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CH IN FIELD ARTY FORWARD OBSN TYPE OF CONDUCT OF FIRE

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N-13737

POWER

COMMAND AND GENERAL STAFF SCHOOL

FT LEAVENWORTH, KANSAS

29 April 1946

MEMORANDUM TO THE DIRECTOR, SECOND COMMAND CLASS

SUBJECT: General Staff Memorandum

Submitted by: Colonel George W. Power, F.A.

26 JUL 1946

No PO Reg #

HEADQUARTERS ARMY GROUND FORCES

WASHINGTON, D.C.

290900 April 1946

MEMORANDUM TO THE CHIEF OF STAFF

SUBJECT: Change in Field Artillery Forward Observation Type of Conduct of Fire.

1. THE PROBLEM

A definite need exists for a change in the technique employed in adjusting Field Artillery fire by forward observation methods in order to conform in principle with methods employed by other arms and services.

2. DISCUSSION

a. Need for Uniformity

(1) Experience in the past war demonstrated that the fire of weapons of one arm or service are frequently adjusted by observers of another.

(2) Different techniques employed resulted in delay, confusion and mistakes.

(3) Training time was not sufficient to ~~turn~~ train all observers in several different techniques to the desired degree of proficiency.

b. Technique Employed

(1) Two generally similar techniques of forward observation are used at present. See Appendix A.

(2) The Infantry, Armored-Cavalry, U.S. Marine Corps and U.S. Navy employ a method wherein the observer gives "commands" for changes necessary to correct the observed error of the fire, while the Field Artillery employ a method wherein the observer reports "sensings" giving the error of the fire.

c. Advantages of "Command" Method

(1) It employs positive direct methods and is more logical and natural and more readily understood.

(2) It is the method used by the Infantry and the Armored Cavalry, the supported arms. A method with which observers of these arms are familiar is advantageous.

(3) It can be adopted by the Field Artillery more easily than the other arms can adopt the "sensing" method.

d. Advantages of Sensing Method

(1) No advantage of this method over the "command" method can be seen.

e. Conclusions

(1) That a uniform method is desirable.

(2) That the "command" method is preferable and should be adopted by the Field Artillery.

3. ACTION RECOMMENDED

a. Recommend that the Commandant, Field Artillery School be directed to conduct a detailed study of each method and comment upon the problem. A draft of recommended letter is appended as Appendix C.

G. W. POWER
Colonel, F.A.
Chief, F.A. Branch, Trng. Div., G-3 Section

CONCURRENCES -- See Appendix B

1. THE PROBLEM.

A definite need exists for a change in the technique employed in adjusting Field Artillery fire by forward observation methods in order to conform in principle with methods employed by other arms and services in adjustment of similar weapons, thus facilitating adjustment of weapons of one arm or service by observers of another.

2. DISCUSSION.

a. Need for Uniformity.

(1) Experience in the past war demonstrated that the fire of weapons of one arm or service are frequently adjusted by observers of another. For example an Infantry observer or an aerial observer of the Army Air Forces may expect observation missions in adjustment of the fire of Army Field Artillery, Marine Corps Artillery, and Naval gun support ships, and therefore must be familiar with the methods of each.

(2) Difference in technique employed by the various arms and services proved to be a handicap resulting in delay, confusion, and mistakes.

(3) In training new observers training time was not sufficient to train all observers in several different methods to the desired degree of proficiency. As a result difficulty was experienced when an observer of one arm or service attempted to adjust the fire of another.

b. Technique Employed.

(1) Two similar general methods of adjustment by forward observers are presently used in the arms and services providing gunfire support. Both methods are simple and easily taught to new observers and each is efficient and permits rapid adjustment.

(2) The Infantry, Armored-Cavalry, U.S. Marine Corps, and U.S. Navy employ a method wherein the observer gives "commands" for changes necessary to correct the observed error of the fire.

(3) The Field Artillery employs a method wherein the observer reports "sensings" giving the error of the fire in relation to the target.

(4) A detailed discussion of the two methods is presented in Appendix A.

c. Advantages of "Command" Method.

(1) The command method employs positive direct methods. It is logical and natural and more readily understood by inexperienced observers.

(2) It is the method employed by the Infantry and Armored-Cavalry. Since these are usually the arms supported by such weapons, their observers will be required to adjust the fire of all. Therefore a method with which these observers are familiar is advantageous.

(3) The method is simple and so little change is necessary from the "sensing" method that the Field Artillery could adopt it with little difficulty. It is believed that the "command" method could be adopted by the Field Artillery more readily than the "sensing" method could be adopted by the supported arms, since gunfire support is the primary mission of Field Artillery whereas adjustment of such fire by observers of the supported arms is only incidental to accomplishment of their primary mission.

d. Advantages of Sensing Method.

(1) No advantages of this method over the "command" method can be seen except that retention of it by the Field Artillery would obviate any necessity for change in training in this branch. However, even though this method is retained by the Field Artillery, observers of that branch must be familiar with the command method because they will be required frequently to adjust the fire of U.S. Marine Corps Artillery and U.S. Navy Ships.

e. Conclusions.

(1) That a uniform method is desirable

(2) That the "command" method is preferable and should be adopted by the Field Artillery.

(3) Concurrences - Appendix B

3. ACTION RECOMMENDED.

a. Recommend that the Commandant, Field Artillery School be directed to conduct a detailed study of each method and comment upon the problem.

b. A draft of recommended letter to the Commandant, Field Artillery School is appended as Appendix C.

G. W. POWER
Colonel, F.A.
Chief, F.A. Branch, Trng. Div., G-3 Section

APPENDICES

APPENDIX A - Detailed Discussion of the Problem

APPENDIX B - Concurrences

APPENDIX C - Draft of Letter to Commandant, Field Artillery School

APPENDIX A

DETAILED DISCUSSION.

1. Need for Uniform Method

a. Extensive combined operations during the war just ended have shown the need for as much uniformity in tactics and techniques as is possible between different arms and services in order to eliminate confusion, delay, and misunderstanding.

b. This fact was particularly noticed in the technique of conduct of fire of similar type weapons of different arms and services.

c. Organization for combat was very flexible. An Infantry regiment might find itself supported by Field Artillery, U.S. Marine Corps Artillery, or U.S. Navy fire support ships. It was common that Infantry observers found it necessary to adjust the fire of weapons of these supporting units because the number of observers from the supporting units was limited. Likewise, Field Artillery and Marine Artillery units frequently reinforced each other and each at times was reinforced by naval gunfire. Therefore, it was frequently necessary for the observers of these units to adjust the fire of guns of the other services. Aerial Field Artillery observers, on occasion, adjusted the fire of Infantry mortars and cannon company weapons.

2. Technique Employed

a. All of the services mentioned above employ forward observation techniques which are similar in general type but which differ in one basic principle.

b. This type of conduct of fire is designed to facilitate observation by a forward observer who may or may not know the exact location of the guns in relation to the target and therefore may not be in a position to determine the range and direction for the guns. To employ this method the observer must know roughly where the guns are located and must be able to visualize the gun-target line on the ground. If he has no idea as to the gun-target line he may call for a single round on a known point or at coordinates given by him and then ask for a second round fired at a different range. These two rounds will then indicate the direction of the gun-target line. The target is designated initially by several methods, generally by coordinates or in relation to another target or terrain feature known to the guns. Adjustment on the target is then accomplished by reporting "sensings" telling where the rounds fall with respect to the target in terms of yards error, or by giving "commands" for changes necessary in direction and range in terms of yards. These "sensings" or "commands" are given in the sense of right or left of the gun-target line and "over" or "short" or "up" or "down" in relation to a line passing through the target perpendicular to the gun-target line. The essential difference in technique lies in the fact that the other arms and services employ the "command" method while the Field Artillery employs the "sensing" method.

c. In the "sensing" method the sensing feature is used to designate the target and to conduct subsequent adjustment. To illustrate - An observer desires to fire upon a target located 1000 yards to the right of a known point and 1000 yards beyond it. Assume the known point is a school house. The observer reports: "School house is 1000 left, 1000 short" and then states the nature of the new target.

In other words it is as if a round had just fallen at the school house and the observer is "sensing" that round in relation to the target upon which he is requesting fire. To continue the illustration - Assume that the observer's estimation is slightly in error and the first rounds fired at the new target fall 300 yards to the left and 200 yards short of it. He would then report his sensing: "300 Left, 200 Short". Based upon these sensings the fire direction center of the firing unit converts these sensings into fire commands for the guns to endeavor to correct the error and place fire on the target.

d. In the "command" method the command feature is used in target designation and in adjustment. To illustrate - Assume the same known point and target as used in the illustration above. The observer would report: "School house - Right 1000, Up 1000" and state the nature of the new target. Under this method "Right" means "Move right" and "up" means "Move up". Similarly the "command" after the first rounds were observed would be "Right 300, Up 200" instead of "300 Left, 200 Short".

e. Thus it can be seen that the "command" method employs a positive approach in that the observer tells the guns what to do, whereas the "sensing" method employs the rather negative or indirect approach of reporting where the last rounds fall.

3. Origin of Field Artillery "Sensing" Method

a. The employment of the sensing feature by the Field Artillery in this type of firing was a logical normal development since sensing is a feature of the technique used in other types of firing executed by the Field Artillery, wherein the observer is taught to sense the rounds first, fix in his mind where the rounds fell, and then give a command to correct the error.

b. This type of conduct of fire was first developed for use by Air Corps aerial observers where it was desired that the observer act only as the "eyes" of the fire direction center to report where the rounds fell. The fire direction center retained full control of the problem and when it could be seen from the sensings that the adjustment was sufficiently close it ordered the guns to start fire for effect and radioed the observer that the adjustment had been completed.

c. Later it was deemed advisable to utilize this type of adjustment in firing observed by Field Artillery ground observers at forward observation points. Here too, the forward observer was utilized only as "eyes", the fire direction center retaining full control of the problem.

d. In the last few years the Field Artillery has changed some of the aspects of this type of firing. Certain control has been relinquished by the fire direction center and given to the observer. For example, the observer uses his judgement, based upon his intimate knowledge of the situation of the troops he is supporting and his first hand knowledge of the target he wishes to attack, in estimating how many guns are needed to attack the target, what kind of ammunition and fuze should be employed, when the adjustment is sufficiently accurate to start fire for effect, and whether speedy effect is essential or the fire for effect should be delayed so that all guns can be layed and fired so that the rounds from all guns fall on the target simultaneously. Formerly the judgement of the observer was not used. Although present practice still requires that the final decisions in such matters be made by the fire direction center, the recommendations of the observer are generally followed and in effect he controls the problem, the fire direction center merely acting as an agent to see that the guns give him what he wants.

e. Thus it can be seen that, while development of the "sensing" method came about logically in the Field Artillery, there is no longer any logical reason for use of the "sensing" method rather than the more logical "command" method.

4. Danger of Continued Use of the Two Systems

a. Under present conditions where two such similar types of conduct of fire are in use, mistakes can easily occur which will result in inflicting casualties upon friendly troops. For example, if an Infantry observer were adjusting the fire of his supporting Field Artillery and became confused so that he reported "500 Right" when he intended that the fire be moved 500 yards to the right, the fire direction center, unaware of his mistake, would move the fire 500 yards to the left. Such a mistake could easily result in bringing fire down upon friendly troops. Such mistakes can be made very easily in the heat of battle and have been made.

APPENDIX B

CONCURRENCES

Chief of Armored - Cavalry Branch, Training Division, G - 3 Section

Chief of Infantry Branch, Training Division, G - 3 Section

Chief of Training Division, G - 3 Section

A. C. of S G - 3

APPENDIX C

DRAFT OF LETTER TO COMMANDANT, FIELD ARTILLERY SCHOOL

HEADQUARTERS ARMY GROUND FORCES

Washington, D. C.

29 April 1946

SUBJECT: Change in Field Artillery Forward Observation Type of Conduct of Fire.

TO: The Commandant, Field Artillery School

1. It is desired that a detailed study be made of the forward observation methods of conduct of fire employed by U. S. Naval shore fire support ships, U. S. Marine Corps artillery, and U. S. Infantry and Armored-Cavalry mortar and assault gun units, with a view to adoption by the Field Artillery of similar methods in order to obtain uniformity.

2. Present methods employed by the Navy, Marine Corps, Infantry and Armored-Cavalry employ "commands" by the observer for changes necessary to correct the error of the fire, whereas the Field Artillery method employs "sensings" by the observer reporting the error of the fire. It is desired to determine whether adoption of the command method by the Field Artillery is advisable.

3. A report of the study together with recommendations will reach this headquarters not later than 30 June 1946.

BY COMMAND OF GENERAL DEVERS