natural point of aim.

(c) Left Elbow.

(d) Sling.

The sling is usually adjusted shorter for rapid fire, resulting in a higher and tighter position; which requires a forward pressure when placing the butt in the shoulder. Too tight a sling can cause the left elbow to jump out of position upon recoil.

(e) Rifle Butt.

Positioned high enough in the hollow of the shoulder to prevent slipping upon recoil.

(f) Right Elbow.

Placed out and forward enough to prevent recoil from being transmitted through the arm, dislodging the right elbow.

(g) Torso.

Position the torso at a minimum angle to the rifle to help absorb recoil, maintain position stability and natural point of aim, and afford quick recovery.

(h) Legs.

Positioned behind the weapon to help absorb recoil. The right leg spread to the right can prevent the right elbow from dislodging; and the left leg spread to the left can prevent the left elbow from being dislodged upon recoil.

(i) Head.

The cheek is pressed down firmly onto the thumb and stock so that the spotweld is maintained throughout the recoil and recovery.

(j) Right Hand.

The grip is firm enough to maintain the position of the hand throughout the string.

(3) Natural Point of Aim.

The natural point of aim is checked and adjusted prior to firing, in the same

manner as slow fire. If any position loss or change of natural point of aim occurs during the string, the position should be adjusted rapidly prior to firing the next shot.

(a) To adjust horizontally, a quick shift of the right leg to the right will move the point of aim to the left; shifting the right leg to the left will move the point of aim to the right.

(b) To adjust vertically, a quick shift of the weight forward will lower the point of aim; shifting the weight rearward will raise the point of aim. It may be necessary to hold the breath, when sight picture is correct, at some point other than the natural respiratory pause.

(4) Rapid Fire Cadence.

Cadence is important to the shooter because it allows him to fire a series of well aimed shots within the specified time. With an established cadence the shooter will obtain better groups and maintain a more constant zero. Good cadence can be developed with the use of the cadence chart (Figure 29) and the three Rapid Fire Exercises, fired either live or dry.

RAPID FIRE CADENCE CHART

300 YARDS

ROUND Nº	1	2	3	4	5	6	7	8	9	10	X	X
SECONDS	12	16	20	24	28	42	46	50	54	58	2	60

8 SECONDS TAKE POSITION
4 SECONDS CADENCE
10 SECONDS RELOAD
2 SECONDS BUFFER

Figure RAPID FIRE CADENCE CHART 300 YARDS PRONE

Figure 29. RAPID FIRE CADENCE CHART-300 YARDS PRONE.

NOTE: In the instruction of rapid fire exercise, it must be emphasized to the firer that he is not required to fire at the exact cadence specified in the chart. The chart simply represents the most economical use of the available time and is a guide only.

(a) One Shot Exercise.

In the one shot exercise the shooter must be able to assume a position rapidly and fire the first shot in a period of 12 seconds. The shooter first assumes his regular position and adjusts his natural point of aim onto the target. When satisfied with his position, he marks his left elbow location to facilitate retaking the position. The shooter then rises, keeping his feet in place, and moves each foot forward three or four inches. Upon command he retakes his position (Using the aforementioned marks as a guide), readjusts his natural point of aim if necessary, and applies the correct trigger control to fire the shot within the specified time limit.

(b) Reloading Exercise.

Reloading with the M-14 is time consuming; however, with practice it can be accomplished smoothly and with a minimum of wasted time and motion. It must be remembered that the loaded magazine should always be placed in the pouch, ammunition down, bullet forward.

This exercise is conducted with the shooter in position, bolt to the rear, and a magazine in the weapon. On the command "Reload" the shooter drops the butt of the rifle to the ground. He reaches forward, and with the right hand grasps the magazine. With the thumb releasing the magazine catch, he pushes down and forward, and places the unloaded magazine on the ground. Reaching to the rear, he removes the magazine loaded with one round from the pouch, inverts it, inserts the forward edge in to the magazine well, and pulls to the rear and up until the magazine is latched. The shooter then pulls the operating rod handle to the rear, releases it, and fires the round. This should be accomplished in a period of 14 seconds.

(c) 10 Shot Exercise.

In the 10 shot exercise, the shooter is required to quickly assume a good position, perfect his aim, and apply the proper trigger control in firing the initial five rounds. He is then required to reload quickly, reassume his position, aim, and apply the proper trigger control in firing the remaining rounds all within the specified time limit of 60 seconds. The dry firing of this exercise will be more beneficial if the man acting as the coach strikes the operating rod handle to the rear following each shot to cock the rifle and simulate recoil. Dummy rounds should be used, but if they are not available, a coin may be wedged between the follower and the upper lip of the magazine to prevent the bolt from locking to the rear.

(4) Firing Procedures.

Prior to firing, several shots should be dry fired by the shooter until he is satisfied with his position. He marks the left elbow location and rises, keeping one or both feet in place. He takes a short step forward, reassumes position with the left elbow on the mark, and checks the natural point of aim. If the correct sight picture can be obtained with a quick leg or weight shift, the shooter is ready. On the command SHOOTERS RISE, the shooter stands. On command LOCK AND LOAD, he engages his safety and loads, making sure that the magazine is latched, a round is in the chamber, and the bolt fully seated. On the command READY ON THE FIRING LINE, he unlocks the weapon. When the targets appear, he assumes position with the left elbow on the mark. He checks his target number by sighting along the barrel as his head is lowered onto the thumb and stock. He obtains correct sight alignment and makes any necessary adjustment of his natural point of aim. He inhales, then exhales, with his focus on the front sight. He then holds his breath and again makes any necessary minor adjustments of natural point of aim. Taking up the slack with a heavy initial pressure, he maintains focus on the front sight, and concentrates completely on correct sight picture while applying a straight to the rear pressure on the trigger. When the rifle fires, the shooter makes a mental note of his call; and if the rifle recoils to the left or the right, he readjusts his natural point of aim. The rifle recoiling to the left (right) is an indication that the natural point of aim is actually to the left (right) of the bullseye. Following recoil, but before the front sight has completely settled, a shallow breath is quickly inhaled, then exhaled to the respiratory pause. This will speed up recovery and reposition the front sight below the bullseye. He then continues the sequence for the remainder of the magazine. Upon completion of the first magazine he unloads, reloads, reassumes position, and continues to fire until the string has been completed.

NOTE: Breathing between shots in rapid fire is necessary to help develop a cadence and restore a needed supply of oxygen to the blood system, thus allowing the retention of a clear sight picture.

f. Sitting Rapid Fire.

Competitive marksmen use three variations of the sitting position all of which are equally satisfactory. They are the Open Leg (Figure 30), Crossed Leg (Figure 31), and the Crossed Ankle (Figure 32) positions. The positions used depend entirely on the shooter. Because of different body conformations, there are shooters who are unable to use the crossed ankle position. However, these two position are used by the majority of competitors. The individual should try all positions and choose the one which affords the most stability.

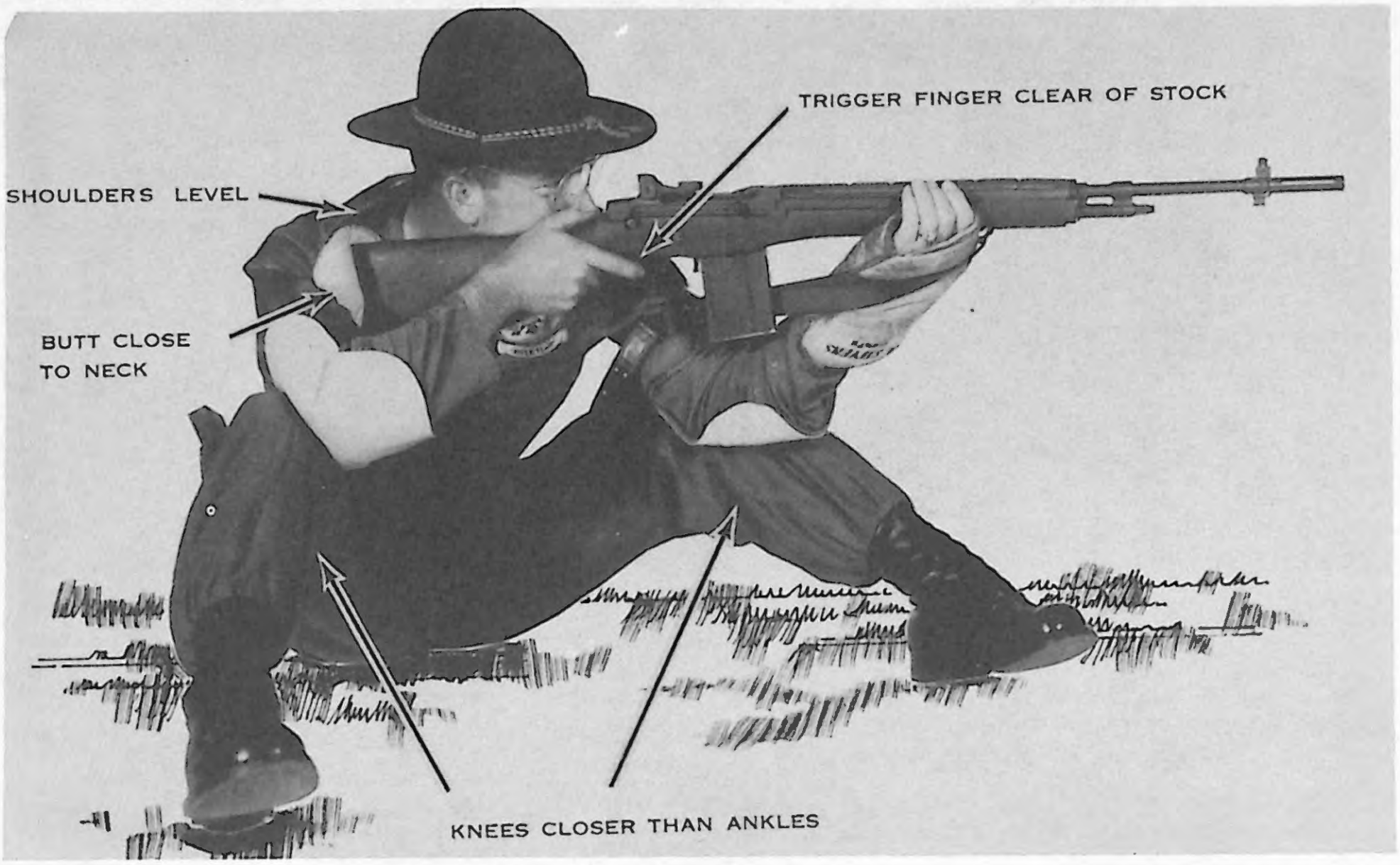


Figure 30. SITTING POSITION--OPEN LEG.

(1) Assume Position.

(a) To assume the Open Leg position, the shooter first selects a portion of level ground on the firing point; then faces the target and does a half right face. He crosses the left foot over the right foot and sits down in place. He then uncrosses the feet and places them a comfortable distance in front of him, about three feet apart. Bending forward at the waist, he puts his left upper arm down along the left shin bone. With his right hand at the butt of the rifle, he pushes the rifle forward, placing the butt of the rifle into the shoulder. He then moves the right hand forward, grasps the small of the stock, and lowers the upper arm until it rests inside the right knee. By pointing the toes inward, he can prevent his knees from spreading and hence maintain pressure on the right upper arm. The position is completed by relaxing the weight forward and assuming the correct spot weld.

(b) The difference between the Crossed Leg and the Crossed Ankle position is very slight. In the Crossed Ankle position, when the shooter sits down, instead of uncrossing his feet and spreading them, he places his feet forward and, bending at the waist, places the upper arms inside the knees. In the Crossed Leg position, after sitting down, he simply leaves the feet in place and positions the upper arms inside the knees. One of the reasons many competitors use the Crossed Leg position is the short period of time that is required to assume this position.

Figure 31. SITTING POSITION - CROSSED LEG.

Figure 32. SITTING POSITION - CROSSED ANKLE.

(2) Checkpoints of the sitting rapid fire positions are as follows:

(a) Rifle vertical.

(b) Left Hand.

Forward to the upper sling swivel. The rifle resting in the "V" formed by the thumb and forefinger. The weight is supported by the heel of the hand. This prevents the hand from slipping, affords the most support, and keeps recovery time to a minimum. In some cases, because of body conformation, the hand may be pulled back somewhat to elevate the muzzle of the weapon, raising the natural point of aim. A small amount of tension may be present but the hand and wrist remain as relaxed as possible.

(c) Left Elbow.

Under the weapon as much as possible and blocked inside the left knee.

(d) Sling.

Positioned well up on the arm above the bicep and tight enough to prevent slipping. Sling tension should be enough to maintain position against recoil throughout the string. The sling is usually shortened approximately one to three inches from the prone rapid fire adjustment.

(e) Rifle Butt.

Placed close to the neck and high in the hollow of the shoulder; to facilitate positioning of the head and to aid in preventing the butt plate from slipping.

(f) Right Elbow.

Blocked in front of the right knee to prevent the arm from being dislodged during recoil.

(g) Torso.

Bent forward at the waist with as much of the body behind the rifle as possible to absorb the recoil. Shoulders are approximately level to prevent canting of the rifle.

(h) Legs.

Muscles relaxed.

(i) Head.

Should be as erect as possible and looking straight through the rear sight. The face is pressed firmly to the thumb and stock so that the spot weld is maintained throughout the recoil and recovery.

(j) Right Hand.

The grip is firm enough to maintain the position of the hand throughout the string.

(3) Natural Point of Aim.

The natural point of aim is checked and adjusted prior to firing. Any error in natural point of aim occuring during the string will cause the weapon to recoil in the direction of the error, and should be corrected before firing the next shot.

(a) If the natural point of aim is off horizontally, shift the feet or the buttocks either right or left until the front sight is on a vertical line with the aiming point.

(b) If the natural point of aim is off vertically shift the feet or buttocks forward or rearward until the correct sight picture has been obtained, while the breath is at the natural respiratory pause. Minor vertical adjustments may be made by moving the left hand on the stock, and by breath control.

(4) Rapid Fire Cadence.

See Prone Rapid Fire Cadence

RAPID FIRE CADENCE CHART

200 YARDS

ROUND Nº	1	2	3	4	5	6	7	8	9	10	X	X
SECONDS	11	14	17	20	23	36	39	42	45	48	2	50

8 SECONDS TAKE POSITION
3 SECONDS CADENCE
10 SECONDS RELOAD
2 SECONDS BUFFER

Figure RAPID FIRE CADENCE CHART 200 YARDS SITTING

Figure 33. RAPID FIRE CADENCE CHART-200 YARDS SITTING.

NOTE: In the instruction of rapid fire exercise, it must be emphasized to the shooter that he is not required to fire at the exact cadence specified in the chart. The chart simply represents the most economical use of the available time and is a guide only.

(a) One shot exercise.

In the one shot exercise, the shooter must be able to assume a position rapidly and fire the first shot in a period of 11 seconds. The shooter first assumes his regular position and adjusts his natural point of aim onto the target. When satisfied with his position, he marks his crotch location on the ground (and feet if necesssary) to facilitate retaking the position. The shooter then rises by crossing his feet and drawing them in close to his crotch. On command, he reassumes his position rapidly, using the aforementioned marks as a guide; readjusts his natural point of aim if necessary; and applies the correct trigger control within the specified time limit.

(b) Reloading Exercise.

See Prone Rapid Fire Reloading Exercise.

NOTE: This exercise in the sitting position is accomplished in a period of 13 seconds.

(c) 10 Shot Exercise.

See Prone Rapid Fire 10 Shot Exercise.

NOTE: This exercise in the sitting position is accomplished in a period of 50 seconds.

(5) Firing Procedure.

When called to the firing line, the shooter builds his position and checks his natural point of aim while dry-firing. At the termination of the preparation period he marks his position, clears his weapon, and rises on the command "SHOOTERS RISE". He loads on command and makes sure that a round is chambered and the weapon is locked. On the command "READY ON THE FIRING LINE," the weapon is unlocked. When the targets appear he quickly reassumes position, using his preplaced marks as a guide. He then looks along the barrel of the weapon to check his target number as he lowers his head; obtaining a good spot weld. He perfects his sight alignment, and makes a quick adjustment in natural point of aim if necessary. He inhales, then exhales, focusing his eye on the front sight. He concentrates on a correct sight picture and applies a straight to the rear pressure on the trigger. When the rifle fires, he makes a mental note of the call and again adjusts his natural point of aim if necessary. During recovery from the shot he takes a quick shallow breath and exhales to the respiratory pause. This should reposition the front sight to a correct sight picture. He then continues the sequence for the remainder of the magazine, reloads, reassumes position, and fires the second magazine in the same manner until the string has been completed.

NOTE: Breathing between shots in rapid fire is necessary to help develop a cadence and restore a needed supply of oxygen to the blood system, thus allowing the attaining of a clear sight picture.

g. Standing.

The standing position is fired from 200 yards, with the sling attached to the rifle but not being used for support. Most shooters agree that the standing position is the most difficult to master. Compared to prone and sitting, there is little doubt that it is the least steady position. However, by applying the fundamentals of position and mental control, there is no reason why consistently high scores cannot be fired. Many of the better offhand shooters attribute their success to an international style standing position.

(1) Assume Position.

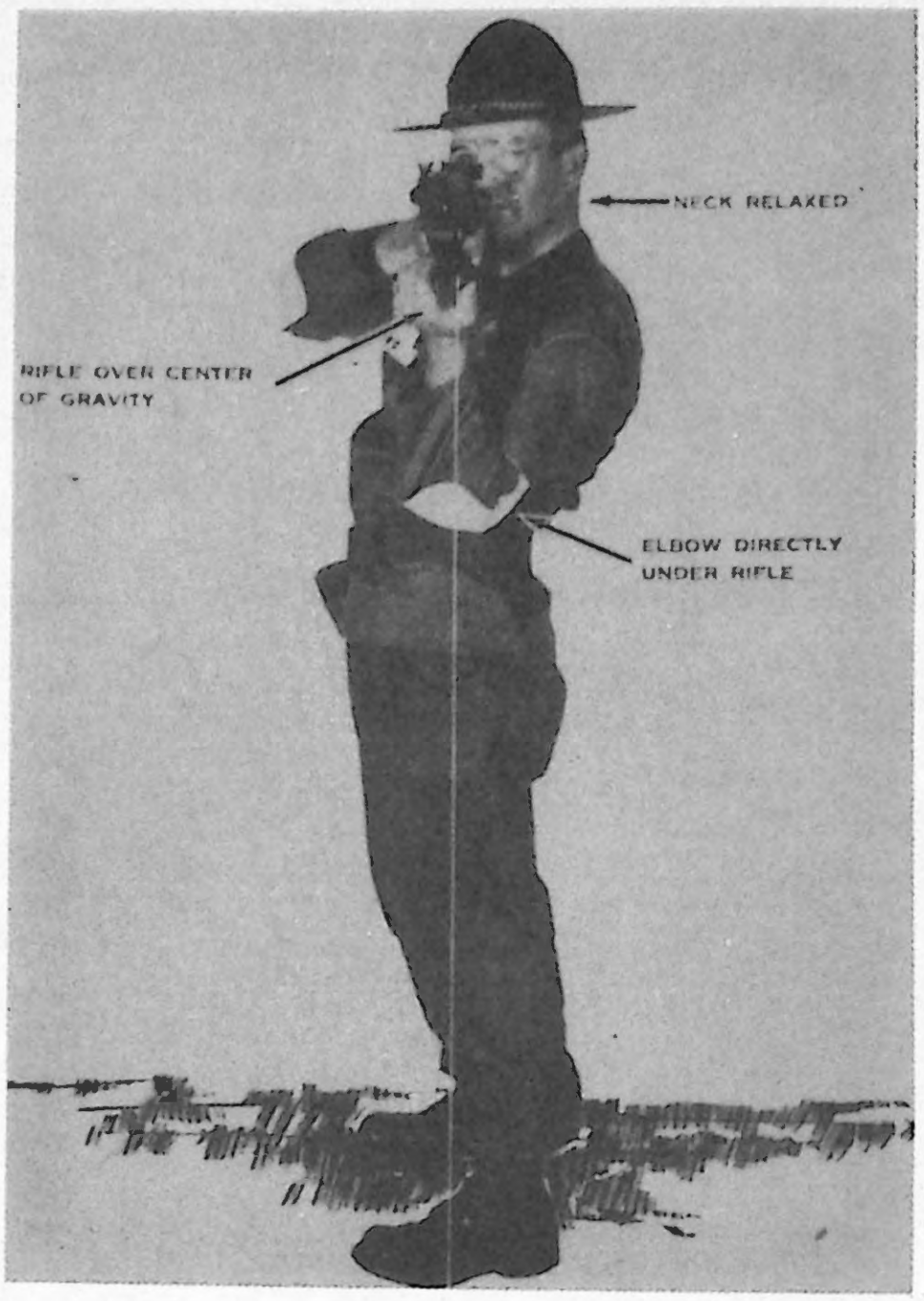
The shooter first selects a level portion of the firing point, stands facing the target, and executes a right face. Spreading the feet a comfortable distance apart, he places the rifle high into the shoulder, with the muzzle elevated; and bends backwards slightly, keeping the legs straight. With the left hand placed under the magazine, he lowers the left elbow until it contacts the body, forms a spotweld, and pivots the torso slightly to the left to the natural point of aim.

(2) Checkpoints of the standing position.

(a) Feet.

Approximately level and spread a comfortable distance apart (Within shoulder width) and toes pointed naturally. Acceptable variations may include: heels slightly lower than the toes, toes pointed inward, and the forward foot angled slightly towards the target.

STANDING POSITION (Side view)
Figure 34.



STANDING POSITION (Front view)
Figure 35.

(b) Left Arm.

Upper arm resting against the side of the rib cage.

(c) Left Hand.

The magazine may be supported by the heel of the hand, with the hand bent forward; or between the thumb and forefinger with the wrist straight, palm to the rear. A shooting glove or mitt may be worn in either case.

(d) Right Hand.

A grip, firm enough to form an anchor for the trigger finger. The degree of pressure exerted by the grip is a matter of individual preference. The hand is positioned to allow a straight to the rear pressure with the trigger finger. The trigger finger is clear of the stock and makes contact with the trigger between the first joint and tip of finger.

(e) Right Arm.

In any comfortable position not causing muscular tension.

(f) Butt Plate.

Place close to the neck and high in the hollow of the shoulder to facilitate positioning of the head.

(g) Head.

Should be erect and cheek resting either on the stock or thumb. The eye is looking straight through the sight with the neck relaxed.

(h) Torso.

Bent slightly back and to the right with a slight pivot to the left from the small of the back, moving the center of gravity and distributing the weight evenly.

(i) Legs.

Straight, but the knees not necessarily locked.

(j) Rifle Vertical.

(3) Natural Point of Aim.

To adjust horizontally turn the feet either right or left, depending on the error. Vertical adjustments are made by moving the rear foot either forward or backward, lowering or elevating the muzzle.

Any adjustments made in the natural point of aim are accomplished while the breath is at the natural respiratory pause.

(4) Procedure for Firing.

Once a good position has been established, the shooter should dry fire a few rounds to check his natural point of aim and trigger control. Any adjustments in position should be made during the preparation period so that the feet can remain in place throughout the string. At the termination of the preparation period he should relax and load on command; and when the targets appear, assume position, mentally reminding himself of the target number. Then taking a short breath, he exhales to the natural respiratory pause. Focusing on the front sight he checks sight alignment and establishes the proper sight picture. The shooter then takes up the slack with heavy initial pressure (Leaving 2-3 lbs of trigger pull), and applies good trigger control until the weapon fires; making a mental note of the position of the front sight in relation to the bullseye at the time the weapon fires. He then follows through by holding the spot weld and maintaining pressure on the trigger until the recoil has been completed.

4. Sight Adjustment.

When a shot or shot group is fired and is not in the desired location on the target, the sights must be moved in order to move the shot or shot group to the proper location on the target. In order to do this, it becomes necessary for the shooter to become familiar with the sights. The sights on the M14 rifle have the following characteristics.

a. Each click of elevation or windage on the standard issue rifle is worth approximately 1 minute of angle and moves the strike of the bullet approximately 1 inch on the target for each 100 yards of range.

b. Each click of windage on the National Match M14 rifle will move the strike of the bullet approximately 1/2 of an inch per every 100 yards of range, while the elevation is the same as for the standard issue rifle.

(1) If this sight is equipped with an elevation disk (100 serration), one click of elevation will raise or lower the strike of the bullet approximately 1/2 of an inch per each 100 yards of range.

(2) If the rifle is equipped with a hooded rear aperture (Figure 36) the sight has a 1/2 minute elevation change capability. To move the strike of the bullet up 1/2 minute, the hood must be rotated so that the notch in the hood is up. If the notch in the hood is already up and a 1/2 minute up is desired, the elevation knob must be moved up 1 click, and the hood rotated so that notch is down. For moving the sights downward, the same procedure is used, but in reverse.

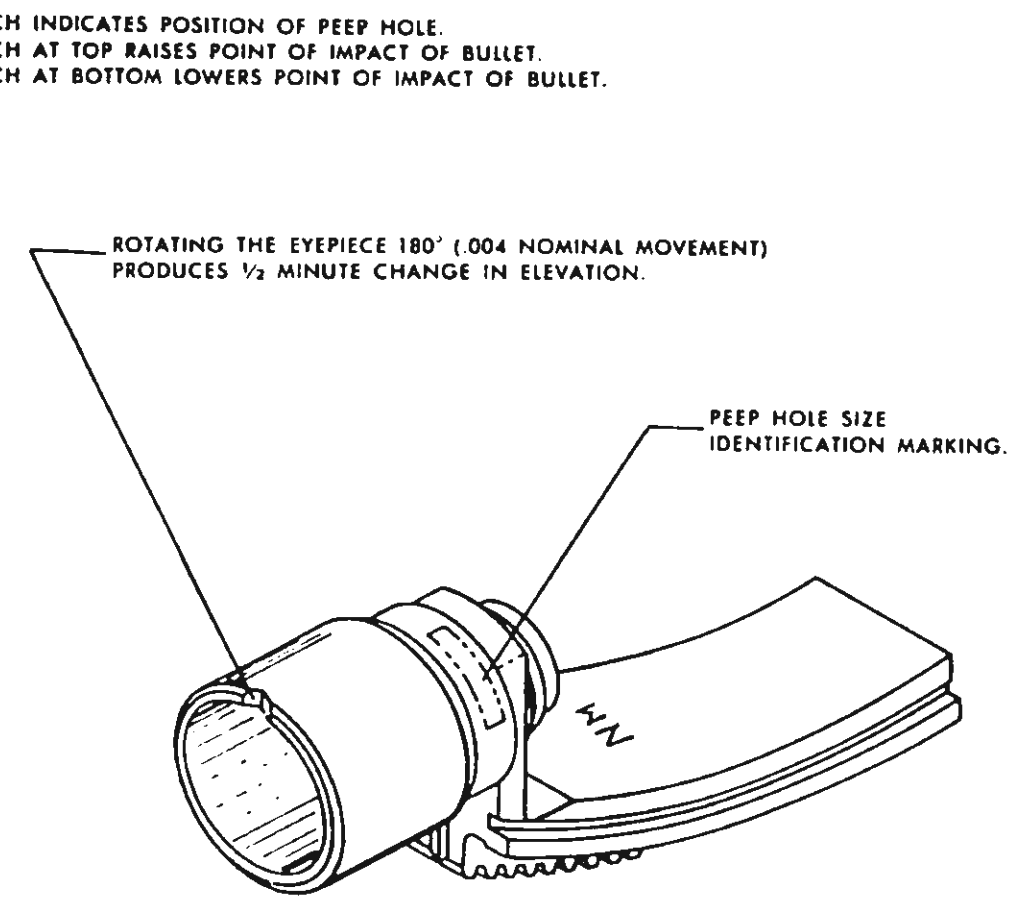


Figure 36. HOODED REAR APERTURE

c. The rear sight must be moved in the direction the shot or shot group is to be moved.

(1) To move the rear sight or shot(s) to the right, the windage knob is turned clockwise. The rule to remember is as follows: "Push right-pull left."

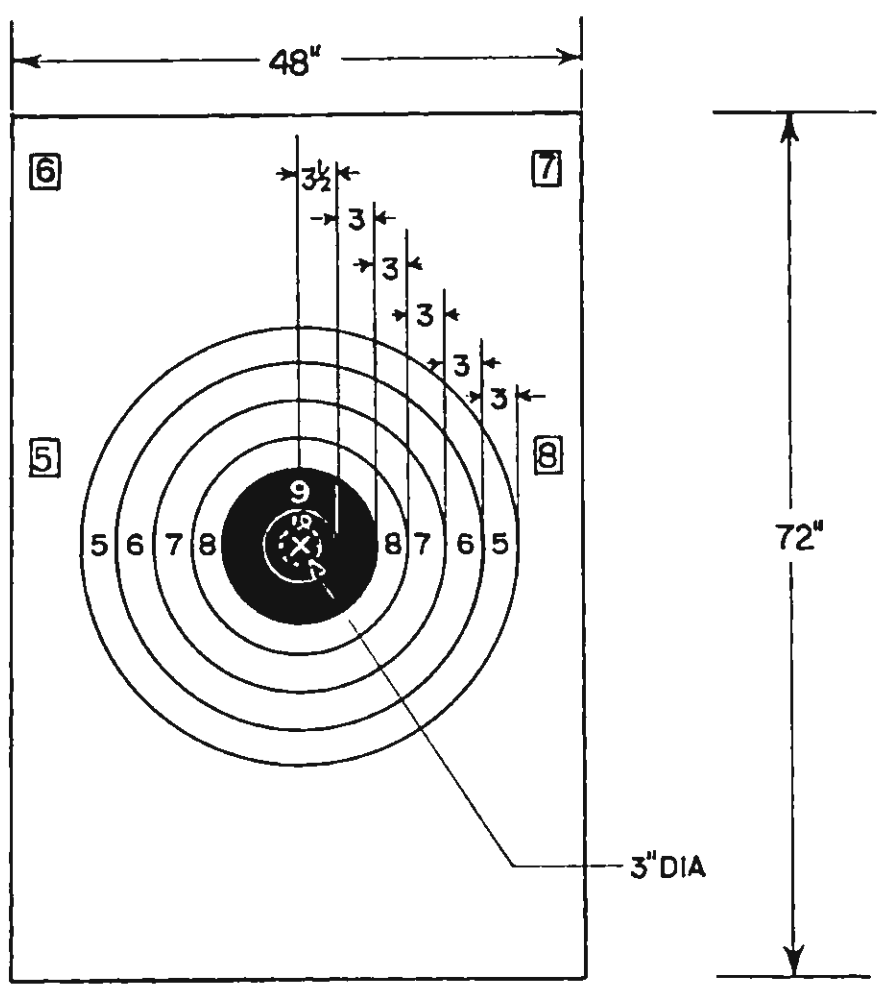
(2) To raise the elevation or shot(s) on the target, the elevation knob is turned clockwise. To lower the elevation or the shot(s) of the target, the elevation knob is turned counterclockwise.

d. The rear sight of the standard M14 rifle can be adjusted from 0 to 72 clicks in elevation and 16 clicks to the right and left of the center line of the windage gauge. For the 1/2 minute clicks in windage on the match rifle, the figures are doubled.

(1) Mechanical windage zero is determined by aligning the sight base index line and the center line of the windage gauge. The location of the movable index line indicates the windage used or the windage zero of the rifle. For example, if the index line is to the left of the center line of the gauge, we have a left reading; windage zero can be determined by simply counting the number of clicks back to the mechanical zero.

(2) The elevation zero for any range is determined by counting the number of clicks down to mechanical elevation zero (hooded aperture notch down).

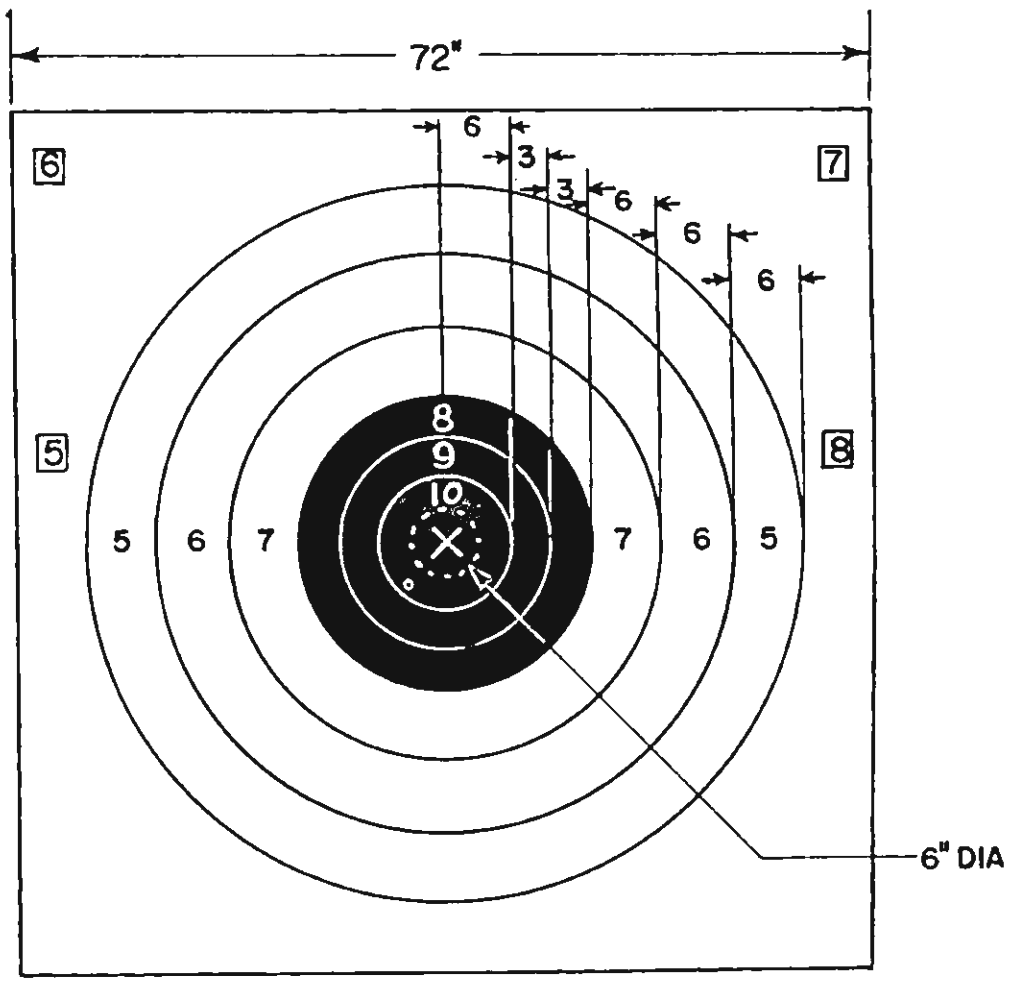
e. To properly utilize the sights in making adjustments during firing we must be familiar with the dimension of the various targets (Figure 37). Once the dimensions are determined, the shooter can intelligently apply the windage and elevation to the sights he has on his rifle.



TARGET RIFLE "A" 200-300 YARDS

FSN 6920-900-8204

6920-999-1436 (CENTERS)



TARGET RIFLE "B" 600 YARDS

FSN 6920-900-8205

6920-999-1437 (CENTERS)

Figure 37. "A" AND "B" TARGET CONFIGURATION

f. Sight adjustment or manipulation is a very important aspect of training that must be taught to the shooter--thoroughly. This can be accomplished by explanation and demonstration of the characteristics of the sights on the M14 rifle, utilizing a rear sight model (Figure 38). The shooter should then receive practical work in the manipulation of the sights. A recommended exercise is the None-Round Sight Drill. The shooter fires three, three-round shot groups, moving the sights in windage and/or elevation after each group fired. When the drill is completed, the distances between groups are measured and recorded.

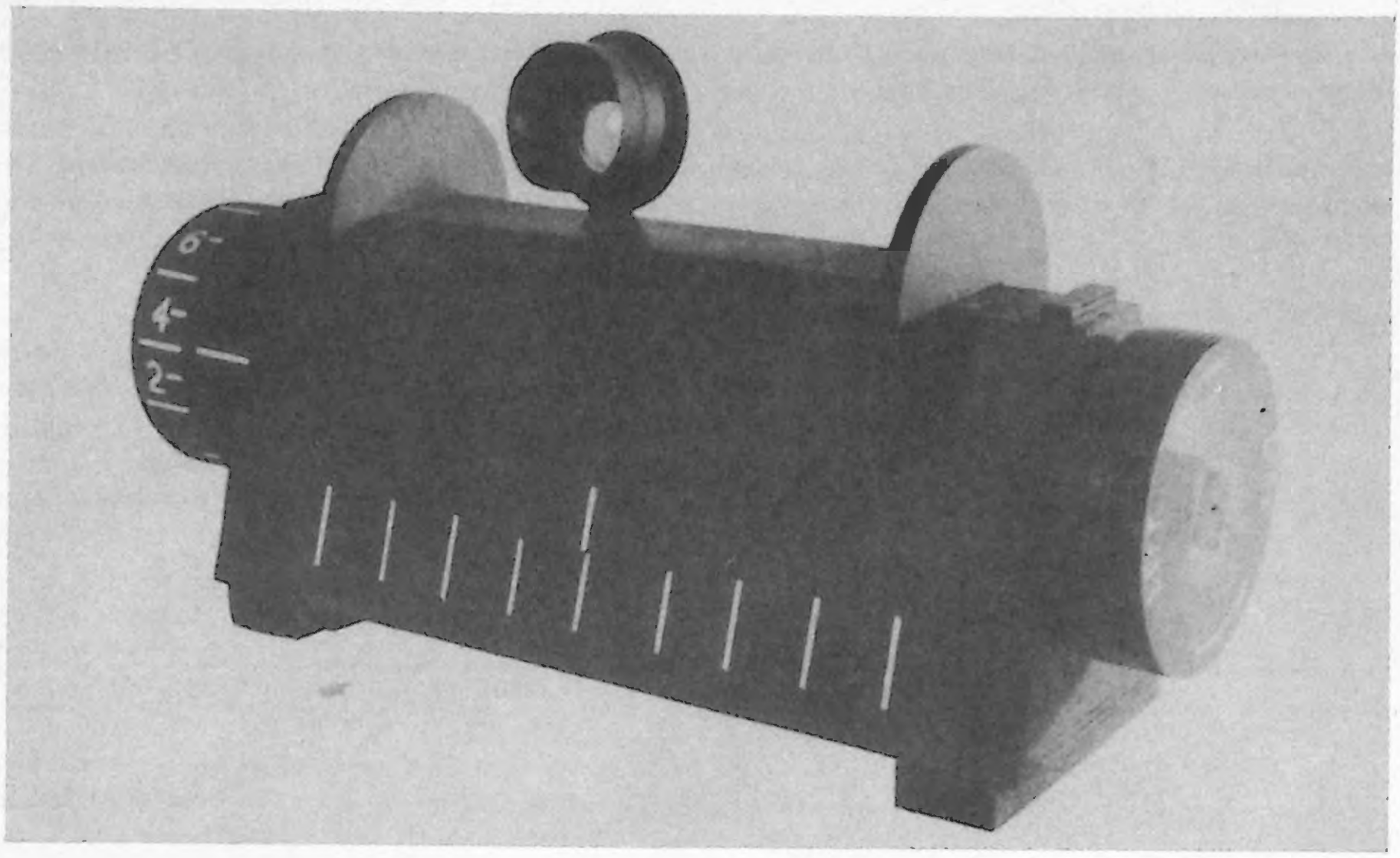
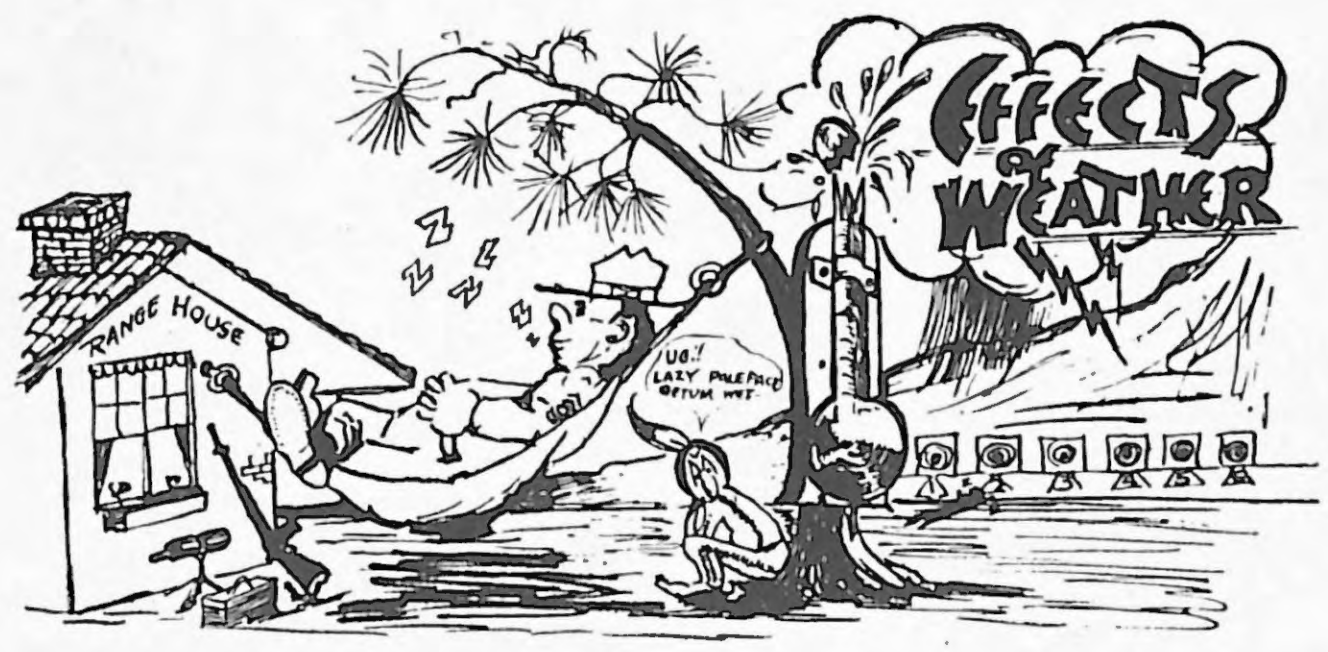


Figure 38. REAR SIGHT MODEL



5. Effects of the Weather.

In the case of the highly trained competitive shooter, effects of the weather are a primary cause of error in the strike of the bullet. The wind, mirage, light, temperature, and humidity all have some effect on the bullet, the shooter, or both. Some of these effects such

as temperature and humidity are insignificant depending on the average conditions under which most matches are fired and such effects are considered to be normal. However, if a match were to be fired under extremes of such effects they would have to be considered. For this reason an explanation will be given of all the conditions of weather as mentioned. In considering the conditions of weather we base our explanation of such effects on the shooter utilizing a match rifle with match ammunition.

a. Wind.

(1) The condition which constantly presents the greatest problem to the shooter is the wind. Wind has a considerable effect on the bullet that increases with the range. This is due primarily to increased resistance of the air as the velocity is reduced causing the bullet to deviate from its natural trajectory. Wind also has a considerable effect on the shooter, particularly in the standing position. The stronger the wind, the more difficulty the shooter has in holding the rifle steady. The effect on the shooter can be partially offset with good training and conditioning.

(2) Before any sight adjustment can be made to compensate for wind, it is necessary to determine it's direction and velocity. There are certain indicators which the shooter may use to accomplish this. These are range flags, smoke, trees, grass, rain, the sense of touch, etc. Another important indicator, "mirage", will be discussed in paragraph b. In most cases, it is relatively easy to determine the direction from which the wind is blowing simply by observing the indicators.

(a) A common method of estimating the velocity of the wind is based on observation of the range flag. The angle in degrees between the flag and its pole is divided by the constant number 4. The result gives the approximate velocity in miles per hour. (Figure 39)

(b) If no flag is visible, a piece of paper, grass, cotton, or some other light material may be dropped from the shoulder. By pointing directly at the spot where it lands, then dividing the angle between the body and the arm by the constant number 4 will result in the approximate velocity in MPH (Figure 39).

(c) If for some reason these methods cannot be used, the following information is helpful in determining velocity:

Under 3 mph, winds can hardly be felt, but may be determined by smoke drift.

A 3-5 mph wind can just be felt on the face.

At 5-8 mph, leaves in trees are in constant motion.

At 8-12 mph, wind will raise dust and loose papers.

At 12-15 mph, small trees begin to sway.

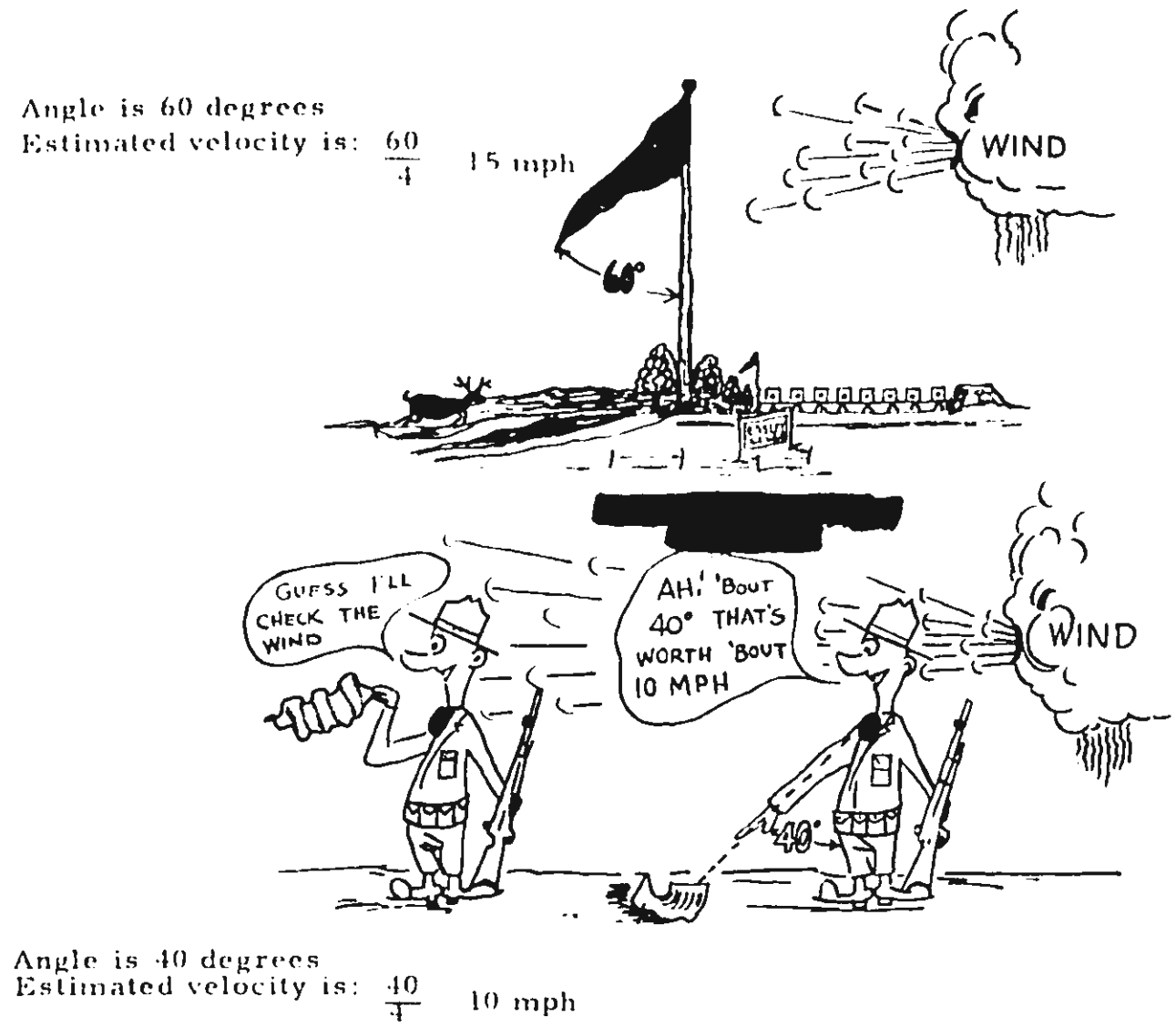


Figure 39. WIND ESTIMATION

(3) Since the shooter must know how much effect the wind will have on the bullet, he must be able to classify the wind. The accepted method is by use of the clock system (Figure 40). A half value wind will affect the strike of the bullet approximately one half as much as a full value wind of the same velocity. A wind velocity corrected in this manner is called the "effective wind." The so-called "no value" wind has a definite effect on the bullet at the long ranges if it is not blowing directly from 6 or 12 o'clock. This is the most difficult wind to fire in due to the switching or "fishtail" effect which requires frequent sight changes. Depending on the velocity of this type wind it may have an effect on the vertical displacement of the bullet.

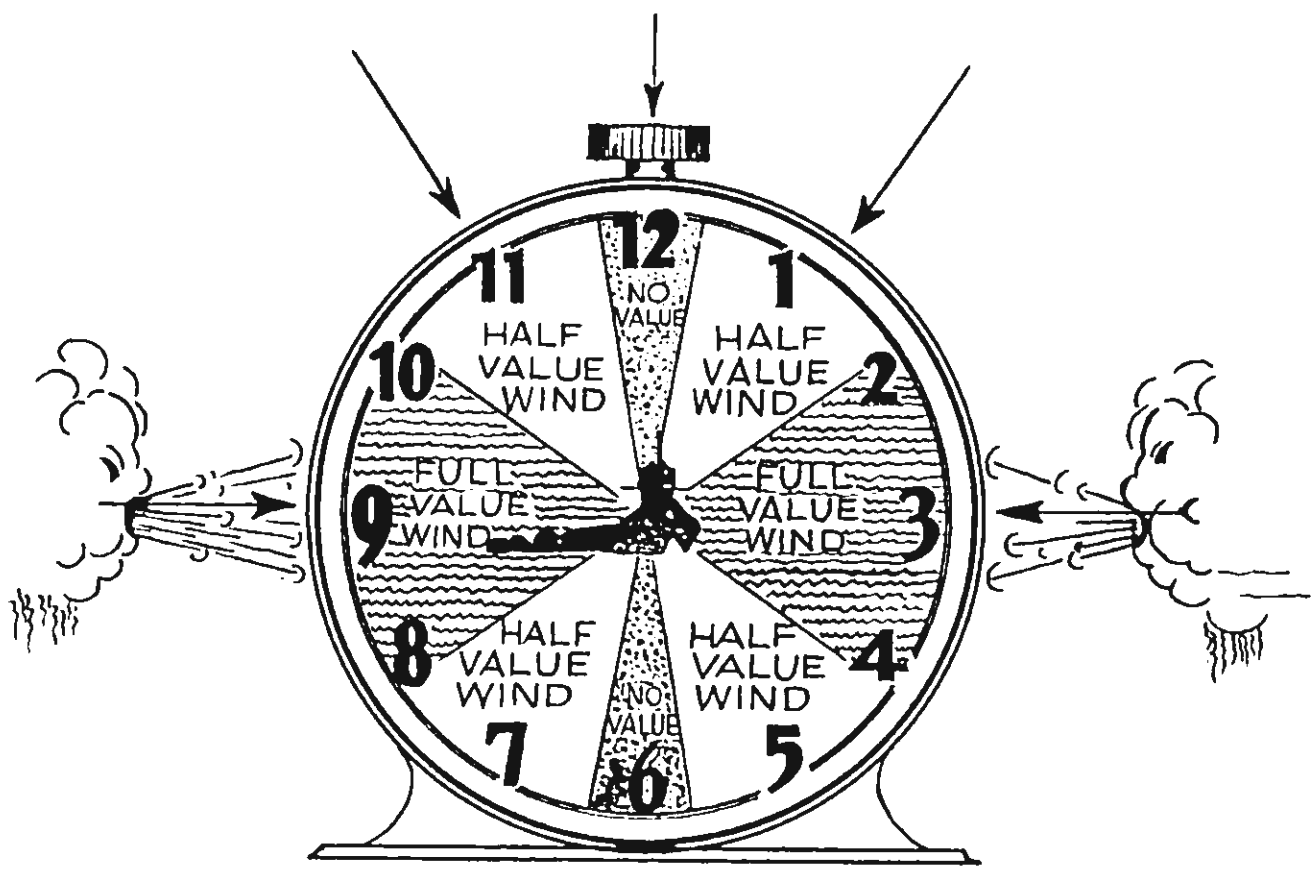


Figure 40. CLOCK SYSTEM

(4) After determining wind direction and velocity, the windage correction to be placed on the sights will be based on the following formula:

$\frac{R \times V}{10}$ = number of 1/2 minute clicks for a full value wind on a National Match Rifle using match grade ammunition.

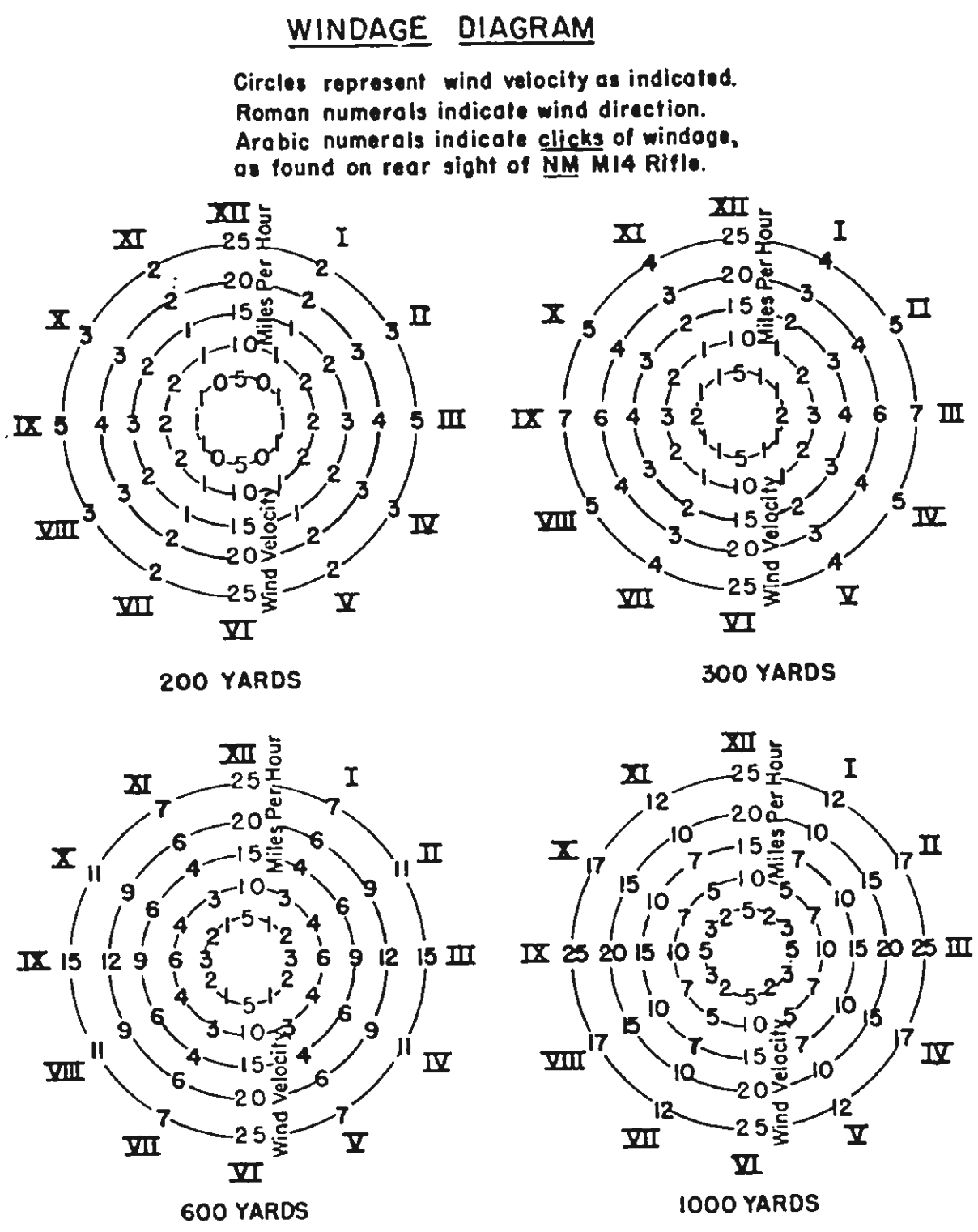
The formula for a Standard Issue Rifle and ammunition is $\frac{R \times V}{15}$ = full minute clicks.

For half value winds simply divide the answer by two. In this formula, R = range in hundreds of yards and V = velocity of the wind in mph. The constant 10 or 15 was arrived at mathematically considering the bullet weight, density of the air, velocity, air resistance, distance to target, rear sight movement, etc.

EXAMPLE: The wind is blowing from 9 o'clock at 10 mph. The range is 300 yards; using the wind formula, R = 3 and V = 10.

$\frac{R \times V}{10} = \frac{3 \times 10}{10} = 3$ clicks $\qquad$ $\frac{R \times V}{15} = \frac{3 \times 10}{15} = 2$ clicks

NOTE: In event the answer is a fraction, use the nearest whole click. A graphic diagram for determining windage corrections is found in figure 41.



WINDAGE DIAGRAM
(NM M14 with match grade ammunition)
Figure 41.

b. Mirage.

(1) The word "mirage" refers to the heat waves or the reflection of light through layers of air of different temperature and density as seen by the naked eye on a warm bright day. With the telescope, some mirage can be seen on all but the coldest days. Proper reading of the mirage will enable the coach or shooter to estimate and make windage corrections with a high degree of accuracy.

(2) As observed through the telescope, the mirage will appear to move with the same velocity as the effective wind, except when blowing straight into or away from the scope. Then the mirage will give the appearance of moving straight up with no lateral movement. This is termed a "boiling" mirage. In general, changes in the velocity of the wind can readily be determined by observation of the mirage up to speeds of approximately 12 mph. Beyond that speed, the movement of the mirage is too fast for detection of minor variations.

(3) Figure 42 gives an illustration of the relative appearance of the mirage under varying velocities and directions. In general, the shallower the waves of the mirage the faster the velocity and resultant wind speed.

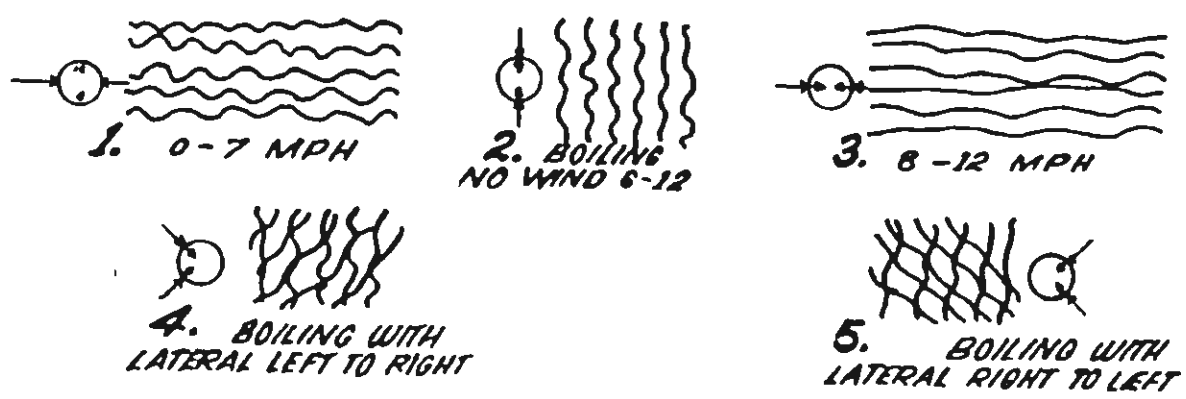


Figure 42. TYPES OF MIRAGES

(4) The true direction of the wind may be determined by traversing the telescope until the heat waves move straight up with no lateral motion (a "boiling" mirage).

(5) Mirage is particularly valuable in reading so-called "no value" winds. If the mirage is boiling, the effective wind velocity is zero. If there is any lateral movement of the mirage at ranges to 600 to 1000 yards it is usually necessary to make a windage adjustment.

(6) Another important effect of mirage is the light diffraction caused by the uneven air densities, characteristic of heat waves. Depending on atmospheric conditions, this diffraction will cause a displacement of the target image in the direction of the movement of the mirage. Thus, if a mirage is moving from left to right, the target will appear to be slightly to the right of its actual location. Since the shooter can only aim at the image received by his eye, he will actually aim at a point which is offset slightly from the center of the target. This error will be in addition to the displacement of the bullet caused by the wind. Since the total effect of the visable mirage (effective wind plus target displacement) will vary considerably with atmospheric conditions and light intensity, it is impossible to predict the amount of error produced at any given place and time. In many cases, any one type mirage may differ in value from one range to another due to differences in terrain features. It is only through considerable experience in reading mirage that the shooter and coach will develop proficiency as a "wind doper."

c. Temperature.

Temperature has a definite effect on the elevation setting required to hit the center of the target. This is caused by the fact that an increase in temperature will increase the

muzzle velocity (Figure 43). Temperature, and its changes, will effect the elevation of the strike of the bullet. There is a rule of thumb to follow, based on tests made at Ft. Benning by USAMTU, at 300, 600, and 1000 yard lines. It was noted that a 20 degree rise or fall in temperature at 300 yards resulted in an elevation change of one minute. It was noted also, that a 15 degree change at 600 yards resulted in a one minute change in elevation; and a 10 degree change at 1000 yards will also require a one minute change. In extreme temperature, either high or low, this rule does not necessarily apply. EXAMPLE - from 90° to 120° or 0° to 30° as illustrated in Figure 43. It should be mentioned that these changes may not affect your zero in the same way each time; but by recording and studying, you can determine how and when temperature changes affect your zero.

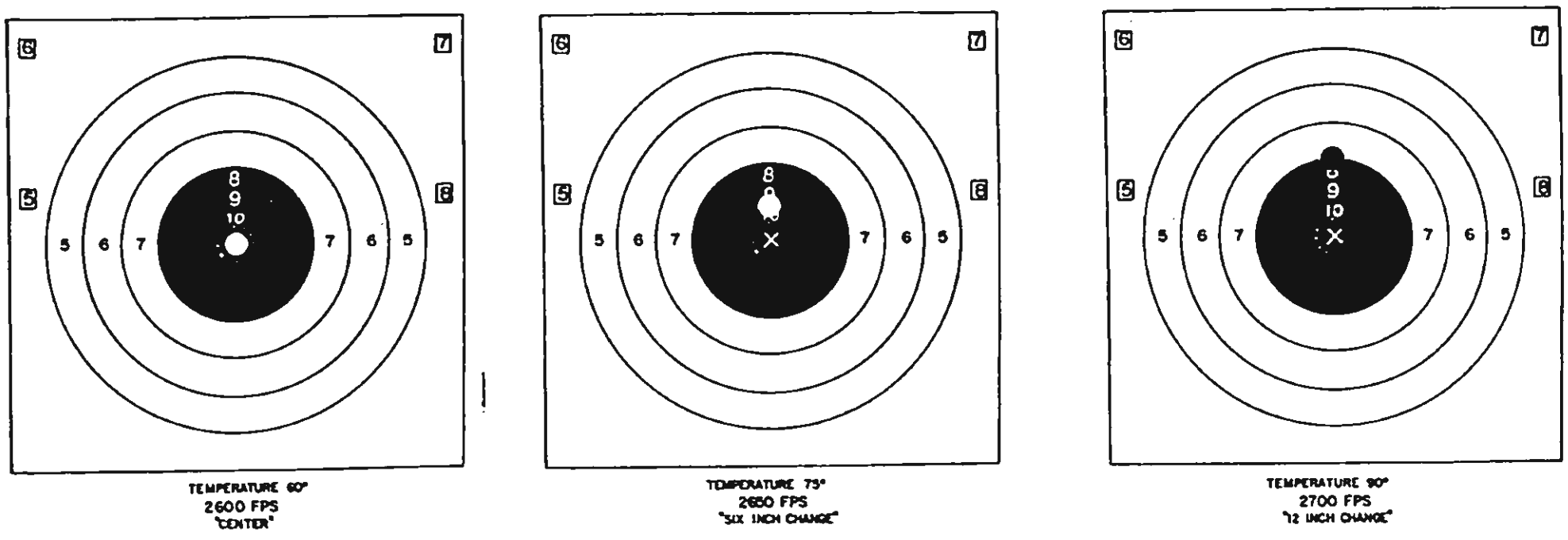


Figure 43. TEMPERATURE EFFECTS (MATCH AMMUNITION)

d. Light.

This subject is very controversal, as light may or may not have an effect on the shooter's aim. The difficulty is that light affects different people in different ways; therefore, it is believed that nothing can be presented as an iron clad fact. The general tendency however, is for the shooter to shoot high on a dull, cloudy day and low on a bright, clear day. This is especially true on a day with intermittent clouds. On a bright day, an apparent halo forms around the bull's-eye causing the aim to be low. On a dull day the halo is gone and the tendency is to hold closer to the bulls'-eye, causing the shots to go high. On an extremely bright day, with the sun directly on the face of the target and a light background, the bull's-eye tends to look smaller than it actually is. Because of the reduced aiming point the shooter will unconsciously hold high; thus requiring a lowering of elevation.

Extreme light conditions from the left or right may have an effect on the horizontal impact of a shot or shot group. When a bright light hits on the face of the target, the edge of the bull's-eye from which the light is coming may appear indistinct, causing the center of the aiming point to be off slightly (Figure 44); so the general rule is to click the sights into the light.

When a bright light is coming from the side but does not hit directly on the target the effect is on the front sight (Figure 45) causing the shot or shot groups to go in the direction from which the light is coming.

On certain occasions both conditions may be in effect, one counteracting the other.

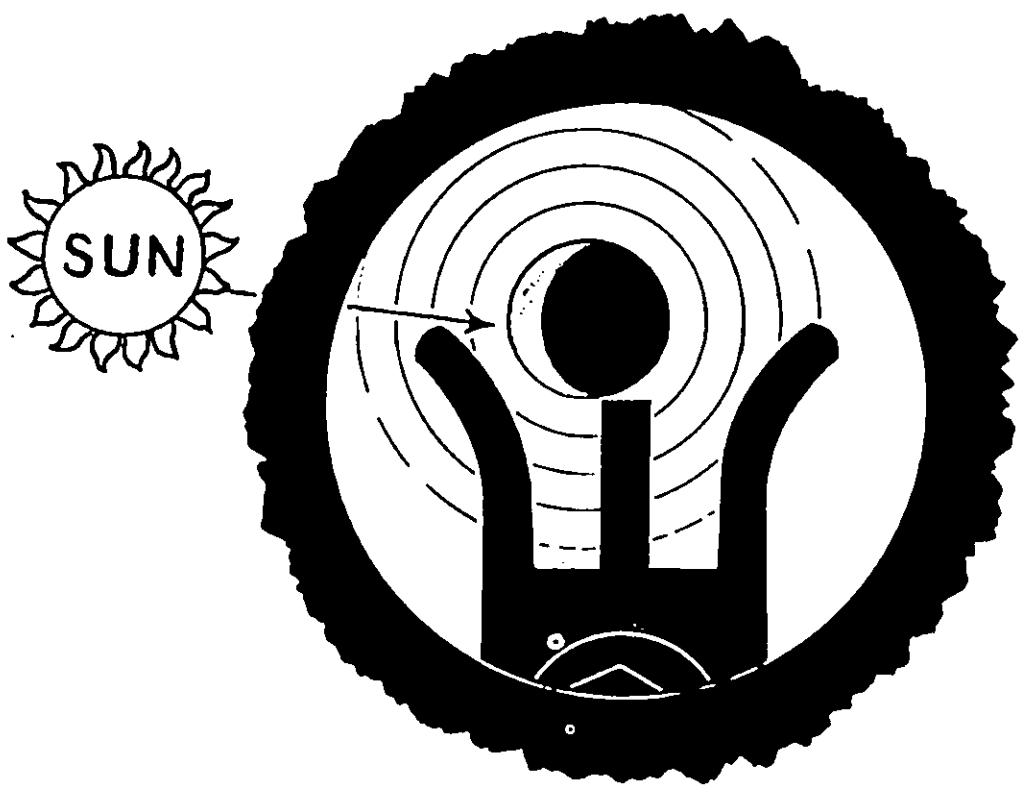


Figure 44. BRIGHT LIGHT ON TARGET

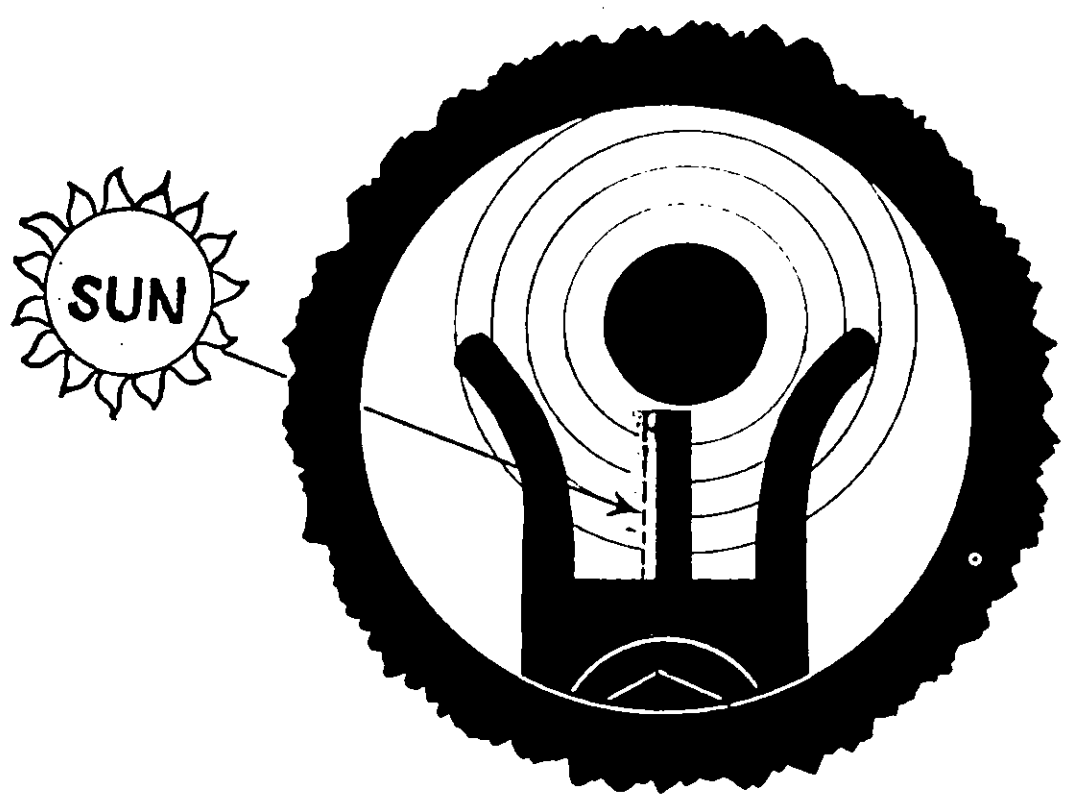


Figure 45. BRIGHT LIGHT ON FRONT SIGHT

e. Humidity.

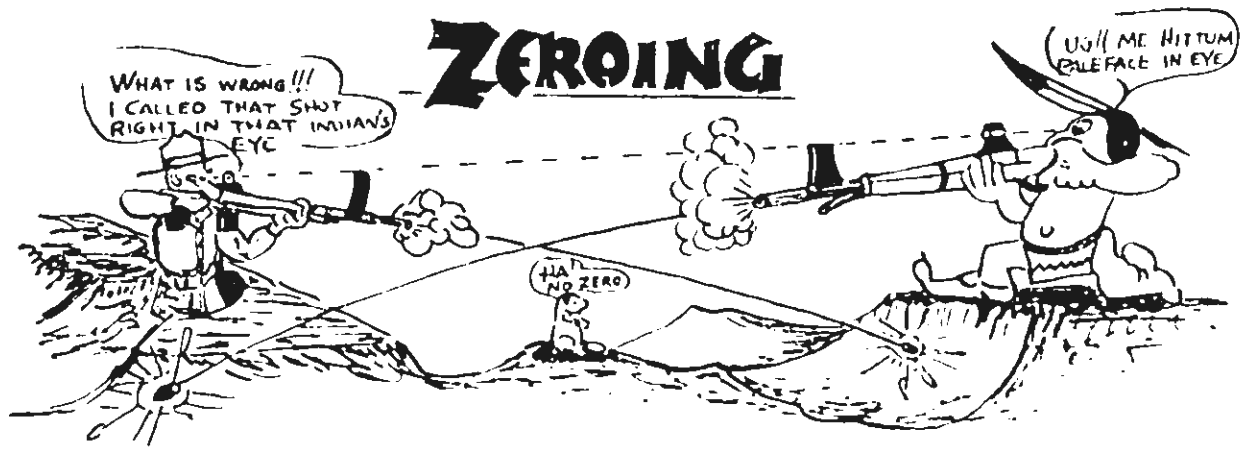
To understand the effects of humidity on the strike of the bullet, one must realize that the higher the humidity, the denser the air, the more resistance to the flight of the bullet through it. This resistance will tend to slow down the bullet and as a result the shooter must raise his elevation to compensate for it. The effects of humidity at the short ranges are not as noticeable as at the long ranges. Again, the experience of the shooter and his resultant study of hits and groups under varied conditions of humidity will determine the effect of humidity on his zero.

For example: A rise in the humidity of say 30% cannot always be determined readily. This rise in humidity makes the air more dense. If this heavier air is present with a 10 mph wind it will require more elevation and more windage to hit the same location than on a day when the humidity was 30% lower.

f. "Judgment and Decision."

Many shooters refuse to believe that a certain condition can affect the strike of the bullet and can quote an instance or two where the same condition had two different effects on the bullet. These shooters failed to note all the factors of weather. Certain combinations of weather will have different effects on the bullet than others. For this reason, a shooter may fire two

successive days on the same range and under what appears to be the same condition and yet utilize two different sight settings. In not considering all of the effects of weather many shooters tend to overemphasize certain effects and this will produce low scores from time to time. As previously mentioned, we normally fire for a certain period of time in training or in a match under what we call average conditions, a certain range of humidity, etc. As a result we zero our rifle and with the exception of minor displacements of our shots and groups we do not have much difficulty except for the wind. Yet we can travel a few hundred miles to a different location and fire our rifles again and find a change in our zero. A thorough study of the weather effects would indicate the change. Proper recording, and study based on experience, are all important with respect to determining the effects of weather. Probably one of the most difficult things to impress upon a shooter is the evidence of a probable change in his zero. If a change is indicated, it should be applied to all ranges.



6. Zeroing.

The zero of a rifle is the sight setting in elevation and windage required to place a shot (or the center of a shot group) in the center of the target at a given range on a day when no wind is blowing. Experience has shown that the best way to zero a rifle is to fire it in the position, range, and cadence at which we intend to use it. As the obtaining of a correct zero is so important, this exercise has been included as one of the "Fundamentals of Marksmanship."

a. It is best to start the initial zeroing phase at the 200 yard line. To facilitate determining the 200 yards zero quickly, it is suggested that the rounds be fired slow fire in the sitting position. When the slow fire shots are striking near the center of the target, fire two three-round shot groups in rapid fire cadence, followed by a rapid fire string of ten. During this firing, sight changes are made to bring the group into the center of the bull's-eye. If the windage zero is four or more clicks offset from mechanical zero, the front sight should be moved to allow mechanical zero and windage zero to be approximately the same. If this is necessary, the front sight is moved in the direction of the shot or shot group. After the front sight is moved it will be necessary to fire another zeroing exercise.

b. Often the rapid fire zero at 200 yards will be different from the slow fire zero. This is due to a difference in position, trigger control, and cadence. Therefore, it is necessary to establish a slow fire zero. To do this, simply fire several shots from the standing position and call each shot accurately. When the shots appear on the target "on call" then the standing zero has been obtained.

c. The 300 yard rapid fire zero is determined by firing the same rapid fire exercises as were fired at the 200 yard line, while at 600 yards, fire single shots until the group is centered in the bull's-eye.

d. If the six o'clock hold is used at all ranges, the normal sight change (without elevation disk) is up two clicks from 200 to 300 yards and up nine clicks from 300 to 600 yards. These changes are subject to variations in light and temperature. (See Effects of Weather)

e. By using this system for zeroing and by recording all shots fired in the scorebook, the shooter will establish an accurate zero. It must be kept in mind that the zero may change, making it necessary to know the relationship between the elevation and windage from yard line to yard line. This information will be contained in the scorebook and is very useful in projecting zero changes.

f. When zeroing in the wind, the effective velocity of the wind must be considered in determining the windage zero. For example, if the wind is worth three clicks right windage, the windage zero on the sight will be three clicks left of the setting required to hit the center of the target.

7. Use of the Scorebook.

The scorebook is used to record every shot fired by the shooter. It is also used to record the weather conditions and their effects on the strike of the bullet and the shooter. If used properly, it will provide the necessary information for initial sight settings at each range. It provides a basis for analyzing the performance of the shooter and his rifle, and is a valuable aid in making bold and accurate sight changes.

a. The following procedure should be used for filling out and maintaining the scorebook in slow fire (Figures 46 and 47).

(1) Before firing, the date, hour, rifle number, ammunition type, temperature, target number, place, light (word description and direction), wind (word description and direction), sight picture to be used, windage zero, elevation used, and any other appropriate remarks to aid the shooter are entered in the space provided.

(2) During firing, a strict sequence must be followed.

(a) If a wind is blowing, the value must be determined and set on the sights.

(b) Entries in the scorebook should be made while the target is in the pit.

1. After firing the first round the windage used should be entered in the appropriate space in the scorebook and the call plotted.

2. When the target is marked the call is compared to the hit, any needed sight changes are made, and the second shot fired.

3. After the second shot is fired the call is plotted along with any sight changes made on the previous shot, and then the location of the first shot plotted.

(3) Upon completion of firing, all remaining entries in the scorebook are filled out. The results should be analyzed and studied very carefully.

b. The following procedure should be used for filling out and maintaining the scorebook in rapid fire (Figure 48).

(1) Before firing, the shooter records the same information as he did for slow fire.

(2) On the firing line the sequence is different than slow fire.

(a) He makes his final windage correction shortly before the targets appear and applies this to the sights. While firing he should mentally note any shots called out of the group.

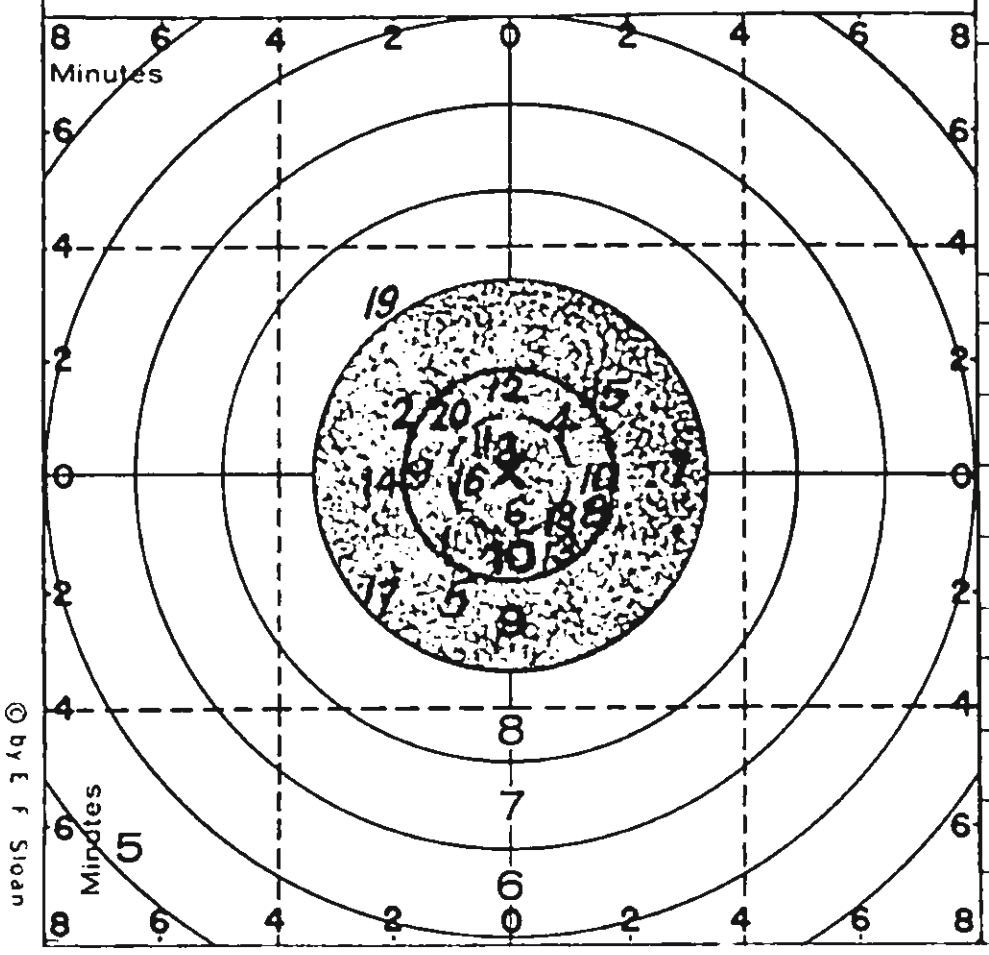
(b) Immediately after firing, the shooter plots his calls. He does this by noting any erratic shots on the plotting bull's-eye.

(c) When the target is marked he should plot all visible hits with an "X" and compare his calls to his hits.

(3) Upon completion of firing, all remaining entries in the scorebook are filled out. The results should be analyzed and studied very carefully.

Instructions in the use of the scorebook must be given prior to firing any rounds in zeroing, practice, or competition. This instruction should be integrated with training in the use of the telescope and the effects of weather, since these subjects are interrelated. Although this instruction is not directly concerned with the individuals skill in applying the fundamentals of marksmanship, it is a vital phase of training to the competitive shooter. The most competent rifleman would not be able to consistently hit the center of the target if he were unable to analyze his performance, or if he had no record of his performance or of the conditions that affect his firing.

200 YARDS SLOW FIRE SCORE SHEET. 'A' TARGET



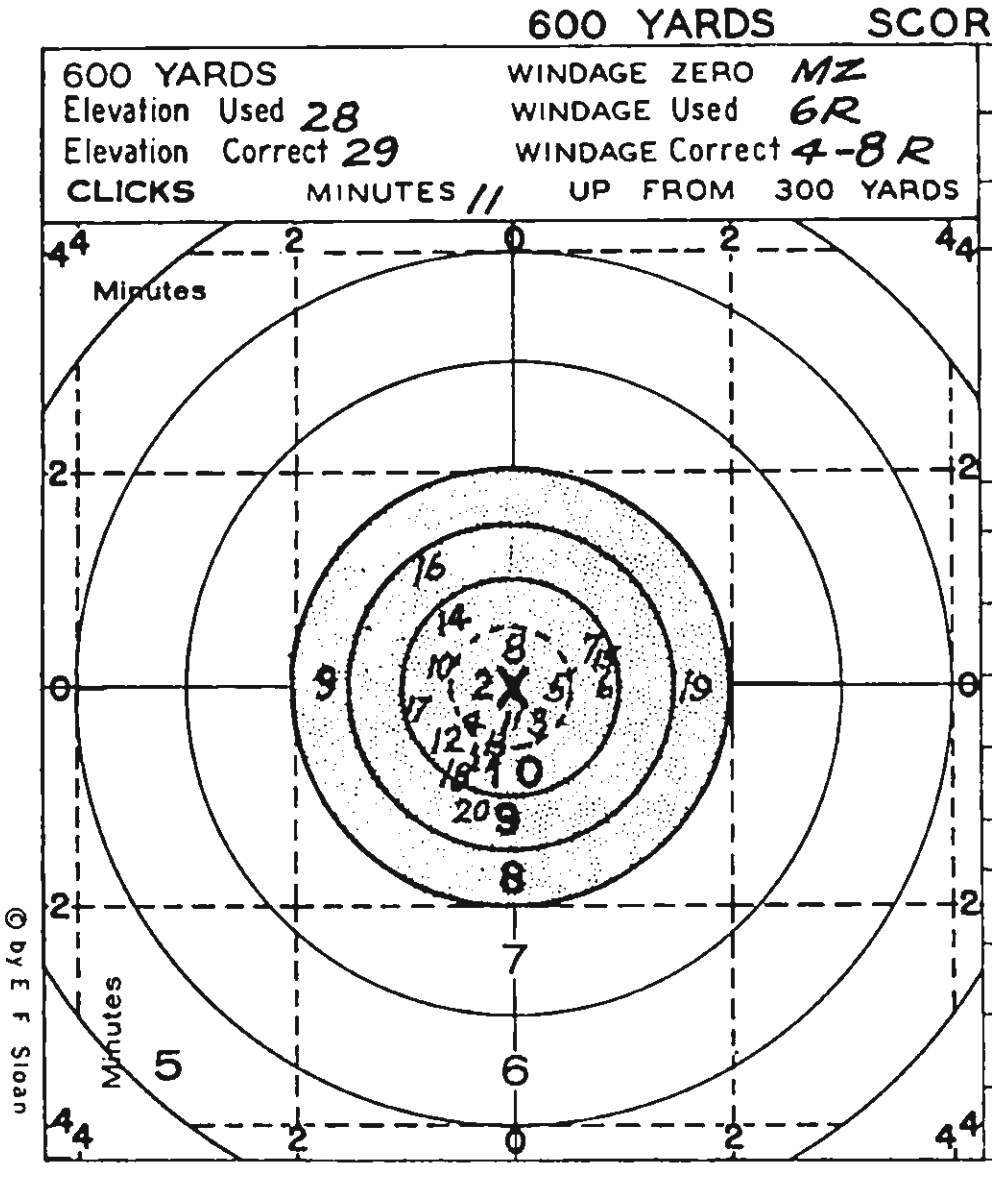
200 YARDS
Elevation Used 16
Elevation Correct 16
WINDAGE ZERO MZ
WINDAGE Used 0
WINDAGE Correct 0

PLACE VAILE DATE 25 Aug 66 HOUR 0700
RIFLE NO 6342 AMMUNITION LC 12065 TEMP 75°
TARGET NO 11 MIRAGE MEDIUM LIGHT BRIGHT
LIGHT (DIRECTION) SIGHT (PICTURE) WIND (MPH) NONE
WIND NONE
REMARKS
IR FOR LIGHT

NO	SS	SS	1	2	3	4	5	6	7	8	9	10	SCORE
ELEV			16										
W G			0		IR								
CALL	○	○	·	·	·	·	·	·	·	·	·	·	
VALUE			10	9	X	10	9	X	9	10	10	X	
NO	SS	SS	11	12	13	14	15	16	17	18	19	20	SCORE
ELEV													
W.G.													
CALL	○	○	·	·	·	·	·	·	·	·	○	·	
VALUE			X	10	10	9	9	X	9	10	8	10	192 5X

Figure 46. SLOW FIRE SCORESHEET (200 YARDS)

600 YARDS SCORE SHEET 'B' TARGET



600 YARDS
Elevation Used 28
Elevation Correct 29
CLICKS MINUTES 11 UP FROM 300 YARDS
WINDAGE ZERO MZ
WINDAGE Used 6R
WINDAGE Correct 4-8 R

PLACE VAILE DATE 25 AUG 66 HOUR 1130
RIFLE NO 6342 AMMUNITION LC 12065 TEMP 82°
TARGET NO 11 MIRAGE MEDIUM LIGHT BRIGHT
LIGHT (DIRECTION) SIGHT (PICTURE) WIND (MPH) 15
WIND STEADY
REMARKS
WANTED TO SIT LOW

NO	SS	SS	1	2	3	4	5	6	7	8	9	10	SCORE
ELEV			28				29						
W G.			6R						5R	4R		6R	
CALL	○	○	·	·	·	·	·	·	·	·	·	·	
VALUE			10	X	X	X	X	10	10	X	8	10	
NO	SS	SS	11	12	13	14	15	16	17	18	19	20	SCORE
ELEV													
W.G.				5R	6R		7R	6R		7R	8R	6R	
CALL	○	○	·	·	·	·	·	·	·	·	·	·	
VALUE			X	10	X	10	10	9	10	10	8	9	194- 7X

Figure 47. SLOW FIRE SCORESHEET (600 YARDS)

200 AND 300 YARDS R.F. SCORE SHEET. "A" TARGET

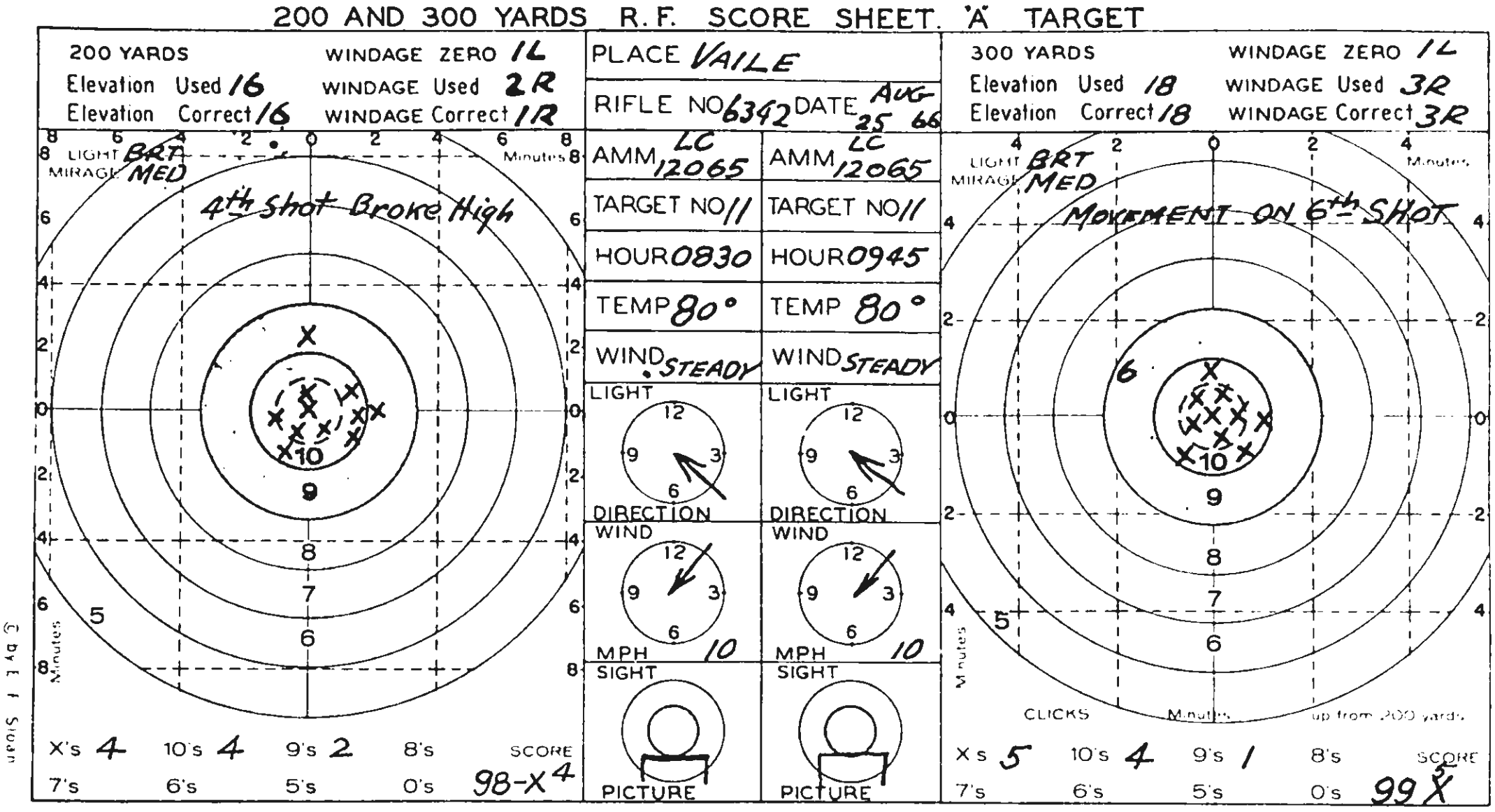
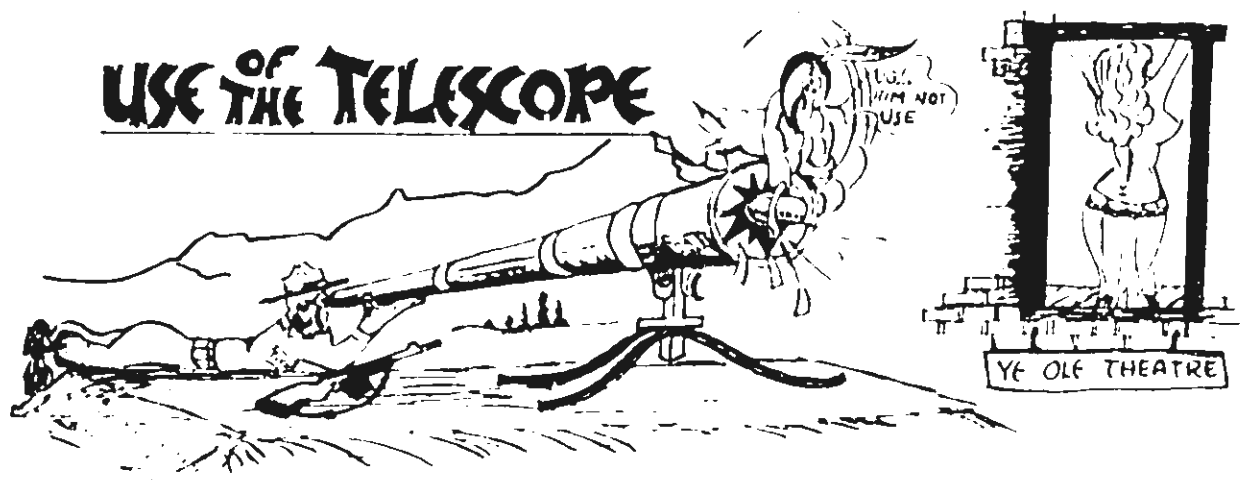


Figure 48. RAPID FIRE SCORESHEET (200 & 300 YARDS)



8. Use of the Spotting Telescope.

The telescope is very important to the individual in determining sight adjustments by reading the mirage (wind condition) or for observing the locations of hits to accurately plot them in the scorebook. If used properly, and used in conjunction with the scorebook, the trained shooter should be capable of keeping his hits in the center of the Bull's-eye. Our concern in this segment is to explain the individual use of the telescope. For a discussion of the team coaches use of the telescope, refer to Technique of Team Coaching. Depending on the range, the use of the telescope varies. In the following discussion we will be concerned with its uses in firing the National Match Course and 1000 yards.

a. At 200 yards in the standing position, the telescope is used to check the location of hits on the target to aid the shooter in accurately plotting the hits in the scorebook. Its use in

this instance requires an extension on the telescope that will raise it to a position which will allow the shooter to observe the target while sitting on his stool. The scope should be positioned near the left foot of the shooter in such a manner that it does not interfere with his position. (Figure 49) The telescope should be focused clearly on the target.

b. At 200 yards in the sitting position, the telescope is used primarily for the plotting of hits. While it may be used to check mirage, experience has indicated that the wind seldom affects the bullet at 200 yards. This would not be the case for a strong wind. Some shooters are also able to observe the first five rounds of a rapid fire string to check their location. While this technique puts much in the shooters favor, it should not be practiced by the inexperienced shooter. Its use in this manner is recommended when firing a new rifle, a rifle that has been repaired, or if firing on a new range where no opportunity has been allowed to recheck or zero the rifle. It requires an extension which would raise it to eye level. The telescope should be positioned near the left leg in such a manner that the shooter can look through it without shifting his position (Figure 50). In all positions, the telescope should not touch the shooter as this would be grounds for disqualification.

Figure 49. USE OF THE SCOPE - STANDING

Figure 50. USE OF THE SCOPE - SITTING

c. In utilizing the telescope to read the mirage, the following adjustment technique is used. As we are concerned with the wind between the shooter and the target, the focus of the

telescope should be short of the target. It is recommended that at 600 yards the focus be on the 300 yard line. Care must be taken not to focus beyond the target as this will sometimes produce a "reverse reading" of the mirage. When the intermediate focus is attained, adjust the lay of the telescope on the target. If using the scope for observing the initial shots of the rapid fire strings at 200 and 300 yards, it will be necessary, after reading the mirage to check the wind conditions, to readjust the focus on the face of the target to facilitate observing the shot holes.

d. At 300 yards, the telescope is used for reading the mirage, checking the location of the initial shots, and for the plotting of hits. In the prone position, the telescope should be positioned near the left elbow in such a manner that the shooter can look through it without shifting his position. (Figure 51) For other techniques applicable to the use of the telescope at 300 yards refer to paragraph (c) above.

e. At 600 yards, the telescope is focused as mentioned in paragraph (c) above. It is positioned in the same manner as mentioned for 300 yards. Before firing, the shooter should check the mirage and make the necessary sight adjustment to compensate for any wind. Immediately after firing and before plotting the call in the scorebook, he again checks the mirage. If any changes are noted, they must be considered in relating the strike of the bullet to the call. After making necessary entries in the scorebook, the shooter again looks through the telescope to observe the location of the hit and to read the mirage prior to firing the next shot. The above procedures should be used for each shot.

f. At the 1000 yard line we use the telescope in the same manner as we do at 600 yards. The focus of the telescope should be at midrange for reading the mirage.

At all ranges the telescope is used to check the condition of the target during the preparation period to insure proper pasting and condition.

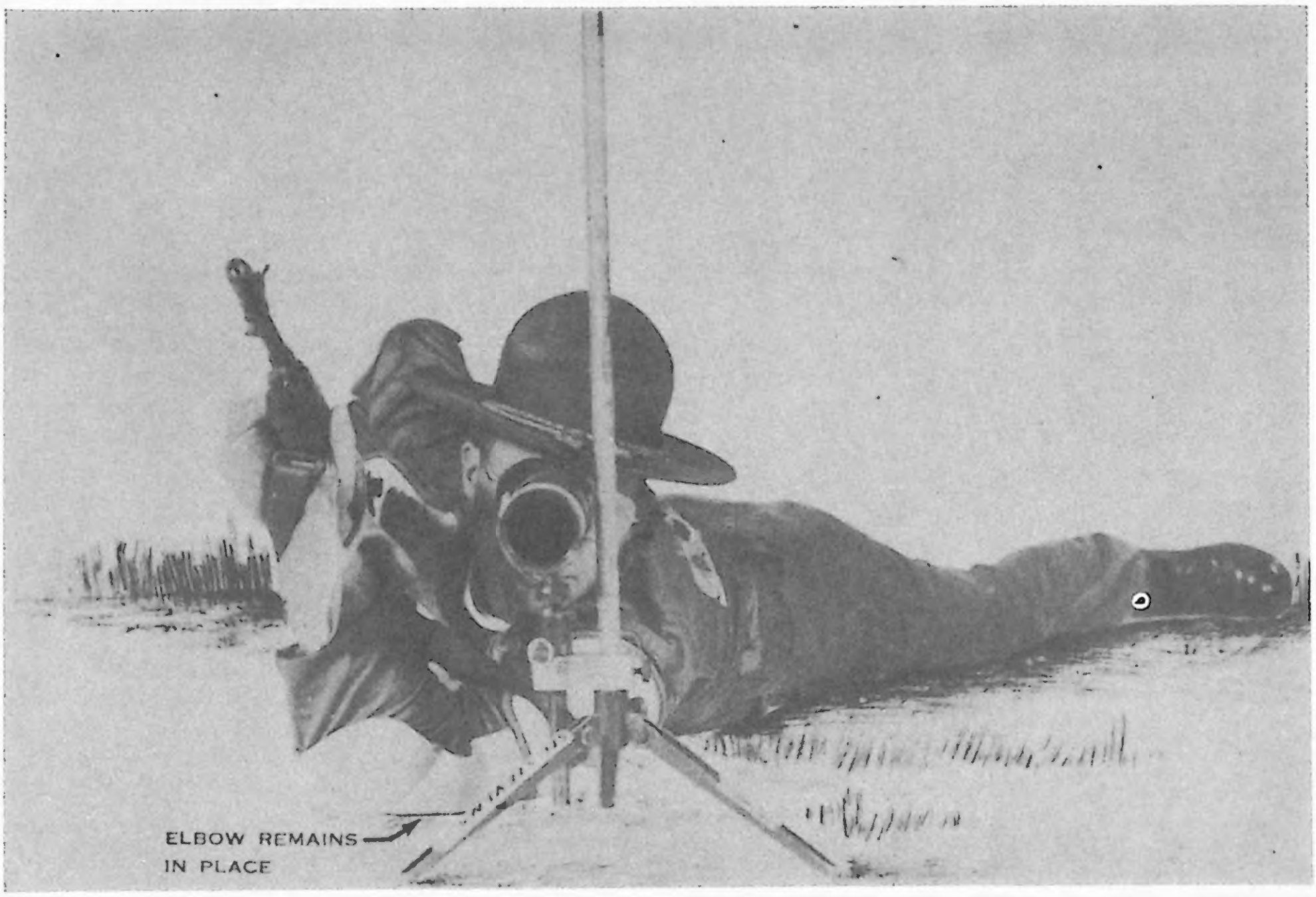


Figure 51. USE OF THE SCOPE - PRONE

G. Detection and Correction of Errors.

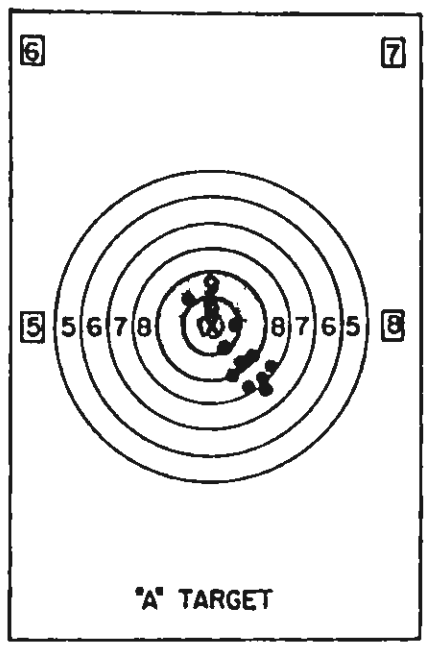
Having progressed through the fundamentals of marksmanship, or during the process of teaching the fundamentals, it will be quite evident that errors are the plague of any shooter. When an error is detected it must be corrected. Sometimes however, errors are not quite so evident, and this is when a good coach will be of value. The process of detection and correction of errors is extremely important. Knowing what to look for, through observation of the shooter or through the analysis of shot groups, will assist the coach in this process.

Most errors may be detected through target analysis but probably the most difficult type of errors to detect are caused by improper trigger control, especially with the experienced shooter. However, if errors are suspected in trigger control they can easily be detected by utilizing the ball and dummy method of firing.

1. Target Analysis.

a. Target or shot group analysis is an important step in the process of detection and correction of errors. As the target appears, critique and correlate errors in performance to loose groups, shape of groups, and size of groups. It is realized that with some shooters, especially the experienced, this cannot be done too readily. However, you must be able to discuss the probable error or errors. Seldom do we find a bad shot group that is caused by only one error. It should also be remembered that in the initial analysis of groups we must take into consideration the capabilities of the shooter as well as those of the weapon and ammunition.

b. Shown below are typical shot groups which are the result of certain probable errors.

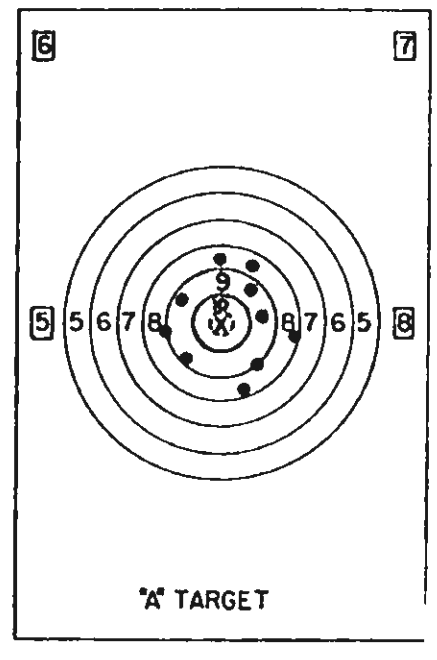


(1) Group Strung Low and Right

Figure 52.

Probable Errors:

(a) Prone - left elbow not under the rifle, loose sling, or the right elbow slipping.
(b) Sitting - right elbow slipping, or the left elbow slipping down the left leg.
(c) May be caused by improper trigger control in both positions.

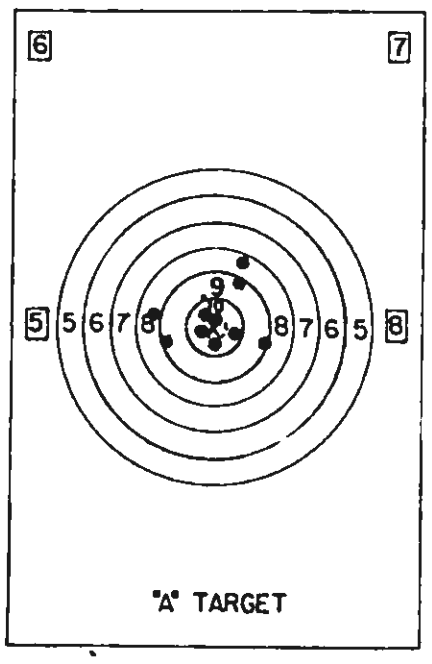


(2) Group Scattered About Bull's-eye

Figure 53.

Probable Errors:

Incorrect sight alignment or sight picture, eye focused on the Bull's-eye, changing the spot weld, or a loose position.



(3) Group with Several Erratic Flyers

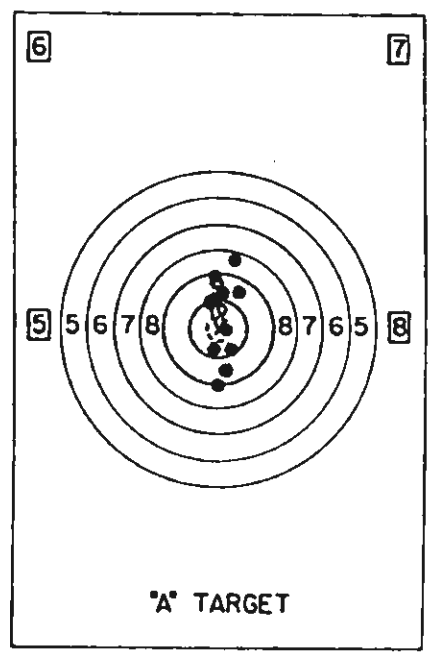
Figure 54.

Probable Errors:

(a) Flinching - shots may be anywhere.

(b) Bucking - shots from seven to ten o'clock.

(c) Jerking - shots may be anywhere.

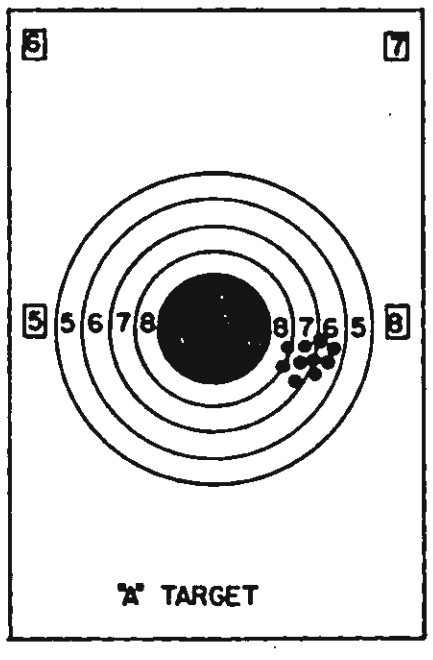


(4) Group Strung Up and Down Through Bull's-eye

Figure 55.

Probable Errors:

Breathing while firing, improper vertical alignment of sights or changing the spot weld.

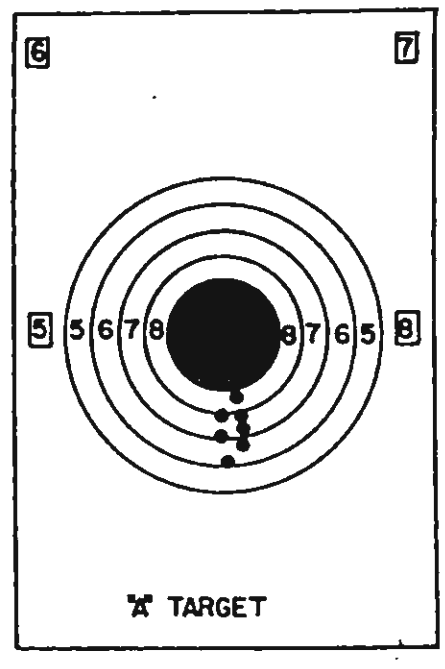


(5) Compact Group Out of Bull's-eye

Figure 56.

Probable Errors:

Incorrect zero, failure to compensate for wind, position and natural point of aim incorrect.

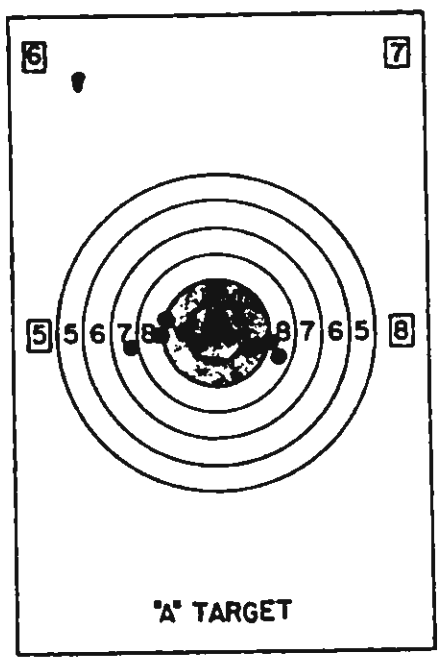


(6) Group From Center to Bottom of Frame

Figure 57.

Probable Errors:

Loose rear sight, sling sliding down arm, too low a position, change in position of rifle in shoulder after reload.



(7) Horizontal Group

Figure 58.

Probable Errors:

Incorrect sight alignment, canting, loose front sight, loose position, muscling rifle.

2. Ball and Dummy.

As mentioned earlier the most difficult type of errors to detect are those caused by improper trigger control, especially with the experienced shooter. When it is suspected or observed that a shooter's poor firing is caused by improper trigger control, as manifested by flinching, bucking, or jerking the trigger, the coach should utilize the ball and dummy method.

a. The main points to consider in determining the number of dummy rounds to use on a shooter or the frequency of the exercise are as follows:

(1) The shooter's experience and needs.

(2) For the experienced shooter it may be sufficient to prove to him that he is flinching, bucking or jerking the trigger.

(3) For the new shooter it may be necessary to repeat the exercise until he produces a few, then more and more good shots.

(4) Do not use the exercise unnecessarily.

(5) Do not use the exercise if errors in aiming or position are manifested.

b. Some suggested exercises are listed below:

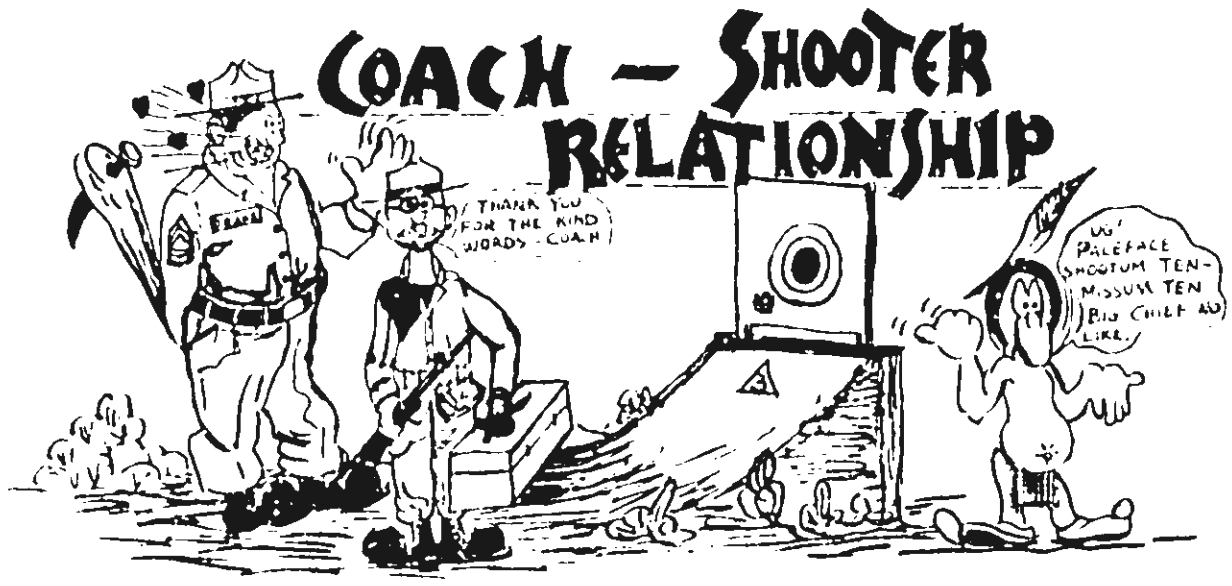
(1) Ball and Dummy in the standing position.

(2) Ball and Dummy in rapid fire. During our discussion of rapid fire, three drills were discussed. The first shot, reloading, and the ten shot drill. These drills are excellent to utilize with the ball and dummy method.

(3) Blank target firing exercises will be beneficial since they remove the impulse to jerk the trigger when the perfect sight picture is attained.

(4) Any combination of the above with the coach applying pressure on the trigger to show the shooter that trigger control is the most important fundamental of marksmanship.

Ball and Dummy exercises are considered to be an effective training technique to increase the shooter's power of concentration and to assist him in overcoming normal reactions to the explosion and recoil.



A. Coach - Shooter Relationship.

Teaching and coaching in marksmanship must be logical and methodical. In order to receive the necessary response and results from the average shooter, the coach must be able to analyze mistakes, dispel false notions, be sympathetic, encouraging, and honest. As each shooter is an individual, the coach must be able to determine the characteristics that affect him. Knowing these, he may apply his coaching psychology to establish a satisfactory relationship. The initial contact between a coach and shooter will be the training period. During this time the coach will call upon his experience to impart knowledge and correct bad firing habits. This training period is of as much benefit to the coach as it is to the shooter. As the training progresses, so does the mutual confidence that is so necessary to their relationship.

There are many characteristics and attributes of a good coach which contribute to the success of a firing team. The most important, however, is the coaches ability to establish the proper "Coach - Shooter" relationship. This is nothing more than a mutual understanding which creates conditions that allow the coach and the shooter to produce the highest scores possible. If there is a conflict in personalities between the coach and shooter, the overall team is adversely affected. This has been and will continue to be a problem for all coaches.

B. Attributes of a Coach.

The following attributes are by no means the key to success for establishing the coach-shooter relationship. If a shooter cannot benefit from training, correction, or practice, all these points have little value. The psychology and techniques of coaching are still a personal thing and the developing of the coach-shooter relationship can only be the product of experience, practice, and the diligent application of these attributes.

1. The coach must be an experienced marksman. The coach's previous experience as a shooter will enable him to understand the problems that his shooters have.

2. He must approach his team assignment with a cheerful and understanding attitude.

3. He should insist on proper application of fundamentals.

4. He should be thoroughly grounded in the principles of detection and correction of errors.

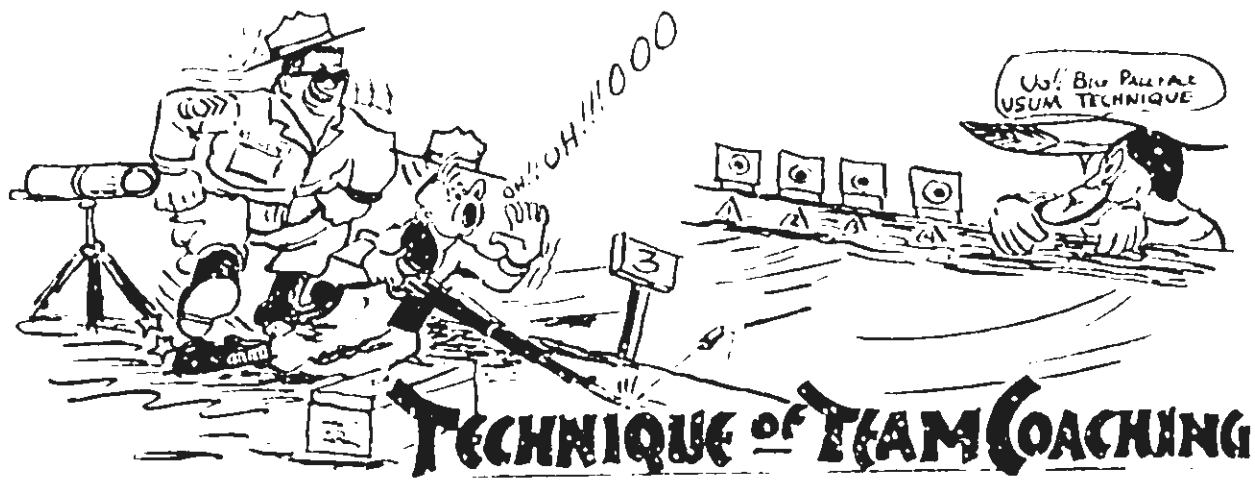
5. He must have the ability to read the wind and mirage consistantly from day to day. This is an important aspect in establishing zeros. This ability increases with practice and experience.

6. He must promote team spirit and the will to win.

7. He must apply the correct coaching techniques.

8. He must insist on correct, prompt execution of instructions and commands.

9. He must never overlook the fact that each shooter is an individual with a personality of his own.



C. Technique of Team Coaching and Conduct of the Match.

1. Techniques of Coaching.

The technique employed by the team coach during the conduct of team firing is the single factor responsible for the attainment of winning scores. The coach's skill, patience, and enthusiasm are all directed toward this one goal, and he must acquire the best possible performance from his shooters. But how does he accomplish this?

After a period of training on the principles and fundamentals of competitive marksmanship, the coach ends up with the trained shooter. He is then faced with the task of selecting his firing team. He accomplishes this based on his system of evaluation and is now ready to train his team in preparation for competition.

The success of his team is based on many factors; however, the selected team generally consists of the best shooters, guided by the best coach, consistant with the correct application of firing and coaching techniques. Competitive teams are generally equal as pertains to talent and the winning team is the one that makes the fewest mistakes. The coach's job is to insure the minimum of mistakes. He accomplishes this by the application of his coaching technique. The technique can best be described as "a process of detection and correction of errors insuring the proper application of marksmanship fundamentals and the guidance of his shooters with commands and information to produce winning scores." The techniques outlined herein are used throughout the Army and were developed as a result of years of experience and evaluation.

Throughout the team training phase and during the competitive matches, it is important to remember that there is no substitute for the coach-shooter relationship. A coach who has gained the respect and confidence of his shooters; who knows their capabilities and characteristics; and has the ability to evaluate their performance while employing the correct coaching techniques will produce winning scores.

2. Conduct of the Match.

In the discussion of the conduct of the match the National Trophy Rifle Team organization will be used as a guide. This team is composed of six shooters, two alternates, a non-firing coach, and a team captain. Keep in mind however, that the techniques discussed are equally applicable to any team organization or course of fire for competitive firing or training with the service rifle.

a. One of the first tasks of the coach is to group the six shooters into pairs or firing partners. This is an important aspect of team firing. He considers the shooters sight picture, personal characteristics, performance, etc. For example; two shooters with the same physical characteristics should be paired together providing they fire at approximately the same speed and are mutually compatible; just as two shooters who use the same sight picture may be paired together.

b. The coach must consider all of the many characteristics of his shooters and as a result of the pairing, he expects the maximum performance and resultant scores under any given condition. These many characteristics are brought to light as a result of training, evaluation, and maintenance of the "Coach's Plotting Sheet" (Figure 64).

c. Before continuing with the discussion of coaching techniques we should review the "Coach's Performance Check list" (Figure 65). This check list is a step by step procedure for the coach to follow without a detailed discussion of technique.

d. Being familiar with the Coach's Performance Check list we can now relate the check list to the firing of the National Match Team Course; also examining Coaching Techniques and duties of the Team Captain.

(1) First stage of the National Match Course.

(a) Standing or offhand firing is possibly the most difficult of all firing stages, and pair rather than individual firing is normally required. During this stage, the coach must rely basically on a shooter's ability and conditioning, in addition to the correctness of his calls. He will advise and encourage the shooters while analyzing their "Hits" vs "Calls". Through this analysis he keeps their groups as close to the center of the bull's-eye as possible.

(b) Careful pairing of shooters is particularly important. While considering the previous pairing requirements which apply to all pairing, the coach wants a strong, fast firing pair on the line to start the match, with the most experienced and reliable shooter on the right. These are pace setters, and their success has a definite psychological advantage. The last, or anchor, pair should be capable of performing well under extreme pressure of time or score.

RANGE COMMAND: TEAM CAPTAINS AND COACHES YOU MAY MOVE YOUR EQUIPMENT TO THE FIRING LINE.

NOTE: Targets are exposed for inspection.

(c) At this time the team captain and coach move their equipment to the firing line and check their target for proper facing and appearance.

RANGE COMMAND: COACHES MOVE YOUR FIRST PAIR TO THE FIRING LINE FOR THE FIRST STAGE OF THE NATIONAL TROPHY TEAM MATCH. PAIRS WILL (SPLIT THE STAKE) (FIRE TO THE RIGHT OF THE NUMBERED STAKE). YOUR THREE MINUTE PREPARATION PERIOD STARTS NOW. (During this time the targets are exposed). AMMUNITION HANDLERS PASS OUT 60 ROUNDS TO EACH TEAM CAPTAIN.

(d) The three minute preparation period is timed by the coach. As the pair is moved to the firing line, the coach will assist the shooters in finding a suitable level piece of ground. When the shooters are in position, the coach accomplishes the following, starting with the shooter on the right; confirm the sight setting and observe the shooters set their sights for elevation and windage (200 SF zero); observe them as they assume the standing position; remind them of the target number; caution them on assuming a natural point of aim; and finally, have them dry fire to check trigger control and hold.

(e) During this preparation period the coach may distribute ammunition which is again checked by the shooters. Upon completion of the check of the shooters, the coach sets up the team scope between them (Figure 59). He observes the wind condition and mirage; however, their effect on the shooter and the bullet will be of little consequence unless blowing quite strong. If the wind is quite strong, the coach may correct for it, giving the shooter sufficient clicks into the wind.

(f) The team captain positions himself to the rear of the scorer where he is best able to verify the value of each shot scored and still communicate with the coach.

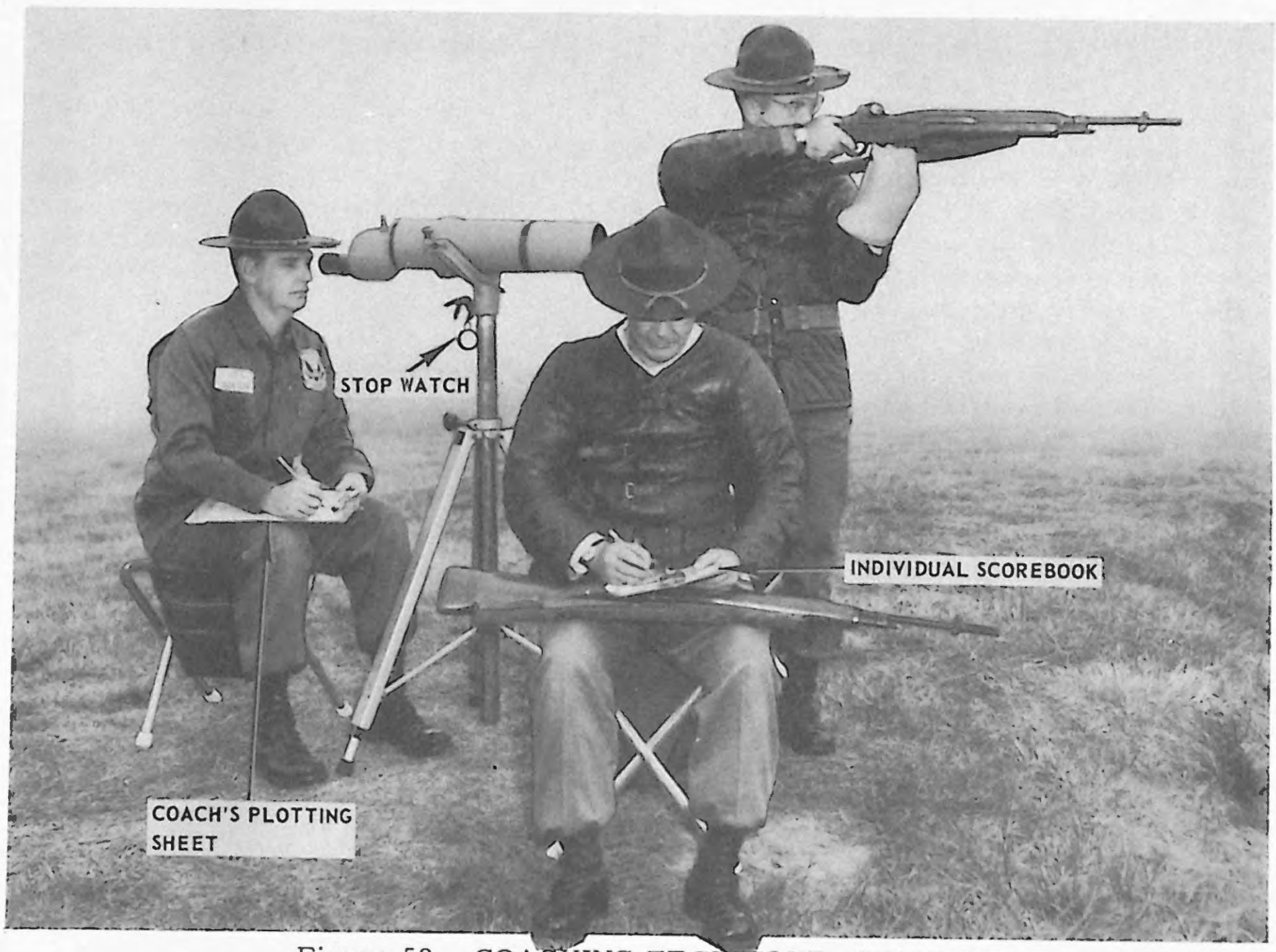


Figure 59. COACHING TECHNIQUE, STANDING

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. THIS IS THE FIRST STAGE OF THE NATIONAL TROPHY TEAM MATCH. 10 ROUNDS PER FIRING MEMBER, SLOW FIRE, STANDING POSITION. TOTAL TEAM TIME 66 MINUTES. WITH ONE ROUND LOCK AND LOAD. IS THE LINE READY? THE LINE IS READY. READY ON THE RIGHT. READY ON THE LEFT. READY ON THE FIRING LINE. YOUR TIME COMMENCES WHEN YOUR TARGETS APPEAR.

(g) As the targets appear the coach starts the stop watch to check the team time and give any necessary windage to both shooters. He reminds the shooter constantly of the target number and tells the number one shooter to fire when he is ready.

(h) After the right shooter fires, he relays his call to the coach who generally watches the shot as it hits the target. The coach should be able to immediately relate the shooter's call to the hit and if a correction is needed, he is ready to relate this to the shooter. As the target is disked, he checks the location and value, plots the hit on the plotting sheet, and gives any correction to the shooter. For example; "Jones, your hit was left of call, come right two clicks." Number two man fire." After the number two man fires, he calls a "ten" at 6 o'clock but the coach saw the man fire an eight at 6 o'clock. As the target is disked, the coach plots the shot on the plotting sheet and cautions the shooter to come up. The coach does not normally give a shooter elevation changes, this is the responsibility of the shooter. But if a shooter fails to correct, the coach may caution or even give a shooter elevation changes.

(i) Individual coaching, as indicated, may be a necessity at the start of the string of slow fire; however, once the shooters are centered and synchronized, they should fire without word as soon as the value of the last shot is given by the scorer, or unless the coach directs the shooters to stop. It is important to remember that if the target is not pulled immediately upon being hit, the coach should call for a mark; after disking, the target cannot be fired on until the value is relayed by the scorer. If the value as recorded is incorrect the team captain must initiate a challenge.

(j) This firing procedure is continued for each pair. The changing of pairs should be completed quickly and orderly. As a pair is about to complete their string, the team captain signals to the assembly area for the next pair, indicating the number of rounds remaining to be fired. This signal is normally given when each shooter has two shots remaining. The next pair will proceed to the ready line completely prepared except for the zero sight setting. As one pair completes their string, they check with the coach as to their elevation, windage, and score. Their weapons will be cleared by the block officer or coach. As the pair leave the line, the next pair will select their positions on the line, place their equipment, and wait for instructions from the coach.

(k) Frequently during the slow fire phase, the coach checks the time to insure that sufficient time remains without pressuring the shooters unnecessarily.

(l) It was previously mentioned that during firing, the coach will advise and encourage the shooters while analyzing their "Calls" vs "Hits". How well a shooter does offhand on any particular day is a measure of his conditioning, both mental and physical. There are times when a shooter may stand to fire and for some reason cannot get off a round. This may be caused by pressure, wind, or many other factors. If the condition arises where the shooter cannot get a round off in approximately 10 seconds, the coach should command the shooter to sit down, unload, relax, breath deeply, and start over again. He may have the shooter dry fire or execute any combination of acts to calm him.

(m) A technique for the coach to remember in using the scope is to watch the shooter until he fires, then shift the eye focus to the target to pick up the hit before the target is pulled. The performance of the shooter is of most importance during the 200 yard slow fire stage. To avoid mistakes, observe the shooter while he makes sight changes to insure correct manipulation of the sights and frequently remind the shooter of the target number.

Upon expiration of the allotted time the targets are pulled and the Range Officer commands:

RANGE COMMAND: CEASE FIRE. LOCK AND CLEAR ALL WEAPONS. IS THE LINE CLEAR? THE LINE IS CLEAR. IS THERE ADDITIONAL TIME REQUIRED. NO ADDITIONAL TIME IS REQUIRED.

(n) At the completion of firing the line will be policed by the shooters as the team captain checks the score and signs or initials the scorecard.

(2) Second and Third stages of the National Match Course.

(a) The rapid fire stages, standing to sitting or kneeling (200 yards, 50 seconds) and standing to prone (300 yards, 60 seconds), are a real test of the shooter's ability; and when fired under a good coach will result in the highest attainable score. Here a coach can direct his shooters with sight changes in elevation and windage, favors (Figure 62), and with information to keep their groups in the center.

(b) The coach will fire his team individually in any sequence he desires. Usually he will start with an experienced shooter who best knows his zero. This will help the coach in determining subsequent windage for the following relays. The last shooter should be experienced and capable of performing well under pressure.

RANGE COMMANDS: RELAY ONE TO THE READY LINE FOR STAGE TWO OF THE NATIONAL TROPHY TEAM MATCH. AMMUNITION HANDLERS PASS OUT 60 ROUNDS TO EACH TEAM CAPTAIN.

(c) At this time the shooter moves to the ready line, adjusts his sling, checks his equipment, and studies his scorebook. The team captain should move to the Ready Line, obtain the shooter's magazine, then return to the firing line and load them.

RANGE COMMAND: RELAY ONE TO THE FIRING LINE FOR STAGE TWO OF THE NATIONAL TROPHY TEAM MATCH. YOUR THREE MINUTE PREPARATION PERIOD STARTS NOW. (During this time the targets are exposed)

(d) As the shooter moves onto the firing line he will acquire his loaded magazines from the team captain.

(e) The preparation period and actions of the coach are the same as in the slow fire stage with the following additional requirements. The position differs and the coach may assist the shooter in the check of the position. When the shooter has assumed his position, the coach may strike the handle of the operating rod to simulate recoil and cock the rifle. This is accomplished in cadence and allows the shooter to dry fire to check position balance, natural point of aim, cadence, and trigger control. He may also have the shooter rise and reassume his position to check markings and return to natural point of aim.

(f) After checking the shooter, the coach positions the team scope. It should be positioned as close to the shooter as possible without interfering with, or touching the shooter

and with the barrel of the scope pointing directly over the axis of the rifle barrel to the target. (Figures 60 and 61.) This positioning allows the coach to see the trace or shock wave of the bullet to the target. The focus of the scope is on the target for both rapid fire stages. With the scope focused, the coach checks the target condition and the mirage. As previously mentioned, the wind or mirage must be quite strong at 200 yards to affect the bullet. At 300 yards the mirage must be checked closely and the initial windage must be accurate. The primary use of the scope in rapid fire is to see the shots hit the target, or if the holes are not visible, to see the shock wave of the bullet as it moves through the air to the target. In this manner the coach can move the shooters shots or group in any direction with the use of simple voice commands. If the scope is not positioned correctly as stated, the coach will not be seeing the true path or trace of the bullet. It is also recommended that the scope be positioned at the lowest possible level above the barrel of the rifle. The coach's position behind the scope is important and the following is recommended. The coach should kneel at the rear of the scope and be ready to shift forward to give the shooter commands. In any case the coach must be able to quickly leave the scope and move forward and observe the shooter when necessary.

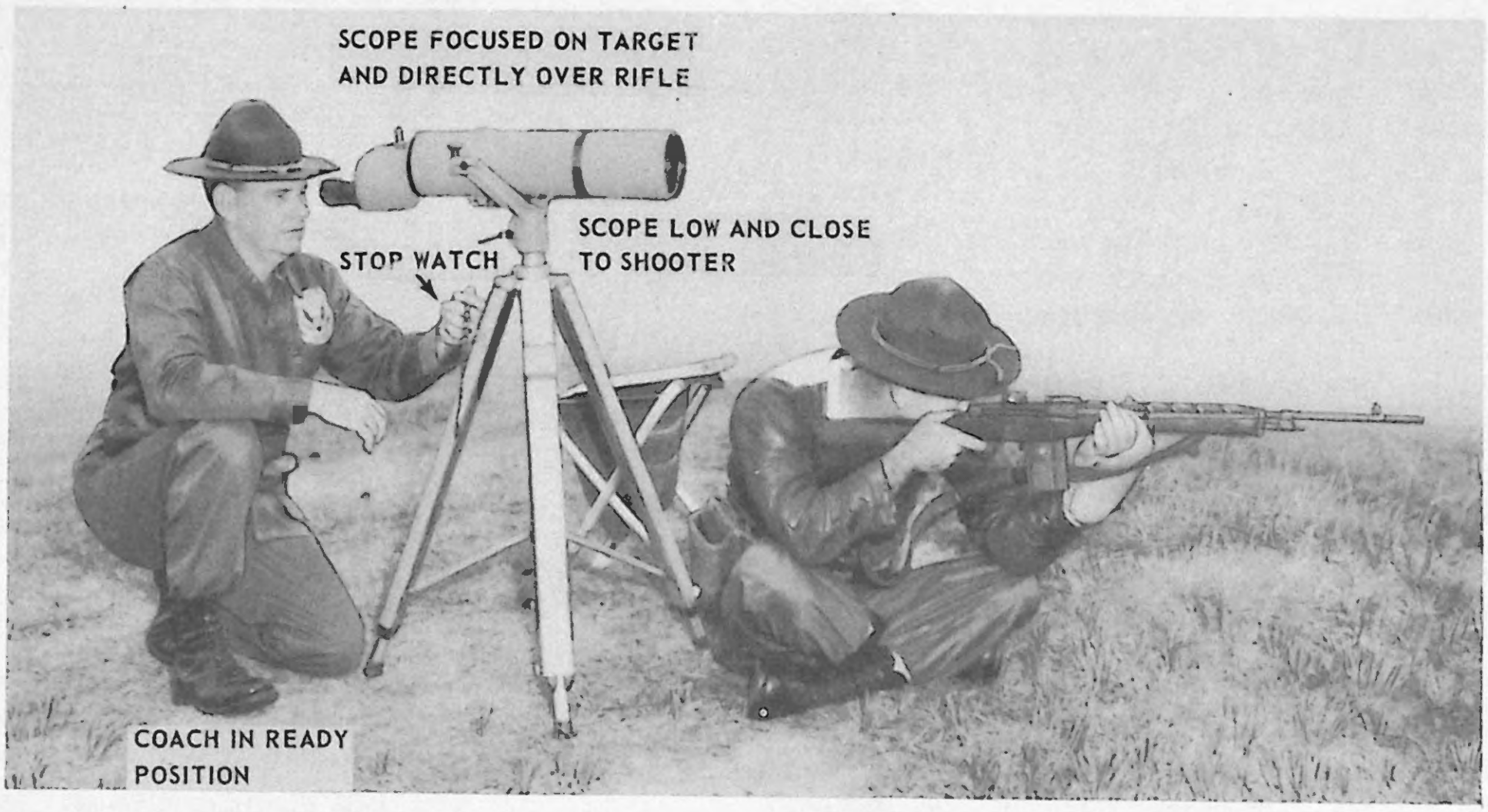


Figure 60. COACHING TECHNIQUE, SITTING RAPID FIRE.

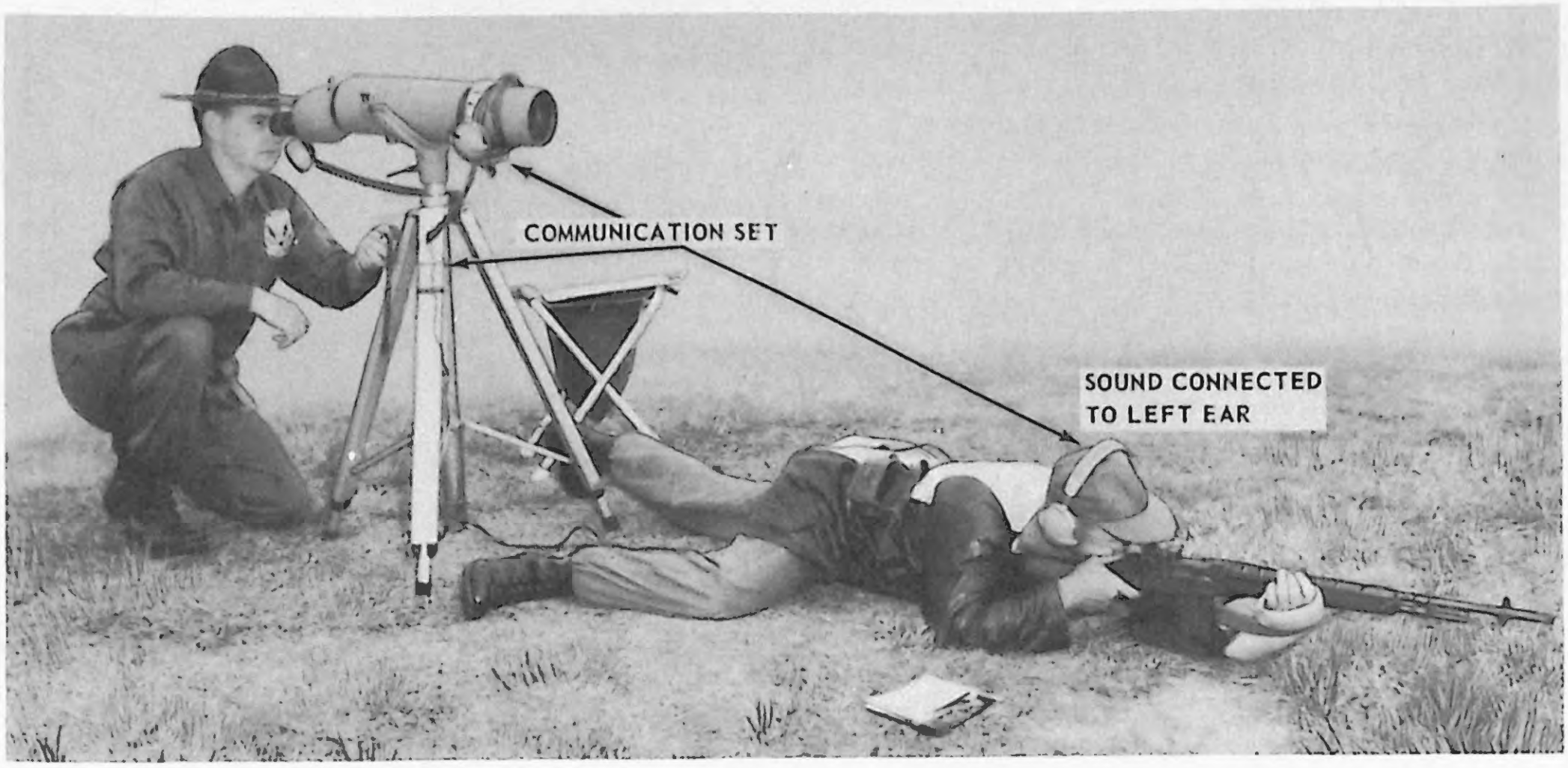


Figure 61. COACHING TECHNIQUE, PRONE RAPID FIRE.

When the preparation period ends the targets are pulled and the Range Officer commands:

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. THIS IS THE SECOND (THIRD) STAGE OF THE NATIONAL TROPHY TEAM MATCH. TEN ROUNDS PER FIRING MEMBER, RAPID FIRE, FROM STANDING TO SITTING OR KNEELING (PRONE), 50 SECOND (60 SECOND) TIME LIMIT. SHOOTERS RISE. LOCK AND LOAD. IS THE LINE READY? THE LINE IS READY. READY ON THE RIGHT, READY ON THE LEFT, READY ON THE FIRING LINE.

(g) During the commands, the coach stands facing the shooter to insure proper application of loading, sight manipulation, and to advise the shooter if necessary. If windage is needed, the coach transmits this to the shooter at the last possible moment to eliminate a change or correction due to any late wind shift. As the target appears, the shooter assumes his position. The coach starts the stop watch, checks the position, and reminds the shooter of the target number. As the shooter starts his aiming process the coach moves to the scope to observe the initial shots.

(h) The coach must see the trace of the initial shot or the location of the hole in the target. The location of this shot is on what the coach must base his subsequent commands to his shooter. If the shot is centered, the coach calls "good" to the shooter. This is important as the shooter is mentally calling his shots. If the first shot is not centered, due possibly to an incorrect zero, additional wind, or as a result of a bad shot by the shooter, the coach must give the shooter additional commands to center the group in the black. These commands are favors. "Favor right"; "Favor left"; "Take white"; and "Hold closer". They are termed full favors and are as indicated below, using the bull's-eye and front sight (Figure 62). These favors are generally six inch favors in the direction indicated. With training and the perfection of technique

between coach and shooter, the distance will vary. Any time the coach calls for a favor, the next shot fired should be called by the coach. This is also the case after firing the 6th shot, regardless of a change. If good, the coach should call "good". If not good, give a subsequent favor, but as in slow fire, the less said the better. A shooter has much to concentrate on and should only be spoken to when necessary. After a few shots fired with a favor it may be necessary to cancel the favor. This is accomplished by telling the shooter to fire "straight away".

(i) At the completion of the first magazine the shooter relates his calls to the coach while reloading. The coach watches the shooter and upon completion of reloading, if a windage or elevation change is needed, he gives this to the shooter.

NOTE: All changes are given verbally and visably with the use of the fingers.

(j) The shooter will repeat all changes given to him by the coach. Changes are given in a positive manner and by elevation, then windage. For examples: "Up one; right two." If no change is necessary, the coach says "good". It may be necessary at times when a strong wind is blowing, and after a change, or if no change is given, to favor the shooter again. The general rule to follow, in most cases, after firing the first magazine is as follows: If a change is needed, give a sight change and never a favor. Also, watch that the shooter correctly manipulates the sights. As the shooter reassumes his position, the coach again checks the shooters position and reminds him of his target number. He then returns to the scope to observe the remaining shots. The sixth shot is important, and the coach must again give a subsequent command to the shooter. The coach must be constantly aware of the cadence and the normal time needed for firing each round, reloading, etc. While this is developed during training, a mistake or a slip in a match may cause a delay that will make the time factor extremely important. Any saved rounds are a coach's responsibility. If the shooter is firing slowly, the coach, after the third or fourth shot, should tell the shooter to "speed it up". He repeats this for subsequent shots as necessary. If, when five seconds are remaining, the shooter has more than one round to fire, the coach commands "shoot'em". The meaning of this command is: Fire your rounds, even if they don't hit the black. This is the only situation in which accuracy is sacrificed for speed. Two eights are better than a ten and a miss.

(k) Individual characteristics of the shooter are important during rapid fire. The same may be said for some weapons. The coach will become aware of these characteristics during training and should be prepared to cope with them during a match. The following examples are cited: Some shooters by virtue of position will constantly fire the first five shots of a string to the left or right, then without a change will fire the remaining five rounds well centered. Some weapons characteristically fire the first shots out of the group, however, magazines should be checked for similarity if different groups are apparent. At the completion of the string the coach checks the shooter's time. The shooter remains in position and the team captain checks the exposure time of the targets. The Range Officer will command:

RANGE COMMAND: CEASE FIRE. LOCK AND CLEAR ALL WEAPONS. ARE THERE ANY ALIBIS? (Alibi targets will be pasted and personnel re-squadded) THE TIME WAS CORRECT. IS THE LINE CLEAR? CLEAR ON THE RIGHT. CLEAR ON THE LEFT. THE FIRING LINE IS CLEAR. SHOOTERS MOVE YOUR EQUIPMENT TO THE REAR OF THE SCORER AND STAND BY TO RECEIVE YOUR SCORE.

(l) As the coach clears the shooter's weapon and the line is cleared, the shooter will move back to the team captain where he checks his sight setting. When the targets are spotted and ready for scoring, the Range Officer is informed.

RANGE COMMAND: RELAY TWO TO THE FIRING LINE FOR STAGE TWO OF THE NATIONAL TROPHY TEAM MATCH. YOUR PREPARATION PERIOD STARTS NOW.

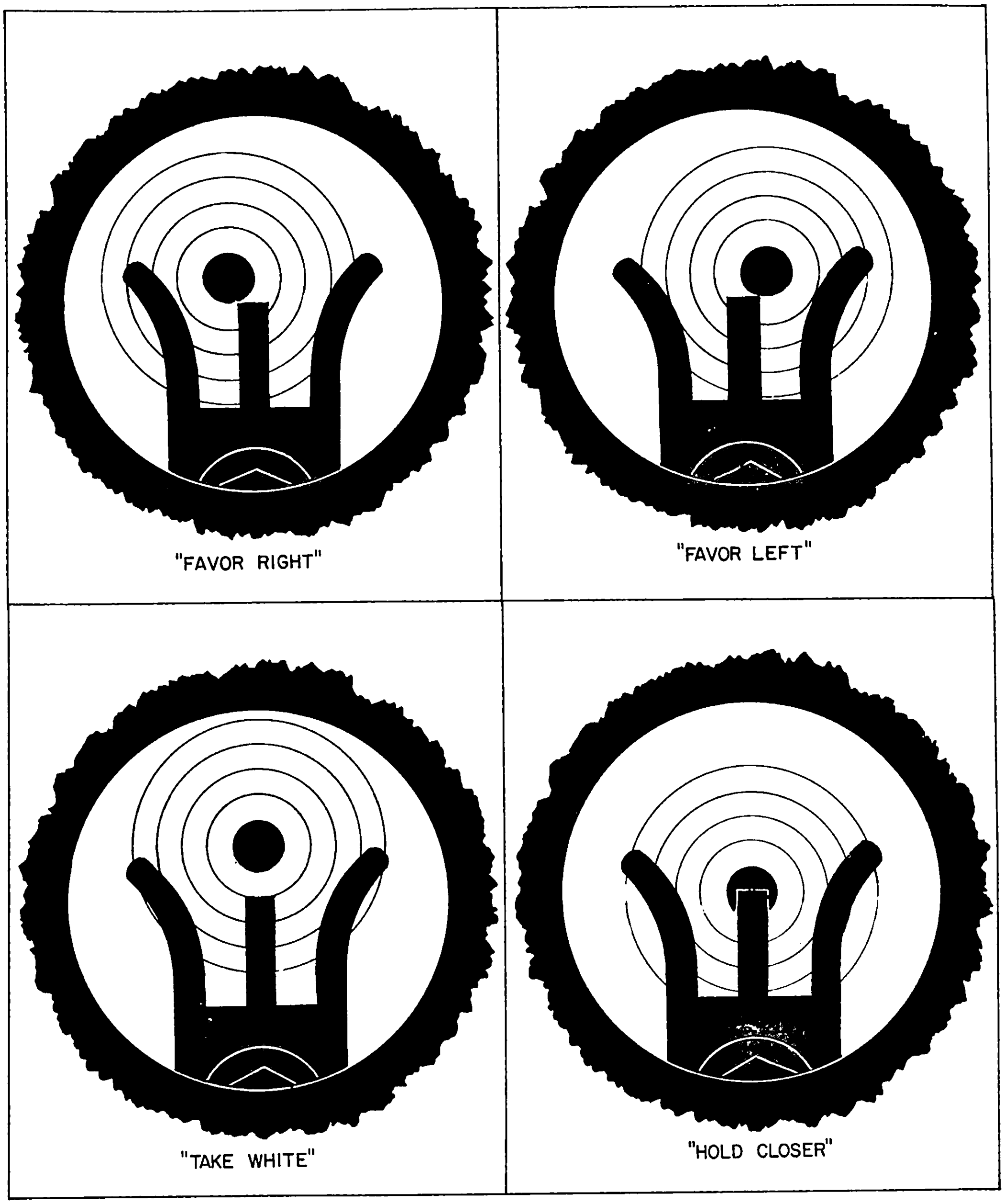


Figure 62. COACHING TEAM FAVORS

RANGE COMMAND: STAND BY, YOUR TARGETS ARE COMING UP FOR SCORING.

(m) During the scoring the team captain makes sure that the correct score is disked and recorded. The coach plots the group and discusses the string with the shooter. The team captain loads the magazines of the next shooter and the coach, using the same techniques he used for the first relay, prepares the succeeding relay for firing.

As soon as scoring is completed the Range Officer commands:

RANGE COMMAND: HAS THE SCORING BEEN COMPLETED ON THE RIGHT? ON THE LEFT? SCORING IS COMPLETED. WITH THE EXCEPTION OF TARGETS BEING CHALLENGED OR RE-DISKED, PULL AND PASTE.

NOTE: When scoring has been completed the pits are informed and the targets are pasted. As soon as all targets are pasted they will be exposed again for a few seconds for the shooters to see.

(n) When all relays are completed, the line is policed and the team captain signs or initials the scorecard.

(3) Fourth stage of the National Match Course.

(a) The 600 yard slow fire stage is difficult by virtue of the range at which fired, and of all the stages of the NMC, requires the utmost in precision firing by the shooter and mirage reading by the coach. The coach must keep abreast of the wind and sight changes made by the shooters under his direction. His use of the coach's plotting sheet becomes extremely important. Here again pair firing is normally required. The coach will analyze the shooter's "Hits" vs "Calls" to keep their groups centered in the bull's-eye.

(b) Careful pairing of the shooters is again important. A strong, fast firing pair should start this stage with the most experienced and reliable shooter on the right. The last, or anchor, pair should be capable of performing well under pressure of time and score.

RANGE COMMAND: TEAM CAPTAIN AND COACHES YOU MAY MOVE YOUR EQUIPMENT TO THE FIRING LINE.

NOTE: Targets are exposed for inspection.

(c) At this time the team captain and coach move their equipment to the firing line and check their target for proper facing and appearance.

RANGE COMMAND: COACHES MOVE YOUR FIRST PAIR TO THE FIRING LINE FOR THE FOURTH STAGE OF THE NATIONAL TROPHY TEAM MATCH. PAIRS WILL (SPLIT THE STAKE) (FIRE TO THE RIGHT OF THE NUMBERED STAKE.) YOUR THREE MINUTE PREPARATION PERIOD STARTS NOW. (During this time the targets are exposed.) AMMUNITION HANDLERS PASS OUT 120 ROUNDS TO EACH TEAM CAPTAIN.

(d) The actions during the preparation period are the same as the slow fire standing, except that the shooters bring to the firing line individual scopes, which are used for plotting purposes only.

(e) After checking the shooter, the coach again sets up his scope as close to the shooters as possible without touching or disturbing them. While there is no required placement of the scope for this stage, it is recommended that it be placed at sitting height between the shooters (Figure 63).

(f) The scope should be equipped with a 24 power eye-piece for most conditions, as this provides the magnification most coaches accept as best. Variable eye pieces are only available with the larger team scopes. The scope is initially focused on the target for a serviceability check and then clearly focused on the 300 yard line. This focus gives a mid-range mirage reading that is of most value to the coach. Regardless of the position of the scope, the coach should be as close to the shooters as possible without touching them. This gives the coach close control of the pair, and the physical proximity of the three helps to promote team spirit.

(g) As long range scoping is fatiguing, for long periods of time it is best to use the scanning technique. Staring at one place will cause fatigue in the "scoping" eye and will make it difficult to pick up changes quickly. If the coach gazes through the scope, shifts his focus from one extreme to the other in the field of view, and watches the mirage as it moves across the numbered boards and the targets, he can make a more accurate comparison of changes. Periodically he should look away from the scope to check the flags and other wind speed and direction indicators. This technique will produce the most accurate "wind doping" with the least fatigue.

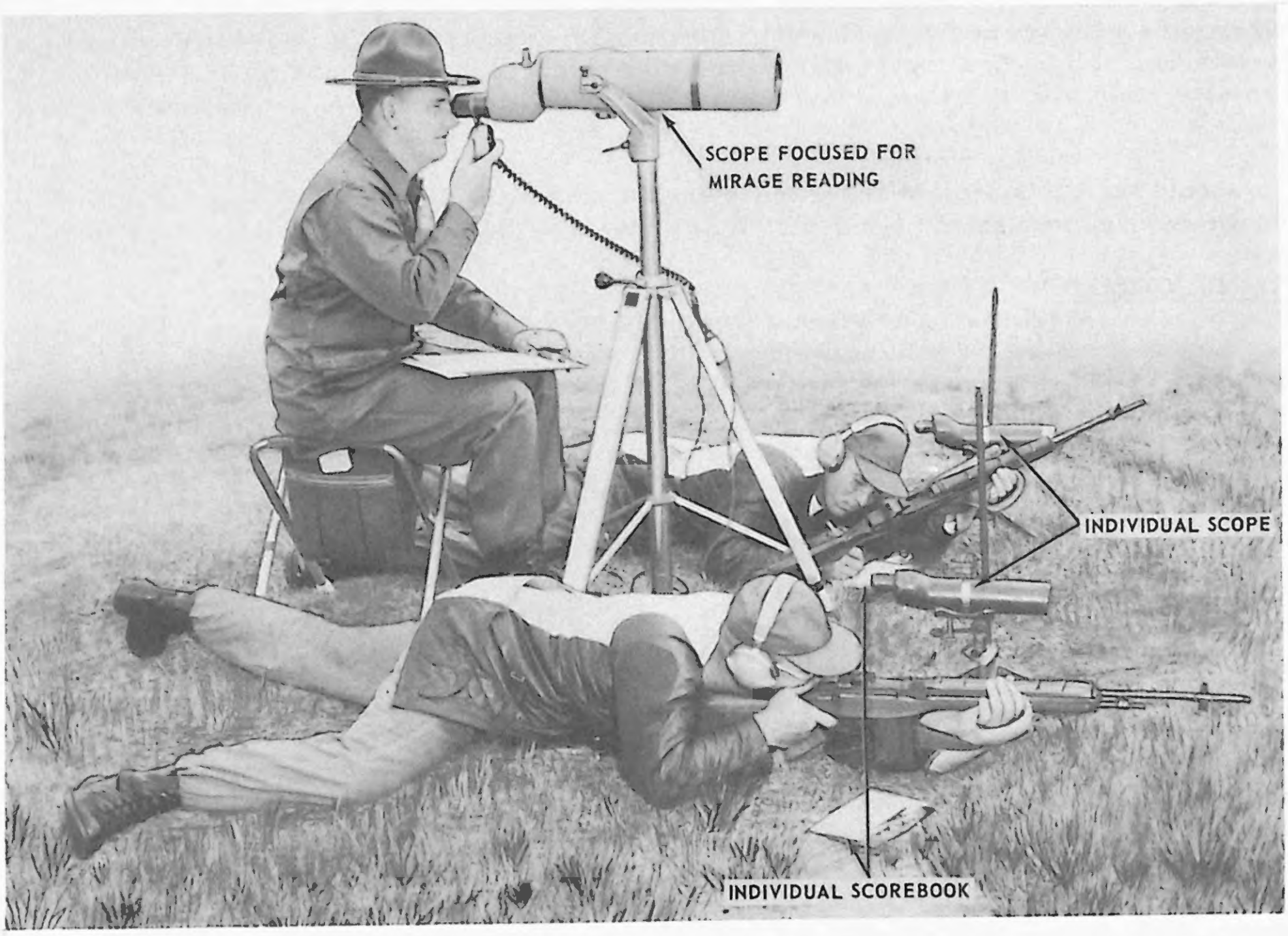


Figure 63. COACHING TECHNIQUE, PRONE-SLOW FIRE

When thepreparation period has been completed the Range Officer commands:

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. THIS IS THE FOURTH STAGE OF THE NATIONAL TROPHY TEAM MATCH. 20 ROUNDS PER FIRING MEMBER, SLOW FIRE, PRONE POSITION. TOTAL TEAM TIME 126 MINUTES. WITH ONE ROUND, LOCK AND LOAD. IS THE LINE READY? THE LINE IS READY, READY ON THE RIGHT. READY ON THE LEFT. READY ON THE FIRING LINE. YOUR TIME COMMENCES WHEN YOUR TARGETS APPEAR.

(h) After the preparation period is completed, and the firing commands given, the coach will have had sufficient time to study the conditions and give a windage adjustment to both shooters for the first shot. If the shooters are ready at the command to commence firing, he directs the right man to fire. If the shooter knows his zero and the coach correctly estimates the wind, the first shot should be in.

(i) Having fired, the shooter calls the shot, plots his shot when marked, and awaits his turn to fire his second shot. Based on the location of the hit as marked, and related to the call, the coach determines the correctness of his initial windage adjustment. If a correction is needed he will relay this to both shooters by stating, "Both guns right (or left) one click." "Number 2 man fire." As previously mentioned, if the shooters zeros are synchronized, any windage adjustment will apply to both shooters. The coach may start off using the synchronized system, but must be flexible enough to revert to individual coaching if one shooter's zero should suddenly change. Under the individual system the shooter's sight setting is based on his last shot, and last call, disregarding his partners last shot and call. For the purpose of team firing, the sooner the shooters are synchronized, the better for the team. This will speed up the firing and minimize the possibilities of firing through many wind changes. Regardless of the employment of either the individual or the synchronized technique, subsequent shots will be good if the shooters perform and the coach gives proper wind changes.

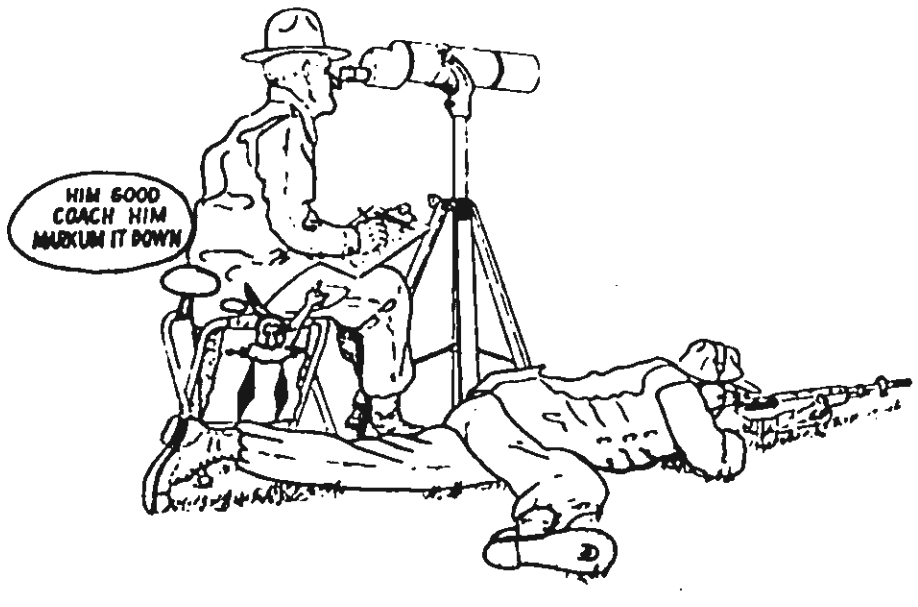
(j) Elevation changes are again the responsibility of the shooter. However, as previously mentioned, if the coach notices a group build up, either high or low, he should caution the shooter to correct for it.

(k) During this stage of slow fire it may be necessary to utilize favors. Under most conditions it is best and recommended that sight changes be used to move a group or shot. However, if firing in a fish tailing or shifting wind of such frequency that it becomes fatiguing and distracting to continually hold up the shooters and have them come out of position to make changes, it is recommended that windage favors be used (Figure 62). The most common favors used at 600 yards are negative favors. Example: "Stay off the right (left)".

(l) The time checking, change overs, sight checks, critique, checking scores, policing brass, etc., are the same as with the 200 yard slow fire stage.

e. A well trained team, that applies the fundamentals as discussed, will be a winning team.

COACH'S PLOTTING SHEET



D. Use of the Coach's Plotting Sheet.

1. The plotting sheet is to the coach what the scorebook is to the shooter. In this respect it is a record of the shooter's performance, the coach's performance, the rifle, ammunition, weather, etc. Because of its importance, the coach maintains a plotting sheet for each firer, for each match or course of fire, and uses it as a guide in critiquing the shooter in his performance. These sheets are maintained as part of the shooter's evaluation file; and whenever the shooter comes under the direction of a new coach these sheets will accompany him.

2. The plotting sheet, as mentioned above, is a measure of the coach's performance. Through remarks, plotting of hits and calls, and recording sight changes and favors, the coach can analyze his coaching ability. His ability to dope the wind and read the mirage will be evident when reviewing the horizontal spread of a group at 600 yards. The placement of the groups during rapid fire will clearly indicate, in relation to the calls and favors given, whether the coach gave the proper and necessary favors. The importance of recording the conditions that affect the shooter from day to day will be evident if properly evaluated.

3. A sample plotting sheet, as revised, is illustrated in Figure 64. This revision was accomplished to enable the coach to more completely record and evaluate the shooters performance. It also facilitates the ease of handling and recording. A block is provided for each stage of firing. The plotting sheet is divided into two sections to facilitate pair firing during slow fire. Cut the sheets in half for filing purposes.

4. The plotting sheet may be modified by the coach to meet individual requirements, however, the following is its generally accepted usage.

a. General Notes. Standard locations are adopted for recording weather conditions and other general information. In each instance, the information should be recorded in a concise and complete manner with the use of descriptive words or phrases. The recording of the light and wind direction is with the use of arrows. In using arrows, we indicate the direction from which the wind is blowing or from which direction the light is coming. For example; utilizing the clock, with the shooter at the center, and 12 o'clock being the target, a 9 o'clock wind, or a wind blowing from the left, would be recorded with the arrow passing through 9 o'clock pointing to the opposite side of the clock. The same is true for the light. For each stage of firing, a

zero or sight change block is provided. This is used to record the shooter's rifle zero, the elevation and windage used for a shot or string, and the correct zero. For the slow fire stages, additional blocks are used to record subsequent changes due to wind changes. A block is provided in each stage to record the shooter's aiming technique. A plotting or hit target is suitable for each stage of firing with an additional call target for the slow fire stages. The target number is recorded in the triangle provided, as this is the standard outline of the target number backings. The recording of the time is important, as light conditions vary depending on the time of day. For specific information as to each stage the following should be noted.

b. 200 yard, Slow Fire. This block is utilized to record the conditions and performance of the shooters for the standing or offhand firing. The call and plot targets are located side by side for ease of use. As previously mentioned, the coach requires the shooter to call each shot. When a shot is called, the coach indicates its location on the call target. When the target is marked, the exact location of the hit is plotted on the plot target. To record these hits and calls, the numbers 1 through 10 or 20 are used. Sighting shots are recorded by utilizing the prefix S to the number of sighters used. The numbers should be small so as not to clutter the target. In this manner the hits and calls can quickly be analized to determine if the shooter is calling properly, if he has his proper zero, or if the coach has properly compensated for weather conditions.

c. 200 and 300 yards Rapid Fire. These are identical blocks, and noted is the absence of any call target. However, a remarks section is labeled "calls" for the coach's use. Here he would indicate the call of the shooters first shots and any bad shots indicated at the conclusion of the string. Favors given to the shooter are recorded in the space provided. The group, as fired, is plotted utilizing small x's to indicate each hit, with the exception of the 1st, 2d, and 6th shot where numbers are used. Numbers are also used to indicate the location of any bad shot or shots out of the group.

d. 600 yard, Slow Fire. This stage is possibly the most difficult for the coach with respect to maintaining it. Yet it must be maintained accurately. Pair firing is normally required and, depending on the match, sighting shots may be authorized. Here the coach must record each shot fired in the same manner as for the 200 yards slow fire stage. An additional remarks section has been added to indicate the mirage whether light, heavy, etc. Keeping abreast of each shot under the varying conditions of the wind is difficult due to the coach's continual observation of the mirage down range. However, every effort should be made to record all sight changes and windage corrections given to the shooters. There are sufficient blocks provided to record the elevation and windage for each shot fired. It is not necessary to repeat elevation or windage entries, a recording is made only upon a change. The shooter's initial zero is placed in the block provided. If the coach has the shooter compensate for the wind, the actual number of clicks is placed in the wind column. For example; a three o'clock wind may be worth six clicks right, this is recorded as R6. The shooter's windage zero is not recorded except as mentioned above. In this manner, any subsequent changes or corrections right or left are merely added or subtracted to the initial windage adjustment. Using this system, the coach will at a glance know the correct windage adjustment the rifle is using at all times. Elevation changes are recorded from the shooters zero. Since elevation is a shooter's responsibility, he should be instructed to relay any changes made. At the completion of the string, the shooter, prior to leaving the firing line, is checked for his specific elevation and windage to verify the rifle's zero and also the windage value at the completion of the string.

NATIONAL MATCH COACH'S PLOTTING SHEET

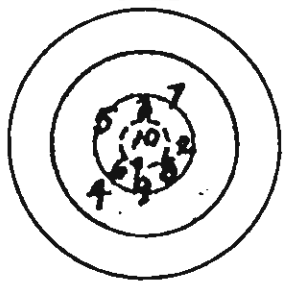
200 YARDS-SF

CALM
BRIGHT WEATHER
75° TEMP
0700 TIME
REMARKS

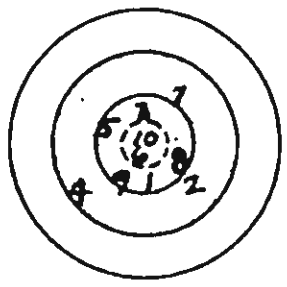
LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH
SIGHT PICTURE

TARGET NO 13

CALL



PLOT



	ZERO	USED (3)				CORR	
ELEV	15	15	16			16	97-2X
WIND	1R	0	1			1R	SCORE

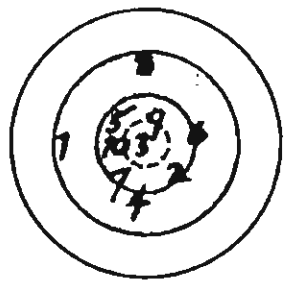
200 YARDS-SF

CALM
BRIGHT WEATHER
75° TEMP
0700 TIME
REMARKS

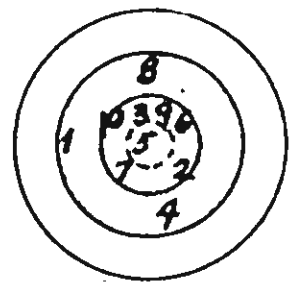
LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH
SIGHT PICTURE

TARGET NO 13

CALL



PLOT



	ZERO	USED				CORR	
ELEV	16	16				16	97-1X
WIND	1L	0				1L	SCORE

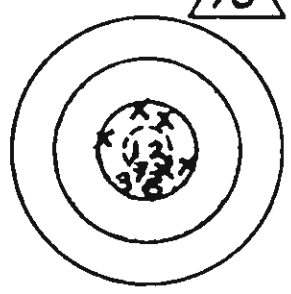
200 YARDS-RF

LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH 8
SIGHT PICTURE

STEADY
BRIGHT WEATHER
80° TEMP
0830 TIME
GOOD CALLS

FAVORS: NONE
REMARKS:

TARGET NO 13



	ZERO	USED	CORR
ELEV	16	16	16
WIND	MZ	1R	MZ

SCORE 100-4X

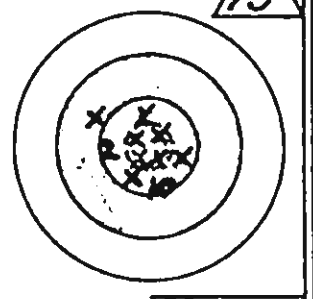
200 YARDS-RF

LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH 8
SIGHT PICTURE

STEADY
BRIGHT WEATHER
80° TEMP
0840 TIME
10th LOW CALLS

FAVORS: ER-1X
REMARKS:
ZERO
CHANGED

TARGET NO 13



	ZERO	USED	CORR
ELEV	18	18	18
WIND	2L	1-2R	1L

SCORE 99-4X

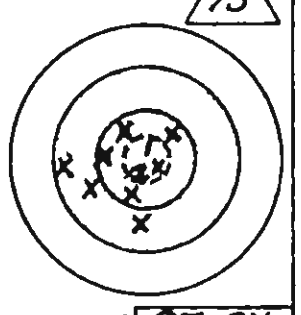
300 YARDS-RF

LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH 10 15
SIGHT PICTURE

BRIGHT WEATHER
80° TEMP
0945 TIME
6th LOW CALLS

FAVORS: FR-1X
REMARKS: WIND PICKED UP

TARGET NO 13



	ZERO	USED	CORR
ELEV	18	18	18
WIND	MZ	3-4R	MZ

SCORE 97-3X

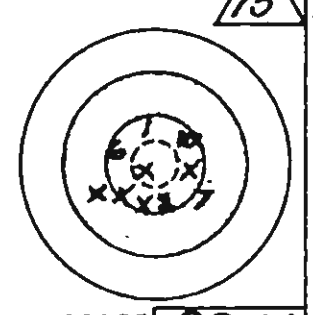
300 YARDS-RF

LIGHT 12 9 3 6 DIRECT
WIND 12 9 3 6 MPH 10 15
SIGHT PICTURE

BRIGHT WEATHER
80° TEMP
1000 TIME
LOOSE GROUP CALLS

FAVORS:
REMARKS: POSITION DIFFICULTIES

TARGET NO 13



	ZERO	USED	CORR
ELEV	20	20	20
WIND	1L	3R	1L

SCORE 98-1X

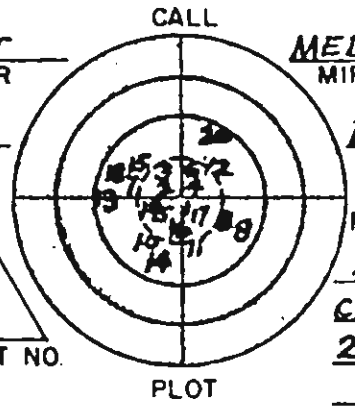
600 YARDS-SF

ZERO	ELEV	WIND
X	28	1R-1L
NO	ELEV	WIND
S1	/	/
S2	/	/
1	28	7R
2		/
3		6R
4		/
5		/
6		/
7		7R
8		8R
9		/
10		6R
11		/
12		5R
13		4R
14		/
15		/
16		6R
17		7R
18		/
19		/
20		5R
CORR ZERO	28	1L

WIND 12 9 3 6 MPH 15
SIGHT PICTURE
LIGHT 12 9 3 6 DIRECT

BRIGHT WEATHER
82° TEMP
1130 TIME
13 TARGET NO

CALL



MEDIUM MIRAGE
REMARKS: ZERO CHANGED 2 LEFT

PLOT

195-9X SCORE

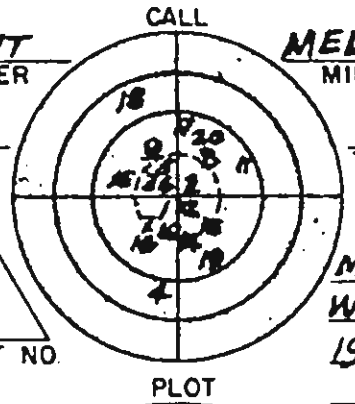
600 YARDS-SF

ZERO	ELEV	WIND
X	31	1L
NO	ELEV	WIND
S1	/	/
S2	/	/
1	31	6R
2		7R
3		6R
4		/
5		/
6		/
7		7R
8		8R
9		/
10	32	/
11		6R
12		5R
13		/
14		/
15		/
16		6R
17		7R
18		/
19		6R
20		5R
CORR ZERO	31	1L

WIND 12 9 3 6 MPH 15
SIGHT PICTURE
LIGHT 12 9 3 6 DIRECT

BRIGHT WEATHER
82° TEMP
1130 TIME
13 TARGET NO

CALL



MEDIUM MIRAGE
REMARKS: MISSED WIND ON 19th SHOT

PLOT

194-6X SCORE

NAME SFC Anthony DATE 26 Aug 66
PLACE Vaile RIFLE NO 7531
AMMO LC-12065 NMC SCORE 489-18X

NAME SSG Hamill DATE 26 Aug 66
PLACE Vaile RIFLE NO 2648
AMMO LC-12065 NMC SCORE 488-11X

FB (MTU) FORM 36-REVISED DEC 1966

Figure 64. NM COACH'S PLOTTING SHEET

COACH'S PERFORMANCE CHECK LIST AND EXAMINATION

NAME:_____ UNIT:_____

A. COACH'S PERFORMANCE CHECK LIST (Students not graded, for information only.)

1. BEFORE REPORTING TO RANGE Did Coach:

a. Receive instructions from the head coach:

(1) Team member's names (Evaluation File)? _____

(2) Target assignment (Squadding Ticket)? _____

b. Analyze previous Coach's Plotting Sheets? _____

c. Check coaching equipment for completeness and serviceability:

(1) Team spotting scope? _____

(2) Stop watch? _____

(3) Clipboard and pencil? _____

(4) Coach's Plotting Sheets? _____

(5) Stool? _____

(6) Lens tissue? _____

(7) Ear plugs? _____

(8) Allen wrench, screwdriver, and combination tool? _____

2. ASSEMBLY AREA Did Coach:

a. Check that team is present and ready?

b. Fill in the appropriate entries of the day's Coach's Plotting Sheets? _____

c. Minimize mental anxiety and human error by talking to and checking the team on:

(1) Course of fire? _____

(2) Firing order? _____

(3) Equipment serviceability (rifle,sights, etc.)? _____

(4) Scorebook analysis? _____

(5) Weather conditions? _____

(6) Correction of individual errors? _____

3. READY LINE Did Team Captain or Coach:

Notify the next relay to move to the ready line in time to relax and think of what they are going to do when the preceding relay has finished firing.

(1)

Figure 65. COACH'S PERFORMANCE CHECK LIST (Page 1 of 3)

B. COACH'S PERFORMANCE EXAMINATION (One point per question, except c. AFTER FIRING 200 and 600 yards slow fire, half point per question.)

1. FIRING LINE 200 AND 600 YARDS (SLOW FIRE)

a. PREPARATION PERIOD — Did Coach:	200 Yds	600 Yds
(1) Help shooters find suitable location on firing line?	_____	_____
(2) Confirm sight setting to be used?	_____	_____
(3) Check that sights are blackened and set properly?	_____	_____
(4) Remind shooter of his target number?	_____	_____
(5) Have shooters dry fire and check natural point of aim?	_____	_____
• (6) Check that ammunition is protected from weather?	_____	_____
(7) Position scope properly?	_____	_____
(8) Check that target is suitable?	_____	_____
(9) Focus scope properly?	_____	_____

b. DURING FIRING — Did Coach:		
(1) Start stop watch and record each relay's starting time on Coach's Plotting Sheet?	_____	_____
(2) Wait until shooters are ready?	_____	_____
(3) Determine the value of the wind and have shooter set sights?	_____	_____
(4) Call off target number before firing?	_____	_____
(5) Require shooter to call each shot?	_____	_____
(6) Require shooter to maintain scorebook properly?	_____	_____
(7) Give correct sight changes?	_____	_____
(8) Maintain Coach's Plotting Sheet properly?	_____	_____
(9) Check on time?	_____	_____
(10) Insure scores are recorded correctly and have team captain challenge when necessary?	_____	_____

c. AFTER FIRING — Did Coach:		
(1) Insure that the weapon is cleared?	_____	_____
(2) Prepare firing line for next relay?	_____	_____
(3) Confirm elevation and windage used?	_____	_____
(4) Analyze performance and confirm or establish zeros?	_____	_____

2. FIRING LINE 200 AND 300 YARDS (RAPID FIRE)

a. PREPARATION PERIOD — Did Coach:	200 Yds	300 Yds
(1) Help shooter find suitable location on firing line?	_____	_____
(2) Confirm sight setting to be used?	_____	_____
(3) Check that sights are blackened and set properly?	_____	_____
(4) Remind shooter of his target number?	_____	_____
(5) Help shooter dry fire and check natural point of aim?	_____	_____

Figure 65. COACH'S PERFORMANCE CHECK LIST (Page 2 of 3)

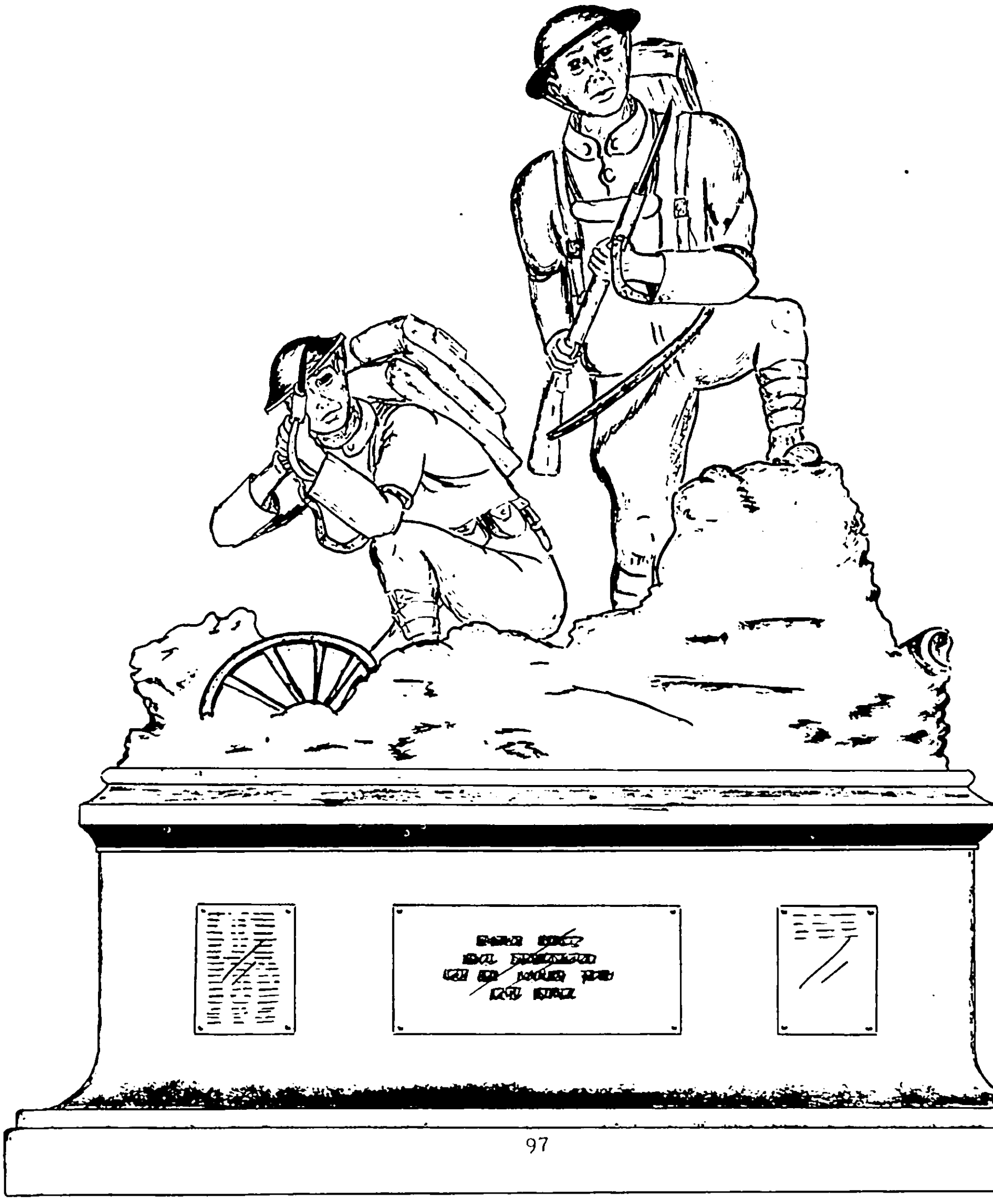
	200 Yds	300 Yds
(6) Check that ammunition is clean and serviceable and magazine properly loaded?	____	____
(7) Position scope properly?	____	____
(8) Check that target is suitable?	____	____
b. DURING FIRING — Did Coach:		
(1) On command "Shooters Rise", move to side of shooter?	____	____
(2) On command "Load", insure safety is engaged, magazine is latched, and top round chambered?	____	____
(3) On command "Ready on the Firing Line", insure safety is disengaged?	____	____
(4) Give estimated wind adjustment?	____	____
(5) Tell shooter when flag is up, waving, and down; and to watch for the targets?	____	____
(6) Start stop watch when targets appear?	____	____
(7) Remind shooter of target number when targets appear?	____	____
(8) Give appropriate commands?	____	____
(9) Move from scope to shooter's side after 1st five shots?	____	____
(10) Insure weapon is reloaded before giving sight changes?	____	____
(11) Give necessary sight changes correctly?	____	____
(12) Remind shooter of his target number after reloading?	____	____
(13) Check shooters time periodically during firing with stop watch?	____	____
(14) Insure that target exposure time is noted?	____	____
c. AFTER FIRING — Did Coach:		
(1) Insure that weapon is cleared if shooter does not have an alibi?	____	____
(2) Have shooter call bad shots?	____	____
(3) Prepare firing line for next relay?	____	____
(4) Complete entries in Coach's Plotting Sheet to include plotting of group?	____	____
(5) Make sure shooter fills out scorebook properly?	____	____
(6) Analyze performance and confirm or establish zeros?	____	____
(7) Insure scores are recorded correctly and challenge when necessary?	____	____

(3)

Figure 65. COACH'S PERFORMANCE CHECK LIST (Page 3 of 3)

Chapter Two

INFANTRY TROPHY FIRING



INFANTRY TROPHY

SECTION I - DESCRIPTION OF THE INFANTRY TROPHY MATCH

A. Infantry Trophy Firing is based on the same fundamentals as National Match Firing; however, there are certain minor variations which must be incorporated. The training program and coaching techniques are considerably different from those used for the National Match, due to the courses of fire.

The Infantry Trophy Match is a rapid fire team match. Teams consist of six firing members, one team captain, and one team coach (Throughout this chapter, the term "coach" will be used to describe both captain and coach). The Infantry Trophy Team is divided into two 3-man fire teams; each coach is responsible for one fire team.

B. The match consists of an exposure of eight silhouette targets for 50 second periods at successive ranges of 600, 500, 300, and 200 yards. At 600 and 500 yards, the "E" silhouette (representing a kneeling man) is used. At 300 and 200 yards, the "F" silhouette (representing a prone man) is used. The positions used by the shooters at each range are as follows: prone at 600; prone, sitting, or kneeling at 500; sitting or kneeling at 300; and standing at 200. A total of 384 rounds of ammunition is issued to each team. The amount and distribution of the ammunition fired at each range depends upon the desires of the coaches and the capabilities of the shooters.

C. The value of hits and bonus system is as follows: 4 points per hit on the silhouettes at 600 yards, three points at 500 yards, two points at 300 yards, and one point at 200 yards. In addition, a bonus score is awarded at each range which is determined by squaring the number of targets with six or more hits. For example, if seven targets each receive six or more hits, the bonus is 7 X 7 = 49 points. The bonus system remains the same for all ranges. In case of team scores being tied, ties will be broken by the high score at 600 yards, then 500 yards, and if the teams are still tied, 300 yards.

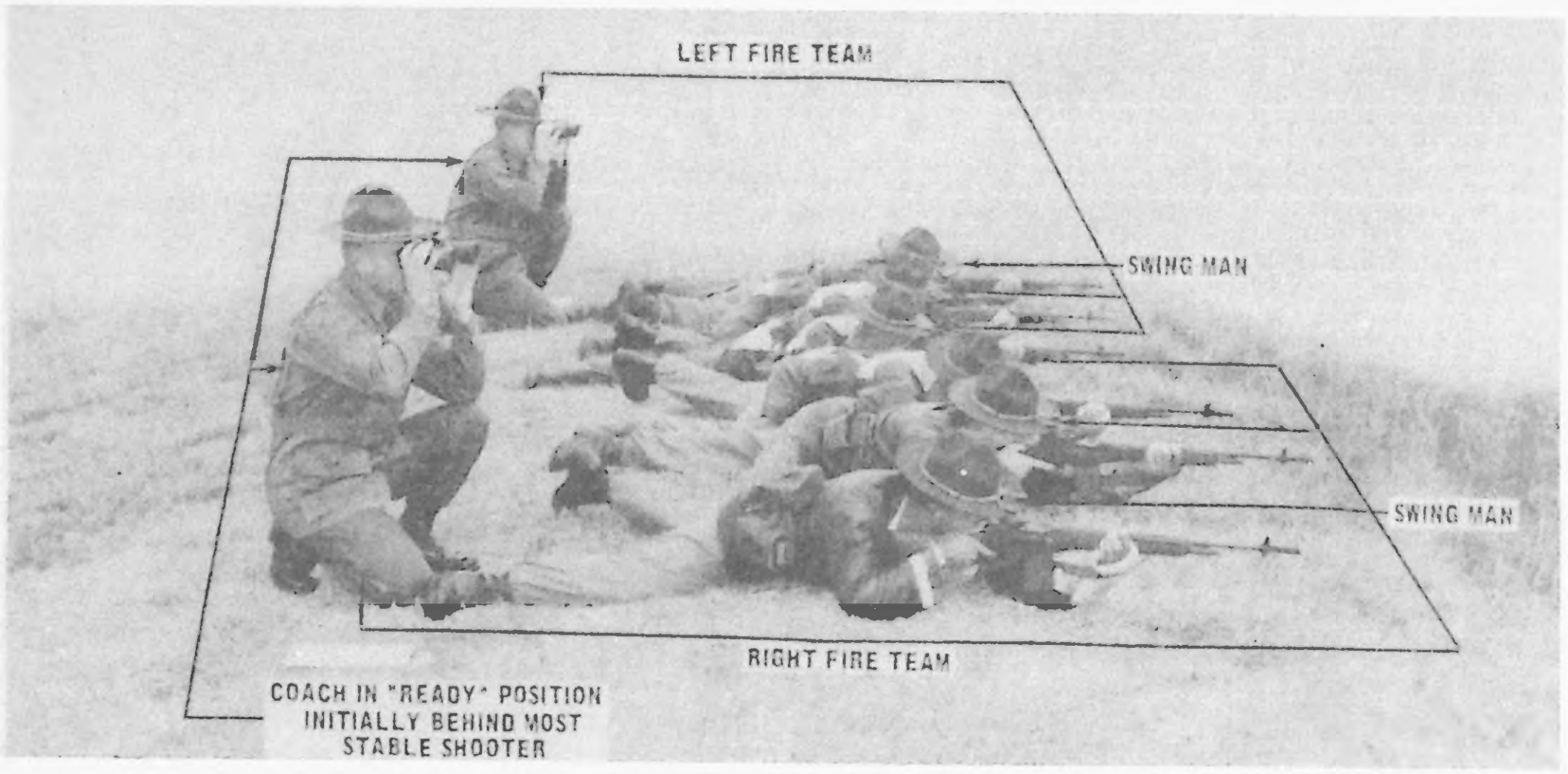


Figure 66. INFANTRY TROPHY TEAM

D. Infantry Trophy silhouettes are pasted on "A" targets in the following manner; the "E" silhouette is centered with the top of the silhouette even with the top of the five ring; the "F" silhouette is centered with the top of the silhouette even with the top of the seven ring.

E. There are no refires. No adjustment will be made for misfires, disabled pieces, or other failures of range, team material, or personnel.

F. The normal scoring is to place spotters in all hits in the silhouettes. Targets will be scored one at a time per block of eight, starting with the lowest number target. The number of hits on a target will be transmitted by telephone when that target is scored. All targets will remain exposed until scoring is completed. If the coach disagrees with the score of one or more targets, he may challenge. When a target is challenged, it will be pulled and then scored by the block officer. The final score will then be transmitted by telephone to the firing line.

SECTION II - SELECTION OF SQUAD MEMBERS

A. Infantry Trophy Shooters should be selected from among the best National Match shooters available. In particular, the most desirable characteristics of an Infantry Trophy shooter are:

1. Ability to fire well; both rapid fire and at 600 yards.

2. Ability to think fast and react instantly.

3. Ability to cooperate and act well as a member of a team.

B. The Infantry Trophy coach must be selected with extreme care. He must:

1. Be a good leader.

2. Be able to dope the wind to within one-half minute.

3. Be able to move fast, think fast, and be alert.

4. Have sufficient knowledge to make on-the-spot repairs of weapons.

5. Be able to observe accurately the wake or trace of the bullet with binoculars. (Maximum power 10X50).

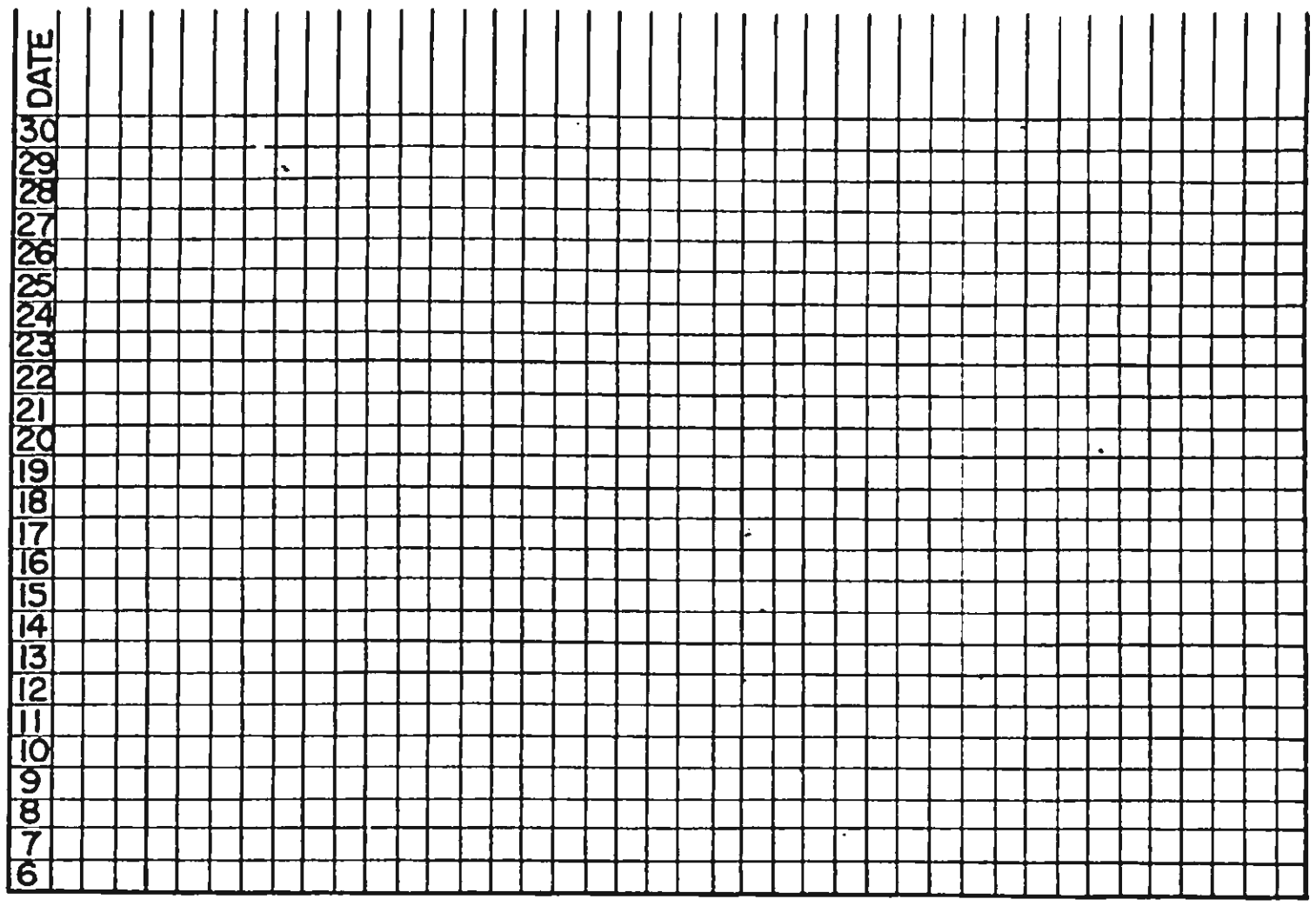
6. Have a voice which is loud enough to be heard by all shooters while firing.

C. In selecting the individual for the team match, the coach will use an evaluation file which is the same as that used in National Match (Figures 1-4) except for the Infantry Trophy Shooter's Graph (Figure 67). On the graph, hits are entered for each yard line and qualified by using the same color code as National Match, except only solid colors are used since only team scores are fired.

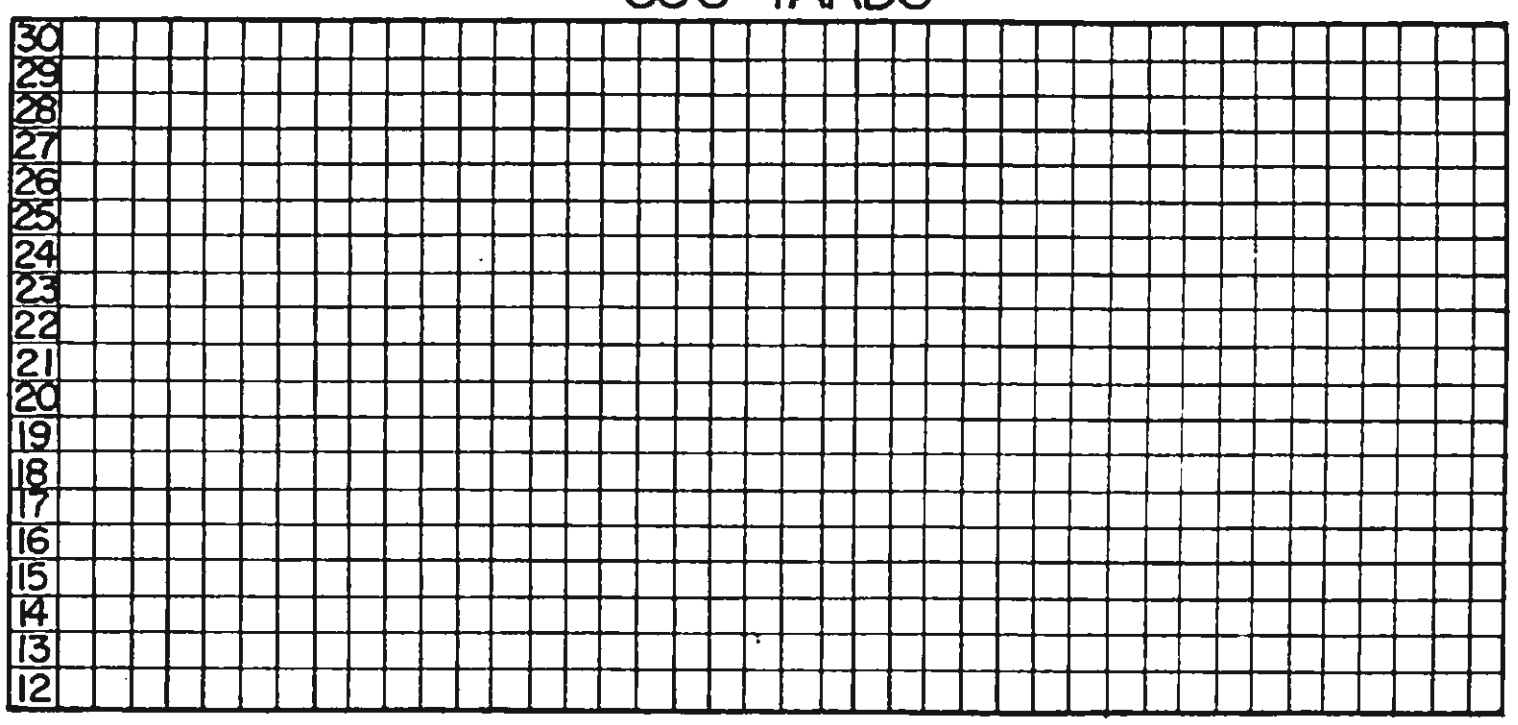
INFANTRY TROPHY SHOOTER'S GRAPH

FB (MTU) FORM 35 REVISED
10 FEB 65

600 YARDS



500 YARDS



300 YARDS

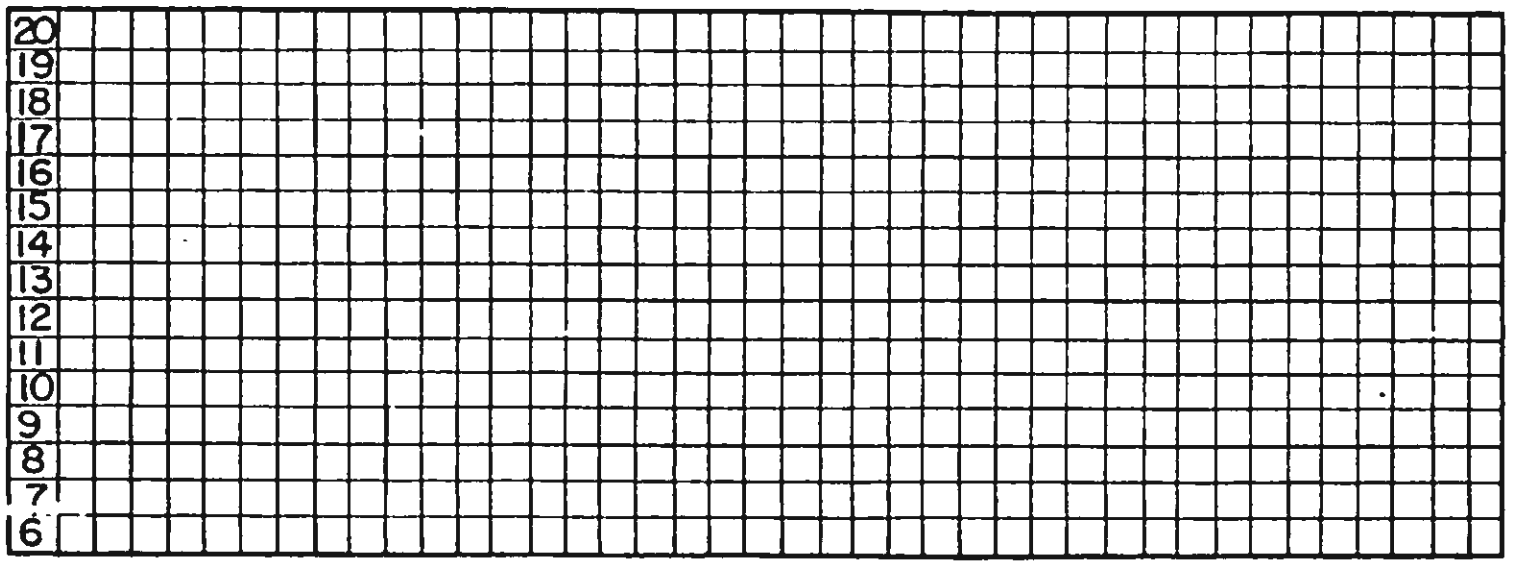


Figure 67. INFANTRY TROPHY SHOOTER'S GRAPH

SECTION III - SQUAD EQUIPMENT

The squad equipment used for Infantry Trophy Firing (Figure 68) is the same as for National Match with the following exceptions:

A. Individual Equipment.

1. Infantry Trophy scorebook (Figures 69, 70, 71, and 72)
2. Four magazines
3. Two magazine pouches
4. Spotting telescope (For practice only)

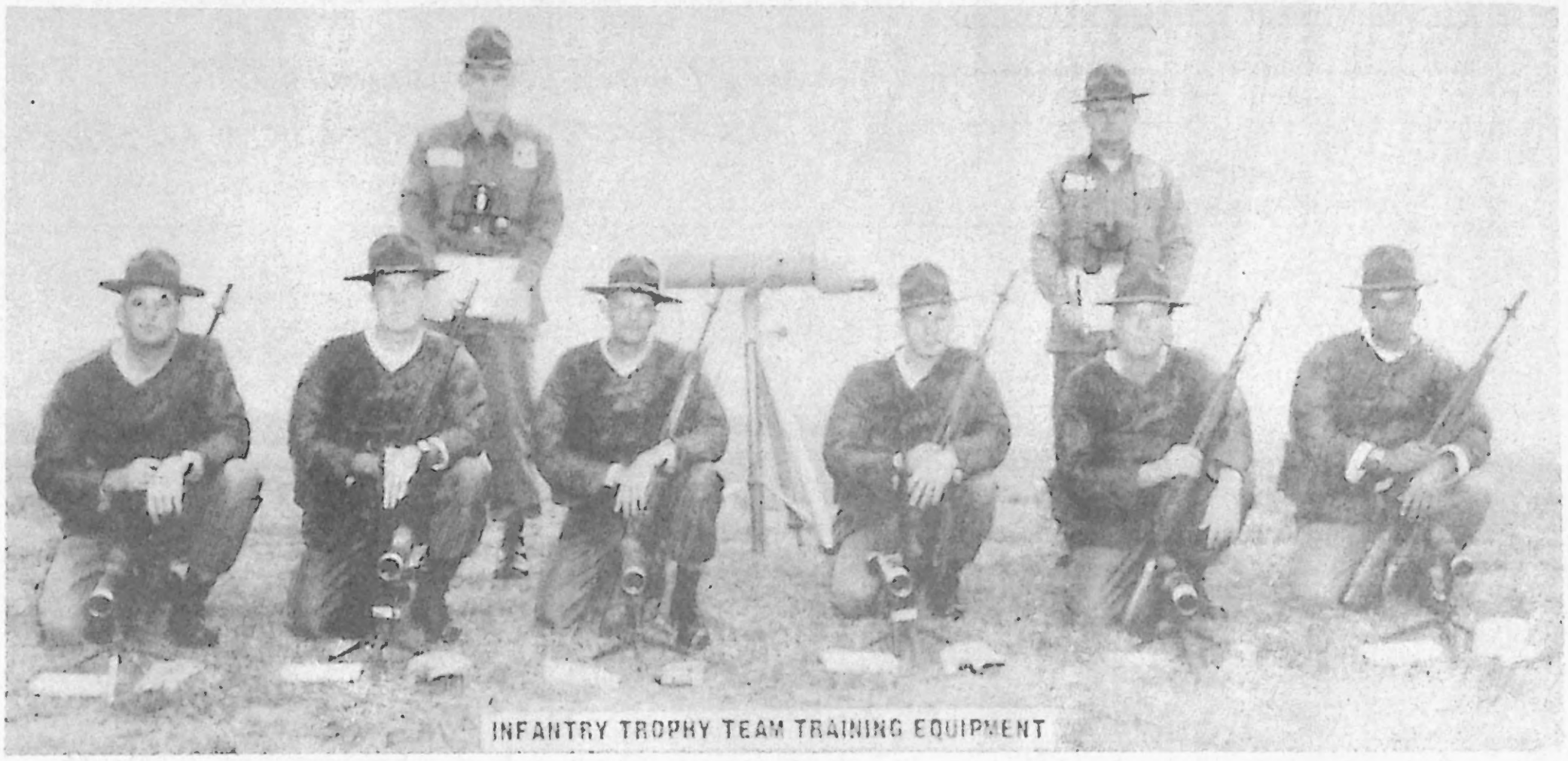
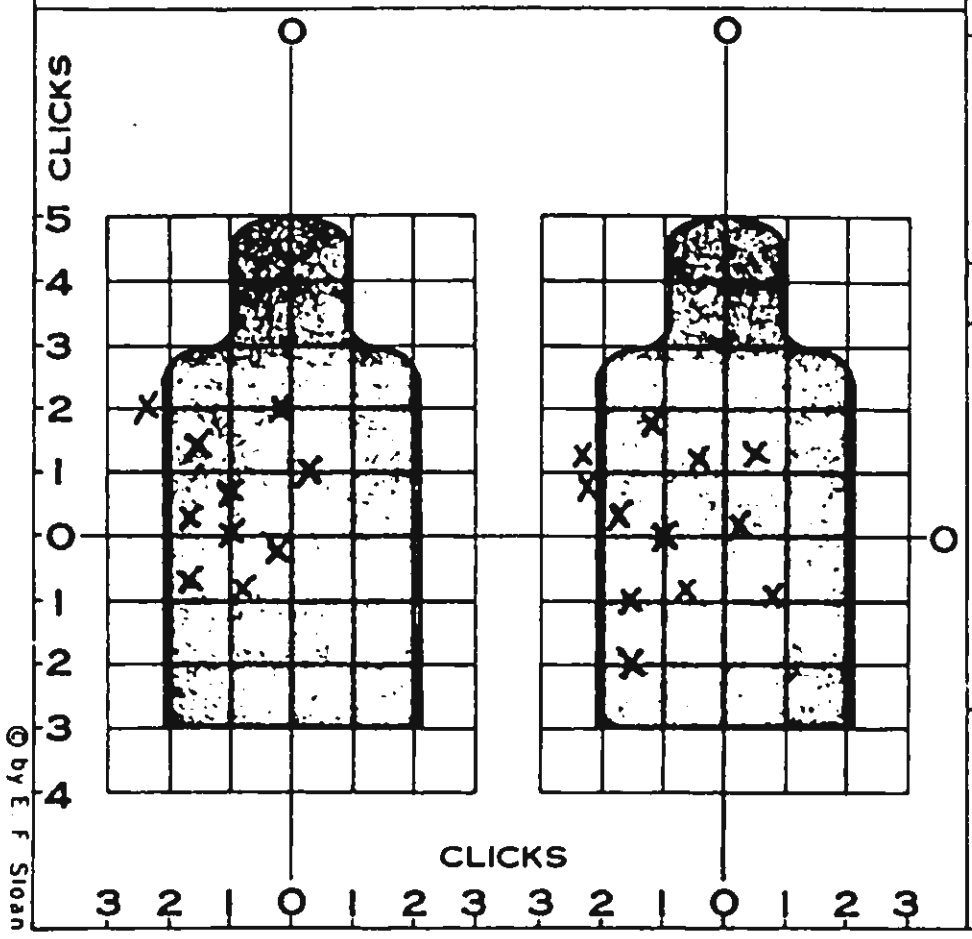


Figure 68. TEAM TRAINING EQUIPMENT

B. Coach's Equipment.

1. Binoculars (Maximum power 10X50)
2. Infantry Trophy plotting sheets (Figure 75)
3. Magazine Round Indicator (Figures 73 and 74)
4. Team telescope (Used in the assembly area only)

600 YARDS SCORE SHEET E TARGET



NO ROUNDS FIRED 22 NO TARGETS FIRED ON 2

NO HITS 19

SCORE

PLACE VAILE DATE 31 AUG 66 HOUR 0700

RIFLE NO 6342 AMMUNITION LC12065 TEMP 80°

TARGET NO 7-8 MIRAGE MEDIUM LIGHT BRIGHT

LIGHT	WIND	HOLD	HOLD	
12 9 3 6 DIRECTION	12 9 3 6 MPH 10			

ELEVATION ZERO 30 WINDAGE ZERO 2L

	USED	CORRECT	CORRECT ZERO	S.F. ZERO
ELEVATION	30	30	30	28
WINDAGE	6R	7R	2L	MZ

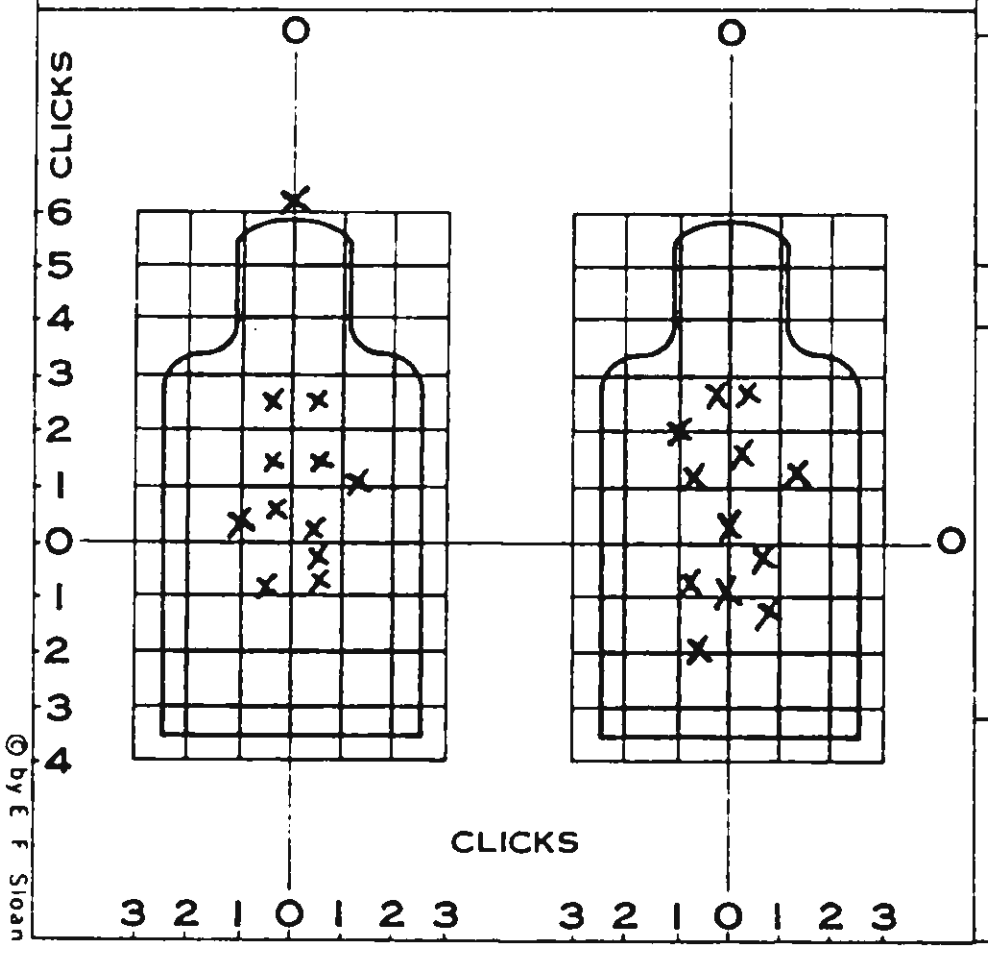
COACHES WIND ORDER RIGHT 6

COACHES WIND CHANGE DURING FIRING NONE

REMARKS 1. RIGHT ELBOW SLIPPING
2. FAVOR RIGHT ON INITIAL SHOTS

Figure 69. INFANTRY TROPHY 600 YARDS SCORE SHEET

500 YARDS SCORE SHEET E TARGET



NO ROUNDS FIRED 24 NO TARGETS FIRED ON 2

NO HITS 23

SCORE

PLACE VAILE DATE 31 AUG 66 HOUR 0715

RIFLE NO 6342 AMMUNITION LC12065 TEMP 80°

TARGET NO 7-8 MIRAGE MEDIUM LIGHT BRIGHT

LIGHT	WIND	HOLD	HOLD	CLICKS DOWN FROM 600 / CLICKS RT OR LT FROM 600
12 9 3 6 DIRECTION	12 9 3 6 MPH 10			5 / NONE

ELEVATION ZERO 25 WINDAGE ZERO 2L

	USED	CORRECT	CORRECT ZERO	S.F. ZERO
ELEVATION	25	25	25	UNK
WINDAGE	5R	5R	2L	UNK

COACHES WIND ORDER RIGHT 5

COACHES WIND CHANGE DURING FIRING NONE

REMARKS 1. GOOD POSITION BUT SLOW CADENCE

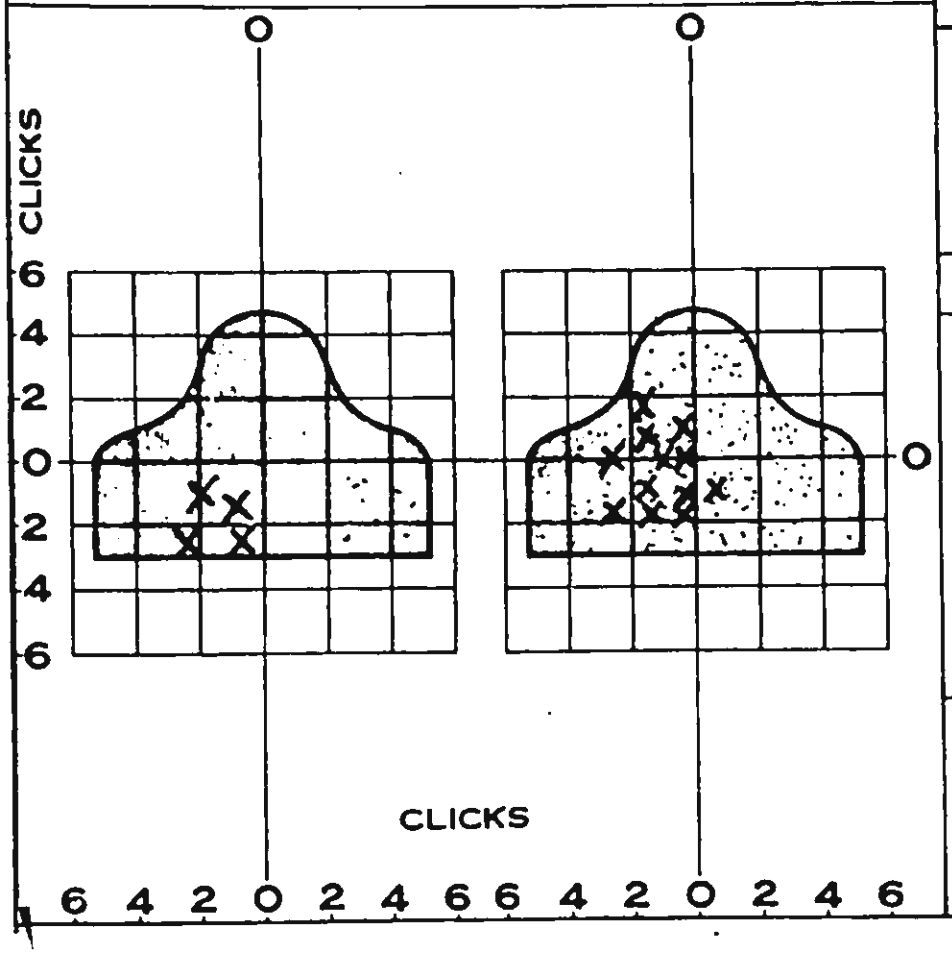
Figure 70. INFANTRY TROPHY 500 YARDS SCORE SHEET

300 YARDS SCORE SHEET F TARGET

NO ROUNDS FIRED 16 NO TARGETS FIRED ON 2

NO HITS 16

SCORE



PLACE VAILE DATE 31 AUG 66 HOUR 0730

RIFLE NO 6342 AMMUNITION LC12065 TEMP 80°

TARGET NO 7-8 MIRAGE MEDIUM LIGHT BRIGHT

LIGHT	WIND	HOLD	HOLD	CLICKS DOWN FROM 500 / CLICKS RT OR LT FROM 500
DIRECTION	MPH 10			7 / 1R

ELEVATION ZERO 18 WINDAGE ZERO 1L

	USED	CORRECT	CORRECT ZERO	S.F. ZERO
ELEVATION	18	18	18	UNK
WINDAGE	3R	3R	1L	UNK

COACHES WIND ORDER RIGHT 3

COACHES WIND CHANGE DURING FIRING NONE

REMARKS 1. POSITION DIFFICULTY ON SHIFT TARGET

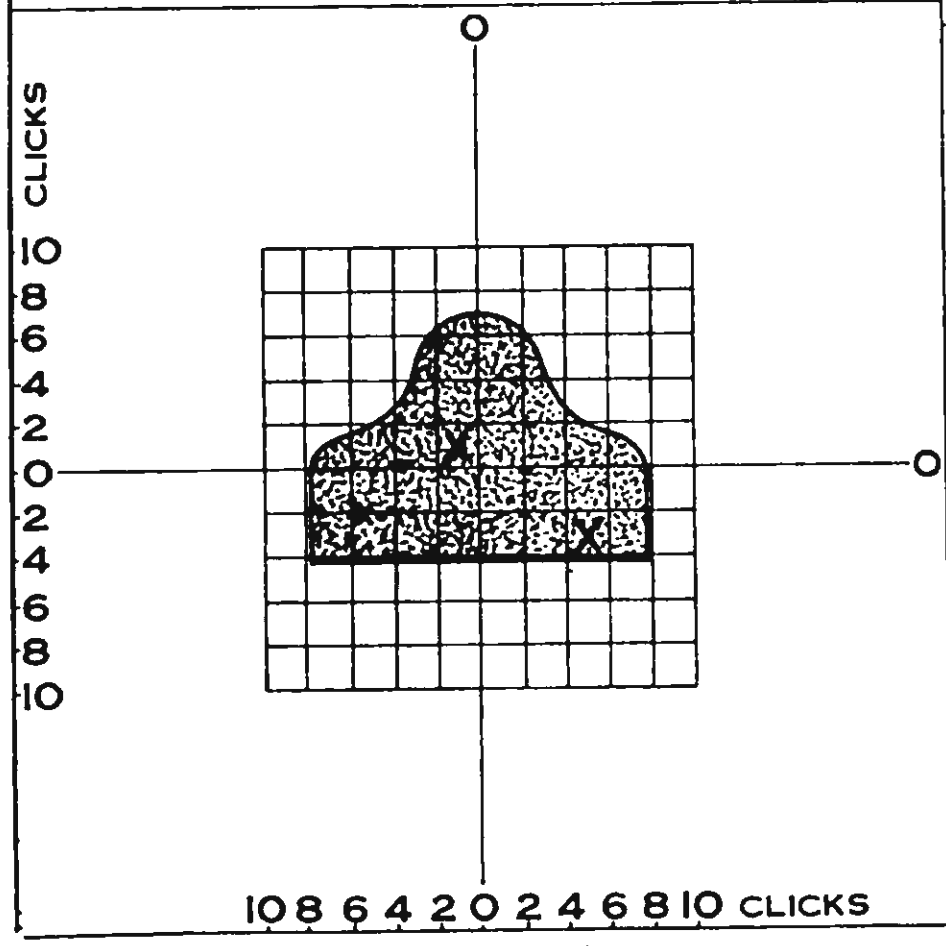
Figure 71. INFANTRY TROPHY 300 YARDS SCORE SHEET

200 YARDS SCORE SHEET F TARGET

NO ROUNDS FIRED 2 NO TARGETS FIRED ON 1

NO HITS 2

SCORE



PLACE VAILE DATE 31 AUG 66 HOUR 0745

RIFLE NO 6342 AMMUNITION LC12065 TEMP 80°

TARGET NO 6 MIRAGE MEDIUM LIGHT BRIGHT

LIGHT	WIND	HOLD	HOLD	CLICKS DOWN FROM 300 / CLICKS RT OR LT FROM 300
DIRECTION	MPH 10			2 /

ELEVATION ZERO 16 WINDAGE ZERO 1L

	USED	CORRECT	CORRECT ZERO	S.F. ZERO
ELEVATION	16	16	16	16
WINDAGE	1R	1R	1L	1L

COACHES WIND ORDER RIGHT

COACHES WIND CHANGE DURING FIRING NONE

REMARKS 1. ON CALL

Figure 72. INFANTRY TROPHY 200 YARDS SCORE SHEET

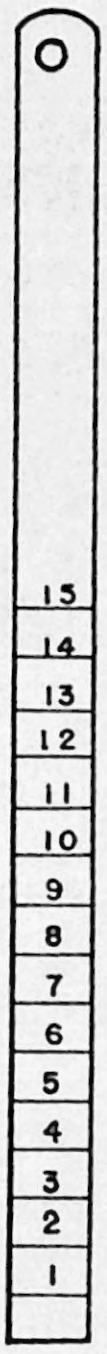


Figure 73. MAGAZINE ROUND INDICATOR

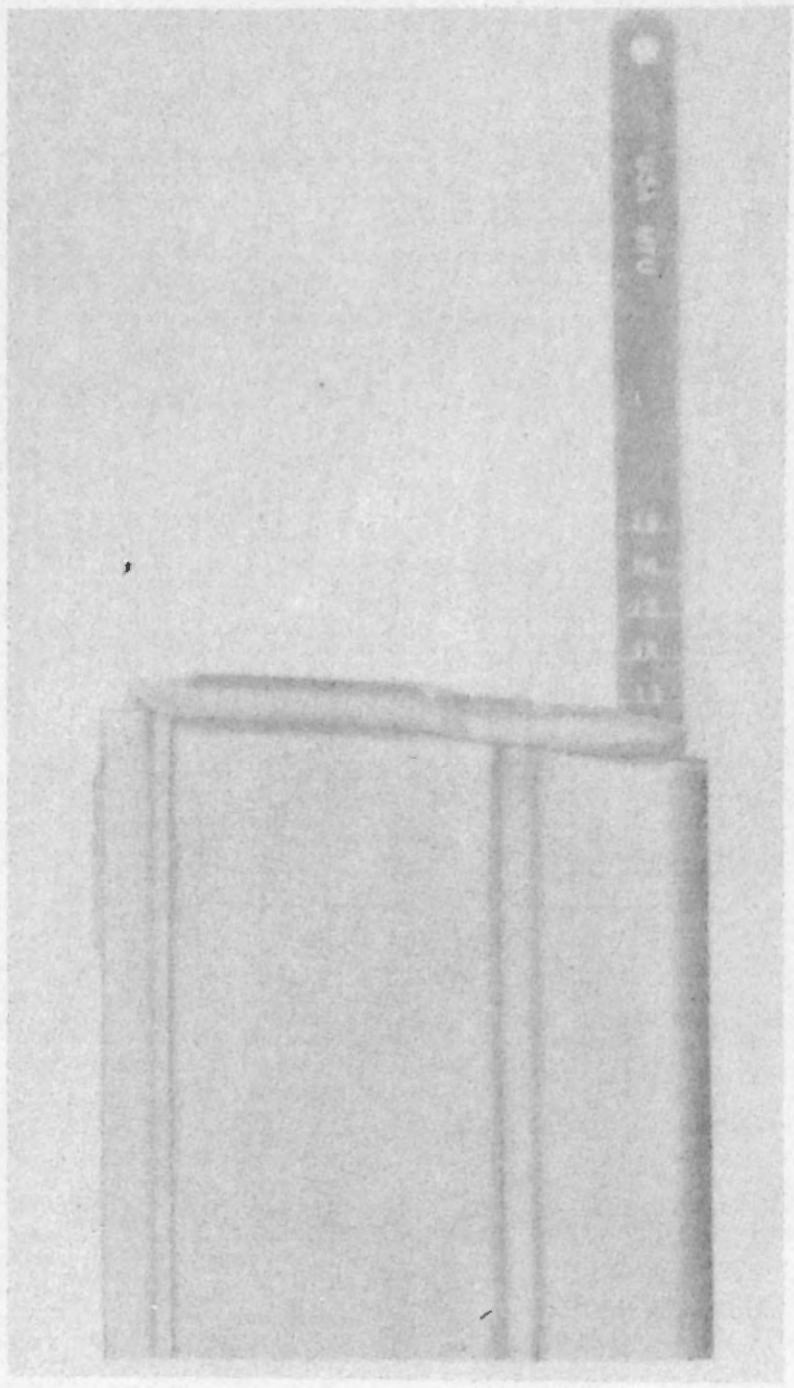


Figure 74. TEN ROUNDS MEASURED WITH INDICATOR

The Round Indicator is six inches long and approximately 1/4 inch wide. The inscribed lines are 7/32 inch apart and numbered from one to 15, starting at the bottom; but may be easily inscribed up to 20 rounds, or magazine capacity.

The indicator is inserted into the magazine until the end makes contact with the magazine follower. The reading is taken from the indicator directly opposite the top round in the magazine.

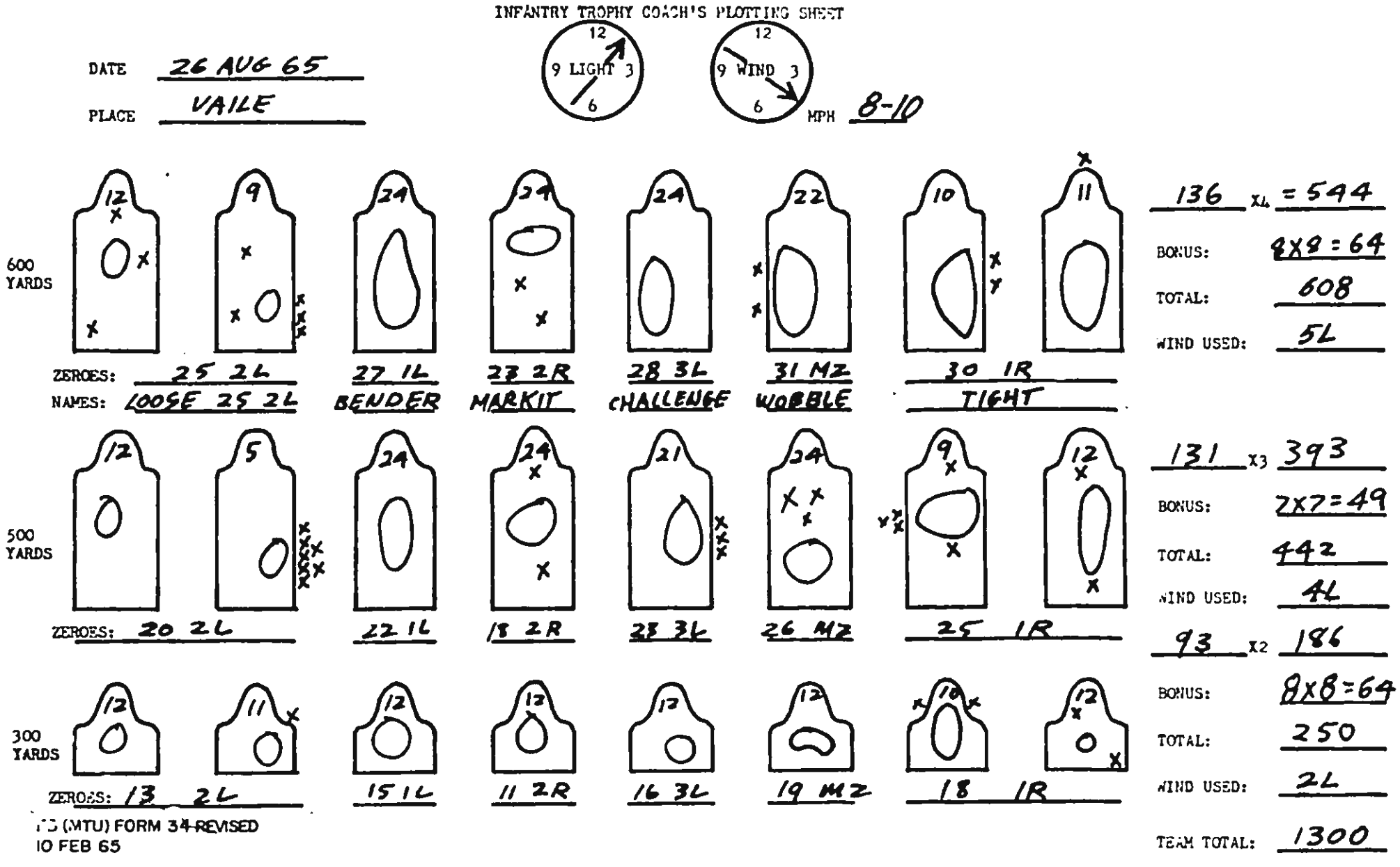


Figure 75. INFANTRY TROPHY COACH'S PLOTTING SHEET

The Coach's Plotting sheet used in Infantry Trophy is different than the one used by National Match coaches.

One of the most important and most difficult jobs the Infantry Trophy coach has is keeping each shooter synchronized with the rest of the team. By plotting each shooter's group at each stage on a plotting sheet; (Figure 75) a coach can more readily spot a shooter's groups drifting out of synchronization.

To assist the coach in making a quick check of the shooters sight settings, a complete record should be kept on the plotting sheet of all zeros at all stages, along with the number of hits scored on each target.

The plotting sheet should also designate where, and under what type weather conditions the match was fired; and with as much simplicity as possible, allow the coach to keep a running score from stage to stage, along with the total score.

NOTE: A sample score card (Figures 76-77) is included here since in many areas score cards are not available.

ENTRY AND SCORE CARD FOR INFANTRY TEAM MATCH
(AR 920 - 30 and AR 672 - 10)

TYPE OF MATCH: ☐ NATIONAL TROPHY ☐ ARMY MAJOR COMMAND ☒ ALL ARMY | YEAR: 1965 | TARGET: 1-8 | RELAY: 1 | PLACE NO. (Stalle-ical):

NAME OF TEAM: M.T.U. BLUE | TEAM CAPTAIN: SFC MUÑIZ | TEAM COACH: M/SGT DAY

TARGET NO.	600 YDS PRONE	500 YDS PRONE, SITTING, OR KNEELING	300 YDS SITTING OR KNEELING	200 YDS STANDING	MATCH TOTAL
1	12	12	12	D.N.F.	36
2	9	5	11	"	25
3	24	24	12	"	60
4	24	24	12	"	60
5	24	21	12	"	57
6	22	24	12	"	58
7	10	9	10	"	29
8	11	12	12	"	35
TEAM STAGE HIT TOTAL	136 TOTAL HITS x 4 = 544	131 TOTAL HITS x 3 = 393	93 TOTAL HITS x 2 = 186	___ TOTAL HITS x 1 = ___	1123
BONUS FOR 6 OR MORE HITS PER TARGET	8 TGT HITS . 8 TGT HITS . 64	7 TGT HITS . 7 TGT HITS . 49	8 TGT HITS . 8 TGT HITS . 64	___ TGT HITS . ___ TGT HITS . ___	177
TOTAL STAGE POINTS	608	442	250		1300

SIGNATURE OF RANGE OFFICER: William C. Pullum | SIGNATURE OF TEAM CAPTAIN: Fernando Muñiz | TEAM TOTAL: 1300

DA FORM 1 MAR 60 1690 — EDITION OF 1 FEB 57 IS OBSOLETE. — GPO-880119

Figure 76. INFANTRY TROPHY ENTRY AND SCORE CARD (FRONT)

NAME OF TEAM: M.T.U. - BLUE | ORGANIZATION: USAMTU

TEAM MEMBERS	COMPETITOR NUMBER	GRADE OR CIVILIAN	SERVICE NUMBER	MILITARY ORGANIZATIONAL ADDRESS	HOME ADDRESS
CAPTAIN - MUNIZ	293	SFC	10406342	USAMTU FT. BENNING, GA.	N/A
COACH DAY	308	M/SGT	37884281	"	"
1. BURGER	111	M/SGT	18162293	"	"
2. ADKINSON	223	SFC	16226969	"	"
3. HAMILL	565	SFC	11287128	"	"
4. THARP	739	SFC	13255672	"	"
5. BRUSHWOOD	303	SFC	13374038	"	"
6. CYZEN	421	LT. COL.	01340455	"	"
ALTERNATE BROWN		CWO3	W2149426	"	"

CHECK APPROPRIATE STATEMENT BELOW

☐ THE ABOVE NAMED MEMBERS OF THIS RIFLE TEAM ARE ELIGIBLE TO COMPETE IN THE ARMY MAJOR COMMAND OR ALL ARMY RIFLE TEAM MATCH.

☐ THE ABOVE NAMED MEMBERS OF THIS RIFLE TEAM ARE ELIGIBLE TO COMPETE IN THE NATIONAL TROPHY RIFLE TEAM MATCH UNDER THE ELIGIBILITY RULES AS PUBLISHED IN AR 920-30 - OPNAV INST 3590.7 - AFR 34-18 - NAVMC 1102(REV 1) JOINT SERVICE REGULATIONS GOVERNING THE MATCH

DATE: APRIL 15, 1965 | PRINTED NAME OF TEAM CAPTAIN: MUNIZ, FERNANDO | SIGNATURE OF TEAM CAPTAIN: Fernando Muniz

Figure 77. INFANTRY TROPHY ENTRY AND SCORE CARD (REAR)

SECTION IV - SQUAD TRAINING

A. Training Program.

The Infantry Trophy squad should train for at least four weeks prior to a match. Training should be divided into two phases: an initial instructional training phase followed by a weekly firing schedule.

1. Regardless of the training time available or the experience of the prospective squad members, an instructional training phase of at least five days should be provided to condition shooters before attempting to establish zeros. The first portion of this instructional training phase consists of instruction in mental and physical conditioning, rules and regulations, safety, fundamentals of Infantry Trophy firing, Conduct of the Match, and fire plans. This instruction then must be followed by dry firing and practice firing of at least five times across the Infantry Trophy course. At this time the coach will observe the shooters, correct all deficiencies noted, and conduct remedial training.

2. An acceptable weekly firing schedule must include: physical training and organized athletics, record and practice Infantry Trophy firing, remedial training, dry firing, and National Match firing.

a. The first four days of the weekly firing program follows a sequence:

(1) Physical training exercises.

(2) Offhand firing (NM).

(3) Record firing Infantry Trophy.

(4) Practice firing Infantry Trophy.

(5) Remedial training of weak stages.

(6) Dry firing (at least 30 minutes).

(7) Organized athletics.

b. The fifth day is the same as the other four days except that National Match firing is substituted for Infantry Trophy firing since in a match, the shooters will fire Nationat Match type firing. The offhand phase, since it is most difficult to master, should be practiced everyday.

CAUTION: Do not overtrain. Infantry Trophy firing is very punishing. Don't let the shooters become "gun shy". If the coach discovers that the team is fatigued he should break the routine with individual training or reviews of the fundamentals.

B. Rules and Regulations.

The procedures for conducting an Infantry Trophy Match are outlined in AR 920-30, CONARC Regulation 622-2, and Chapter Two, Section V Coaching Techniques and Conduct of the Match of this guide. Any variation from these procedures must be explained in the ground rules for that match and/or at the team captains meeting prior to the match.

C. Safety.

Safety precautions are the same as for the National Match Firing, except that teams must move down range in line.

D. Fundamentals of Infantry Trophy Firing.

In training Infantry Trophy teams, the coaches should follow the same fundamentals of marksmanship training as used in National Match training. The modifications required in Infantry Trophy firing are as follows.

1. Aiming.

At all ranges the shooters should be taught to aim at the silhouette rather than the target frame, since occasionally, silhouettes will not be centered on the frame. The most commonly used sight pictures are found in Figures 78 and 79.

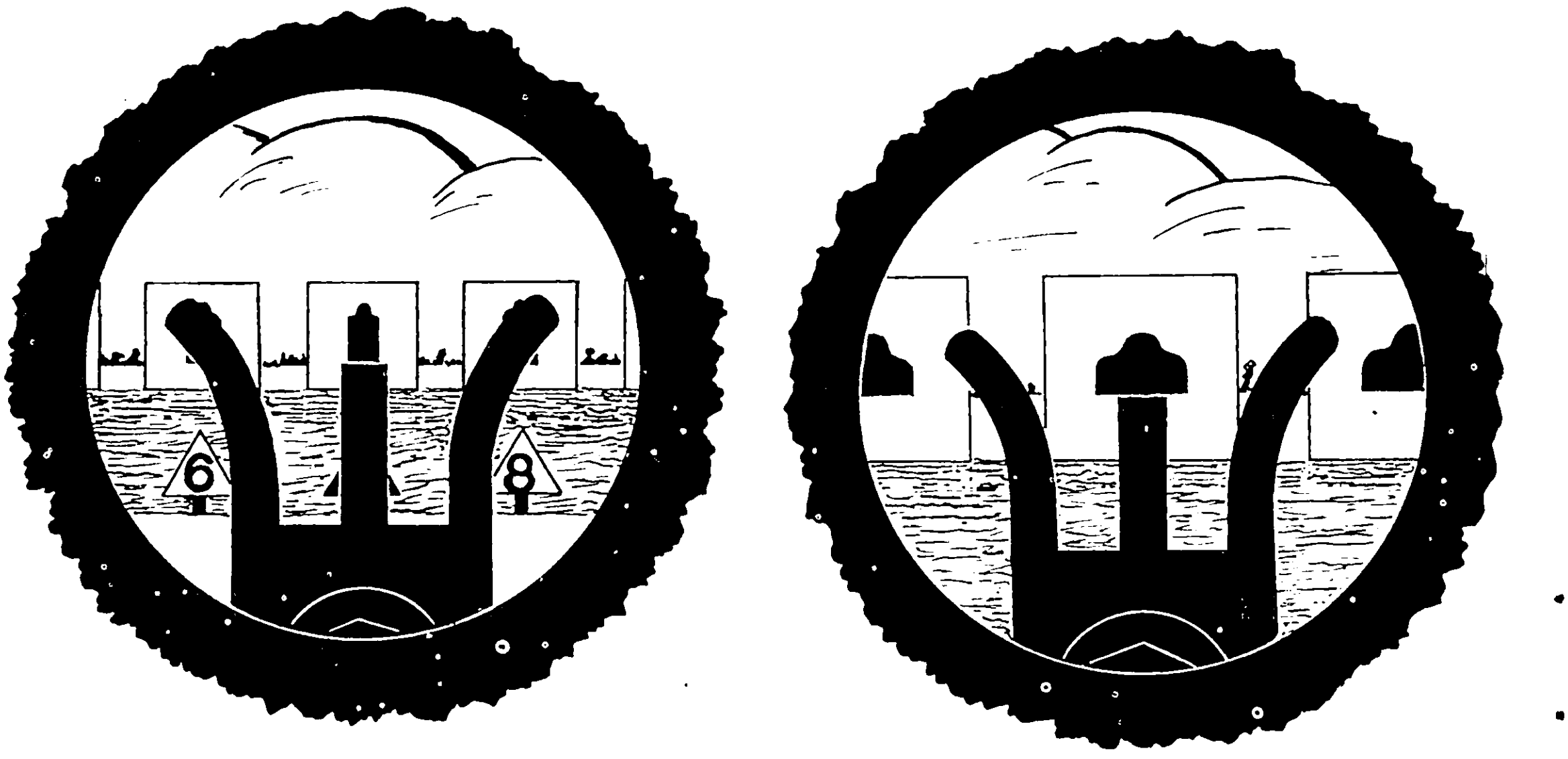


Figure 78. "SIX O'CLOCK HOLD"
600, 500, and 300 Yards

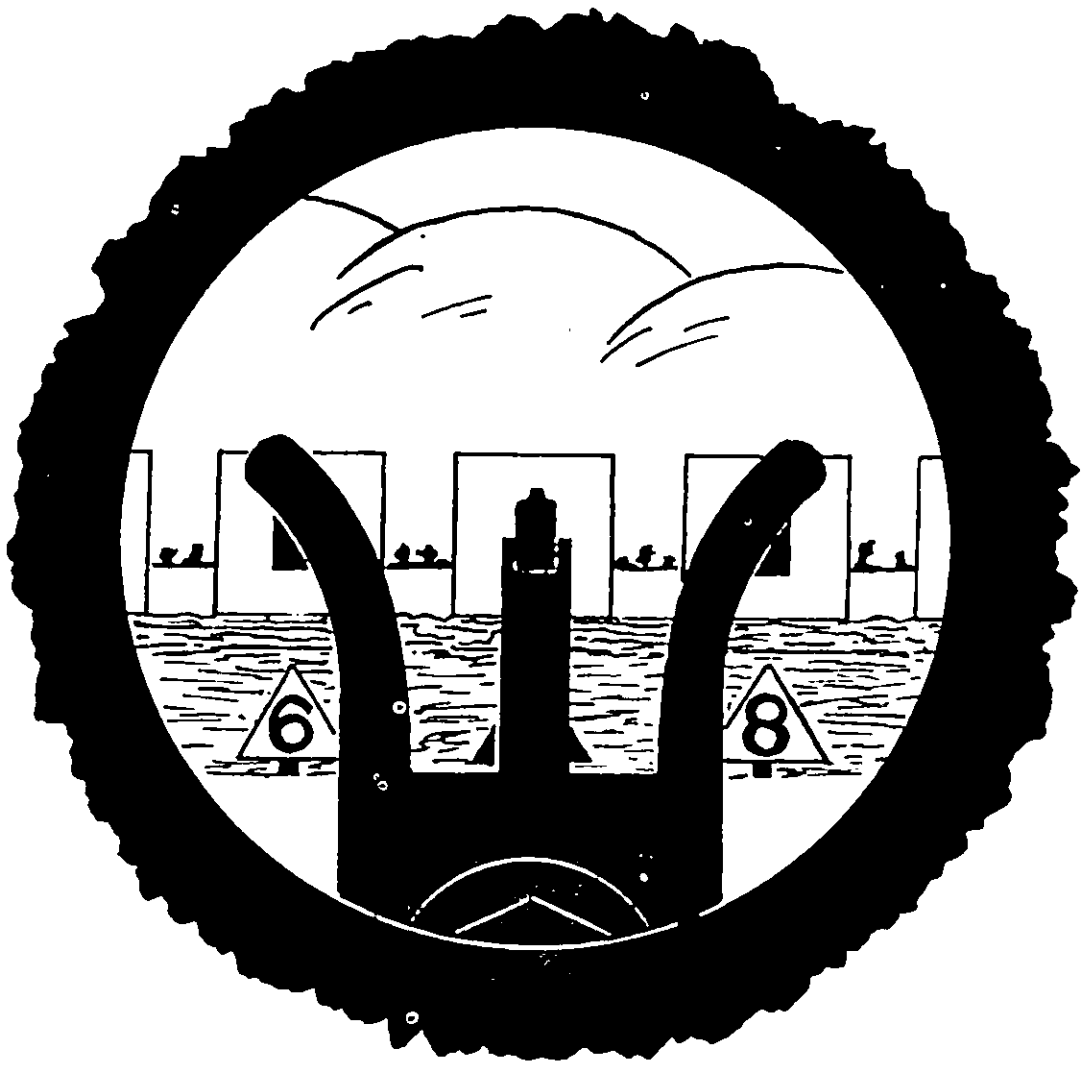


Figure 79. "CENTER OF MASS HOLD"
600 and 500 Yards

2. Trigger Control.

The trigger control used in Nation Match firing is satisfactory for Infantry Trophy firing. However some Infantry Trophy shooters have successfully used another technique which permits an extremely high rate of fire, without disturbing the sight picture. In this method, the slack is not released after each shot. The shooter merely releases the trigger until the hammer hooks are engaged, at which time a distinct click will be heard and felt. He is then ready to increase pressure on the trigger to fire the next round. This method is sometimes difficult to master, but it is very effective.

3. Positions.

The standing and sitting positions are identical to those used in National Match firing. However in the prone position, fast recovery is facilitated if the shooter employes the following techniques:

a. Use the sling at least as tight as for National Match rapid fire, with the loop as high up on the arm as possible.

b. Exert pressure forward and down with the left hand.

c. Place cheek well up on the comb of the stock with a firm downward pressure.

d. Grasp the small of the stock firmly with the right hand.

e. Place as much weight as possible, evenly distributed, on both elbows.

f. If an elbow slips while firing, make the entire body as rigid as possible. This is the only variation to the fundamentals of firing stated in the introduction to Infantry Trophy firing. Under these conditions, relaxation must be sacrificed.

g. With practice, increase the cadence in the prone position until well aimed shots are fired at intervals of two seconds or less.

h. Emphasize reloading exercises until the period of firing the last shot from one magazine to the first shot from the next magazine is reduced to eight seconds or less.

4. Zeroing.

Though the principles of zeroing are the same as for National Match firing, Infantry Trophy zeros are extremely difficult to determine. A slight alteration of position or change of cadence will cause a considerable displacement of the group. Since all Infantry Trophy matches are team matches, and all zeros must be synchronized, zeros are established by the coaches. The following techniques have been found to be helpful as a guide in zeroing teams.

a. Do not attempt to establish zeros until shooters have been firing Infantry Trophy at least five days.

b. Generally, do not make a zero change of one minute or less until the shooter has fired at least two strings to confirm the change.

c. Correlation: At times it may be necessary for shooters to fire their weapons without having a proven zero. In this case, there are two methods of correlation which enables a shooter to obtain a sight setting which will place the shot group of his rifle within one minute of the center of the target.

(1) 50 Yard Correlation Target: The 50 yard correlation Target (Figure 80) is used to determine zeros by moving the shot group of an unzeroed rifle to a predetermined point on the target. This point is determined by firing a zeroed rifle with a correct sight setting and recording the placement of the group. For example, if a rifle with a 600 yard sight setting fires a group at 25 BJ then by firing another rifle and adjusting the sights until the group is located at this same point (25 BJ), the rifle would be zeroed for 600 yards for that individual. The 50 yard Correlation Target is the best method of correlation but if the targets are not available, the National Match - Infantry Trophy correlation may be used.

(2) National Match - Infantry Trophy Correlation: The correlation between National Match and Infantry Trophy zeros must be determined at 600 yards or 300 yards or both. It is accomplished at 600 yards by firing slow fire at a "B" target until shots are hitting in the center of the bull's-eye. Then as soon as the position and sling have been adjusted for Infantry Trophy, an "E" silhouette is exposed for 50 seconds, during which the shooter will fire his normal Infantry Trophy cadence. The number of clicks of elevation and windage required to move this group to the center of the silhouette determines the 600 yards correlation. At 300 yards, the same procedure is followed, with the exception that the "A" and "F" targets are used, and 10 rounds in 60 seconds are fired on the "A" target. This correlation exercise should be conducted with a coach observing the wind through a telescope in order to compensate for wind changes.

CAUTION: The correlation thus obtained is only valid for the rifle used. If the shooter has other rifles, they must also be fired for correlation.

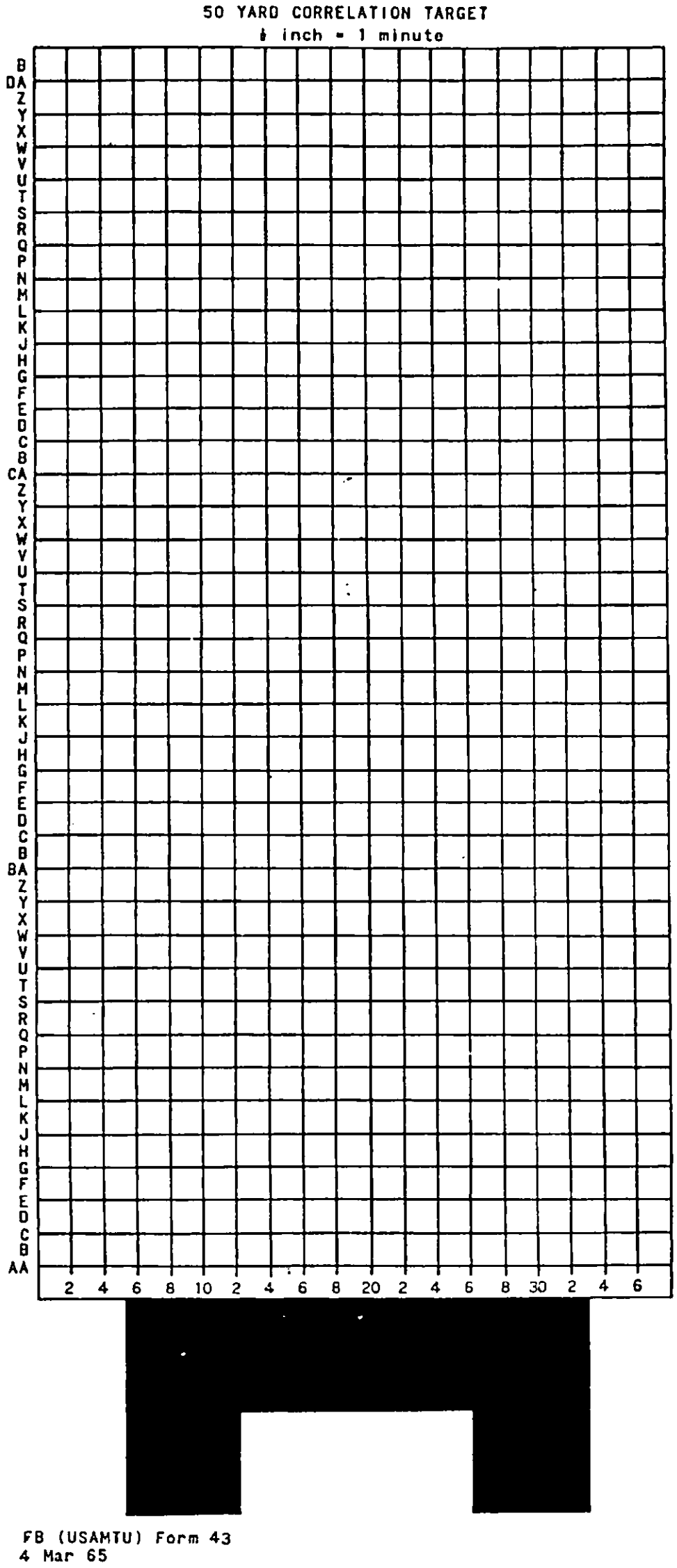


Figure 80. 50 YARD CORRELATION TARGET.

5. Scorebook.

The Infantry Trophy scorebook (Figures 69-72) should be maintained in the same manner as the National Match scorebook. During practice firing, the shooters should be allowed to carry individual telescopes to the firing line to facilitate the plotting of shot groups.

E. Dry Firing.

Drying Firing is essential to the Infantry Trophy shooter since it is a good opportunity to try new techniques in sight picture, position, and trigger control. It also helps to perfect the shooter's cadence.

1. Conduct of Dry Firing: Since the bolt must be operated manually, it is necessary to divide the team to provide each shooter with a bolt operator. It is desirable to dry fire in the same sequence that the match is fired. Dry fire periods should last for approximately 30 minutes each day.

2. Dry Fire Ranges: The ideal dry fire range is the known distance range since there is no substitute for realism. If, however, a separate dry fire range must be used, the simulated 600 yard line should be at least 150 yards from the targets. The 500, 300, and 200 yard lines should be scaled accordingly. Targets also must be reduced in size. For example, if an actual range of 150 yards is used to simulate the 600 yard line, the silhouette should be reduced to one-fourth the normal size. The dimensions of the full size targets are as follows: "E" silhouette, 19 1/2 x 40 inches, "F" silhouette 26 x 19 inches. For the exact details of target configuration and superimposition onto rifle target "A". See Figure 81.

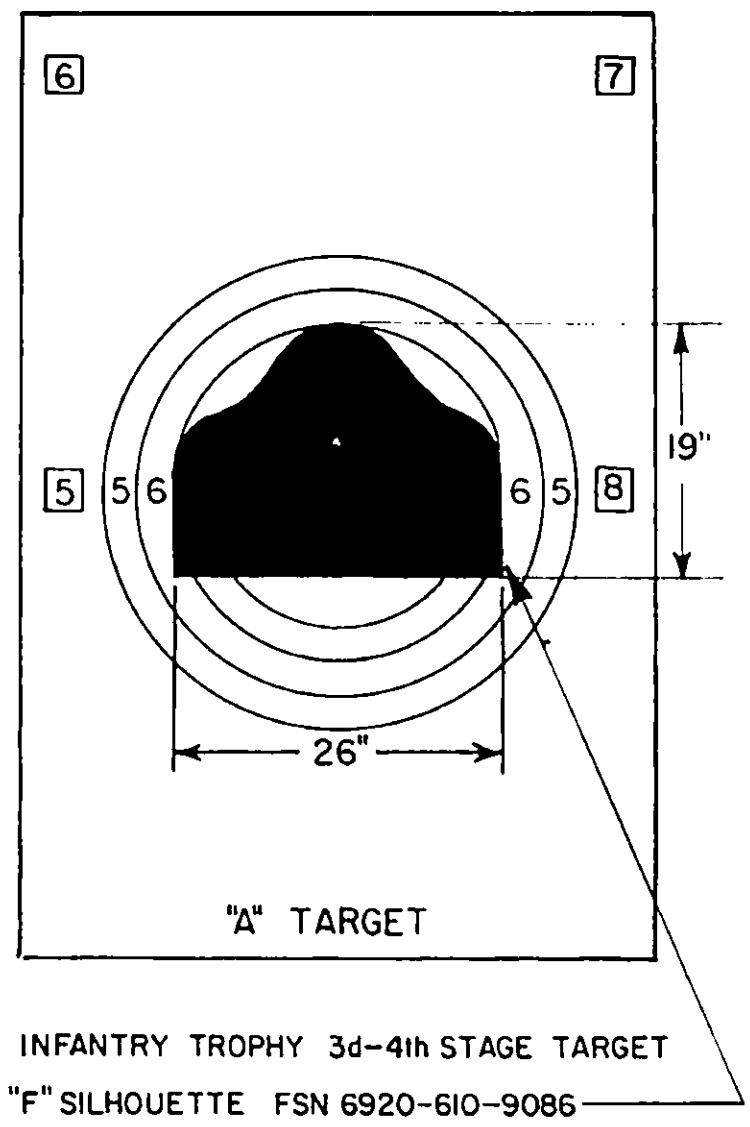


Figure 81. TARGET CONFIGURATION.

F. Detection and Correction of Errors.

Since Infantry Trophy firing is based on the same fundamentals as National Match firing, the methods for correcting errors are essentially the same. However, since six shooters are firing simultaneously under two coaches, the problem of detecting errors is magnified considerably. The following methods of detecting and correcting errors have been quite successful in training the Army Team.

1. Observation: When firing for practice only, coaches should not use binoculars, but should devote their full attention to the performance of the shooters. Occasionally, if the wind has been miscalculated, the shot groups will be misplaced but the coaches will be able to detect errors. Also, since the shooters will fire a full string without a sight change, the confirmation of zeros and synchronization is facilitated.

2. Target Analysis: To some extent, analysis may be performed simply be studying the shot groups plotted on the coach's plotting sheet or shooter's scorebook. Example of typical shot groups and their related probable errors are illustrated below:

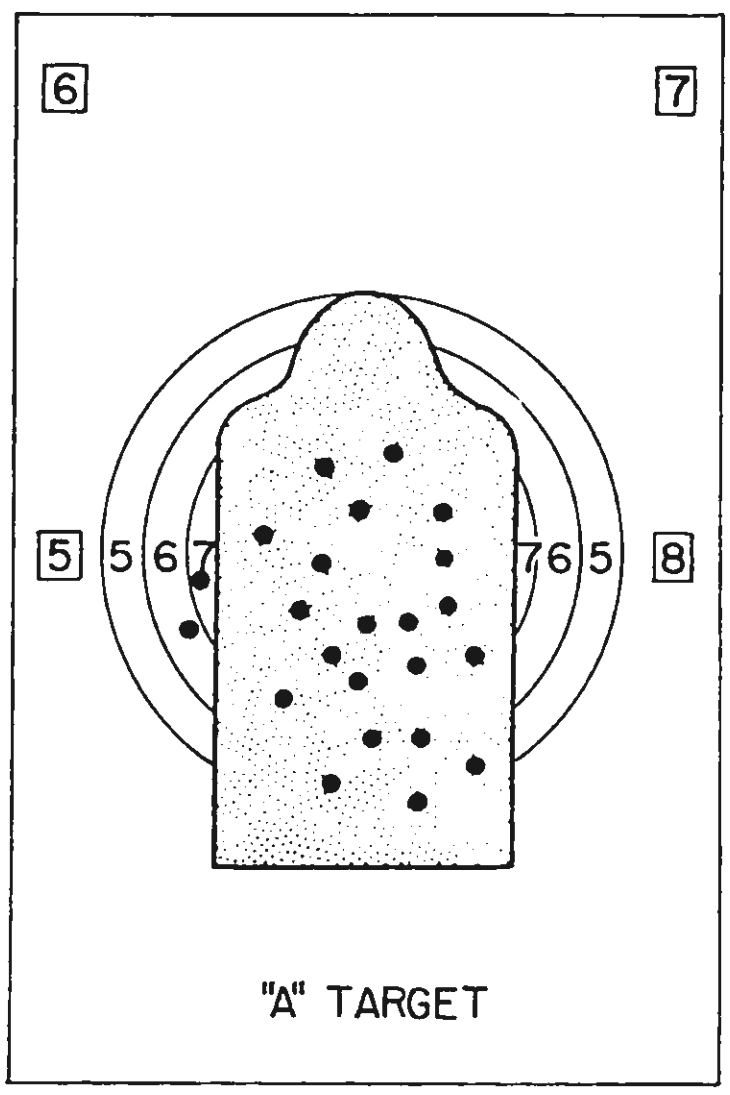


Figure 82. TWO ROUNDS OUT OF SILHOUETTE TO THE LEFT

Probable Error: Firing first shot of each magazine in slow fire cadence, and the remaining shots in rapid fire cadence.

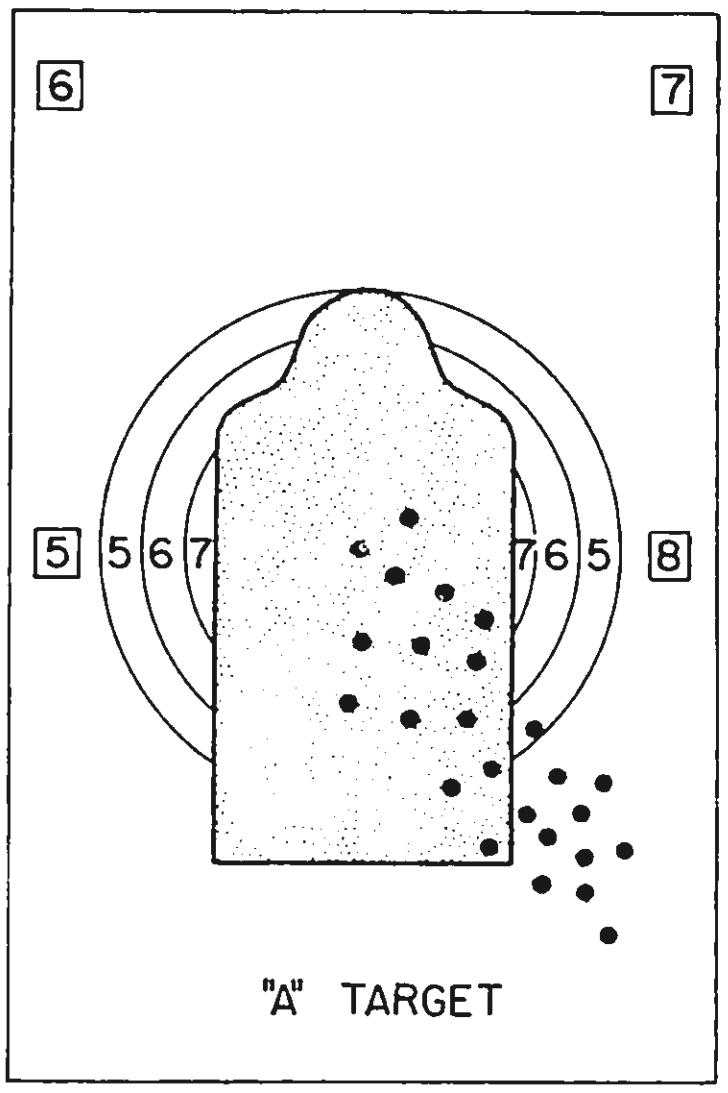


Figure 83. GROUP BUILDING LOW AND RIGHT

Probable Error: Right elbow slipping or improper trigger control (Jerking).

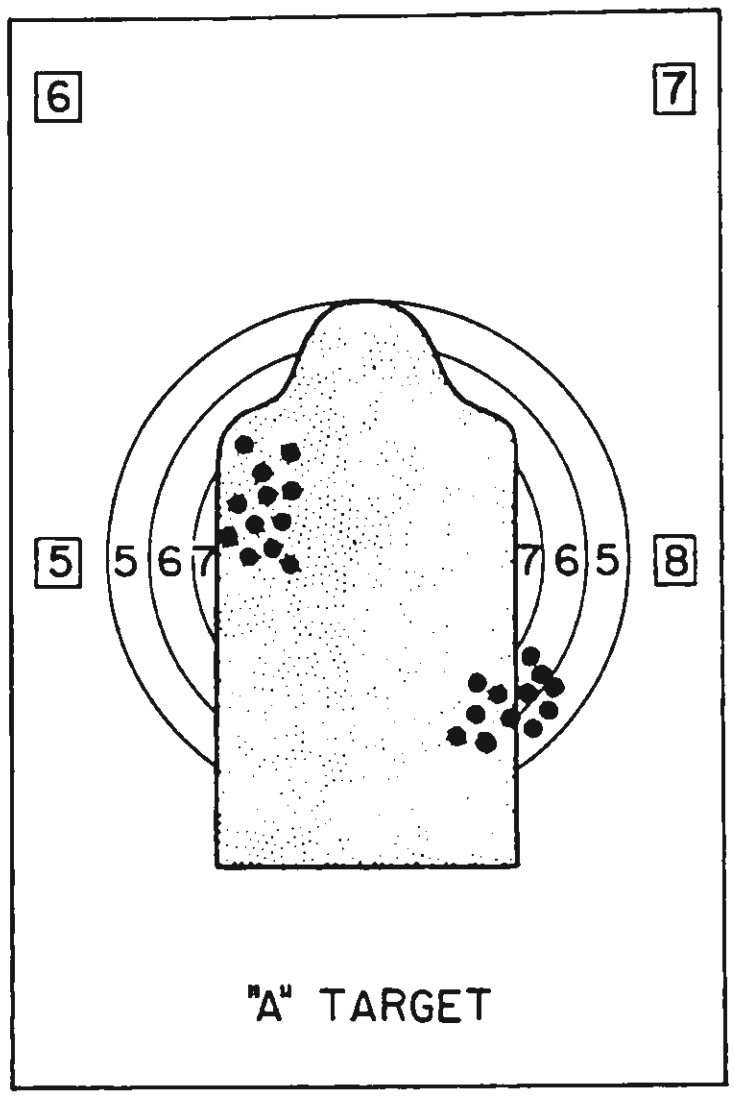
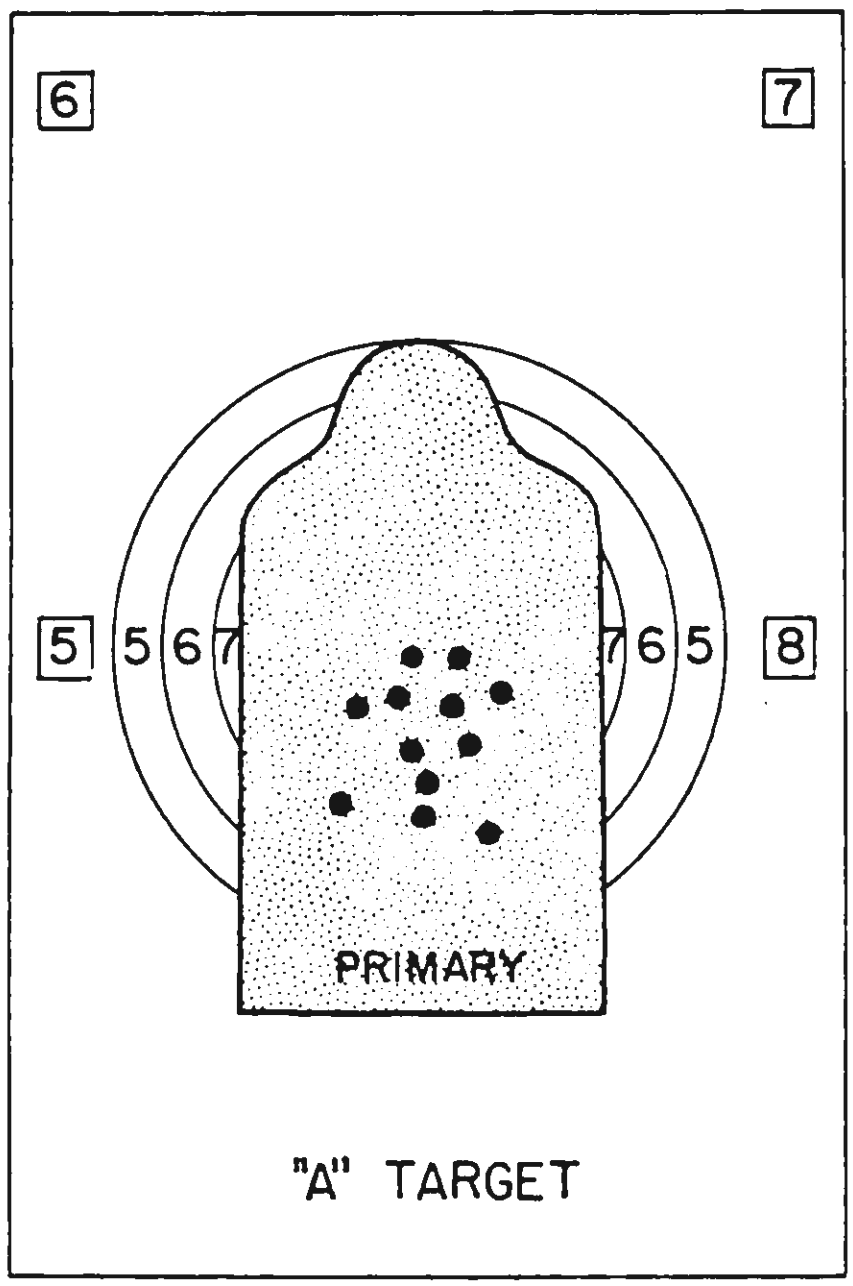


Figure 84. TWO DIFFERENT GROUPS

Probable Errors: Changing position and spot weld after each reload; or magazines not matched.



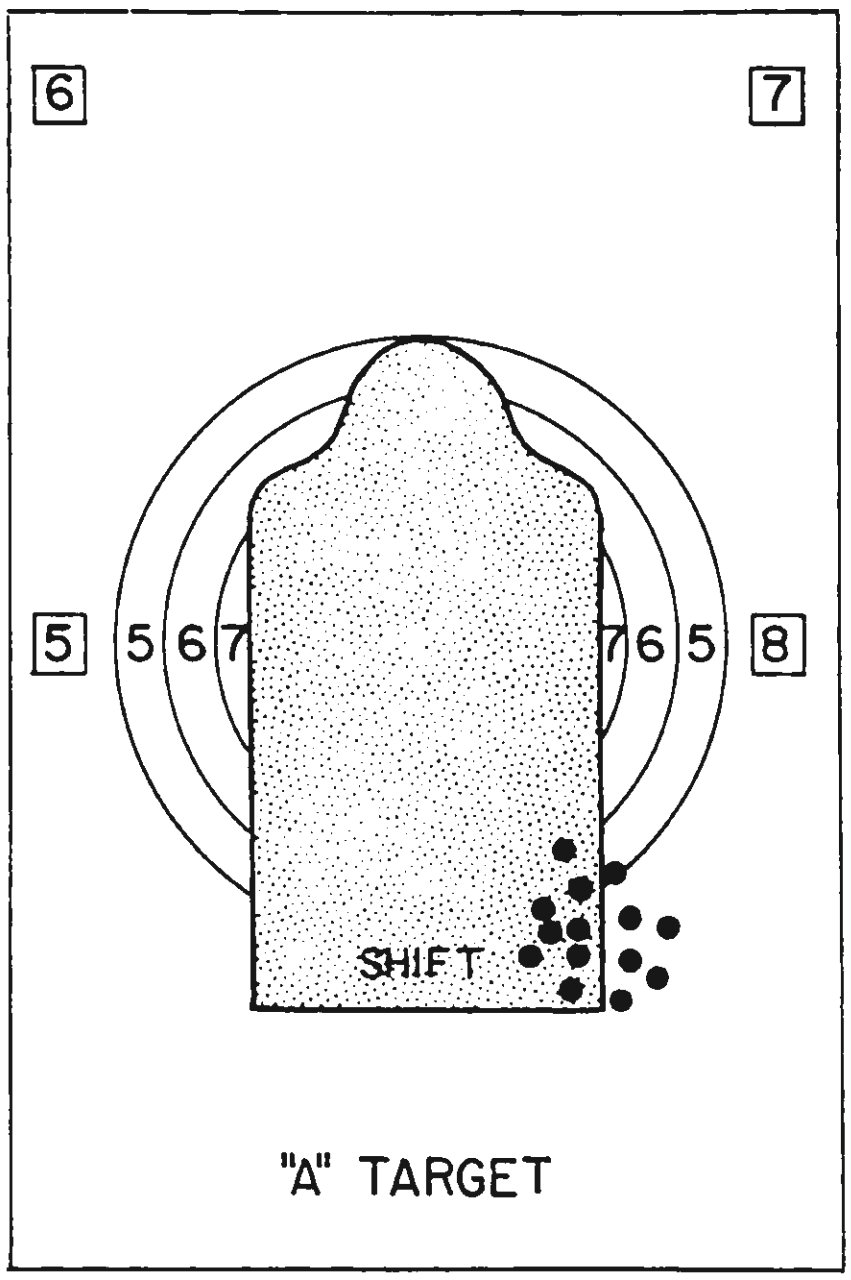


Figure 85. GROUP ON SHIFT TARGET, LOW AND RIGHT

Probable Error: Left elbow no longer under the rifle after shifting (May be eliminated by shifting from right to left).

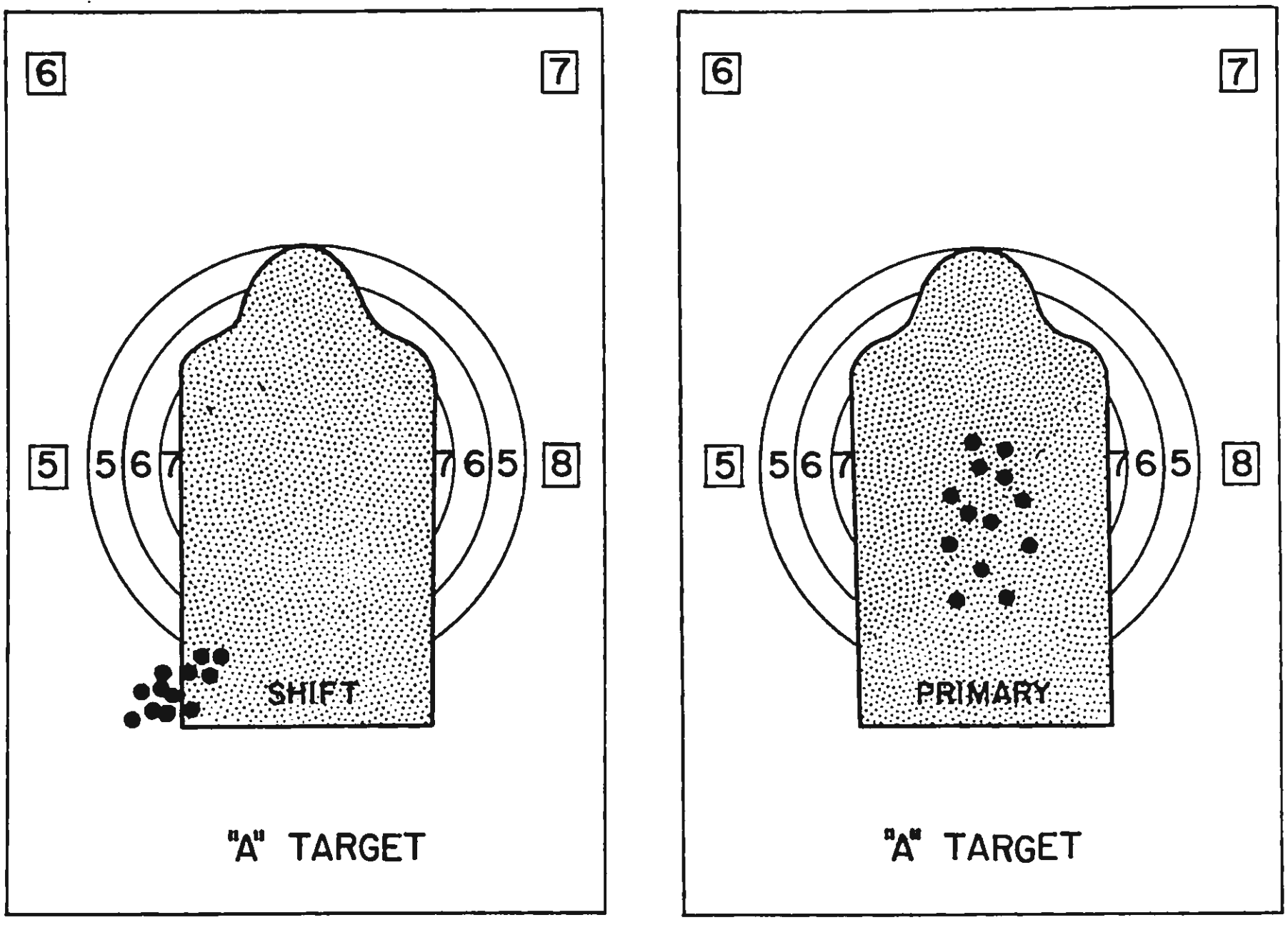


Figure 86. GROUP ON SHIFT TARGET, LOW AND LEFT.

Probable Errors: Over shifting of natural point of aim (Eliminated by readjusting position).

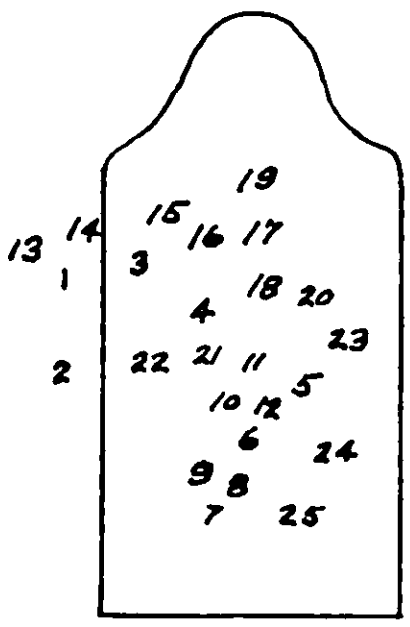
A more accurate way of analyzing shot groups is accomplished by using the Pit Plotting Sheet (Figure 87). Shots are recorded and numbered as accurately as possible by experienced shooters placed in the pits for that specific purpose. This system has an added advantage since the sequence of the rounds fired can be determined.

PIT PLOTTING SHEET

INFANTRY TROPHY

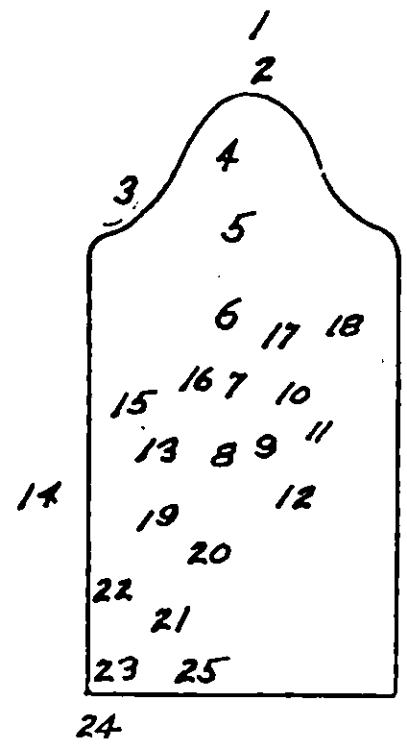
Name Sfc Liberty Name Sfc Duncan

Target Nr. 15 Date 6 June 66 Target Nr. 16 Date 6 June 66

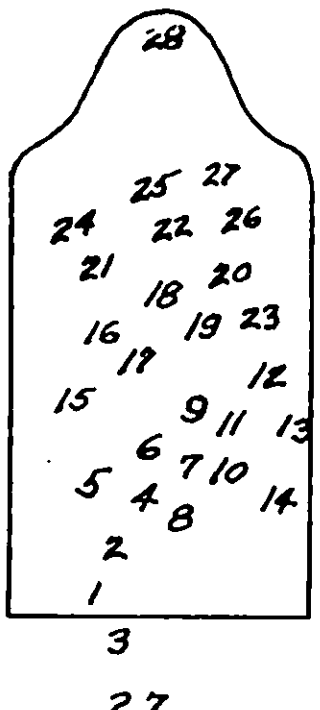


HITS 21

600 YARDS

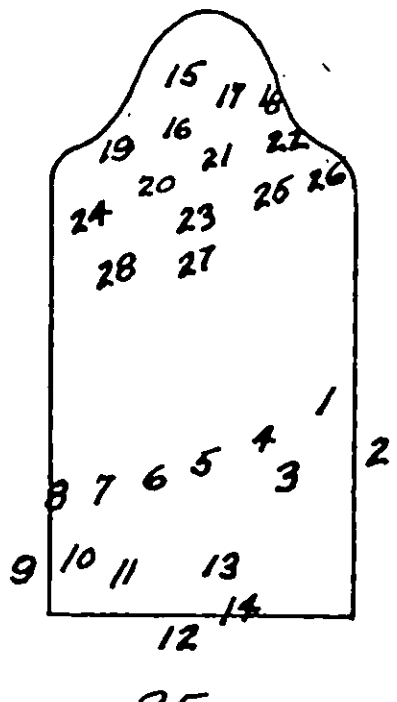


HITS 20

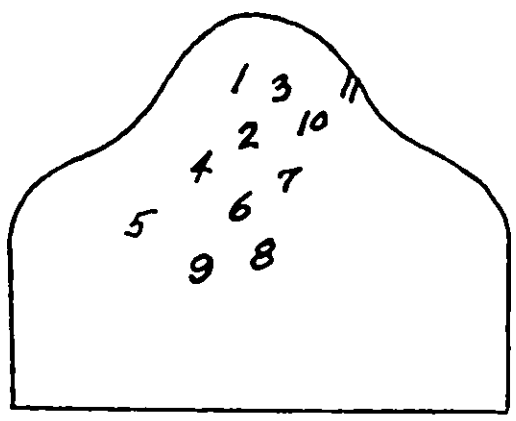


HITS 27

500 YARDS

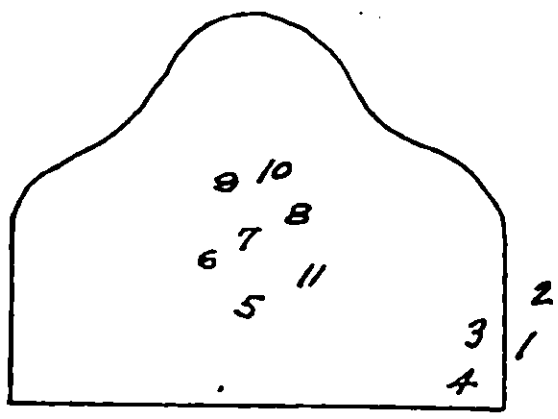


HITS 25



HITS 11

300 YARDS



9

Figure 87. PIT PLOTTING SHEET

G. Fire Plans.

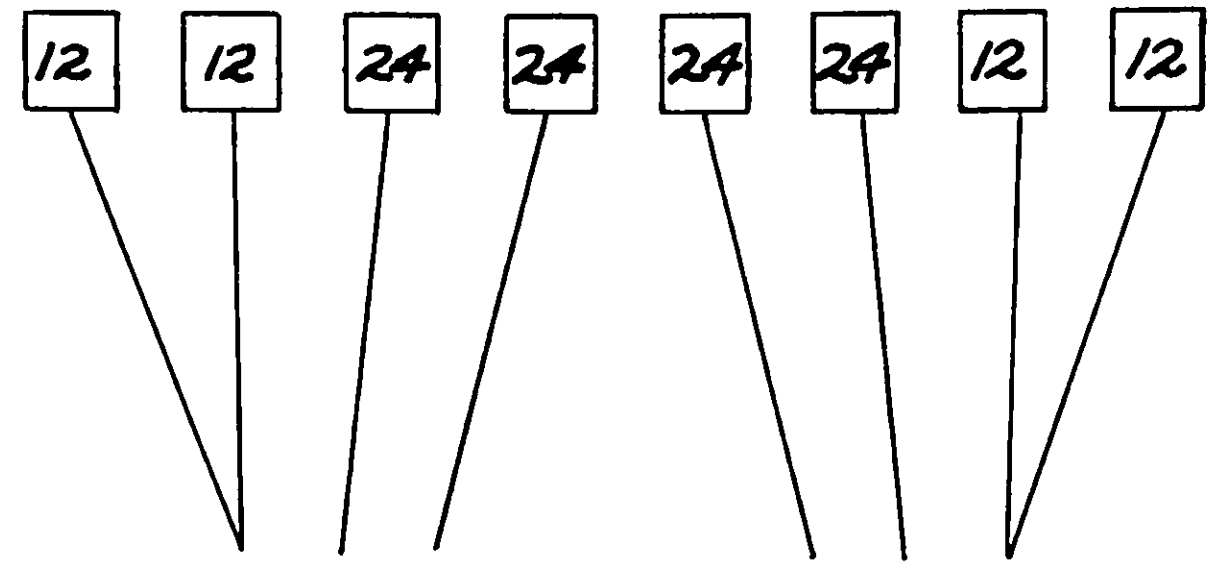
1. The most common method of controlling fire is to divide the six shooters into two 3-man teams, each fire team being controlled by one coach. The right fire team will fire on the right four targets and the left team will fire on the left four targets. Obviously, when three men fire on four targets, one or more must fire on at least two targets. Usually the most cosistent shooter is designed as the "swingman." The swingman will usually use the outside target of his block as the primary target. This facilitates other shooters swinging to his shift target in case of a malfunction. Both fire teams, although working individually with their coach, are close enough together for all shooters to hear commands from either coach.

2. Fire plans vary according to the capabilities of the team and the desires of the coaches, but they should, as much as possible, have the following characteristics.

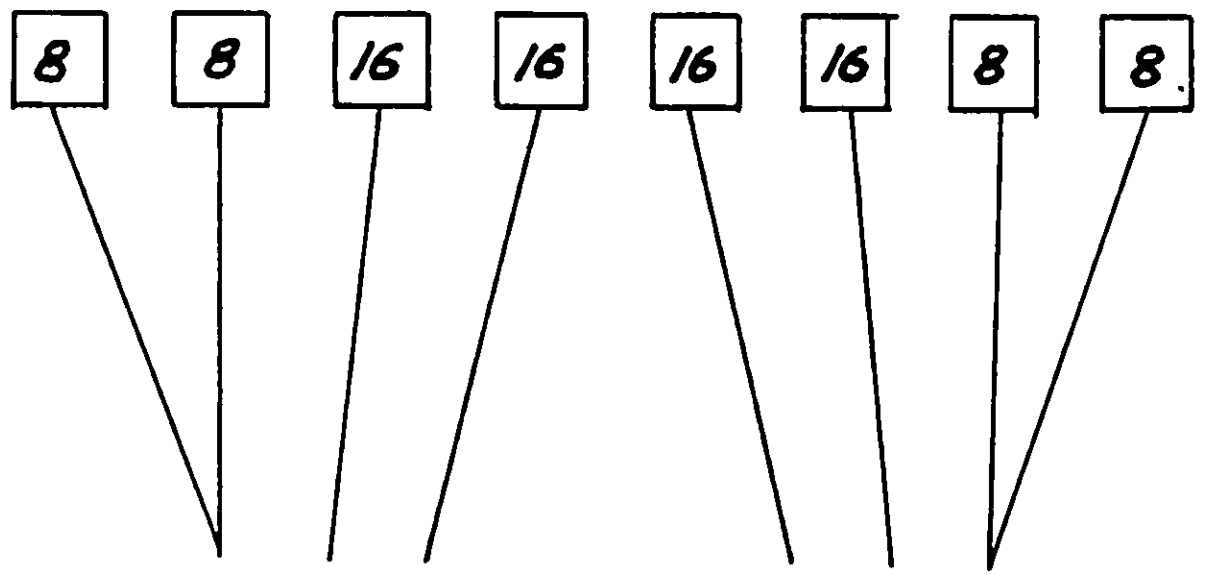
a. Simplicity: Because of the rapidity of action in the match, neither shooters nor coaches can devote a great deal of attention to the fire plan during firing. Therefore the plans should be as uncomplicated as possible and should require a minimum amount of shifting. This will insure the maximum number of hits within the capabilities of the shooters.

b. Fire Distribution: The fire plan should provide for a maximum assurance of "squaring" (six or more hits) all targets. A maximum number of rounds should be fired at the longer ranges because of the increased value of each hit.

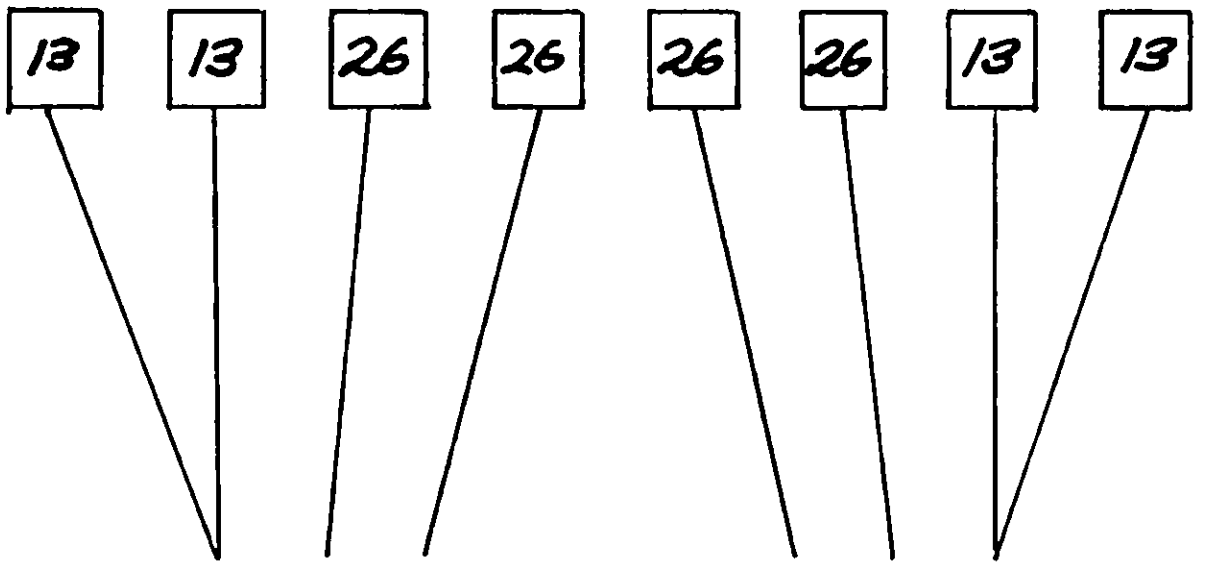
3. Various type fire plans for experienced and inexperienced teams are shown in figures 88-91. These are not necessarily the best possible plans, but they incorporate the above characteristics and may be used as a guide in devising other fire plans. There is no 200 yard fire plan shown for either team since generally, there is usually no ammunition remaining for the 200 yard stage.



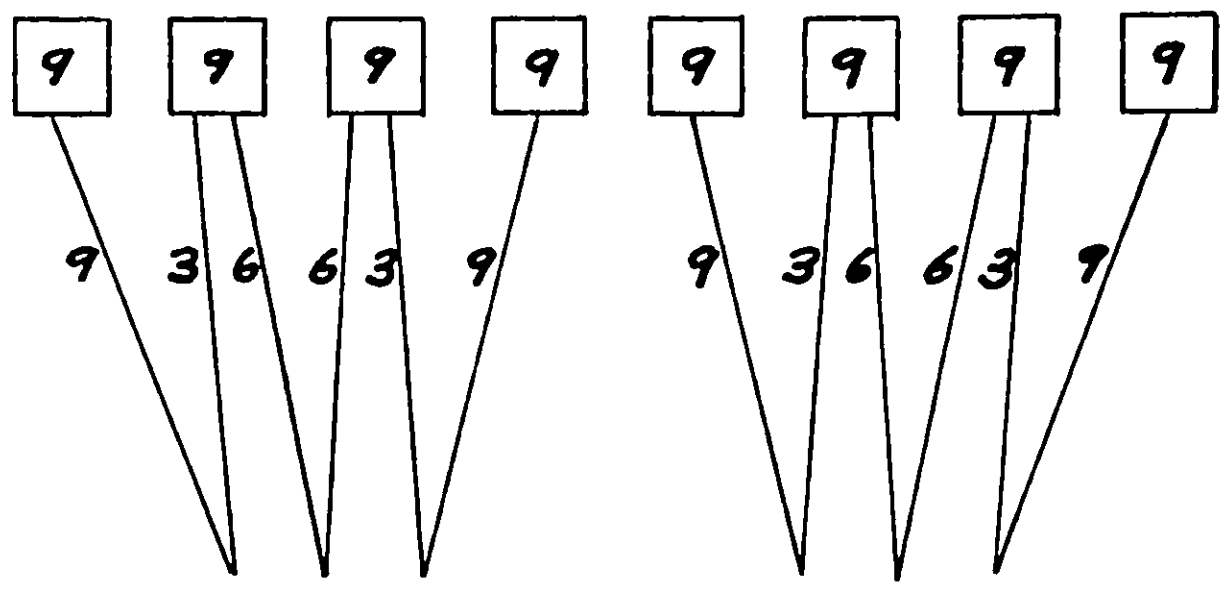
Fire Plan for the Inexperienced Team, 600 & 500 Yards.
Each shooter fires 24 rounds.
Figure 88.



Fire Plan for the Inexperienced Team, 300 Yards.
Each shooter fires 16 rounds.
Figure 89.

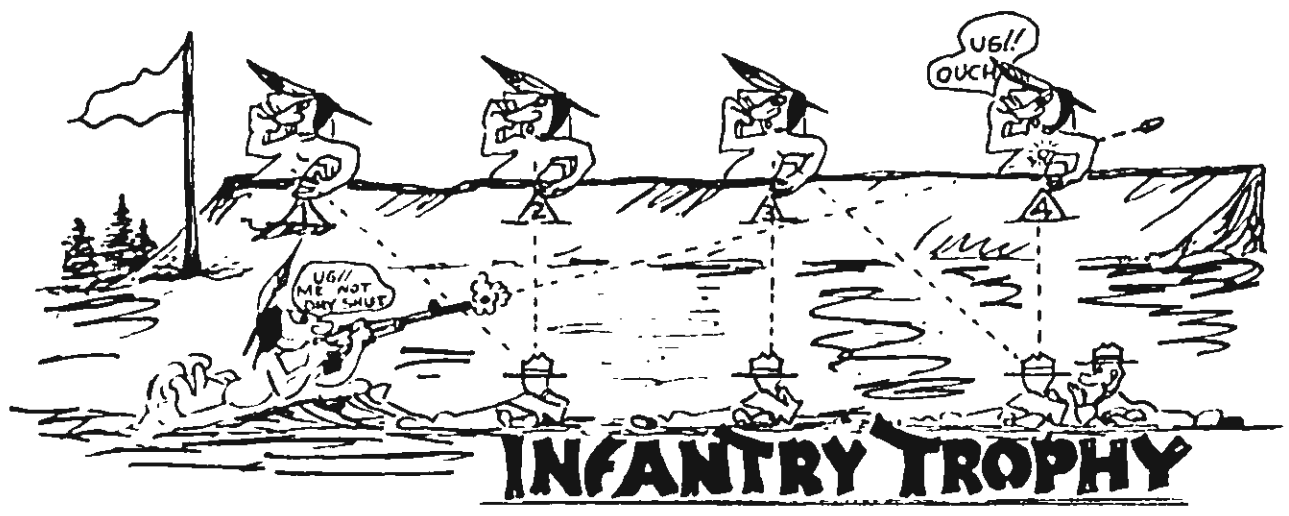


Fire Plan for the Experienced Team, 600 & 500 Yards.
Each shooter fires 26 rounds.
Figure 90.



Fire Plan for the Experienced Team, 300 Yards.
Each shooter fires 12 rounds.

Figure 91.



SECTION V - COACHING TECHNIQUES AND CONDUCT OF THE MATCH

The success or failure of an Infantry Trophy team is determined largely by the coaching. A minor error in wind doping will cost the team points. The coaches must not only be able to dope the wind, but they must make every effort to prevent malfunctions and errors. In addition, coaches should work with the shooters for at least four weeks prior to the match in order to establish a good coach-shooter relationship and to develop the necessary teamwork. A listing of the coach's duties and techniques employed in conjunction with the range commands are as follows:

A. Duties in the Assemble Area.

1. Check range for quality of firing lines, proper pasting of targets, visibility of target numbers, etc.

2. Check shooters scorebooks (Figures 69-72) and the Coach's Plotting Sheet (Figure 75) to determine proper zeros.

3. Check all weapons for loose sights, proper lubrication, and functioning.

4. Supervise setting and blackening of sights.

5. Assign target numbers and discuss fire plan to be used.

6. Check equipment and spare parts, to include:

a. Binoculars and lens tissue.

b. Allen wrench.

c. Combination tool.

d. Extra trigger group.

e. Extra bolt.

f. Extra sling.

g. Screw driver.

h. Magazine round indicator.

7. Focus Binoculars.

Focusing of the binoculars should be done by looking through the eyepiece at the target with both eyes open; and placing a hand over the front of one eyepiece, turn the focusing nut of the other until the object is sharply defined. Repeat for the other eye and note the diopter scale reading on each eyepiece.

RANGE COMMAND: FIRST RELAY OF TEAMS FOR THE INFANTRY TROPHY TEAM MATCH. TAKE YOUR POSITION ON THE READY LINE. TEAM CAPTAINS, DRAW AND ISSUE YOUR AMMUNITION.

B. Duties on the ready line.

1. Verify receipt of 384 rounds of ammunition.

2. Issue ammunition to team members.

3. Have shooters check ammunition, charge magazines, and place in pouches.

4. Have shooters put on slings and adjust for 600 yards.

5. Have shooters check sight setting (elevation 600 and wind zero).

6. Insure that each shooter knows his target number(s) and the team fire plan.

RANGE COMMAND: FIRST RELAY MOVE TO THE FIRING LINE. YOUR THREE MINUTE PREPARATION PERIOD HAS STARTED.

NOTE: All commands given by the coach will be repeated by all shooters; this will insure that the shooters have heard and understood the command.

C. Duties and techniques employed on the firing line at 600 yards.

1. Before Firing.

a. Position shooters on the firing line.

b. Check focus of binoculars.

c. Insure that shooters recheck sights for proper zero.

d. Have shooters call their target number(s) and fire plan.

e. Have shooters dry fire to check position; coaches assist by striking operating rod to simulate recoil.

RANGE COMMAND: YOUR THREE MINUTE PREPARATION PERIOD HAS ENDED. THIS IS THE 600 YARD STAGE OF THE INFANTRY TROPHY TEAM MATCH, 50 SECONDS TIME LIMIT. TEAM CAPTAINS HAVE YOUR TEAMS LOAD AND BE PREPARED TO FIRE WHEN YOUR TARGETS APPEAR.

f. Have shooters lock and load, then assume firing position.

g. Give initial windage.

h. Initially take a squatting or kneeling position behind the shooter who has the most consistant zero; normally the swing man of each fire team. It is recommended that the kneeling position be used because of its stability. The coach should position himself to the rear of the shooter's right foot so that he is looking directly over the axis of the rifle. If four or more clicks of wind is used, the coach should position himself slightly to the wind side of the shooter. This will help him to observe the true arc of the bullet more accurately.

RANGE COMMAND: IS THE LINE READY? THE LINE IS READY. READY ON THE RIGHT. READY ON THE LEFT. READY ON THE FIRING LINE.

2. During Firing.

a. Check the elevation and windage of the first two or three shots. If the elevation and windage are correct, at 600 yards the trace of the bullet should disappear in line with, and approximately six inches above, the head. At 500 yards the trace will disappear just inside the top of the silhouette. If it appears that an additional windage correction is necessary, it must be given at once. If the team is experienced and zeros are well synchronized, give the correction to the entire team. If, however, the coach feels that the shooter under observation is not synchronized, he may give the correction to the shooter only (Figure 92). In giving windage corrections, always give directions of change first. For example, say, "left two" instead of "two left". All corrections must be taken immediately. Elevation corrections are preceded by the shooter's name.

Figure 92. FIRE ADJUSTMENT TECHNIQUE

b. As soon as it appears that a shooter is centered on the target, move as rapidly as possible to a position behind the next shooter to observe his shots. Attempt to observe the third shooter before his first magazine has been expended.

c. Be alert for malfunctions. The shooter having a malfunction will call out his target number, at this time the team member to his left or right (predesignated by the coach) will shift and fire his last eight rounds, or remaining rounds if less than eight, on that target. After the malfunction is cleared, the shooter calls "ready", then the team member shifts back to his own target.

d. After the coach has observed his fire team, he moves back to the swing man or to the team member who was given a correction.

RANGE COMMAND: CEASE FIRE. UNLOAD AND CLEAR ALL WEAPONS. IS THE LINE CLEAR? CLEAR ON THE RIGHT? CLEAR ON THE LEFT? THE FIRING LINE IS CLEAR.

3. After Firing.

a. Insure all rifles are unloaded and cleared.

b. Have shooters return sights to windage zero.

c. Have shooters set their windage and elevation zero for next stage.

d. Collect and redistribute unexpended ammunition.

e. Have shooters move loaded magazines to front pouch.

f. Have shooters readjust slings for next stage if necessary.

g. Ensure that all shooters know the fire plan to be used at the next stage.

RANGE COMMAND: STAND BY, YOUR TARGETS ARE COMING UP FOR SCORING.

h. One coach fills out plotting sheet (Figure 75) and analyzes the groups with the team members.

i. The other coach verifies scores with the score keeper.

j. Have shooters plot group(s) in individual scorebook (during practice).

RANGE COMMAND: HAS SCORING BEEN COMPLETED? SCORING HAS BEEN COMPLETED. TEAM CAPTAINS PREPARE TO MOVE YOUR TEAMS TO THE 500 YARD LINE.

k. Insure that all equipment is secured and shooters are prepared to move out on command.

RANGE COMMAND: DRESS CENTER, KEEP THE LINE STRAIGHT. WHEN YOU ARRIVE AT THE 500 YARD FIRING LINE, ASSUME YOUR FIRING POSITION. MOVE OUT.

l. Insure team is dressed to the center and in a straight line.

D. Duties and techniques employed on the firing line 500, 300, and 200 yards.

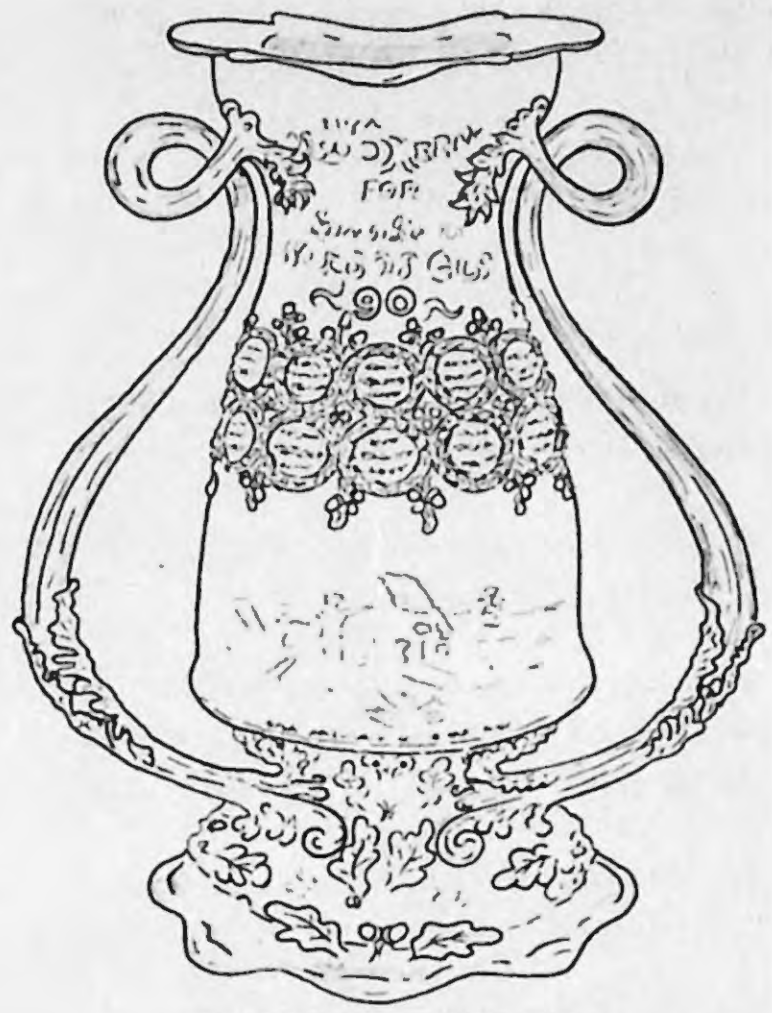
1. All coach's duties accomplished on the 600 yard line must be performed on the 500, 300, and 200 yard lines, but without the benefit of a three minute preparation period. This necessitates team members taking a position immediately upon arriving at the firing line.

2. Likewise, the range commands at the shorter ranges are the same except for the lack of a preparation period command and the substitution of the proper yard lines where needed. At the completion of firing on the 300 hard line, if all teams have expended their 384 rounds, then the match will end; if any team has one or more rounds remaining, then all teams must go to the 200 yard line and complete the requirements of the last stage.

Chapter Three

LONG RANGE FIRING

LEECH CUP TROPHY



HERRICK TROPHY

ROUMANIAN TROPHY

WIMBLEDON TROPHY

SECTION I - DESCRIPTION OF LONG RANGE FIRING

Long Range Matches are fired from the prone position at ranges of 500 yards and beyond. When firing at 500 and 600 yards the military "B" target is used and a time limit of one minute per round is allowed. At ranges beyond 600 yards the military "C" target is used with a time limit of 1 1/2 minutes per round.

The "Leech Cup Match" fired as an individual and the "Herrick Trophy Team Match" are examples of long range competition. The Leech Cup Match consists of two sighting rounds and 20 rounds for record from the 1,000 yard line. The Herrick Trophy Team consists of six firing members, a team coach, and team captain. In this match no sighters are allowed, pair firing is required, and 20 record shots are fired per firing member from the 1,000 yard line.

Long range matches can be fired with any type rifle that conforms to the match rules. This chapter deals with the match or magnum rifle using telescopic and iron sights.

SECTION II - SELECTION OF SQUAD MEMBERS

Selection of long range squad members is the same as Chapter One (National Match) Sec II with the following exceptions:

A. The competitive new shooter rule outlined in CONARC Regulation 622-2 does not apply to long range firing.

B. Selection of a long range shooter should, as a rule, be based on proven ability or potential. This ability or potential should be displayed at long range with a service rifle or a bolt rifle with iron or telescopic sights.

C. An experienced smallbore shooter should also have the potential as a long range shooter, because of his scope experience and holding abilities.

D. The Long Range Shooter's Graph (Figure 93) is used in the same manner as the National Match Shooter's Graph (Figure 2).

LONG RANGE SHOOTER'S GRAPH

NAME _____ RIFLE NR. _____ SCOPE NR. _____

1000 YARDS TELESCOPE

DATE																														
100																														
99																														
98																														
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1000 YARDS IRON SIGHT

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600 YARDS IRON SIGHTS

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Figure 93. LONG RANGE SHOOTER'S GRAPH

SECTION III - SQUAD EQUIPMENT

The equipment used for long range is the same as in Chapter One (National Match), Sec III.

The equipment shown in Figure 94 supplements that found in Figure 5.

A. Individual Equipment:

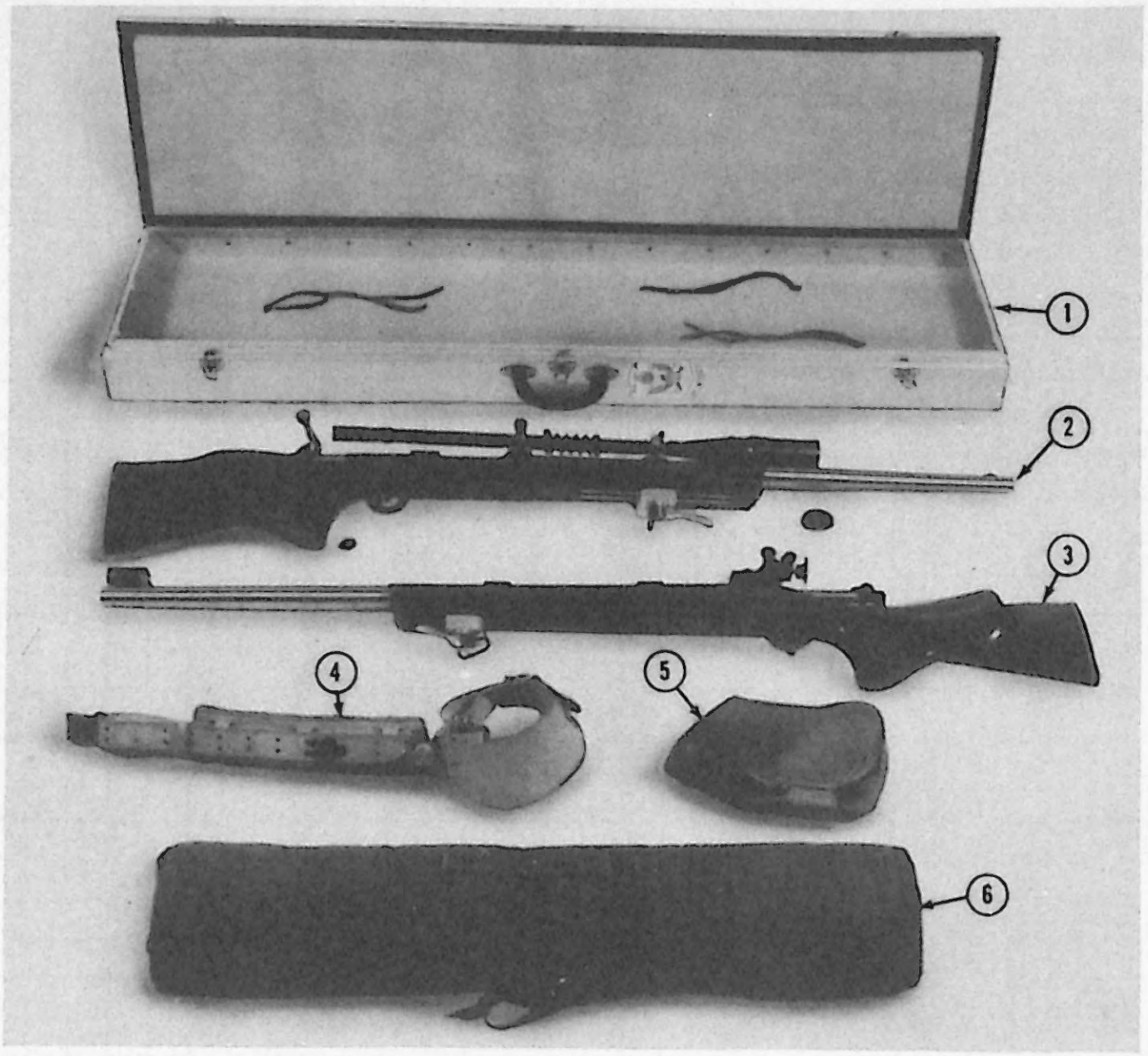


Figure 94. INDIVIDUAL EQUIPMENT

1. Rifle carrying box.

2. Rifle with telescopic sight.

3. Rifle with iron sights.

4. Sling cuff.

5. Shooting mitt.

6. Shooting mat.

B. Coach's Equipment:

The coaching equipment is the same as in Figure 6. The cleaning rod is needed by the coach in case it becomes necessary to dislodge a bullet from the breach.

C. Factors to be considered in the Selection of a Long Range Rifle.

1. Barrel.

a. The Army team uses caliber .30 barrels. However, barrel sizes of 6.5mm, 7mm, and caliber .270, have shown excellent promise. Their biggest handicap is the lack of high quality match bullets.

b. Bore demension should be compatable with the diameter of the bullets used. Uniformity of the bore has been found to be more important than any one specific set of demensions. The Army team selects barrels that have a maximum of .0001 inch variation in land and groove throughout their length.

c. Rate of twist is extremely important. The bullet has to spin fast enough to keep it "nose on" at the distance fired. Excess spin may cause inaccuracy. The Army team uses both one in ten and one in eleven inch twist, (the lands and grooves make one complete turn in 10 or 11 inches of barrel length) with the 190 grain bullet in a .338 caliber cartridge case, necked down to .30 caliber, commonly called .30/338. The .30/338 is loaded to a velocity of slightly under 2950 feet per second. A twist as slow as one in 14" can be used with a 168 grain bullet, but only under ideal firing conditions (little or no wind).

d. The barrel should be 26 to 28 inches in length to get maximum benefit from the powder consumed. This length is also desirable for its sight radius when using iron sights, and it makes a balanced rifle resulting in shooter comfort.

e. The barrel should be approximately one inch in diameter at the muzzle for best accuracy.

2. Action.

To be assured of the highest quality, use actions made by a proven manufacturer.

3. Headspace.

Headspace is an important factor for accuracy and safety. Headspace is the distance between the face of the bolt and the base of the cartridge fully seated in the chamber. On magnum rifles, headspace is measured (Controlled) from the shoulder of the belt to the face of the bolt. On other rimless cartridge rifles, the headspace is measured (Controlled) from the shoulders of the chamber to the face of the bolt. Headspace measurement or adjustment must be made by an experienced gunsmith. Any variation in cartridge case length will change the headspace and affect the accuracy of the rifle. If several cartridges of varying length were fired from a rifle, the headspace, chamber pressures, and muzzle velocity would vary; resulting in an erratic shot group.

4. Trigger.

The trigger should be adjustable to various weights. A trigger with no slack, no creep, and that breaks clean is desired. The trigger weight must conform to the specifications in the match program. Normally a minimum 3 lb trigger is required in an iron sights match. In any sights, any rifle match, the trigger can be any weight; provided it is safe. In many "no restrictions" Long Range Matches, a set trigger is allowed.

5. Stock.

The stock is formed, glass bedded, and fitted to the barrel and receiver. A firm contact is necessary between some points of the barrel and receiver group and the stock. From

the receiver end, a pad of glass should extend under the barrel for approximately 2 1/2 inches to assist in controlling barrel whip. At other points, the barrel and receiver group should not touch the stock. Expansion, shrinkage, or warping of the stock will change the pressure points between the barrel and receiver and the stock causing a zero change, affecting the rifle's accuracy. Select a stock that resists warping under various weather conditions. A laminated stock is preferred; if not available, a close, straight grained stock, such as walnut, is good. An epoxy impregnated stock adds strength and prevents warping. The stock should also be waterproofed inside and out with a high qualtiy varnish or plastic finish.

D. Care and Cleaning of a Long Range Rifle.

Care and Cleaning of the long range rifle has a direct relation to its accuracy. Excessive metal and powder fouling in the bore will cause erratic shots; however, some fouling may improve accuracy. The Army Team gets best results between the 20th and 80th shots with a fouled bore. The Army Team schedules cleaning so that 20 fouling rounds are fired through each rifle prior to a match. To establish a cleaning schedule, it should be determined whether fouling rounds improve accuracy, how many rounds result in the best accuracy, and how many rounds create excessive fouling; resulting in erratic shots.

1. Materials required for cleaning.

a. Military Issue.

(1) Lubricating oil.

(2) Bore cleaner.

(3) Patches.

(4) Bore brush.

(5) Rag.

b. Purchased.

(1) Plastic coated cleaning rod.

(2) Toothbrush.

(3) Fiber Chamber brush.

(4) Plastic grease.

2. Cleaning procedure.

Wipe cleaning rod to remove any abrasives. Remove the bolt and run 1/2 a cleaning patch through the bore to remove loose fouling, which contains abrasive glass particles from the primer. A full size cleaning patch may become stuck in the bore. Dip the bore brush in bore cleaner, run it through the bore 10 to 12 times from the breach end, push the brush all the way through, and pull it all the way out to prevent crimping the bore brush bristles. With a chamber brush dipped in bore cleaner, scrub the chamber, dry the bore with clean patches, push the cleaning rod through the barrel from the breech, remove the patch at the muzzle end, and ease the rod back out. Run patches through the bore until a patch appears clean and dry. Run patches into the chamber until a patch comes out clean and dry. Clean the face of the chamber and interior of receiver with a cotton swab or rag, clean the face of bolt with bore cleaner and brush, dry the bolt, put a light coat of oil on the bolt and exterior of the weapon.

Put a light coat of oil in the bore. Oil in the bore must be removed prior to firing. If a telescopic sight is mounted on the weapon, replace lens covers before cleaning. Clean and reapply plastic grease between scope tube and bearing surfaces of front and rear mounts, insuring that the rear mount plunger is lubricated at all times.

3. Storage and transportation.

Store in a rifle rack, muzzle up, bolt closed, and firing mechanism uncocked. When transporting, have bolt closed and firing mechanism uncocked. If in a leather case, pack it sights up. In all cases make sure that the barrel is not under outside pressure. Any pressure on the barrel may cause a shift in the zero by changing the bedding of the rifle. On the range, place the rifle in a rifle fork with sights up; and protect from the weather.

4. Because the tension adjustment of the bedding screws has a direct relationship to accuracy, any adjustment should be performed only by an experienced gunsmith.

SECTION IV -- SQUAD TRAINING

A. Training Program.

Once the selection of individuals has been made to comprise a squad, an organized training program should be laid out to mold them into individual and team shooters. The goal of the program is to prepare each individual to adequately represent himself and the team at any level of competition.

1. Instructional training phase.

After selection of squad members an instructional training phase should be conducted to familiarize them with the elements of long range firing. In determining how much time to devote to the instructional training phase, the time available and experience of the shooters should be considered. If long range firing is to be conducted in conjunction with National Match Firing, those elements that apply to both types of firing need not be repeated. Instructional training should include physical and mental conditioning, rules and regulations, care and cleaning, safety, fundamentals of long range firing, detection and correction of errors, care and cleaning, dry firing, and range firing.

2. After completion of the instructional training, a training program should include:

a. Physical conditioning.

It should be performed daily during practice, and discontinued prior to and during matches.

b. Team firing.

Based on the progress of each individual, as recorded in the evaluation file, teams should be formed and a concentrated effort placed on team firing.

c. Individual firing.

Since a good portion of match competition is individual, time should be allowed for individual firing. Deficiencies noted by the coaches during team firing should be corrected at this time.

d. Match firing.

All individual matches should be entered. There is no substitute for this type of training, which offers the true competitive spirit of marksmanship. Here, the individual is afforded the opportunity to build and develop a high degree of mental conditioning and discipline so necessary to the shooter.

3. The training program is a continuous process of detection and correction of errors. When a weakness is noted, a review of the technique, fundamental, or subject is recommended. This can be accomplished on an individual or group basis.

B. Physical Conditioning: Refer to Chap One, Sec IV-B.

C. Mental Conditioning: Refer to Chap One, Sec IV-C.

D. Rules and Regulations: Refer to Chap One, Sec IV-D.

E. Safety: Refer to Chap One, Sec IV-E.

CAUTION: Loading the wrong type of ammunition into a rifle can cause damage to the rifle and result in injury to the shooter.

F. Fundamentals of Long Range Firing.

1. Aiming.

Aiming with the long range rifle is the same as with the service rifle (Chap One, Sec IV-F.1.) except for the type of sights used. An explanation of iron and telescopic sights follows:

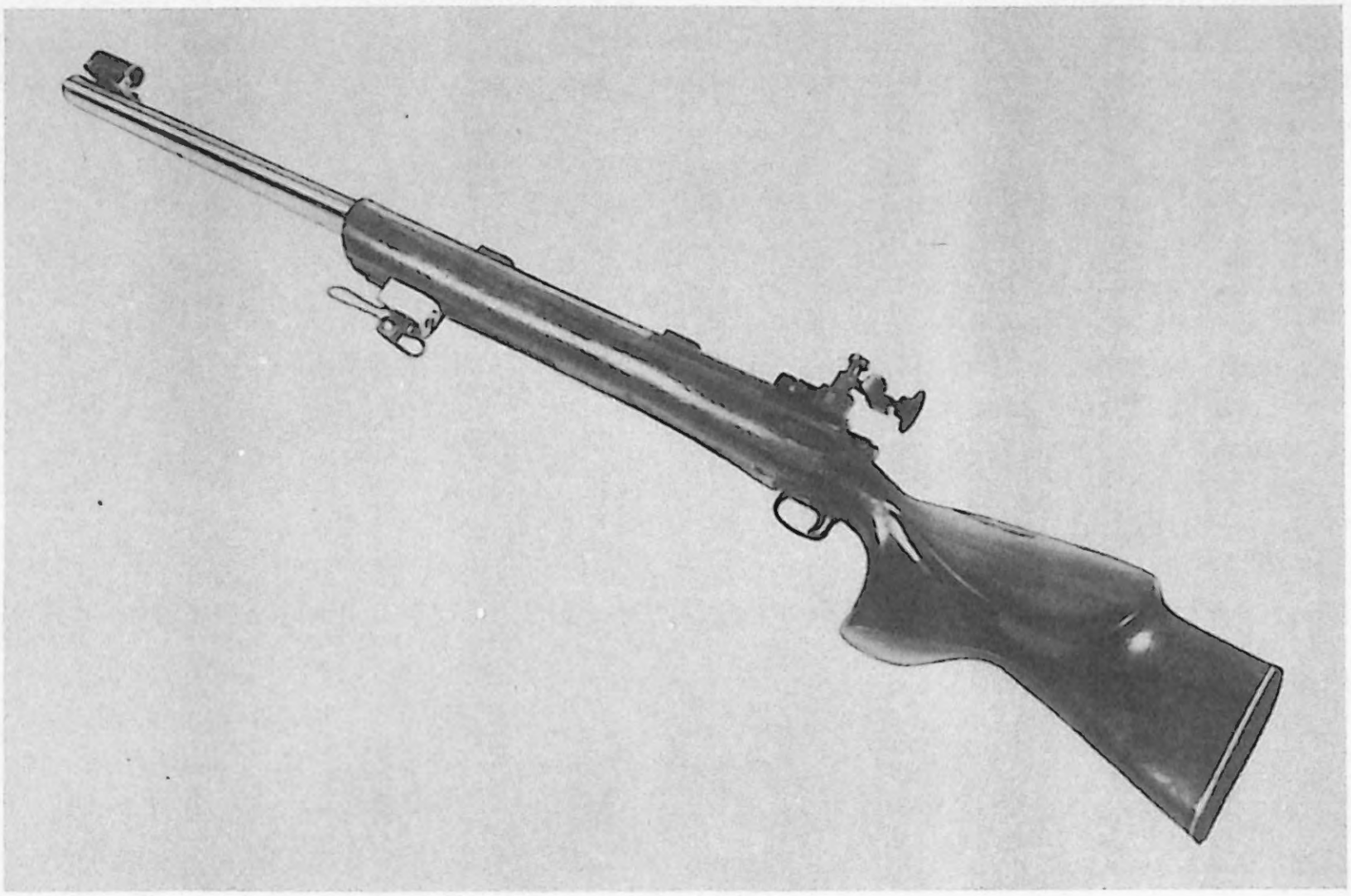


Figure 95. IRON SIGHTS MOUNTED.

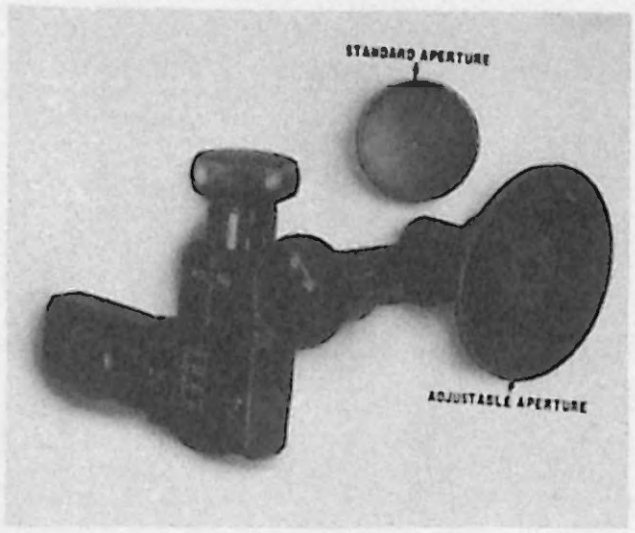
a. Iron Sights.

(1) Rear Sight.

Should be attached firmly to the receiver and capable of 1/4 minute elevation and windage adjustments.

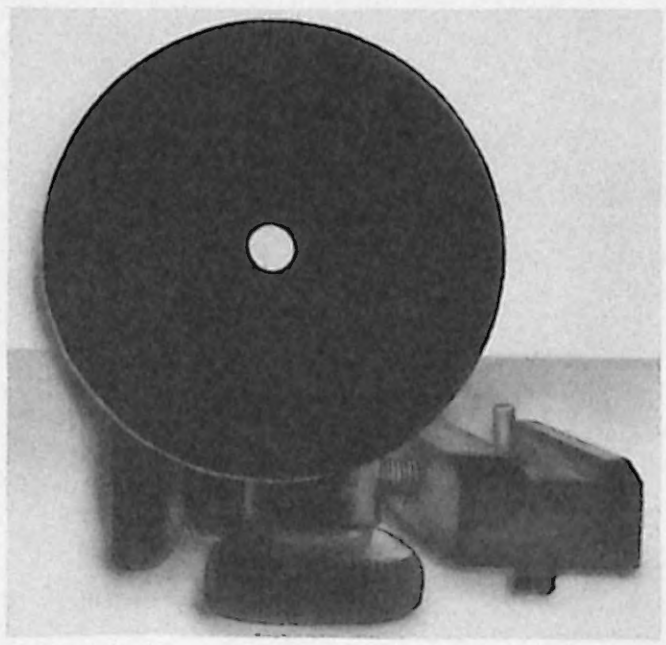
(a) Rear aperture.

Rear apertures are available with an adjustable peep or a fixed peep. The adjustable aperture is desired. By adjusting the size of the rear aperture, the shooter can control the amount of light entering the eye and obtain visual clarity or contrast in sight picture.



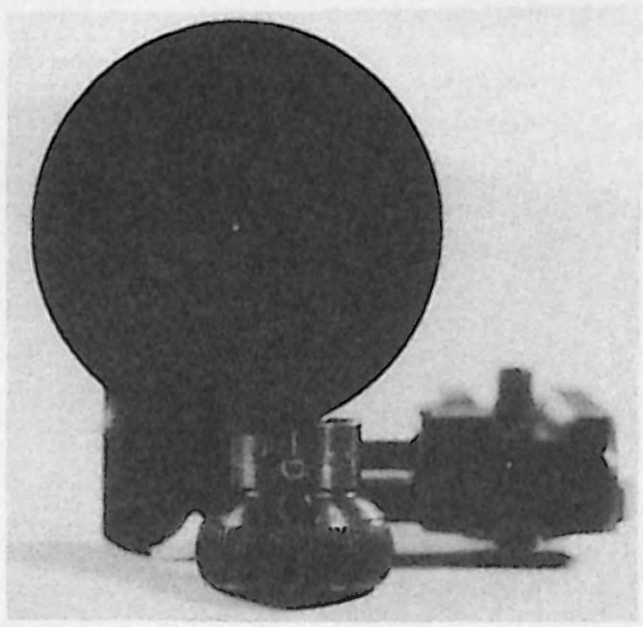
STANDARD APERTURE

Figure 96.



ADJUSTABLE APERTURE-OPEN

Figure 97.



ADJUSTABLE APERTURE-CLOSED

Figure 98.

(b) Eye relief.

The rear sight should be positioned on the receiver so the distance between the sighting eye and aperture results in the shooter assuming an upright head position. Eye relief should not be so close that the shooter worries about recoil; and not so far back that he must strain to obtain a clear sight picture.

(2) Front sight.

The front sight consists of a tublar mount containing a removable post or aperture insert.

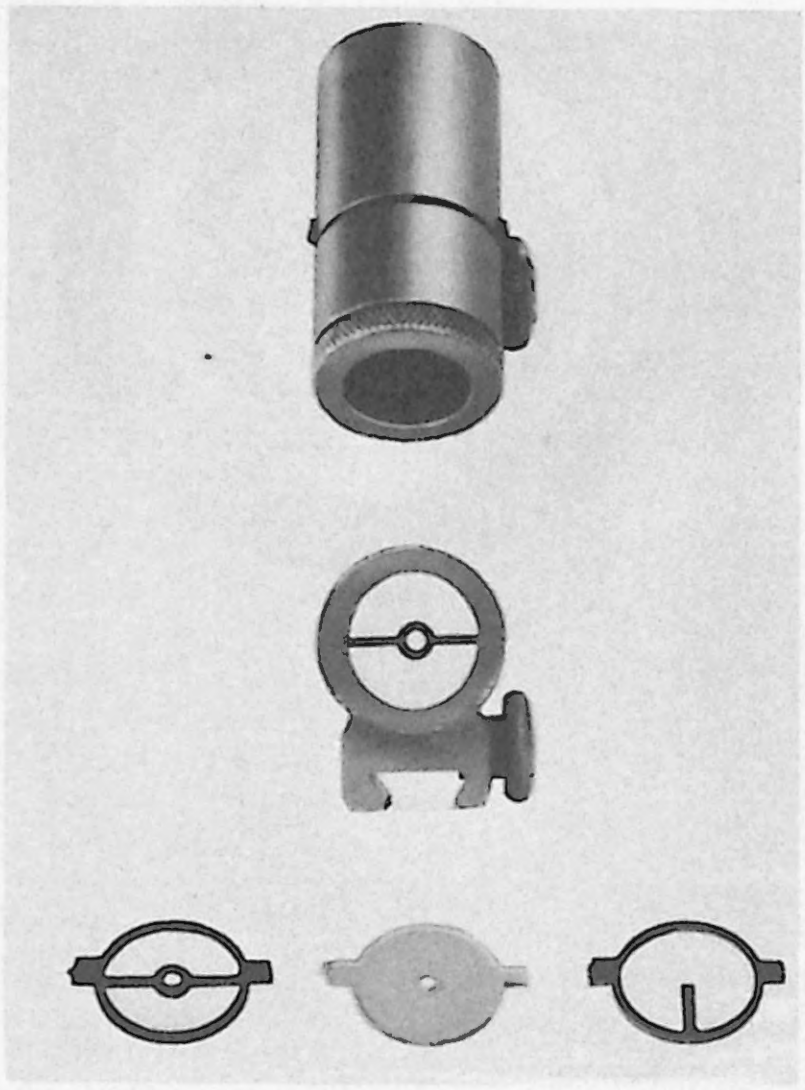


Figure 99. GLOBE FRONT SIGHT AND INSERTS

(a) Aperture insert.

The aperture insert may be either skeleton or transluscent plastic (Figure 99). The skeleton aperture is the most widely used. The transluscent plastic aperture is preferred by some shooters and is available in clear plastic or various colors. Both apertures are available in various sizes. A common error is selecting an aperture that is too small. Select an aperture that appears to be at least twice the diameter of the bullseye. An aperture selected under one light condition may, under a different light, form a halo around the bull or make the bull appear indistinct or oblong. The aperture selected should reveal a wide line of white around the bull and allow the bull to stand out in clear definition against this background.

1. Sight alignment is obtained by centering the front aperture in the rear aperture (Figure 100).

2. Sight picture is obtained by centering the bull in the front aperture so an even line of white exists between the bull and aperture (Figure 101.

(b) Post Insert.

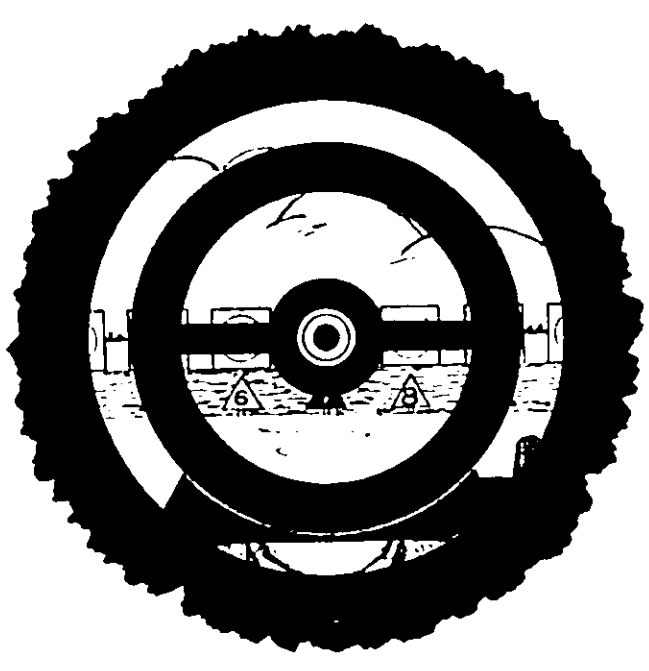
The post insert (Figure 99) is available in various post widths. The post size to be used is a matter of shooter preference. The sighting procedures with a post sight are explained in Chap One, Sec IV-F. 1.

(c) Inserts in combination.

Occasionally a shooter prefers to use the aperture and post inserts in combination. When used in combination, the aperture sight picture is used with the post acting as a leveling device (Figure 102).

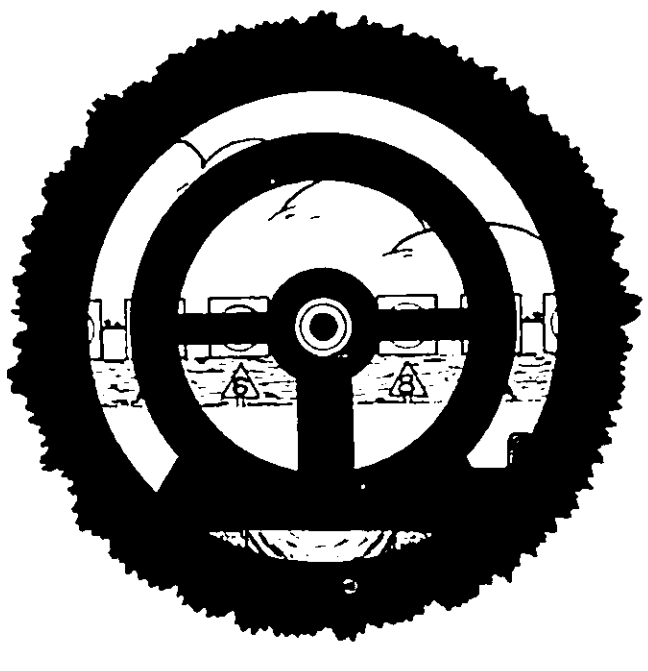
SIGHT ALIGNMENT-
APERTURE FRONT SIGHT

Figure 100



SIGHT PICTURE- APERTURE
FRONT SIGHT

Figure 101



SIGHT PICTURE-
INSERTS IN COMBINATION

Figure 102

b. Telescopic Sights.

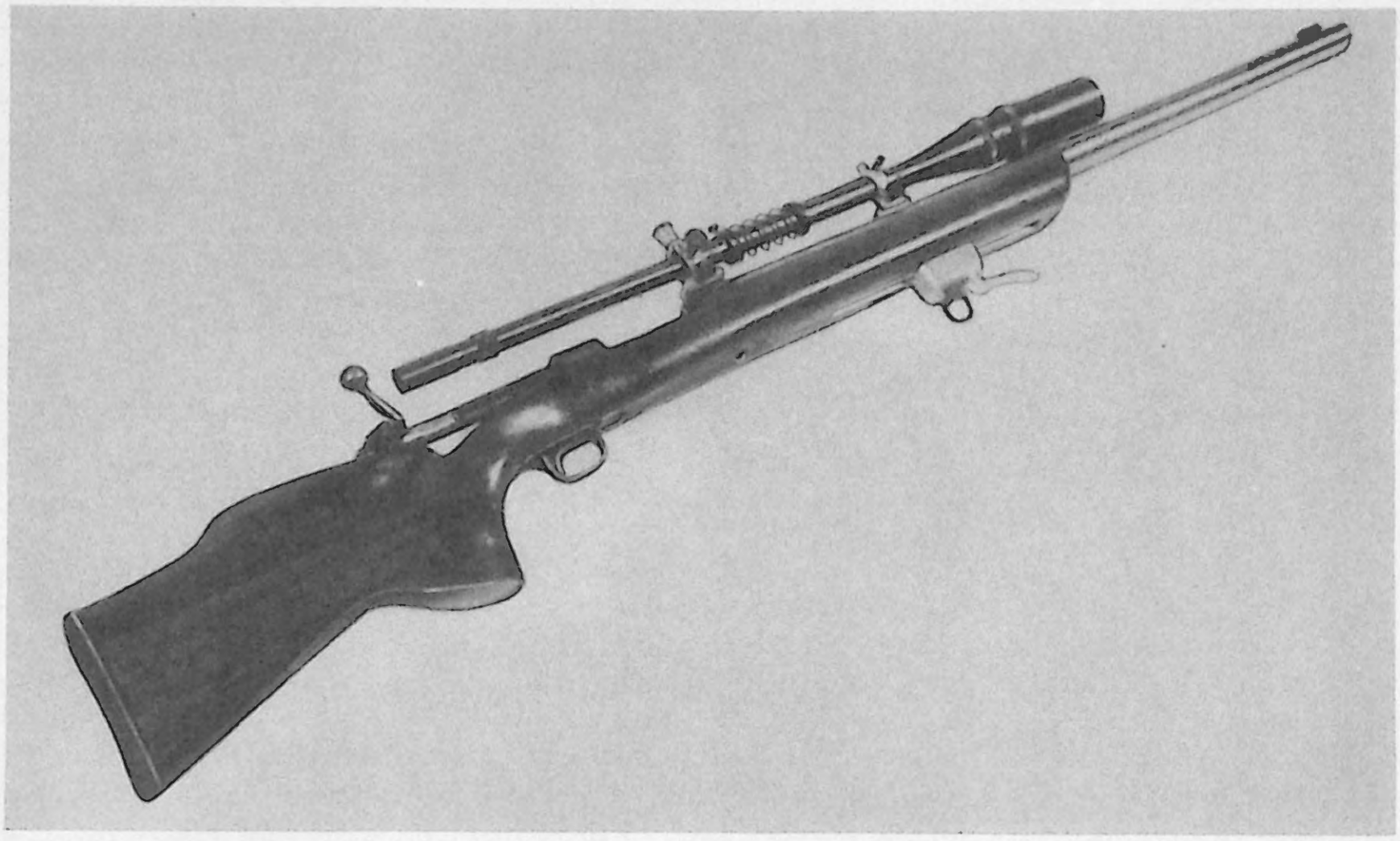


Figure 103. TELESCOPE MOUNTED

The telescopic sight (Figure 104) consists of a scope tube, front mount, rear mount with 1/4 minute elevation and windage adjustments, recoil spring, tube clamp, and lens covers.

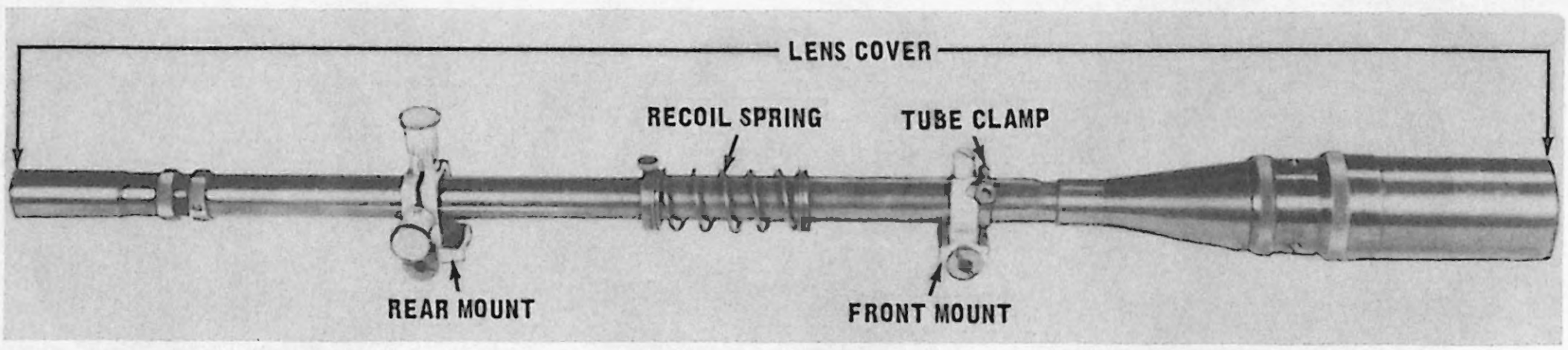


Figure 104. TELESCOPE SIDE VIEW

The scope mounts are positioned and locked onto the dovetail bases at the same point each time the scope is attached to the rifle. A change of distance between the scope mounts will change the degree of angle between the scope and barrel when a click of elevation or windage is applied to the sight. Telescopic sights are available in various powers and type of reticles. The Army Team uses a 14 power X 1 1/2" lens with a crosshair or a crosshair and dot reticle.

(1) Adjusting the telescopic sight.

A good scope for target firing has two adjustments; reticle clarity and distance focus (parallax). The methods of making the mechanical adjustments for reticle clarity and distance focus are not explained because the methods of adjustment vary with the manufacturers design. Methods of adjustment can be found in the manufacturer's instructions. The telescopic sight may be adjusted while affixed to or free of the rifle. To be correct, the scope should be adjusted to the shooter's eye.

(a) Reticle clarity.

To adjust reticle clarity, drape a white handkerchief over the objective end and point the scope at the sky. Place the head near the eyepiece, look at a distant scene for several seconds, then glance into the eyepiece. If properly focused, the reticle will appear instantly sharp and distinct; if not, the reticle clarity needs adjustment.

(b) Distance focus.

If distance focus is not correct, the scope has parallax. Parallax is the apparent movement of the reticle on the field of view of the scope when viewed from various positions through the eyepiece; and simply means that the reticle is not properly located at the focus of the lens system. To test for parallax, lay the scope in a tripod; or if mounted, place the rifle on a rifle fork or bench; so that it will be vibration free and not require the use of hands to maintain it in a fixed position. It should be pointed at an immovable object, such as the corner of a target, at exactly the range from which the rifle is to be fired. Position the head without touching the rifle at normal eye relief (Distance from eyepiece). The head should be moved from side to side or up and down at right angles to the line of sight. Observe if there is any relative motion between the reticle and the target. If any relative motion exists, adjust the distance focus until all motion ceases, then lock the adjustment in place. The correct distance focus adjustment should be established and marked or recorded for each range at which the rifle is to be fired; to insure that the scope will be parallax free.

(2) Eye Relief.

Is the distance from the sighting eye to the eyepiece. Correct eye relief can be determined by the appearance of the field of view. Eye relief is correct when the complete field of view is clear and distinct. When the outer edge of the field of view becomes indistinct or is reduced in size, eye relief is incorrect. Eye relief varies with different types of scopes, but most long range telescopic sights have an eye relief of approximately two inches. It is recommended that the scope be positioned a minimum of two inches from the sighting eye to prevent being hit by the scope when the rifle is fired. The use of the scope recoil spring with a high power, heavy recoiling, rifle does not allow sufficient eye relief during recoil. It also has been proven that it opens-up the group size and places excessive strain on the optical system. The spring should be moved toward the eyepiece, out of the way, and secured. To adjust eye relief, the shooter must be in the prone position with his head placed naturally on the stock. Push the scope forward and unlock the tube clamp; pull the scope toward the sighting eye until a complete and distinct field of view is seen. Without moving the scope, slide the tube clamp against the forward mount and lock it. To insure that the scope is in the exact location for each shot, pull the scope to the rear until the tube clamp meets the forward mount and then apply a slight clockwise or counterclockwise pressure against the tube. A shooter should always twist the tube in the same direction and grasp the tube where the internal adjustments cannot be disturbed.

(3) Sight Picture.

Correct sight picture with a telescopic sight is obtained by placing the center of the reticle in the center of the bullseye.

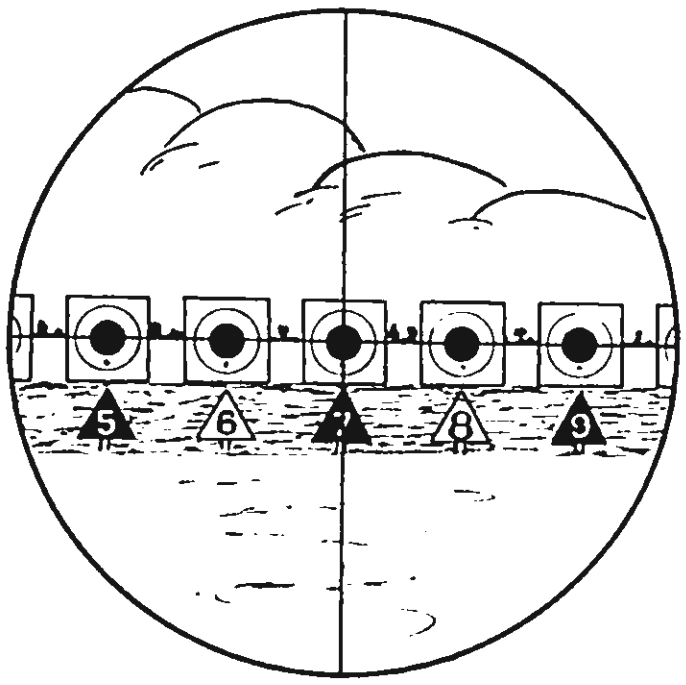


Figure 105. SIGHT PICTURE WITH TELESCOPE

The telescope magnifies the movement of the shooters body and his weapon. The center of this movement (Wobble area) should be centered in the bullseye. A shooter with a large wobble area should aim (Center his wobble area) just below center to prevent a high shot on pulse beat.

(4) Breathing and Aiming Process.

Refer to Chap One, Sec IV-F. 1.

2. Positions.

To become a good long range shooter, the ability to hold must be developed. A good long range shooter has the ability to hold his wobble area within a six inch spotter at a distance of 1000 yards. This description of the long range prone position is based on those positions used by the most successful long range and international shooters.

a. Sling.

Adjustment of the loop sling can be found in Chap One, Sec IV-F. 3b. The sling cuff may also be used. The sling may be high or low on the upper left arm. The forehand stop should press snugly (But not painfully) against the left hand. The sling on the arm is the most frequent source of pulse beat. The sling can be moved about on the arm to find the point of minimum pulse. Pulse beat can also be minimized to an extent by conditioning the arm to the pressure of the sling.

b. Stock weld.

As mentioned in aiming, the relationship between the eye and the rear sight must be consistent. A good long range rifle will have a comb (Cheek piece) on the stock. Placing the cheek at the same point on the cheekpiece when assuming position will insure consistent eye relief. That point where the cheek makes contact with the stock can be marked with a piece of tape.

Figure 106. STOCK WELD

c. The Long Range Position is described as follows:

(1) The shooter lies facing almost directly toward the target. Most good shooters face slightly to the right between 5 and 15 degrees.

(2) The body is not twisted, but is stretched out and relaxed; the spine straight.

(3) The left leg is roughly parallel to the spine, with the toes pointing in. The left heel does not have to touch the ground.

(4) The right leg is angled away from the spine. This angle may be slight or pronounced. The leg may be straight or slightly bent. It is desirable to roll the body over a certain amount to the left to make breathing easier and to bring the right shoulder closer to the center of the position. However, too much roll twists and cramps the body. The individual must experiment to find how much body roll is desirable.

(5) The left elbow should be directly under or slightly left of the rifle. If the left elbow is to the right of the rifle, the muscles of the upper torso become twisted and cramped.

(6) The left hand and wrist should be comfortable when holding the rifle. Place the rifle on the heel of the hand.

(7) The butt plate should rest snugly against the shoulder. As a general rule, it should be placed in close to, or on, the collar bone; however, some shooters have developed other techniques peculiar to their own position. It is felt that this should be left up to the judgment of the individual.

(8) The right hand may grip the stock loosely or with a comfortable degree of pressure. The trigger finger should not apply pressure to the stock when pressure is applied to the trigger.

d. Low Position.

Most shooters use the low position because it gives maximum stability with a minimum amount of strain. The upper left portion of the chest makes contact with the ground. The left arm can be extended as much as desired as long as the forearm doesn't touch the ground. The low position has less sling tension, which is most cases reduces pulse beat.

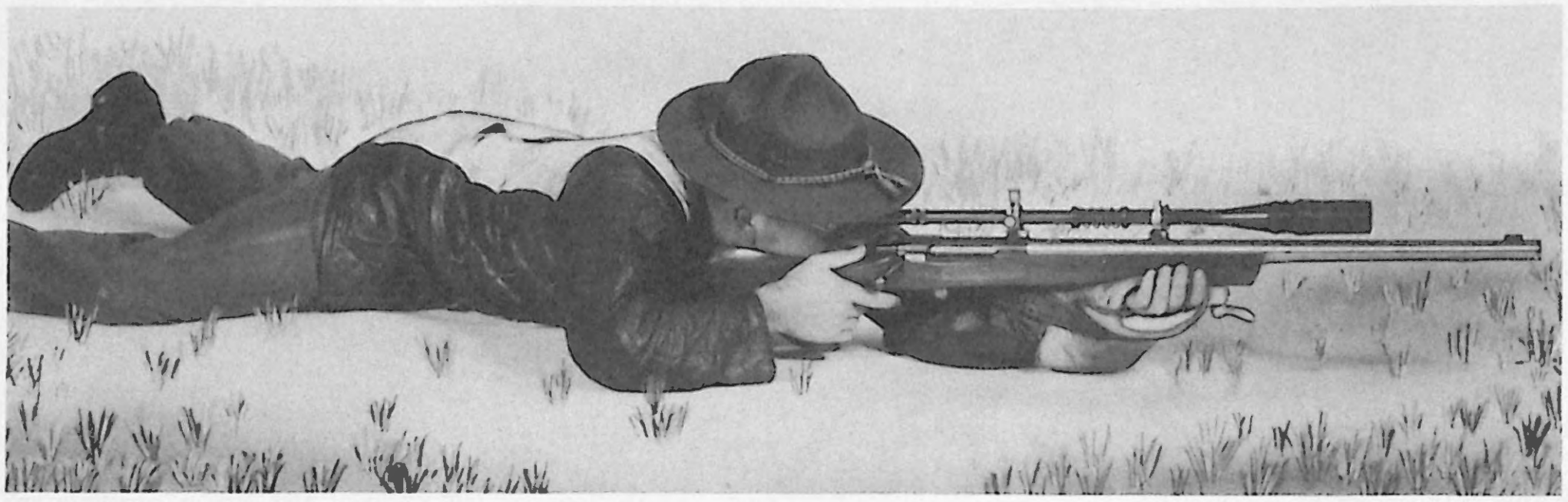


Figure 107. LOW POSITION

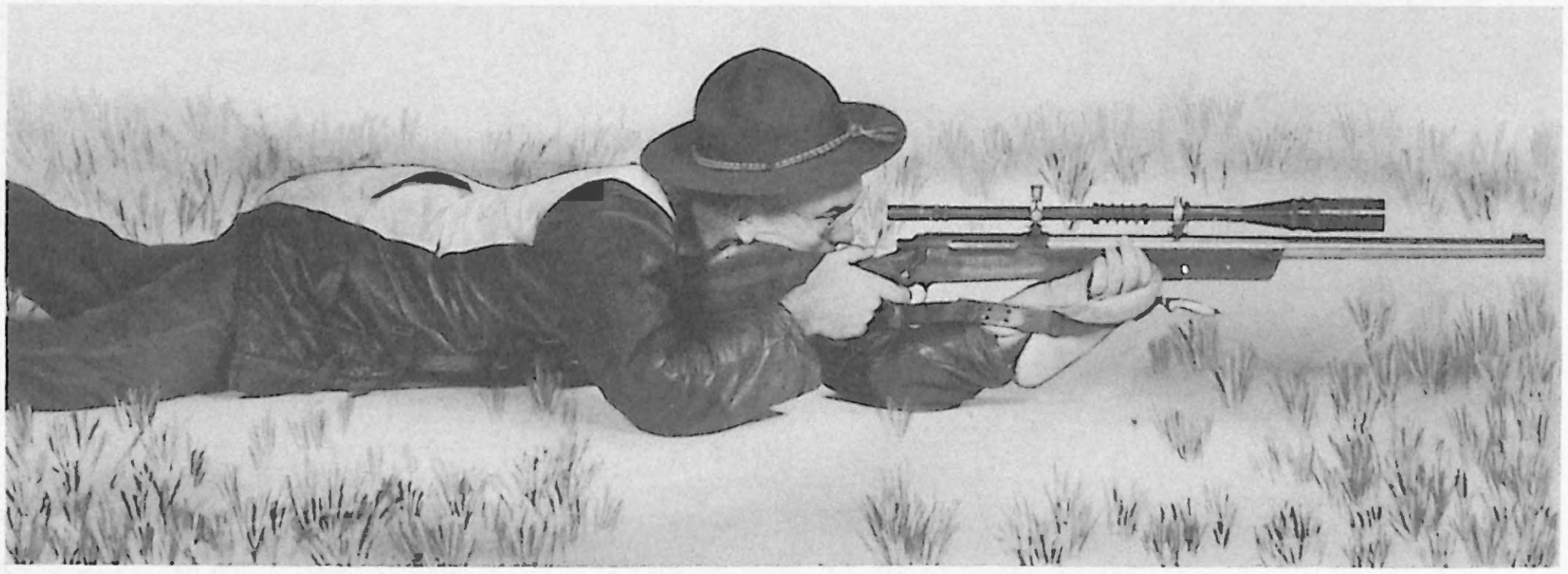


Figure 108. HIGH POSITION

e. High Position.

In the high position, the sling is tighter and the upper portion of the body is off the ground. The left arm is not extended as much, the forearm is higher off the ground, and the shooter's weight is forward into the sling.

f. Selecting a position.

The height of a shooter's position is determined by the conformation of his body. Generally, the taller man will have a higher position. The position can be improved by modifying the degree of body roll, how far the left arm is extended, sling tension, or the position of the forehand stop. To establish a good position it will take considerable practice and experimentation. The shooter must be aware that position modifications can change his zero. Experience will enable a shooter to "feel" when his position is right, and he will rely on this factor.

g. Adjusting Natural Point of Aim.

Refer to Chap One, Sec IV-F. 3d.

3. Trigger Control.

A discussion of trigger control can be found in Chap One, Sec IV-F. 2. Trigger control with a single stage trigger is applied in the same manner as a two stage trigger that has had the slack taken up by the trigger finger. Trigger control should be applied without conscious thought when the sight picture is correct with iron sights; and when the wobble area is reduced and positioned correctly on the aiming point with telescopic sights. Most successful long rang shooters concentrate on sight picture while applying trigger control.

4. Sight Adjustment.

When a shot is fired and it is not in the desired location on the target, the sights must be moved for the next shot to strike the target at the proper location. To make correct sight adjustments, the shooter must be familiar with the sights. The iron and telescopic sights used by The Army Team are graduated into 1/4 minute clicks of elevation and windage. This means that one click on the elevation or windage knob will change the angle between the sights and rifle barrel 1/4 minute. One 1/4 minute click will move the strike of the bullet 1/4 inch at 100 yards, 1 1/2 inches at 600 yards, and 2 1/2 inches at 1000 yards.

a. Iron Sights.

(1) Elevation

(a) To move the strike of the bullet up, the elevation knob (Figure 109) is turned counterclockwise as the (up) arrow indicates. To move down, the elevation knob is turned clockwise.

(b) The elevation knob scale has three numbered minutes (0-1-2) and these are graduated into 12 (1/4 minute)clicks.

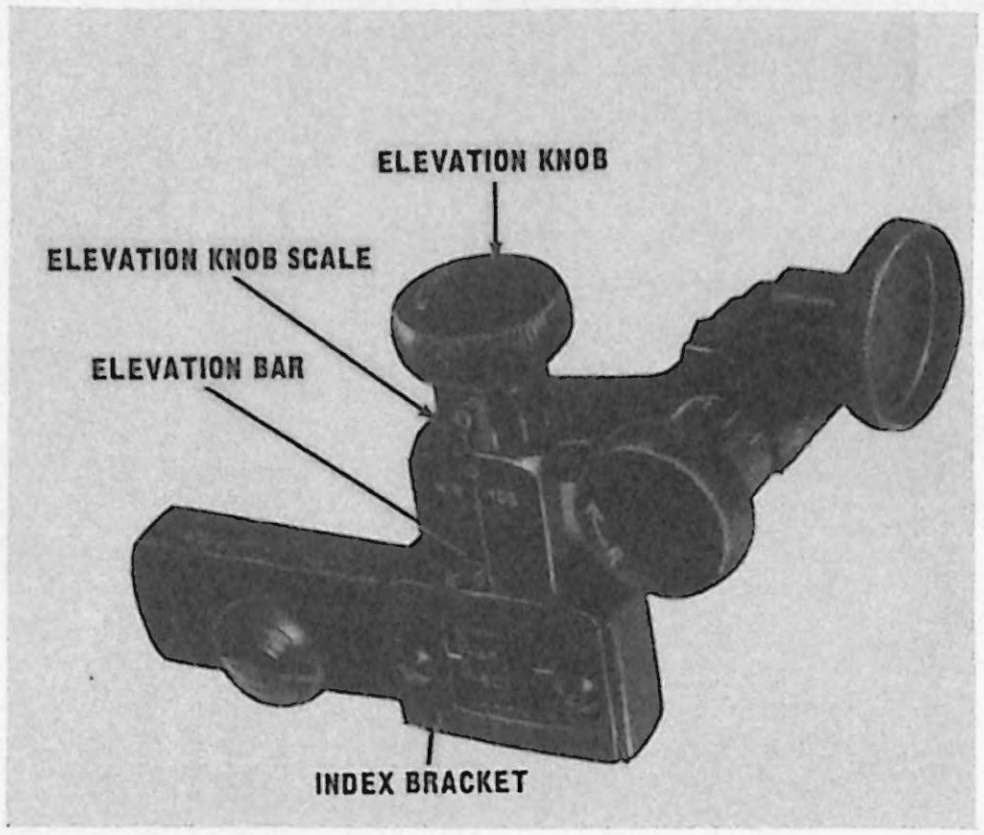


Figure 109. ELEVATION MECHANISM

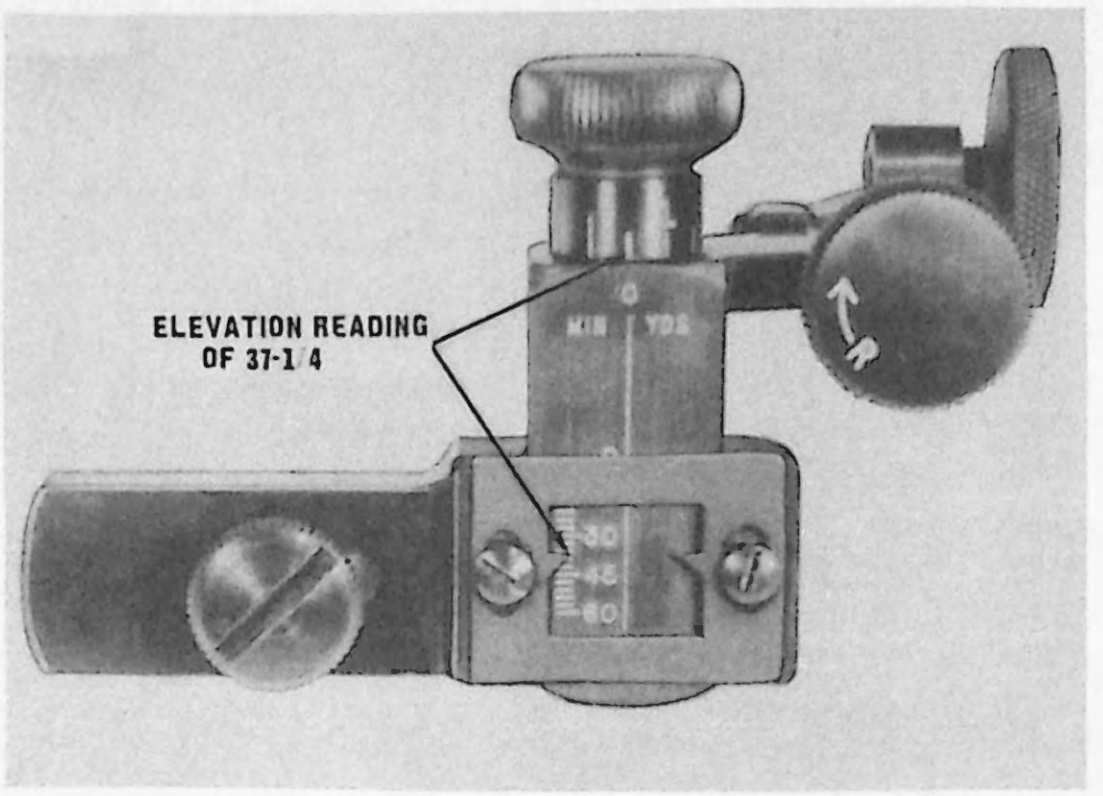


Figure 110. ELEVATION READING OF 37 1/4

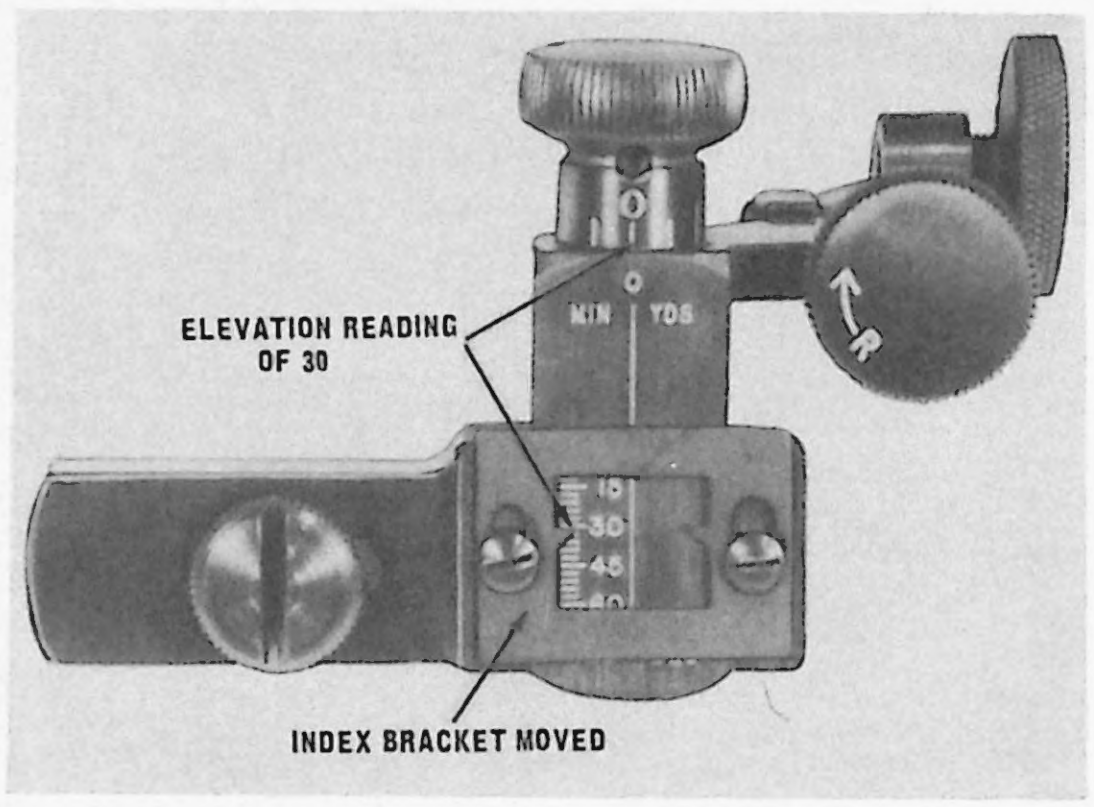


Figure 111. ELEVATION READING OF 30

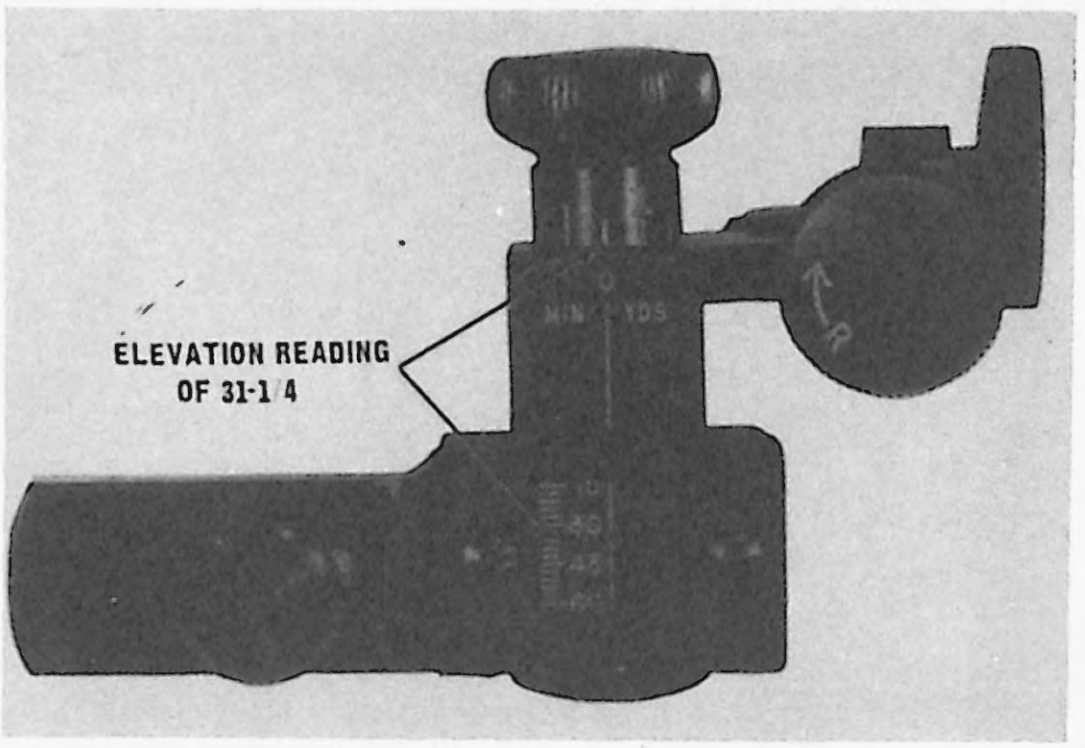


Figure 112. ELEVATION READING OF 31 1/4

(c) The elevation bar (Figure 109) is graduated from 0 to 60 minutes. Each index represents three minutes; and every fifth index line is numbered.

(d) The index bracket can be moved to facilitate reading the elevating mechanism. An example of this procedure follows:

1. A shooter has zeroed his rifle and the elevating mechanism reads 37 1/4 minutes (Figure 110).

2. Rotate the elevating knob down five clicks; the sight will read 36 minutes. Loosen the index bracket and slide it up to read 30 minutes, then tighten it (Figure 111).

3. Rotate the elevating knob up five clicks. The angle between the sights and rifle barrel has not changed but the elevation reading has changed. The shooter should record his elevation zero as 31 1/4 minutes. (Figure 112).

(2) Windage.

(a) To move the strike of the bullet right, the windage knob (Figure 113) is turned clockwise as the (R) arrow indicates. To move left, the windage knob is turned counter-clockwise.

(b) The windage knob scale has three numbered minutes (0-1-2) and these are graduated into 12 (1/4 minute) clicks.

(c) The rear sight can be moved approximately 45 minutes from extreme left to extreme right.

(d) The windage scale contains 12 index lines, six lines on either side of the zero mark. Each index line represents three minutes or 12 one quarter minute clicks of windage.

(e) The windage scale can be moved to facilitate reading the windage mechanism. An example of this procedure follows:

1. A shooter has zeroed his rifle and the windage mechanism reads 10 3/4 minutes left (Figure 114).

2. Rotate the windage knob right seven clicks; the sight will read nine minutes left. Loosen the windage scale and slide it left so the zero mark is on the index line on the aperture mount, then tighten it (Figure 115).

3. Rotate the windage knob left seven clicks. The shooter should record his windage zero as 1 3/4 minutes left (Figure 116).

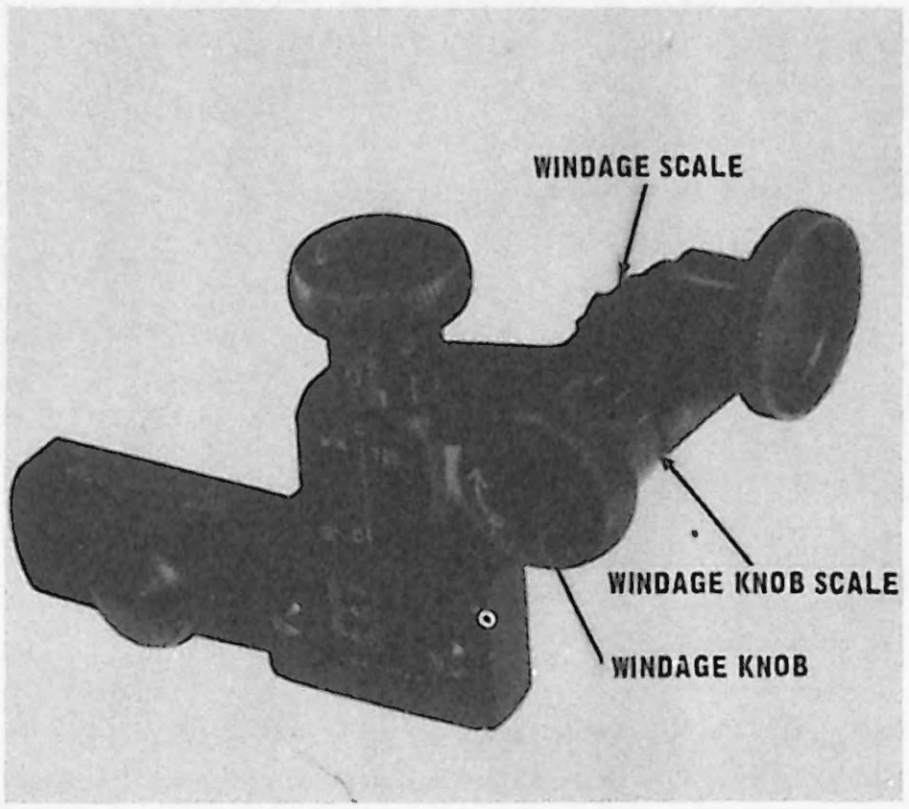


Figure 113. WINDAGE MECHANISM

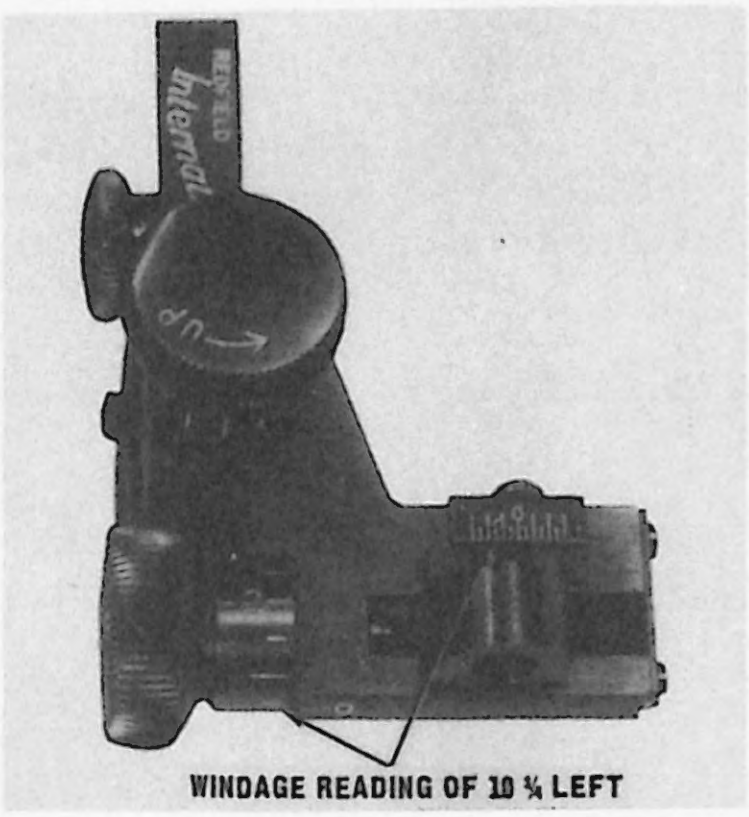


Figure 114. WINDAGE READING OF 10 3/4 LEFT

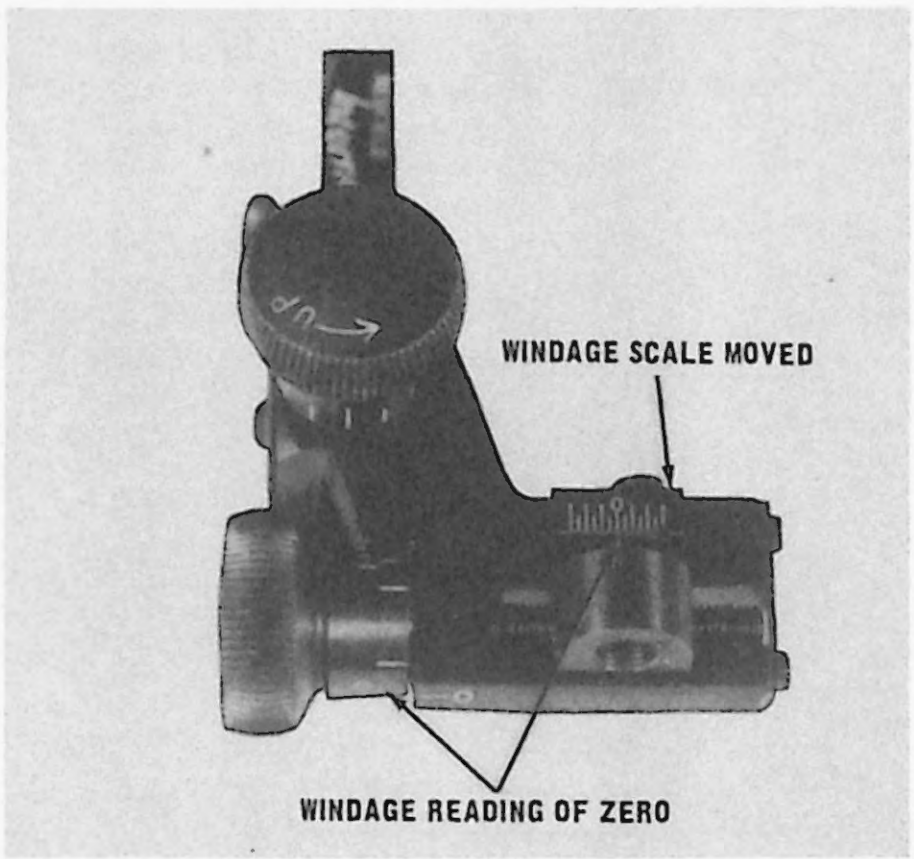


Figure 115. WINDAGE READING OF ZERO

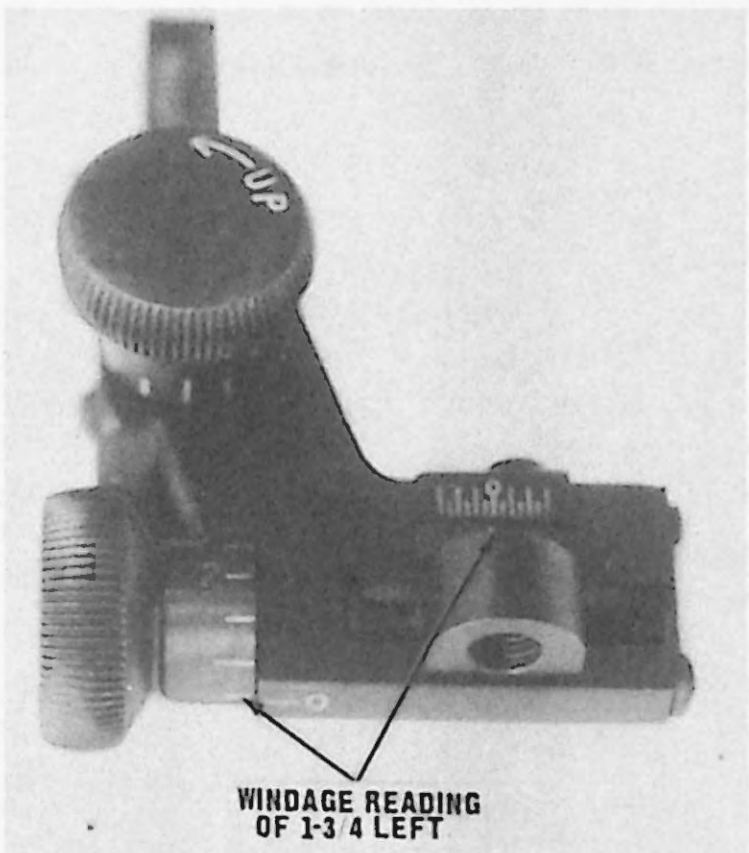


Figure 116. WINDAGE READING OF 1 3/4 LEFT

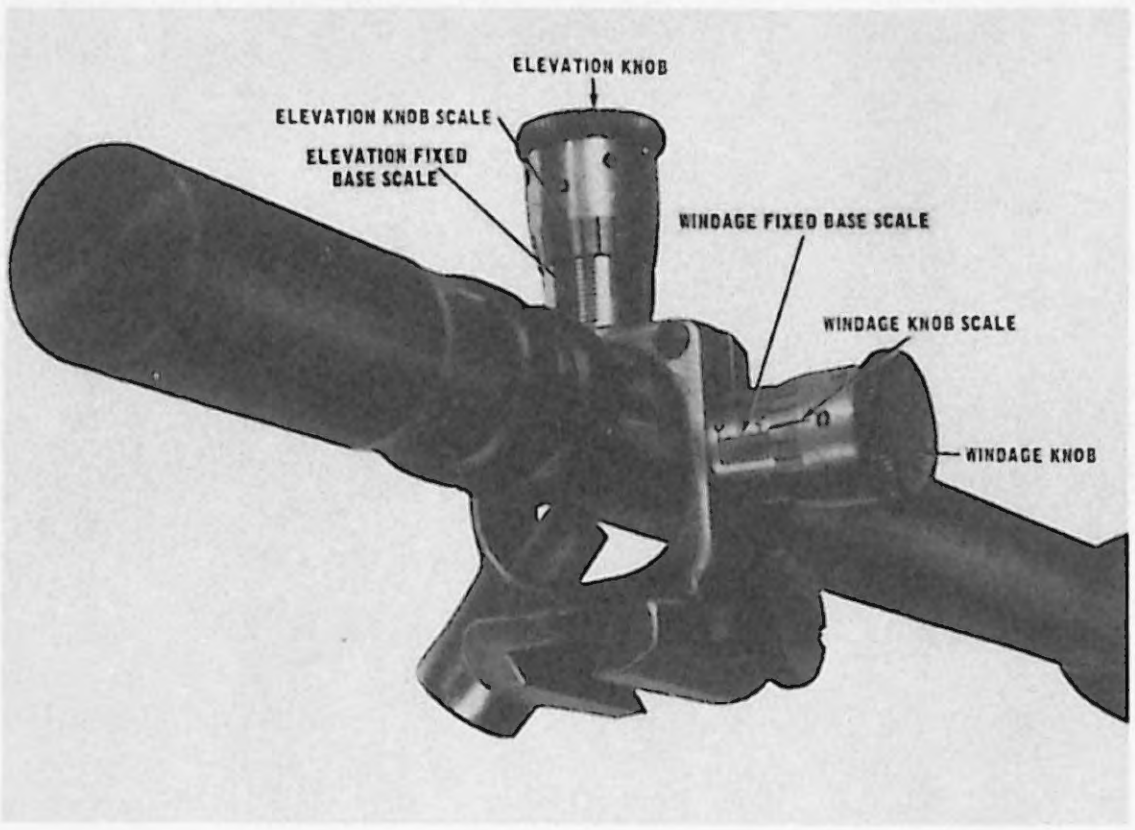


Figure 117. FIXED BASE SCALES EXPOSED.

b. Telescopic Sight.

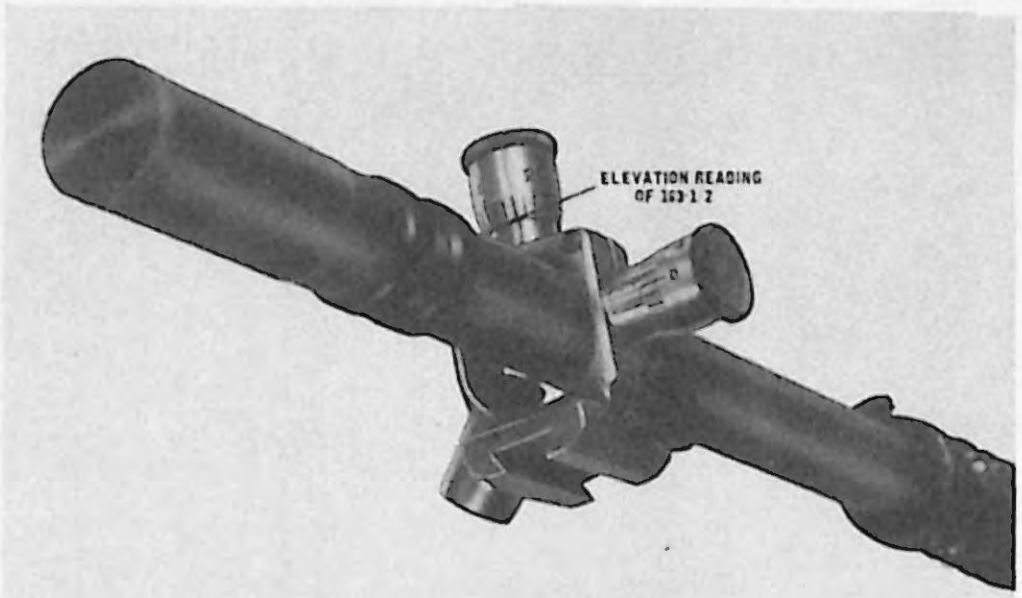
(1) Elevation.

(a) To move the strike of the bullet up, the elevation knob (Figure 117) is turned counterclockwise. To move down, the elevation knob is turned clockwise.

(b) The elevation knob has 25 graduations, every fifth graduation is numbered (0-5-10-15-20). It takes two 1/4 minute clicks to move from one graduation to another.

(c) The elevation fixed base scale is graduated from 0 to 300 in 12 1/2 minute increments. 50 clicks, 25 graduations, or one revolution will move the elevation knob thimble one increment on the fixed base scale.

(d) The elevation mechanism is read and recorded in graduations, Figure 118 reads 163 1/2.



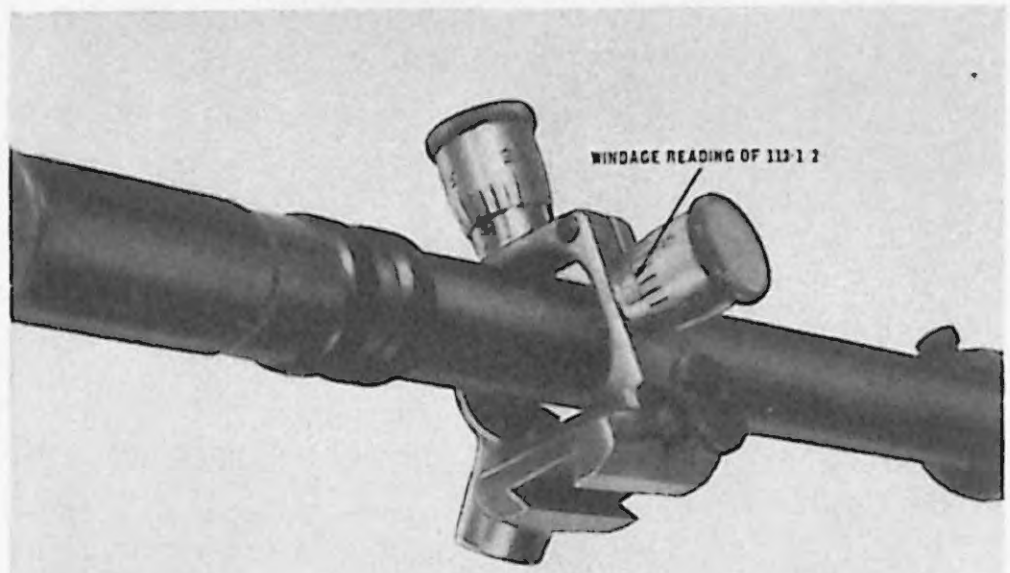


Figure 118. ELEVATION READING 163 1/2. Figure 119. WINDAGE READING 113 1/2.

(2) Windage.

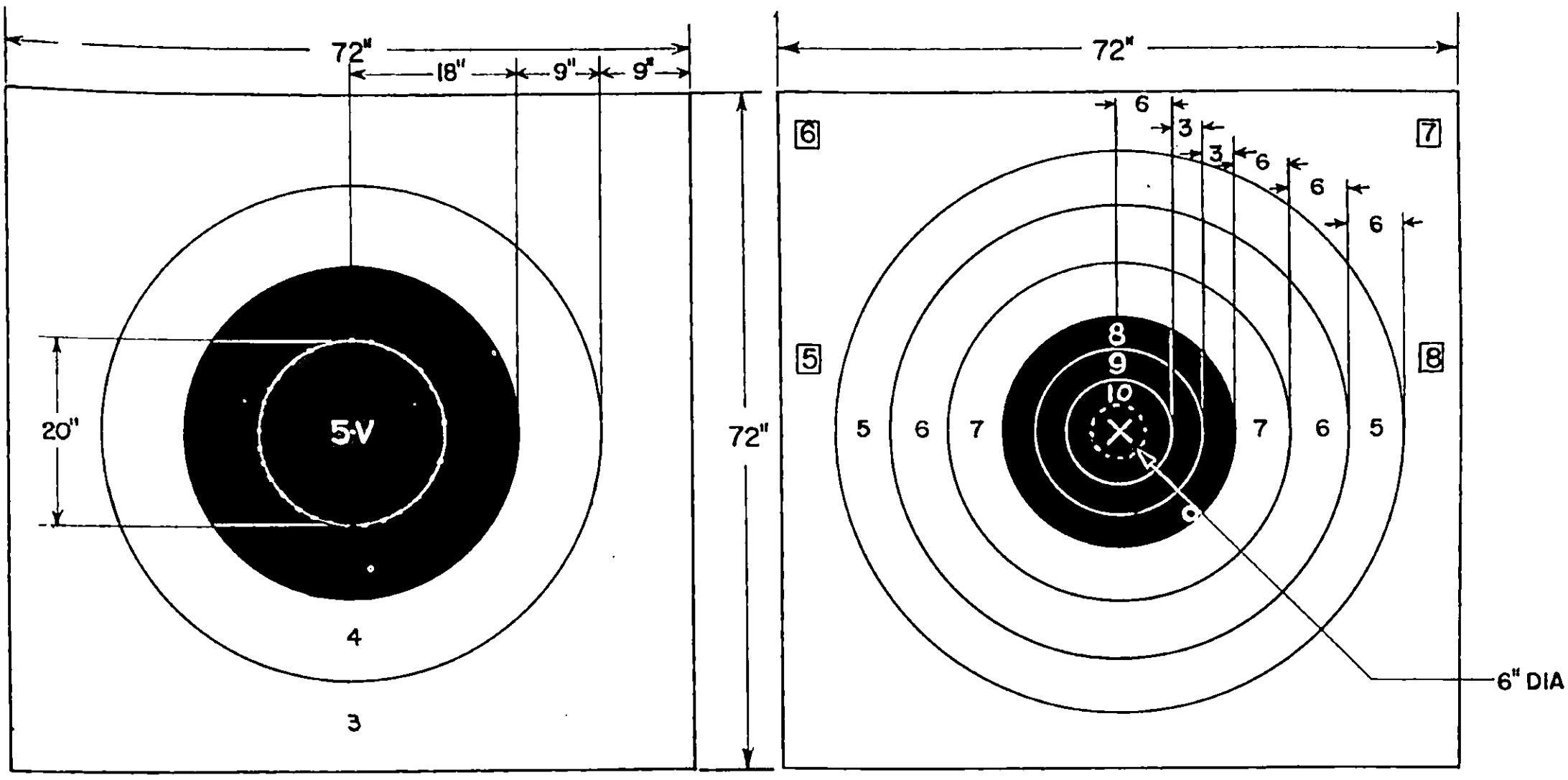
(a) To move the strike of the bullet right, the windage knob is turned counter-clockwise. To move left, the windage knob is turned clockwise.

(b) The windage knob has 25 graduations; every fifth graduation is numbered (0-5-10-15-20). It takes two 1/4 minute clicks to move from one graduation to another.

(c) The windage fixed base scale is graduated from 0 to 225 in 12 1/2 minute increments. 50 clicks, 25 graduations, or one revolution will move the windage knob one increment on the fixed base scale.

(d) The windage mechanism is read and recorded in graduations, Figure 119 reads 113 1/2.

c. To properly utilize the sights in making adjustments, the shooter must be familiar with the target dimensions (Figure 120). Once the dimensions are known, the shooter can intelligently apply the windage and elevation to the sights he has on his rifle.



TARGET RIFLE "C" 1000 YARDS

FSN 6920-600-6877

6920-610-1799 (CENTERS)

TARGET RIFLE "B" 600 YARDS

FSN 6920-900-8205

6920-999-1437 (CENTERS)

Figure 120. "B" AND "C" TARGET CONFIGURATION

5. Effects of Weather.

Refer to Chap One, Sec IV-F. 5.

6. Zeroing.

The zero of a rifle is the sight setting, in elevation and windage, required to place a shot in the center of the target at a given range when no wind is blowing. The rifle should be zeroed from the range and position that it is to be fired. Since obtaining a zero is so important, this has been included as one of the fundamentals.

a. The first step in zeroing is getting a shot on target.

(1) Boresighting.

From the range that a zero is required, place the weapon onto a rifle fork or bench so that it is free of movement. Remove the bolt, sight through the bore, and position the rifle so that a clearly defined aiming point, such as the bullseye, is centered in the bore. Adjust the sight so the line of aim of the sights and the barrel intersect at the same place on the aiming point. After boresighting the sight must be raised to compensate for the drop of the bullet. The elevation needed will depend on the ballistic characteristics of the round to be fired, or how flat a trajectory it has (Figure 121). The Army Team uses a .30-338 magnum for long range firing which hits approximately 5 1/2 feet below the line of bore at a distance of 600 yards and 22 1/2 feet at a distance of 1000 yards. This requires the sight to be raised approximately 11 minutes at 600 yards and 27 minutes at 1000 yards for the initial shot after boresighting. A comparison of ballistic characteristics between the .30-338 magnum and another cartridge to be fired will help determine how much elevation should be applied for the initial shot following boresighting.

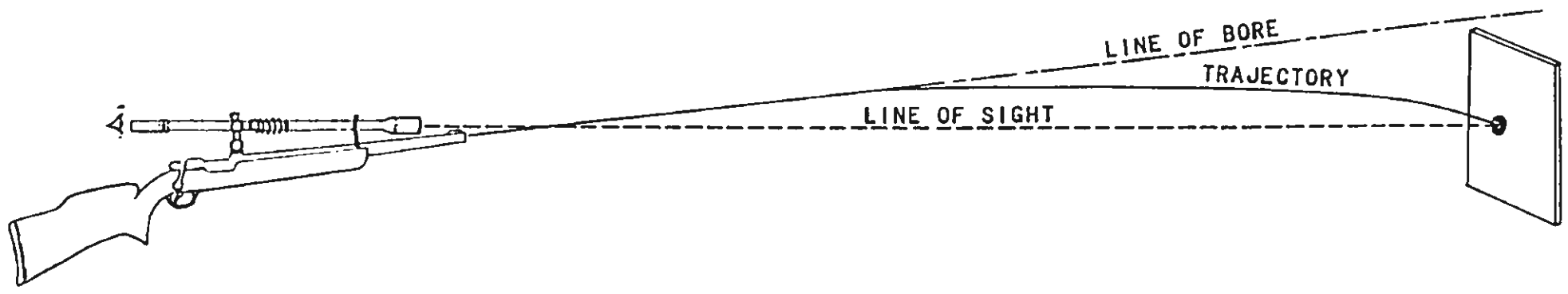


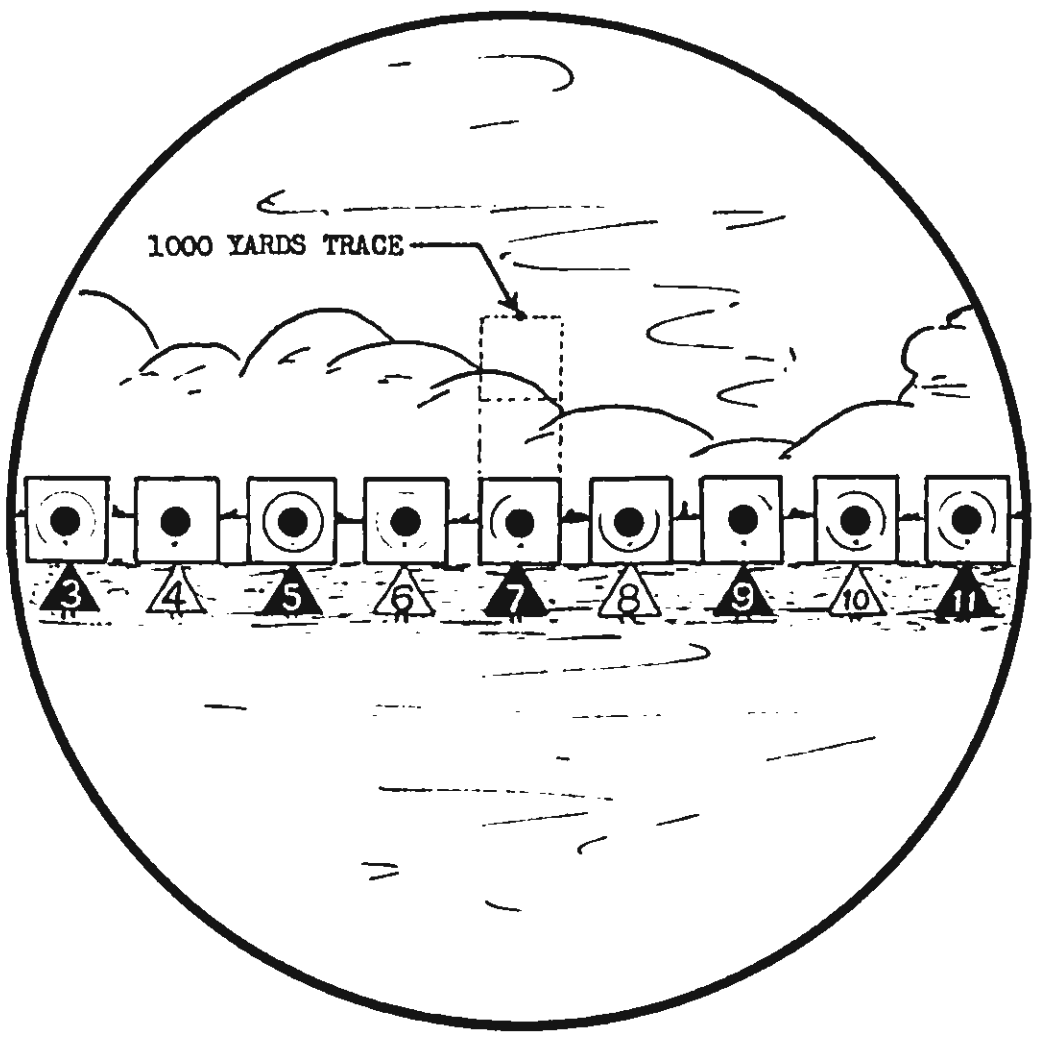
Figure 121. LINE OF BORE, LINE OF SIGHT, AND TRAJECTORY

(2) Comparison with a zeroed rifle.

If another rifle of the same type and caliber has been zeroed, a comparison between the angles of the sights and barrels of the unzeroed and zeroed rifle can be made. This comparison can be made at any distance, on any clearly defined aiming point. For ease of explanation, this procedure will be used at a distance of 50 yards with an "A" target as the aiming point. Place the zeroed weapon on a rifle fork or bench so that it is free of movement, adjust the sights onto the known zero, and remove the bolt. Sight through the bore and position the rifle with the bullseye centered in the bore. Observe through the sight and note its point of aim. Repeat the boresight procedure with the unzeroed rifle and then adjust the sight so that its point of aim is identical to that on the zeroed weapon.

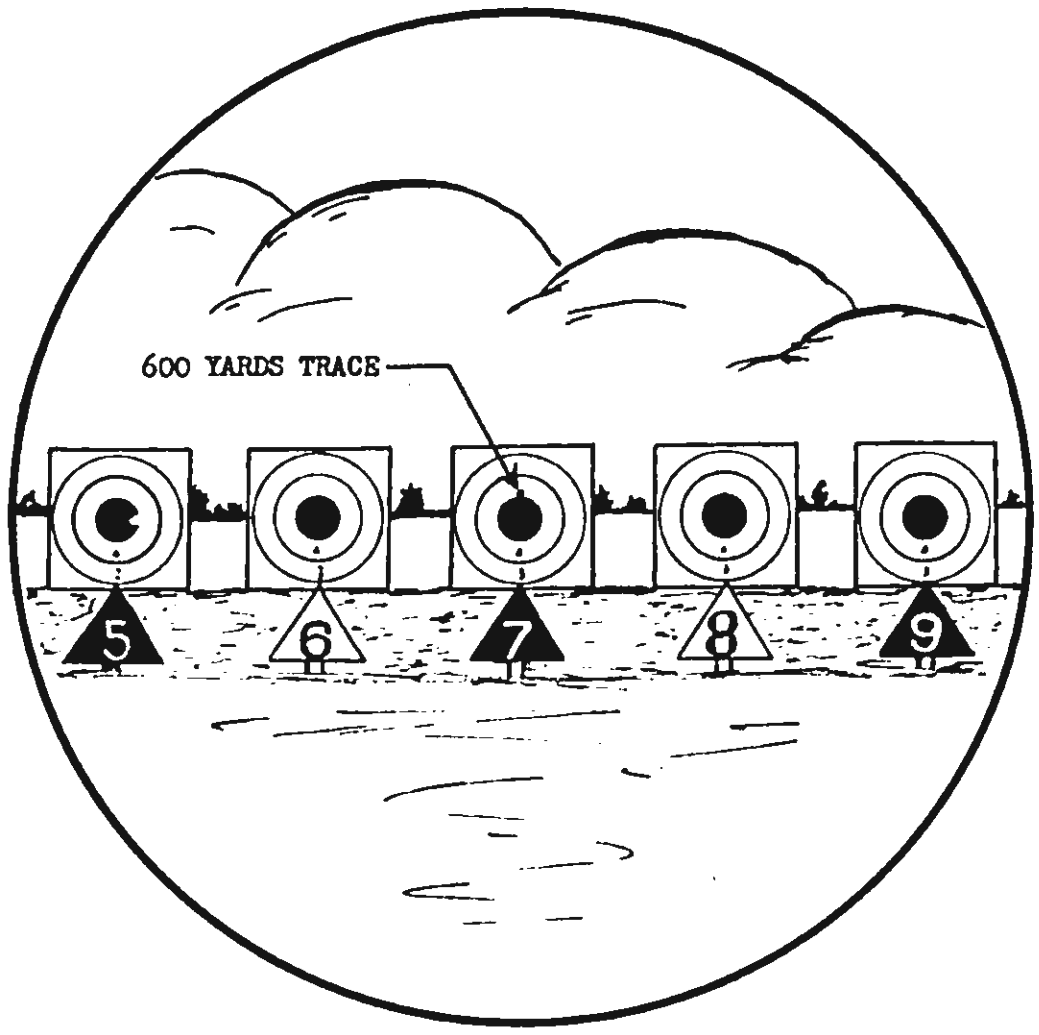
(3) Observe the Trace.

This method may be used alone or in conjunction with the other methods previously discussed. It requires an observer with a spotting scope. The shooter assumes position and the spotting scope is aligned over the rifle barrel slightly behind the shooter, with the bullseye centered in the field of view and the distance focus short of the target. The observer watches the trace of the round (It has the appearance of a vapor trail) when the rifle is fired. If the impact of the bullet is detected, a sight adjustment can be made based on the impact. If the impact is not detected, a sight adjustment can be made based on the trace. The location of a shot can be estimated by observing the trace at its highest point. The maximum ordinate of .30-338 ammunition is approximately 7 1/2 feet at 1000 yards and 2 feet at 600 yards. The bullet reaches its maximum ordinate between the shooter and his target which makes the trace appear much higher through the observers scope. Using rifles and ammunition comparable to that of the Army Team, the highest point of the trace of a center shot fired from 1000 yards will appear, through a 100mm team scope with a 24 power eyepiece, approximately two target frames above the edge of the frame (Figure 122).



1000 YARDS

Figure 122. TRACE AT 1000 YARDS



600 YARDS

Figure 123. TRACE AT 600 YARDS

The trace of a center shot fired from 600 yards will appear just above the bullseye (Figure 123).

The highest point of the trace will appear to the right of impact if the wind is blowing from the right and to the left of impact if the wind is blowing from the left.

b. Once the shooter has hit the target, he should adjust his sights until his shot group forms in the center of the V ring. The amount of windage needed to compensate for the effects of wind should be determined and then removed from the sight. The shooter has now determined his zero with a hot, fouled barrel.

c. Heat expansion of the barrel, metal, and powder fouling has much to do with establishing a zero. These factors can cause the first several shots to be displaced in elevation. Sight adjustment or hold off may be necessary between each shot until the barrel completes expansion. Record the first shot fired with a cold clean barrel and each shot thereafter. If more than one string is to be fired before cleaning the barrel, record the first shot fired with a cold fouled barrel and each shot thereafter. It may be necessary to fire several strings to pinpoint the cold clean, cold fouled, or hot fouled barrel zero of a particular rifle.

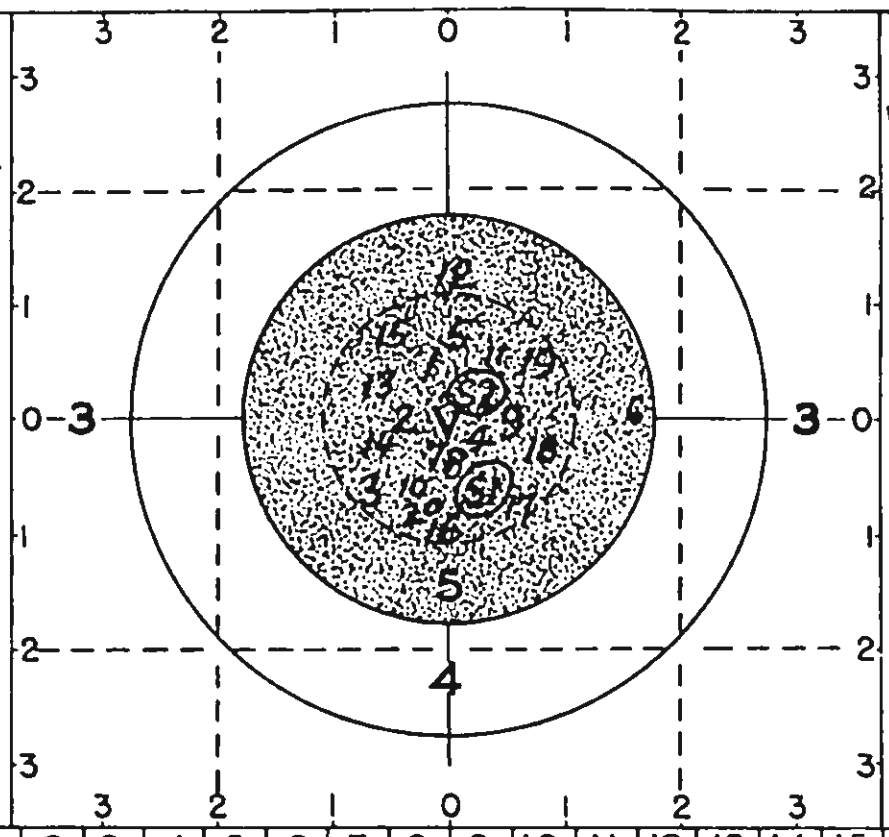
7. Use of the Scorebook.

Refer to Chap One, Sec IV-F-7. with these exceptions:

a. Draw the desired sight picture. With iron sights, note the front aperture size and draw a circle around the bull, showing the apparent line of white between the bullseye and the aperture. With a telescopic sight, draw the correct placement of the reticle.

b. Elevation changes with iron sights or telescopic sights are recorded as -1, +3, etc. Minus represents down, plus represents up. The number represents clicks, not graduations or minutes.

1000 YARDS SCORE SHEET



Elev.(Used) 150 1/2
Elev.(Correct) 150 1/2
Mins.up from 600 Yds. 16

W.G. Zero 125

PLACE Fisk
DATE 5 OCT 66 HOUR 0900
RIFLE NO 32601
TARGET NO 13 TEMP 70°
AMMUNITION 66-190 (HL)
LIGHT BRIGHT MIRAGE LIGHT
WIND

LIGHT | SIGHT PICTURE | WIND

DIRECTION | MPH

REMARKS
TELESCOPE #12369
BUILDING HIGH
FROM 2-7 SHOTS

NO.	SS	SS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL
ELEV.	150½			-2	-2					-1													
W.G.	#2					14R			10R							13R					11R	10R	
CALL	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	?	•	•	•	100
VAL.	V	V	V	V	V	V	V	5	V	V	V	V	V	5	V	V	V	V	V	V	V	V	18V

Figure 124. 1000 YARD SCORESHEET FILLED OUT.

8. Use of Spotting Telescope.

Refer to Chap One, Sec IV-F, 8.

Firing with the telescopic sight has the added advantage of enabling the shooter to observe mirage changes while in the process of aiming. If a mirage change is detected, it is recommended that the shooter refer to the spotting scope before making a sight adjustment or if an experienced long range shooter, favor, as explained under team coaching (Figure 125).

G. Detection and Correction of Errors.

Refer to Chap One, Sec IV-G.

When firing with a telescopic sight in which parallax exists, a slight change in positioning of the head from shot to shot can cause a vertical and horizontal displacement.

SECTION V -- LONG RANGE TEAM COACHING

Refer to Chap One, Sec V Team Coaching, with the following exceptions:

A. At ranges greater than 600 yards, the time limit is 1 1/2 minutes per shot plus a three minute preparation period between pairs. In a six-man team match, 20 rounds per firing member, the time allowed will be 186 minutes.

B. Sight changes are relayed by the coach and applied by the shooter in clicks, not graduations or minutes.

C. When firing with telescopic sights during fishtailing or shifting winds, constant sight adjustments can be fatiguing and distracting to the shooter so it is recommended that favors be used (Figure 125).

1. Left favors (Figures 125) relayed by the coach and applied by the shooter are: "Break it on the figure 5," "Break it on the V line at nine," and "Break it on the edge of the black at nine."

2. Right favors (Figure 125) are "Break it on the figure V," "Break it on the V line at three," and "Break it on the edge of the black at three."

3. If the prevailing wind seems to be holding, the coach should click the shooters to center.

4. A coach should never give a favor that will have the shooter holding outside the black.

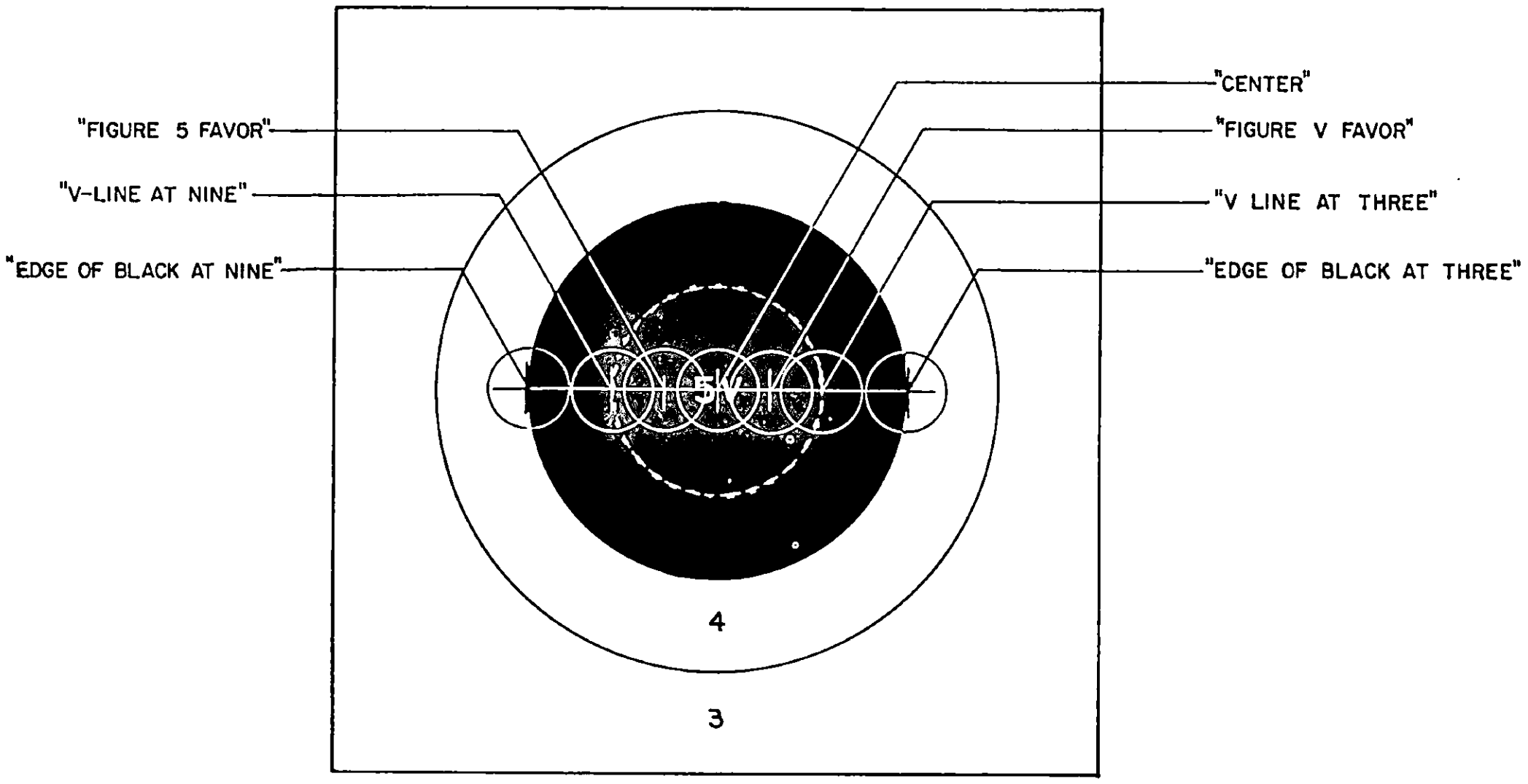


Figure 125. LONG RANGE FAVORS

D. Long Range Coach's Plotting Sheet.

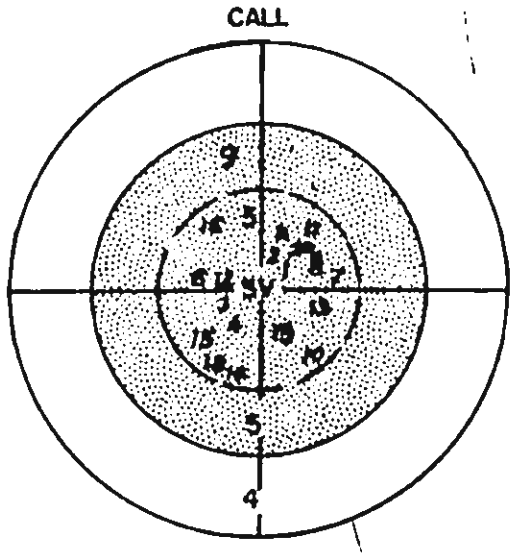
The Long Range Coach's Plotting Sheet is used in the same manner as the National Match Coach's Plotting Sheet (Figure 64) with the following exceptions:

1. The elevation and windage zero and the elevation used for the first shot will be recorded in minutes when using iron sights and in graduations when using telescopic sights.

2. Sight adjustments made during the string will be recorded in clicks. Elevation sight adjustments are recorded using the plus or minus system. For example: If the sight is raised two clicks, the coach records +2 in the elevation block of that particular shot (Figure 126).

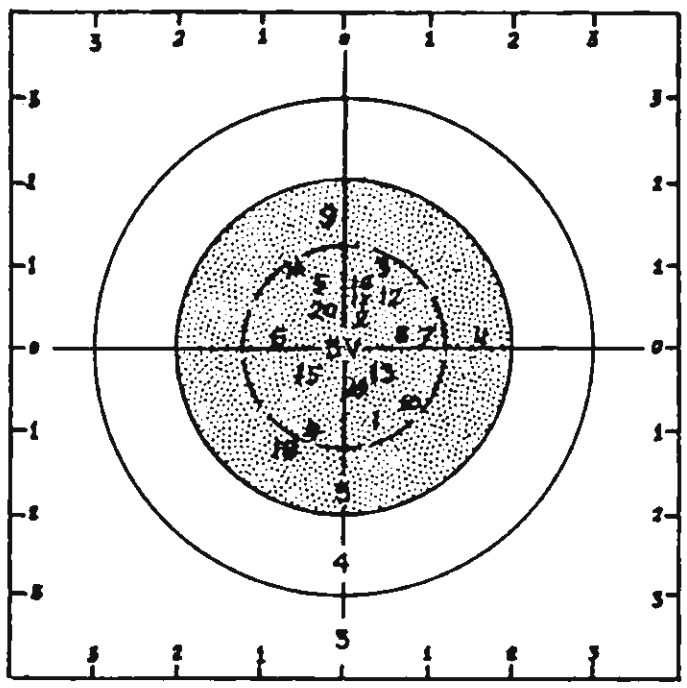
LONG RANGE COACH'S PLOTTING SHEET

CALL



46
TARGET NO.

PLOT



ZERO: ELEV 150½ WIND 140

	S1	1	2	3	4	5	6	7	8	9	10
ELEV	/	150½	+2		-1	-2					
WIND	/	10R		12R				10R			

	S2	11	12	13	14	15	16	17	18	19	20
ELEV	/										
WIND	/		8R	9R				8R			

LIGHT DIRECTION | SIGHT PICTURE | WIND MPH 15-19

NAME SSG REBIDUE

DATE 23 JULY 1966 HOUR 1015

TEMP 83° LIGHT BRIGHT

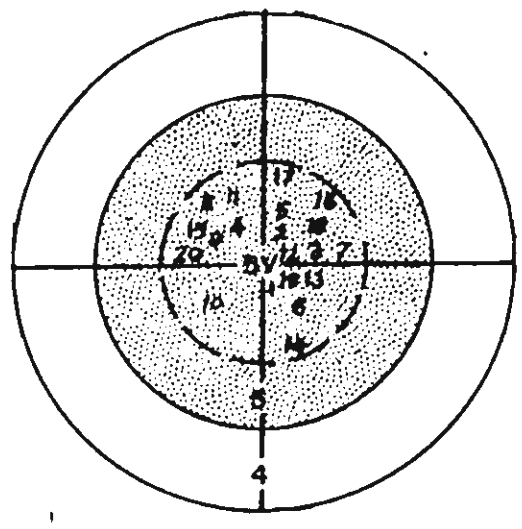
MIRAGE MEDIUM WEATHER CALM-BRIGHT

RIFLE NO. 32601 AMMO 66-190

REMARKS: START WITH 150½ ELEV
NO 18 HELD TOO LONG

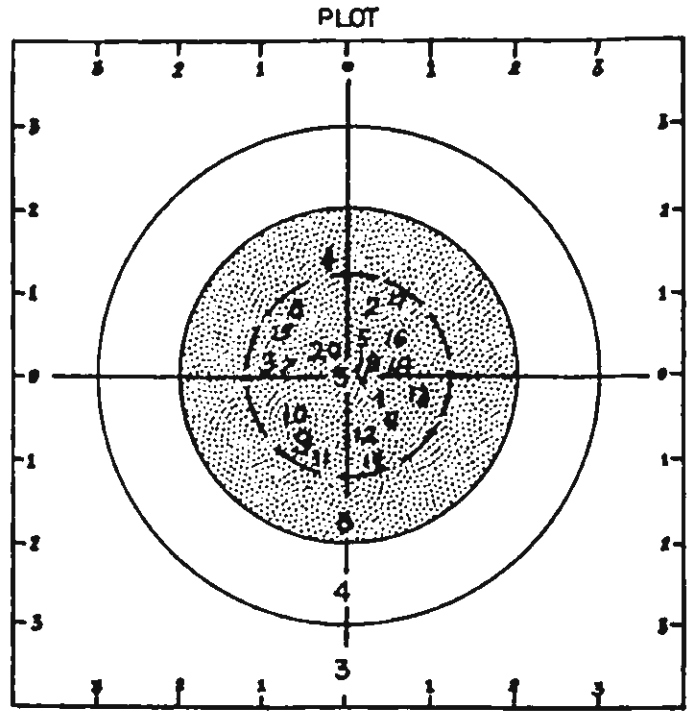
100-17

CALL



46
TARGET NO.

PLOT



ZERO: ELEV 146 WIND 152

	S1	1	2	3	4	5	6	7	8	9	10
ELEV	/	146		-2		-4					+1
WIND	/	10R			12R				10R		

	S2	11	12	13	14	15	16	17	18	19	20
ELEV	/		+2	+1							
WIND	/		8R								

LIGHT DIRECTION | SIGHT PICTURE | WIND MPH 15-19

NAME SFC STEVENS

DATE 23 JULY 1966 HOUR 1015

TEMP 83° LIGHT BRIGHT

MIRAGE MEDIUM WEATHER CALM-BRIGHT

RIFLE NO. 32607 AMMO 66-190

REMARKS: 2ND DAY OF FIRING COLD.
CLEAN BARREL START
WITH 146 ELEV

100-19

FB (MTU) FORM 37 REVISED 5 MARCH 1963

Figure 126. LONG RANGE COACH'S PLOTTING SHEET (FILLED OUT)

Chapter Four

COMBAT MATCH FIRING

DOUGHBOY TROPHY

SECTION I - DESCRIPTION OF THE COMBAT RIFLE MATCH

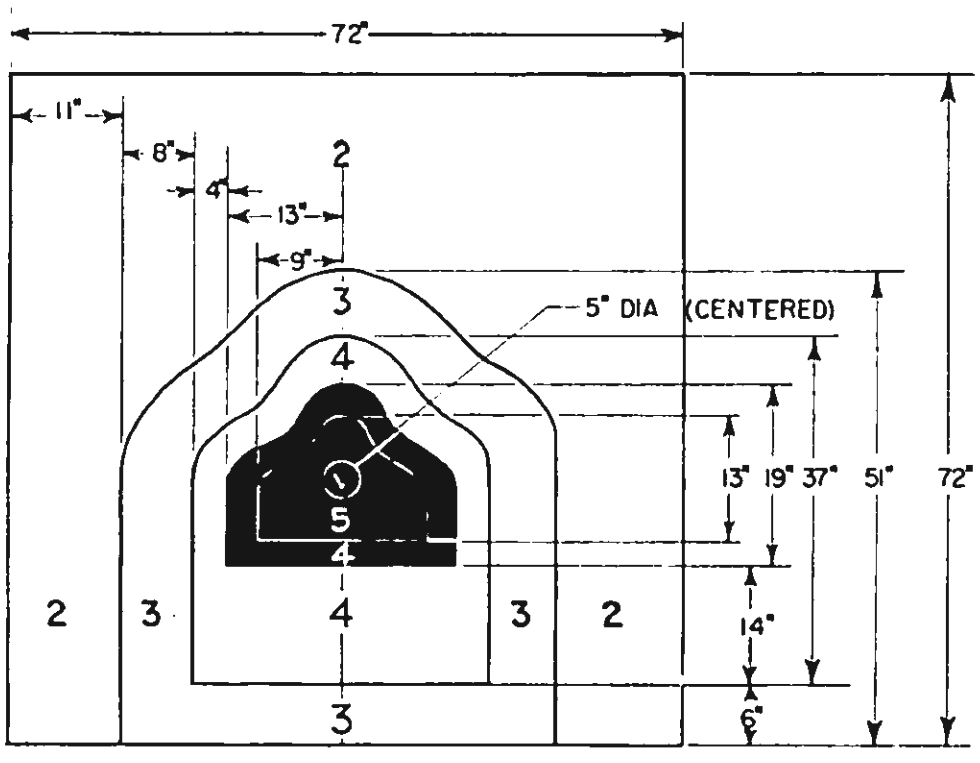
A. The Combat Rifle Match was developed through the Army Marksmanship Training Program and is designed to instill confidence in the individual soldier to a degree that he will engage an armed enemy instinctively and without hesitation. This course will develop skilled riflemen who will be available to unit commanders to aid in furthering the proficiency of marksmanship within the unit and instill teamwork between riflemen. This match is fired both individually and as a team.

B. The Combat Rifle Match, fired as an individual match, is composed of four stages of fire: Slow Fire, Rapid Fire, Quick Fire, and Fire and Movement. The first stage of the match is two sighters and 10 rounds for record, slow fire, prone position from the 400 yard line. The second stage is a 10 round rapid fire prone exercise requiring movement from the 400 yard line to the 300 yard line. The third stage is 10 rounds quick fire, at a snap target, prone position, also from the 300 yard line. The fourth stage is a 20 round assault firing exercise of four phases requiring movement from the 450 yard line to the 100 yard line. The first phase is two rounds, prone position from the 400 yard line. The second phase is eight rounds, sitting or squatting position from the 300 yard line. The third phase is five rounds, kneeling position from the 200 yard line. The fourth phase is five rounds, standing position from the 100 yard line.

C. The Combat Rifle Match, fired as a team match, is composed of the same course of fire except there are no sighters allowed, the team is assigned a bank of eight targets, and bonus points are given for fire distribution in stages two and four. In stages one and three, the six middle targets of the block of eight are exposed and in stages two and four, all eight targets are exposed.

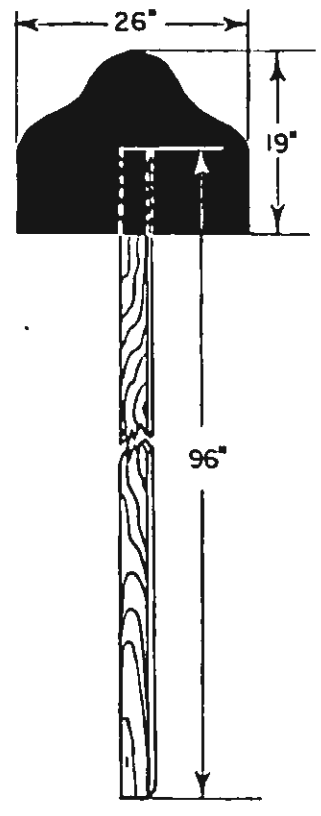
D. The targets used are as follows:

1. In stages one, two, and four the standard "D" prone silhouette target (Figure 127) is used.



RIFLE TARGET "D"
FSN 6920-922-7450
6920-922-7451 (CENTERS)

Figure 127. RIFLE TARGET "D"



PASTEBOARD "F" SILHOUETTE
FSN 6920-795-1807

Figure 128. SILHOUETTE PASTEBOARD "F"

2. In stage three the "F" prone pasteboard silhouette target (Figure 128) is used. The silhouette is attached to a pole so that it may be raised and lowered by the pit personnel.

E. Scoring Procedure:

1. Target Rifle "D"

a. To signal a "V", the white disk is raised vertically up the RIGHT side of the target until horizontal with the silhouette, moved across the face of the target, then lowered vertically down the LEFT side of the target.

b. To signal a "five", the white disk is raised vertically up the CENTER of the target, held over the center of the silhouette, then lowered vertically.

c. To signal a "four", the red disk is raised vertically up the CENTER of the target, held over the center of the silhouette, then lowered vertically.

d. To signal a "three", the red disk is raised vertically up the RIGHT side of the target to the upper right hand corner, held momentarily, then lowered vertically.

e. To signal a "two", the red disk is raised vertically up the LEFT side of the target to the upper left hand corner, held momentarily, then lowered vertically.

f. To signal a "miss", the red flag is waved once across the face of the target from RIGHT to LEFT.

2. Target Rifle Silhouette Pasteboard "F"

a. When disking the "F" target, the white disk is raised vertically for each hit on the target.

b. All hits have a value of five points.

c. Misses are not indicated.

3. Bonus points will be allowed in team competition according to the following:

a. In stages one and three no bonus.

b. In stage two a bonus will be awarded for those targets with a score of 35 or more points.

c. In stage four a bonus will be awarded for those targets with a score of 70 or more points.

d. The bonus shall be computed separately for stage two and for stage four. In each of the stages the square of the number of targets with 35 or more points (stage two) or 70 or more points (stage four) will be doubled and added to the total fired score of the team for that stage.

SCORE CARD COMBAT RIFLE MATCH TEAM COMPETITION									
NAME OF TEAM				TEAM LEADER			ASST TEAM LDR		
	TGT NR	TGT NR	TGT NR	TGT NR	TGT NR	TGT NR	TGT NR	TGT NR	TOTAL
STAGE 1									TOTAL
STAGE 2									TOTAL
BONUS STAGE 2	NR OF TGT WITH 35 OR MORE POINTS _____ X _____ = _____ X2 = _____ (EXAMPLE: 7 X 7 = 49 X 2 = 98)								TOTAL
STAGE 3									TOTAL
STAGE 4									TOTAL
BONUS STAGE 4	NR OF TGTS WITH 70 OR MORE POINTS _____ X _____ = _____ X2 = _____ (EXAMPLE: 7 X 7 = 49 X 2 = 98)								
SIGNATURE OF TEAM LEADER				SIGNATURE OF UMPIRE (SCORER)			TEAM TOTAL		

Figure 129. SCORE CARD (Front) TEAM COMPETITION

ENTRY CARD COMBAT RIFLE MATCH TEAM COMPETITION					
NAME OF TEAM				ORGANIZATION	
TEAM MEMBER	COMP NR	GRADE	SER NB	MILITARY ADDRESS	HOME ADDRESS
TEAM LEADER					
ASST TEAM LEADER					
1					
2					
3					
4					
5					
6					
ALT					
ALT					
DATE	PRINTED NAME OF TEAM LEADER			SIGNATURE OF TEAM LEADER	

Figure 130. SCORE CARD (Rear) ENTRY CARD TEAM COMPETITION

SCORE CARD COMBAT RIFLE MATCH INDIVIDUAL COMPETITION												
NAME			RANK	SER NR		ORGN				RELAY		TGT
STAGE 1												TOTAL
	SS	1	2	3	4	5	6	7	8	9	10	
STAGE 2												TOTAL
STAGE 3	Number of hits _____ X5											TOTAL
STAGE 4		1/11	2/12	3/13	4/14	5/15	6/16	7/17	8/18	9/19	10/20	TOTAL
SIGNATURE OF COMPETITOR					SIGNATURE OF UMPIRE (SCORER)						MATCH TOTAL	

Figure 131. SCORE CARD INDIVIDUAL COMPETITION

F. Ammunition.

Only issue service grade ammunition may be used.

1. Ammunition for individual matches will be issued by the umpire to the shooters during the preparation period for each stage.

2. In team matches the ammunition will be issued to the team leader who in turn distributes it to his team members.

3. Recommended ammunition distribution for both individual firing and team firing is as follows:

INDIVIDUAL MATCHES		
STAGE	NR. ROUNDS	POSSIBLE SCORE
1st	② – 10	50
2nd	10	50
3rd	10	50
4th	20	100
———	② – 50	250
TEAM MATCHES		
ALL	360	2056

Figure 132. AMMUNITION DISTRIBUTION CHART

SECTION II - EQUIPMENT

It is intended that the equipment worn and used by individuals will be only that normally associated with combat and field duty. Competitors will wear a field uniform prescribed by the Match Director, appropriate for the season. It will include:

Figure 133. FIRER WITH EQUIPMENT

Figure 134. TEAM LEADER WITH EQUIPMENT

A. Steel helmet with liner. The chin strap will be fastened.

B. Load bearing equipment, including a pistol belt with suspenders, full canteen with cup and carrier, first aid packet and pouch, magazines, two magazine pouches, and if issued, a bayonet.

C. Binoculars, not exceeding 7x50 power, may be used by the team leader and assistant team leader to direct fire during the team matches.

D. The team leader and assistant team leader will wear equipment required of shooters and will carry a rifle, unloaded and locked.

E. No individual or team member will be allowed to fire without having the equipment prescribed, worn or carried in the manner intended for it. During the conduct of the match, if equipment is lost by the shooter, he will not be allowed to fire until the equipment has been replaced in its proper position. Failure to meet this requirement may result in disqualification of the individual for the match involved.

F. The only rifles used in this competition will be the standard issue service rifle. (M-1, M-14, and M-16).

SECTION III - ELIGIBILITY, COMPOSITION, AND SELECTION OF TEAM MEMBERS

A. Eligibility

Teams at all levels of competition will be formed only from members of the same company. Team members must have been assigned to the unit they represent for 60 days prior to the starting date of the competition, except for personnel assigned on PCS from outside the installation who may compete without regard to the 60 day limitation. Provisional organizations approximating the strength of a rifle company (TOE 7-18E) may be established for units with an assigned strength of less than 50 personnel.

B. Composition

1. A team designed to approximate the rifle fire power of a squad will consist of six firing members, two alternates, one team leader, and one assistant team leader. No more than one commissioned officer will be permitted on a team. At least three of the individuals who fire must be grade E-4 or less.

2. All team members are eligible to compete in the individual portion of the matches.

3. It is intended that the identity of the company (parent unit) will follow the team through all levels of competition.

C. Selection of team members is the same as in Chapter One, Section II.

SECTION IV - TEAM TRAINING

A. Training Program

The Combat Rifle Team should train for at least three weeks prior to a match. Training should be divided into two phases; an initial instructional training phase followed by a firing schedule.

1. Regardless of the training time available or the experience of the prospective team members, an instructional training phase of at least three days should be provided to condition shooters before attempting to establish zeros. The first portion of this instructional training phase consists of instruction in mental and physical conditioning, rules and regulations, safety, fundamentals and conduct of the match. This instruction then must be followed by dry firing and practice firing of at least five times across the Combat Rifle Match course. At this time, the coach will observe the shooters, correct deficiencies noted, and conduct remedial training.

2. An acceptable firing schedule should include:

   a. Physical training exercises and/or organized athletics

   b. Practice firing

   c. Record firing

   d. Remedial training of weak stages

   e. Dry firing

CAUTION: Do not overtrain. If the coach discovers that the team is fatigued he should break the routine with individual training or a review of the fundamentals.

B. Rules and Regulations.

The procedure for conducting the Combat Rifle Match are outlined in inclosure 1 to Appendix I. CONARC Reg 622-2, and Chap. Four of this guide. Any variation from these procedures must be explained at the team leader's meeting prior to the match.

C. Safety

1. Appropriate range safety rules and regulations will be followed.

2. During stages of the match requiring movement, rifles will be locked and the muzzle of the weapon pointing down range. The rifle can be unlocked only when the shooter has assumed the proper firing position on the firing line.

3. Personnel assigned the duty as umpires for the match will, at the direction of the range officer or his assistant, check the competitors for safety, completeness of uniform and equipment, record scores; and in individual matches, issue ammunition as it is required for each stage of the match. One umpire will be assigned to each shooter, both in individual and team competition. In addition, in team events, there will be an extra umpire assigned to each team to keep the team score. Shooters may be used as umpires, however, care should be exercised in assigning this duty to allow for rest and preparation if the shooter must subsequently participate in the match.

4. Participants shall be subject to disqualification for violation of safety rules.

5. A participant shall be disqualified for failure to follow prescribed course of fire.

6. During the matches, if a competitor falls and the umpire has no doubt that the bore of the rifle is clear, the shooter may continue. If, however, the umpire has any doubt about the condition of the bore he will halt the shooter, inspect the rifle, and make certain it is clear before the shooter is allowed to continue. In team matches the shooter may use the team or assistant team leader's weapon, if his own cannot be used.

7. Safety rules outlined in Chap. One, Sec. IV-E, will be followed if applicable.

D. Fundamentals of Combat Match Firing.

In training Combat Rifle Teams, the coaches should follow the same fundamentals of marksmanship training as used in National Match training. Modifications required in Combat Rifle Match firing are as follows:

1. Aiming.

At all ranges, the shooter should be taught to use a "center of mass" hold on the silhouette. The instability of the positions, caused by the rapid movement between yard lines, makes other holds difficult and impractical.

The basic elements of aiming are the same as outlined in Chap. One, Sec. IV-F. 1.

2. Positions.

All positions used in the Combat Rifle Match Course; prone, sitting, standing, and kneeling; are unsupported positions. The loop sling will not be used but the use of the hasty sling and hinged butt plate are optional.

a. Adjusting the Hasty Sling.

Place the butt of the rifle on the right hip, cradled on the right arm. This leaves both hands free to adjust the sling. Unlock the keeper, move the keeper and feed end of the sling until they are positioned by the firing mechanism. This is the sling adjustment for the average soldier. Lock the keeper, give the sling a half turn to the left then place the left arm through the sling so that the sling is high on the upper arm. Move the left hand to the left and under the sling and then to the right over the sling. Grasp the rifle with the left hand between the balance and the stock ferrule swivel. If the sling has been given a half turn to the left, it will be flat around the back of the left hand and wrist. Each man will have to determine his own correct sling adjustment. Move the keeper and feed end of the sling until this adjustment is reached.

b. The prone (Figure 135), sitting (Figure 136), and standing (Figure 137) positions are the same as discussed in Chap. One, Sec. IV-F3 with the following exceptions:

(1) The left hand should be exerting a slight rearward pressure.

(2) The right hand should grip the small of the stock firmly but not rigidly. A firm rearward pressure must be exerted by the right hand to keep the rifle butt in its proper position.

Figure 135. PRONE POSITION

Figure 136. SITTING POSITION

Figure 137. STANDING POSITION

Figure 138. KNEELING POSITION

c. Kneeling Position

To assume the kneeling position (Figure 138) the shooter faces his target and executes a right face. He places his left foot to his left front, pointing toward the target. He kneels on the right knee and rests on his right heel. He places his left upper arm on the flat portion of his left knee. With his right hand, he places the rifle butt into the pocket formed in the right shoulder. His right elbow is set on a comfortable position allowing the rifle to be retained in the pocket of the shoulder. To complete the position he shifts his weight forward and obtains a spot or stock weld; at the same time exerting a slight pressure to the rear with his left hand and a firm pressure rearward with his right hand.

3. Trigger Control.

Trigger Control for Combat Rifle Match Firing is the same as discussed in Chap. Two, Sec. V-D. 3.

4. Rapid Fire.

In Rapid Fire, (Stages two and four) care must be taken not to "press" the pace while moving. Better scores will result from a leisurely run and a more rapid firing cadence than from an accelerated run and a slower firing cadence. Rapid breathing while in position will enlarge the groups. The recommended running speed should be slightly faster than double time. Rapid fire techniques discussed in Chap. One, Sec. IV-F. 3. and Chap. Two, Sec. IV-D. 3. also apply in Combat Rifle Match Firing.

5. Zeroing.

The principles of zeroing are the same for National Match and the Combat Rifle Match, however zeros for the latter are extremely difficult to determine because rapid breathing, slight alteration of positions, and a change of cadence will cause displacement of groups. The following techniques have been found to be helpful as a guide in zeroing:

a. When zeroing initially, it is recommended that the shooter zero slow fire; starting at the shortest range and working back, utilizing the position and targets prescribed for that stage.

b. For each stage a zero, in clicks, should be established rather than adjusting the aiming point from stage to stage.

c. A zero can only be determined by firing from the range, position, and cadence required of a particular stage.

d. Other factors in zeroing can be found in Chap. One, Sec. IV-F.6. and Chap. Two, Sec. IV-D.4.

6. Use of the Scorebook.

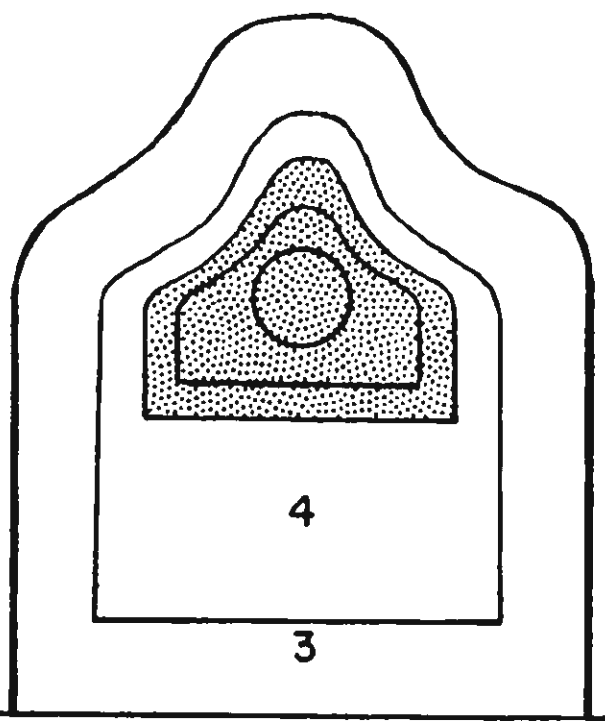
The Combat Rifle Match score sheets (Figures 139, 140, 141, and 142) should be maintained in the same manner as the National Match score sheets (Figures 46, 47, and 48). During practice firing, the shooter should be allowed to carry individual telescopes to the firing line to facilitate the plotting of shot groups.

NOTE: The use of a telescope on the firing line is not permitted in matches.

400 YDS SLOW FIRE SCORE SHEET "D" TARGET

REMARKS:

ELEV ZERO_____
WIND ZERO _____



PLACE		DATE		HR		
RIFLE NR.		AMMO		TEMP		
LIGHT	SIGHT P	WIND	LIGHT			
			WIND			

NR.	S-1	1	2	3	4	5
ELEV						
WINDAGE						
CALL	△	△	△	△	△	△
NR.	S-2	6	7	8	9	10
ELEV						
WINDAGE						
CALL	△	△	△	△	△	△

TARGET NR_____

Figure 139. 400 YARDS SLOW FIRE SCORE SHEET

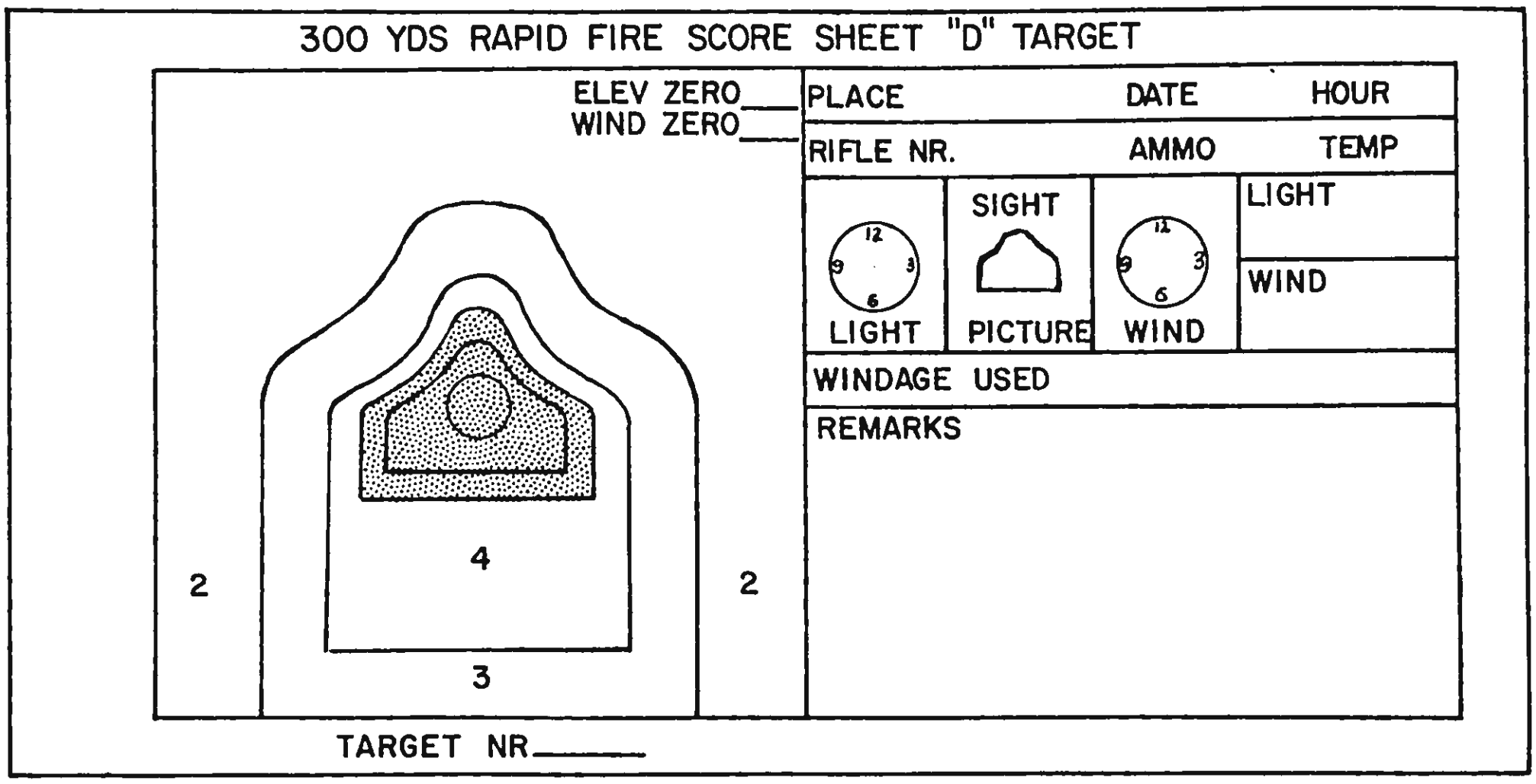


Figure 140. 300 YARDS RAPID FIRE SCORE SHEET

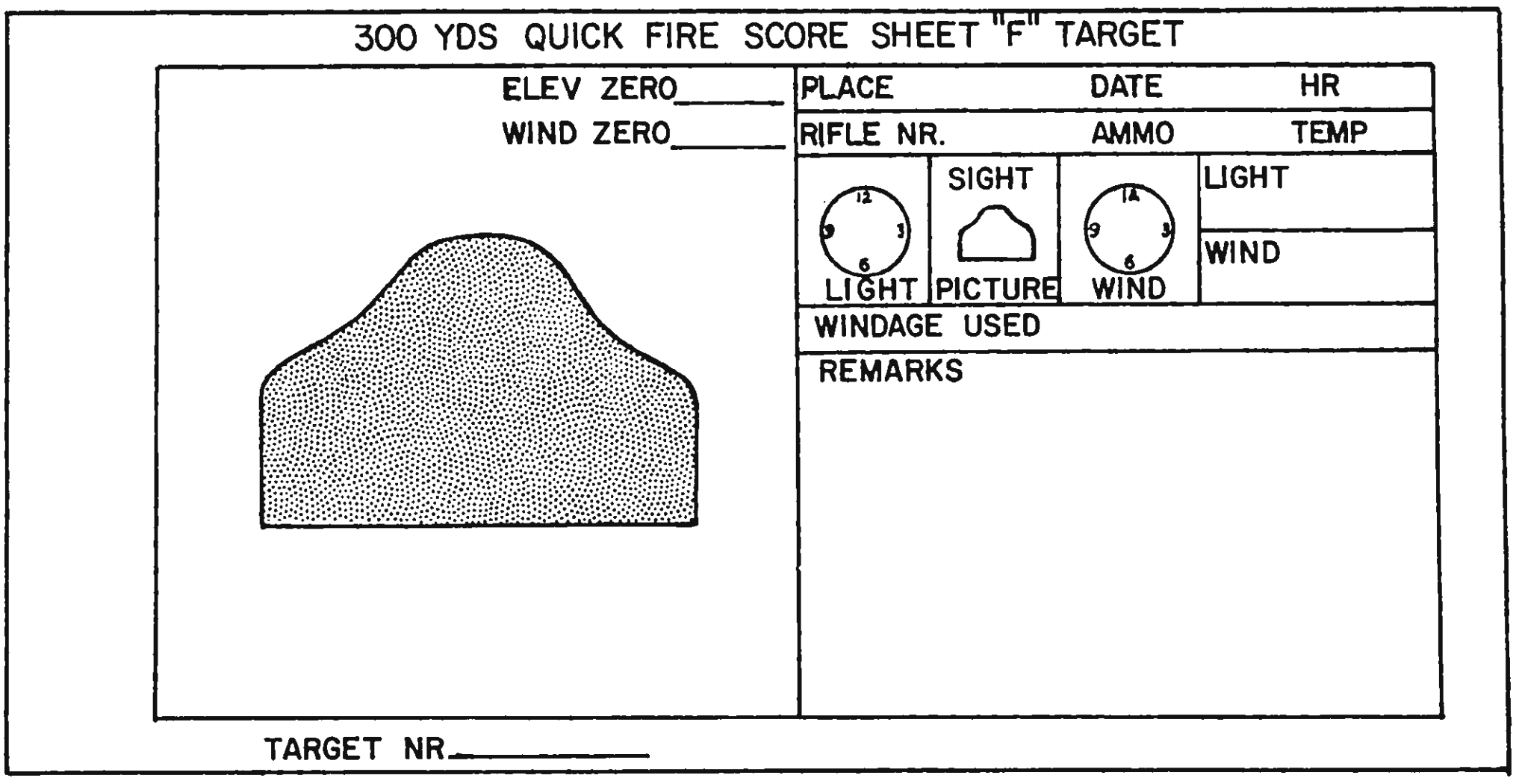
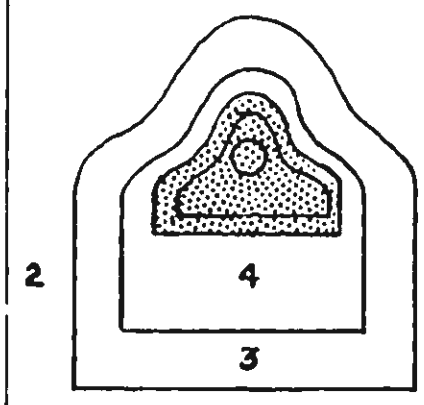


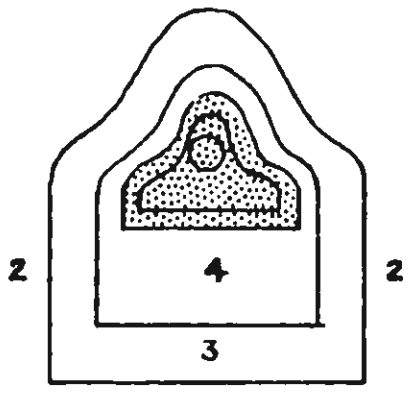
Figure 141. 300 YARDS QUICK FIRE SCORE SHEET

FIRE AND MOVEMENT SCORE SHEET "D" TARGET

REMARKS:



TGT NR._____



TGT NR. _____

PLACE		DATE		HR
RIFLE NR.		AMMO		TEMP
12 9 3 6 LIGHT	12 9 3 6 WIND	LIGHT		
		WIND		
YARDS	400	300	200	100
ELEV ZERO				
WIND ZERO				
SIGHT PICTURE				
ELEV USED				
WIND USED				

Figure 142. FIRE AND MOVEMENT SCORE SHEET

7. Dry Firing.

Dry firing is essential to the shooter since it is a good opportunity to try new techniques and helps perfect the firing cadence. Since the bolt must be operated manually it is necessary to divide the team to provide each shooter with a bolt operator. It is desirable to dry fire in the same sequence that the match is fired. Dry fire periods should last for approximately 30 minutes each day. The ideal dry fire range is the known distance range since there is no substitute for realism.

8. Detection and Correction of Errors.

Refer to Chap. One, Sec. IV-G. and Chap. Two, Sec IV-F.

SECTION V — CONDUCT OF THE MATCH AND TEAM COACHING

A. Team Firing.

On the day of the match a meeting is held by the Match Director in which any changes in the ground rules are discussed. At this meeting the team representative will draw for relay and target number. When ready, the Range Officer commands.

1. First stage of the Combat Rifle Match.

RANGE COMMAND: RELAY ONE TO THE READY LINE.

The first relay of teams is then moved to their assembly points directly behind their assigned firing points, where the team equipment is checked for completeness by the umpire, and the team ammunition is issued.

At this time, the team leaders assure that each shooter is ready to begin the match. Having referred to past Combat Match Leader's Record Sheets (Figure 145) and confirmed the zeros to be used, they caution any shooter on stages he may be weak in. They also prepare a Record Sheet to be maintained throughout this match. After checking that all sights have been set for 400 yards, and ammunition has been distributed properly, the fire plan is explained. The team leader and assistant team leader also check their binoculars for proper focusing, as explained in Chapter TWO, Sec V. When ready, the Range Officer commands:

RANGE COMMAND: RELAY ONE TO THE FIRING LINE FOR STAGE ONE OF THE COMBAT RIFLE MATCH. YOUR ONE MINUTE PREPARATION PERIOD STARTS NOW.

At this time, the center six targets of the assigned block of eight targets are exposed. The shooters assume a good prone position and dry fire on their assigned target. The team leader and assistant team leader check the target assignments and insure that the proper windage has been applied to the rifle. At the completion of the preparation period the targets are lowered and the Range Officer commands:

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. WITH A MAGAZINE OF 10 ROUNDS LOCK AND LOAD. YOU WILL HAVE 10 MINUTES TO FIRE 10 ROUNDS SLOW FIRE FROM THE PRONE POSITION. IS THE LINE READY? THE LINE IS READY. YOU MAY COMMENCE FIRING WHEN THE TARGETS APPEAR.

After each shot the target is pulled and marked with a spotter, raised and the value of the shot disked and recorded by the umpire. During firing, the team leaders direct the shooters to make any sight adjustments necessary.

When the last shooter has finished or 10 minutes have expired, the targets are lowered and the Range Officer commands:

RANGE COMMAND: CEASE FIRE, CLEAR ALL WEAPONS. (Umpires clear all weapons) IS THE LINE CLEAR? THE LINE IS CLEAR.

2. Second stage of the Combat Rifle Match.

Having completed stage one, the team readies itself for stage two. During this stage, the team starting from the 400 yard line in the prone ready position (Figure 143) in which the shooter must have one elbow and the stomach touching the ground, must move rapidly to the 300 yard

line. At the 300 yard line, the shooters must reassume the prone position, and fire their allotted ammunition within a target exposure time of 75 seconds, according to the fire plan being used.

Figure 143. PRONE READY POSITION

RANGE COMMAND: RELAY ONE PREPARE FOR STAGE TWO OF THE COMBAT RIFLE MATCH. YOUR ONE MINUTE PREPARATION PERIOD STARTS NOW.

The targets are not exposed during this preparation period.

At this time, the team leaders insure that each shooter knows his assigned target(s), the number of rounds to be fired and that each shooter has set his zero for 300 yards. He studies the wind conditions, determines the number of clicks needed to compensate for this wind and has the shooters apply this windage.

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. SHOOTERS LOCK AND 'LOAD. THIS EXERCISE IS RAPID FIRE FROM THE PRONE POSITION AT 300 YARDS. IS THE LINE READY? THE LINE IS READY. YOUR WEAPON WILL BE LOCKED DURING MOVEMENT. YOU MAY RISE AND MOVE FORWARD WHEN YOUR TARGETS APPEAR.

As the block of eight targets appear, the shooters will rise, move (Figure 144) to the 300 yard line, assume the prone position, unlock and then commence firing. Each shooter must reload at least once during this stage. The leaders may at this time watch, with the binoculars, the path of the bullet and give verbal commands adjusting the fire of any shooter. The targets remain up for 75 seconds, then are pulled and marked by placing spotters in the shot holes. As the targets are pulled, the Range Officer commands:

RANGE COMMAND: CEASE FIRE, CLEAR ALL WEAPONS, IS THE LINE CLEAR? (Umpire clear weapons) THE LINE IS CLEAR. STAND BY FOR YOUR SCORE.

Figure 144. RIFLE CARRYING POSITION

While the targets are being spotted, the team leaders check their team, making sure that the next stage fire plan is understood, and that all zeros are set. The targets are then raised for scoring. It is suggested that the targets be disked from left to right allowing the umpires time to score the eight targets.

3. Third stage of the Combat Rifle Match.

The targets are lowered when scoring has been completed, and the team readies itself for stage three. This stage will be 10 rounds quick fire two rounds per six second exposure, fired from the prone position at 300 yards.

RANGE COMMAND: IS THE SCORING COMPLETE? RELAY ONE PREPARE FOR STAGE THREE OF THE COMBAT RIFLE MATCH. YOUR ONE MINUTE PREPARATION PERIOD STARTS NOW.

The targets are not exposed during this preparation period.

During the preparation period, the team leaders recheck zeros and target assignment and determine the windage needed and have the shooters apply this windage.

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. WITH A MAGAZINE OF 10 ROUNDS LOCK AND LOAD. TARGETS WILL BE EXPOSED FIVE TIMES FOR SIX SECONDS ON EACH EXPOSURE. UNLOCK, WATCH YOUR TARGET.

The targets are exposed for six seconds and each shooter will fire two rounds at his own target. The leaders observe the path of the bullet and adjust fire if necessary. The targets are then lowered for six seconds. This procedure will be repeated for a total of five exposures, two rounds should be fired by each shooter at his target during each exposure.

After the fifth exposure, the Range Officer commands:

RANGE COMMAND: CEASE FIRE, CLEAR ALL WEAPONS. IS THE LINE CLEAR? (Weapons checked by umpire) THE LINE IS CLEAR. STAND BY FOR YOUR SCORE.

Spotters are placed in each hit, and the silhouettes are raised individually from left to right.

A white disk is raised in front of the silhouette for each hit.

Upon completion of scoring the Range Officer commands:

RANGE COMMAND: IS THE SCORING COMPLETE? RELAY ONE MOVE TO THE 450 YARD LINE FOR STAGE FOUR OF THE COMBAT RIFLE MATCH.

4. Fourth stage of the Combat Rifle Match.

The team is then moved back to the 450 yard line as a unit by the Team Leader. While at this yard line, the team assembles behind their firing points. The team leaders explain the fire plan, redistribute the ammunition, and prepares the team for stage four.

Stage four is an assault firing exercise of four phases requiring a movement from the 450 yard line to the 100 yard line. The amount of ammunition fired by each shooter will depend on the team fire plan, but at least two rounds must be fired by each shooter on the first phase, prone at 400 yards, eight rounds on the second phase sitting or squatting at 300 yards, five rounds on the third phase kneeling at 200 yards, and five rounds on the fourth phase standing at the 100 yard line. Targets will remain up for a 30 second exposure for movement to and firing from the 400 yard line, and withdrawn for 15 second intervals between exposures thereafter. The targets will be exposed for 65 seconds for the remaining phases of the stage. All movement must start from the prone ready position. This stage must include a reloading of the weapon during or at the completion of the second phase (300 yards).

RANGE COMMAND: RELAY ONE TO THE STARTING LINE FOR STAGE FOUR OF THE COMBAT RIFLE MATCH. YOUR ONE MINUTE PREPARATION PERIOD STARTS NOW.

The targets are not exposed during this preparation period.

At this time the Team Leaders insure that each shooter knows his assigned target(s), the number of rounds to be fired, and that each shooter has reset his sights for 400 yards. The Team Leader also determines the windage needed and has the shooters apply this windage.

RANGE COMMAND: YOUR PREPARATION PERIOD HAS ENDED. WITH ONE MAGAZINE LOCK AND LOAD. WEAPONS WILL BE LOCKED DURING MOVEMENT. IS THE LINE READY? THE LINE IS READY. WATCH YOUR TARGET.

When the targets appear, the shooters will start the exercise. Umpires must see that all movement is made with the rifles locked and muzzle pointed down range. Any shooter that does not move forward at any particular phase as the targets appear will be disqualified.

During firing, the Team Leaders may watch, with binoculars, the path of the bullet and adjust fire. During the 15 second interval that the targets are withdrawn, they insure that each shooter locks his weapon, resets his sights, returns to the prone ready position, makes any adjustment in windage, and knows the fire plan for the next phase.

At the completion of the fourth phase (100 yards) firing, the Range Officer commands:

RANGE COMMAND: CEASE FIRE, CLEAR ALL WEAPONS. IS THE LINE CLEAR? (Weapons checked by umpire) THE LINE IS CLEAR. STAND BY FOR YOUR SCORE.

When the spotters have been placed in the targets and they are ready for disking, the line is informed and the Range Officer commands:

RANGE COMMAND: WATCH YOUR TARGETS.

The targets are raised and scored. After disking and scoring have been completed the team umpire will consolidate each shooters score to the team score card and tabulate the team score. After all scoring has been completed and all team score cards have been signed by the Team Leader, the Range Officer commands:

RANGE COMMAND: IS THE SCORING COMPLETE? SLING YOUR RIFLES AND MOVE TO THE REAR OF THE RANGE.

The senior umpire will march the shooters and umpires to the rear of the range. There the Team Leaders and the shooters discuss the match just fired and reaffirm or establish zeros. The Team Leaders also complete the Record Sheet and advise the shooters of any difficulties they may have encountered.

B. Individual Firing.

The individual shooter will fire the match as described for team matches, with these exceptions.

1. Each shooter has his own individual target separated by an unexposed target on each side.

2. No coaching or assistance is allowed throughout the match.

3. No bonus system during individual firing.

4. Umpires will distribute ammunition for each stage during the one minute preparation period.

5. In stage one, two sighters will be fired for a total of 12 rounds with a time limit of 12 minutes.

6. In stage two the shooter must load two magazines of five rounds each.

7. In stage four the shooter must load two magazines with 10 rounds each and fire two rounds at the 400 yard line, eight rounds at the 300 yard line, five rounds at the 200 yard line, and five rounds at the 100 yard line.

C. Leader's Record Sheet.

1. The record sheet kept by the Team Leaders in Combat Match firing is somewhat different than in other types of competitive firing. Because in this type of firing the targets, when scored, may involve slow fire, rapid fire, groups by more than one shooter or groups fired from more than one yard line, any plotting of groups by the Team Leaders would be impractical. They should concern themselves mainly in establishing and recording accurate zeros and a record of the fire plan being used. Recording daily scores help to indicate a shooter's proficiency.

2. A lowering of scores indicates a need to analyze shot groups. The team leader and shooter analyze those shot groups plotted in the individual's scorebook.

3. A sample record sheet, shown in (Figure 145) allows the Team Leaders to record zeros, score, weather conditions, and the windage used at each stage.

COMBAT MATCH LEADER'S RECORD SHEET

DATE _____ TEAM LEADER _____

PLACE _____ ASST TEAM LEADER _____

TIME _____

STAGE ONE LIGHT (12 9 3 6) WIND (12 9 3 6) MPH _____ — TOTAL SCORE

TARGET NR. | △ △ △ △ △ △ △ △

NAME _____ _____ _____ _____ _____ _____

ZERO _____ _____ _____ _____ _____ _____

SCORE _____ _____ _____ _____ _____ _____ _____

WINDAGE USED _____

STAGE TWO LIGHT (12 9 3 6) WIND (12 9 3 6) MPH _____

ZERO _____ _____ _____ _____ _____ _____

SCORE _____ _____ _____ _____ _____ _____ _____ _____ _____

BONUS:– TARGETS WITH 35 OR MORE POINTS _____X_____=_____X2 _____

WINDAGE USED _____

STAGE THREE LIGHT (12 9 3 6) WIND (12 9 3 6) MPH _____

ZERO _____ _____ _____ _____ _____ _____

SCORE _____ _____ _____ _____ _____ _____ _____

WINDAGE USED _____

STAGE FOUR LIGHT (12 9 3 6) WIND (12 9 3 6) MPH _____

ZERO

400 _____ _____ _____ _____ _____ _____

300 _____ _____ _____ _____ _____ _____

200 _____ _____ _____ _____ _____ _____

100 _____ _____ _____ _____ _____ _____

SCORE _____ _____ _____ _____ _____ _____ _____ _____ _____

BONUS:– TARGETS WITH 70 OR MORE POINT _____X_____=_____X2 _____

WINDAGE USED _____ 400 _____ 300 _____ 200 _____ 100 _____

REMARKS: — TEAM SCORE

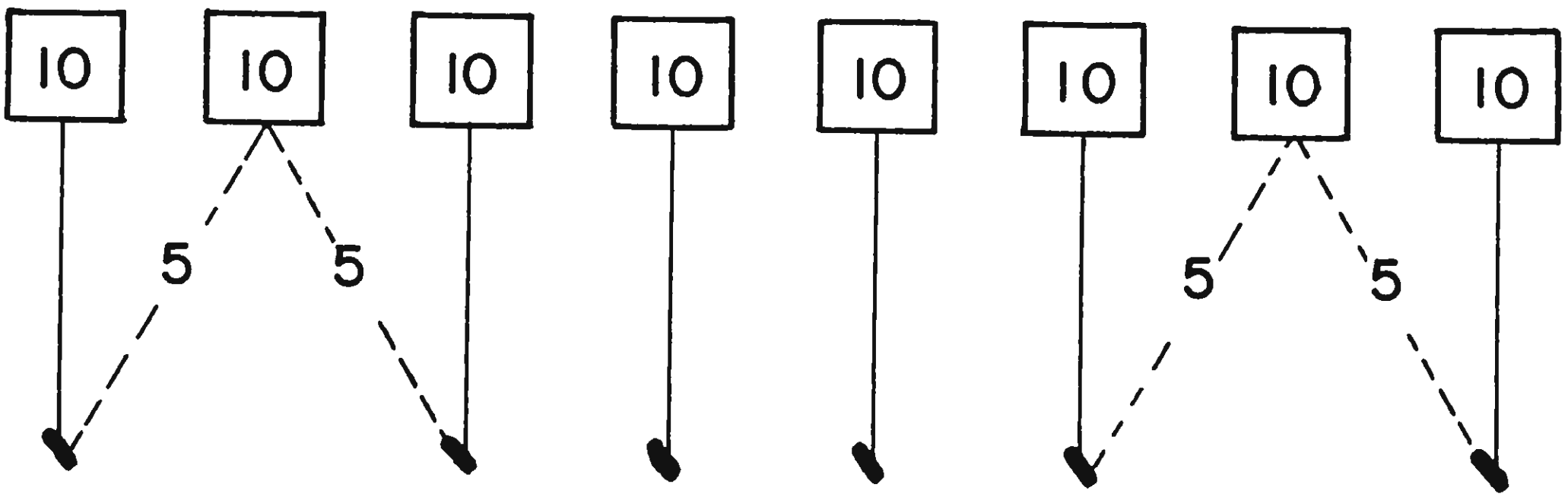
Figure 145. LEADER'S RECORD SHEET

SECTION VI -- FIRE PLANS

The most common method of controlling fire is to divide the six shooters into two three man fire teams, each fire team being controlled by one leader. The right fire team will fire on the right four targets and left team will fire on the left four targets. Obviously, when three men fire on four targets, one or more must fire on at least two targets.

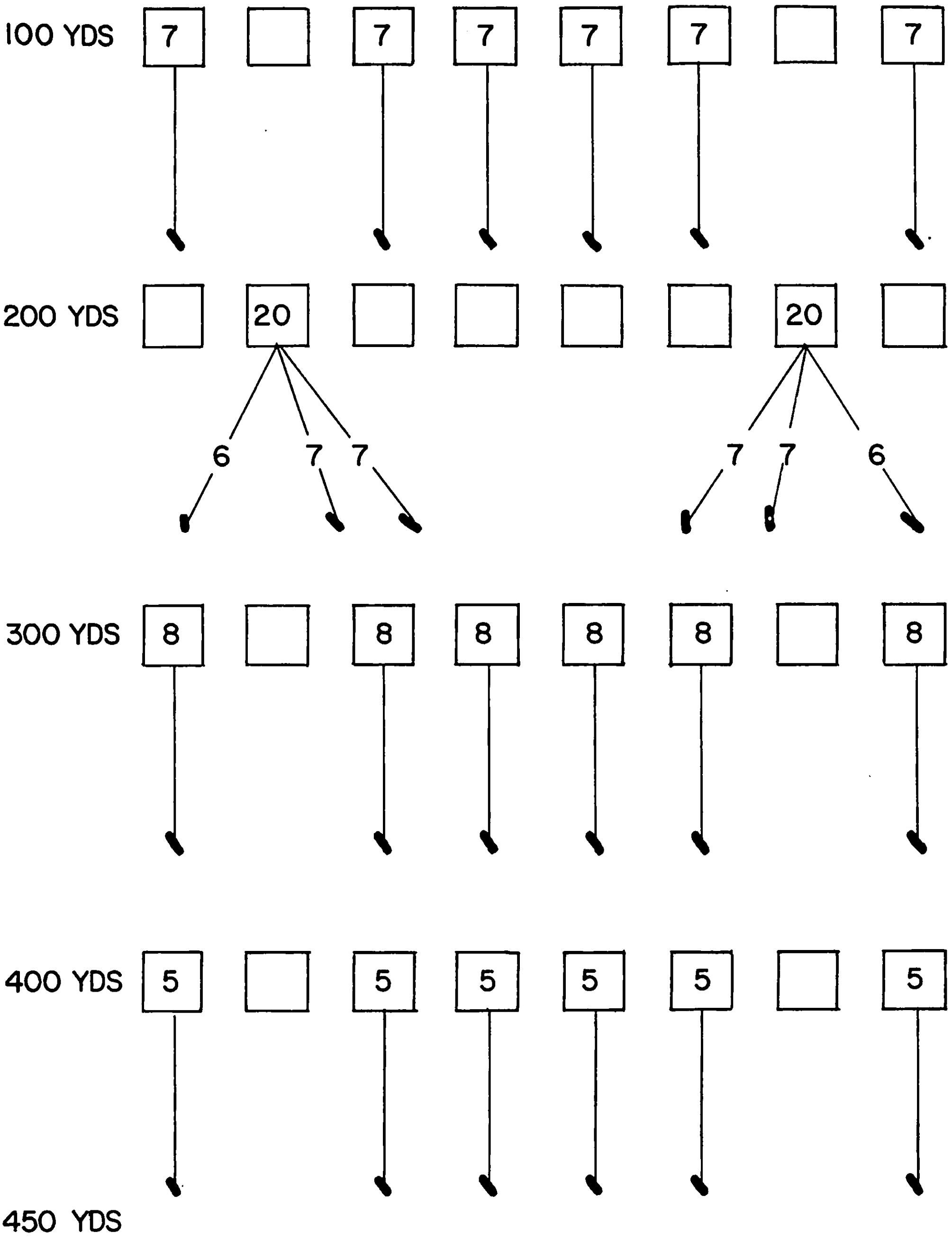
Fire plans vary according to the capabilities of the team and the desires of the team leader.

The fire plans suggested in Figures 146 and 147 are just one of many that may be used when firing stages two and four of the Combat Rifle Team Match.



FIRE PLAN, TEAM MATCH, STAGE TWO

Figure 146. FIRE PLAN, TEAM MATCH, STAGE TWO



FIRE PLAN, TEAM MATCH, STAGE FOUR

Figure 147. FIRE PLAN, TEAM MATCH, STAGE FOUR

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