

THE 4.2 INCH MORTAR M-30

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SUBJECT: The 4.2 Inch Mortar, M-30

1. PROBLEM. To determine if four 4.2 inch mortars are sufficient to support the new infantry battalion when conducting offensive and defensive operations.
2. ASSUMPTIONS.
 - a. TOE 7-16E applicable to the ROAD division will apply throughout the army in the near future.
 - b. The tactical use of mass destruction weapons in total war will necessitate the new infantry battalion being able to fight on widely separated frontages, in isolated actions, or on normal frontages.
3. FACTS BEARING ON THE PROBLEM.
 - a. TOE 7-16E authorizes four 4.2 inch mortars in the Mortar Davy Crockett Platoon. (1:104)
 - b. The 4.2 inch mortar has a high rate of fire. (2:331) ✓
 - c. The 4.2 inch mortar has a relatively large dispersion pattern. (2:331)
4. DISCUSSION.
 - a. The organization prescribed for the Mortar Davy Crockett Platoon is authorized by TOE 7-16E. (Annex A)
 - b. The mortar has certain characteristics that must be considered in its employment. (Annex B)
 - c. The 4.2 inch mortar is normally employed in general support during the conduct of the attack. (Annex C)
 - d. The battalion has the capability of conducting an area defense which is oriented toward retention of specific terrain. (Annex D)
5. CONCLUSION. Four 4.2 inch mortars can provide limited but not adequate fire support for the new infantry battalion.
6. ACTION RECOMMENDED. The organization of the mortar section in the infantry battalion include a minimum of six 4.2 inch mortars.


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ANNEXES: A - TOE, Mortar Davy Crockett Platoon
 B - Characteristics of the 4.2 Inch Mortar
 C - Employment During the Attack
 D - Employment During the Defense
 X - Bibliography

CONCURRENCES: (Omitted)
NONCONCURRENCES: (Omitted)
CONSIDERATION OF NONCONCURRENCES: (Omitted)
ANNEXES ADDED: (Omitted)
ACTION BY APPROVING AUTHORITY:

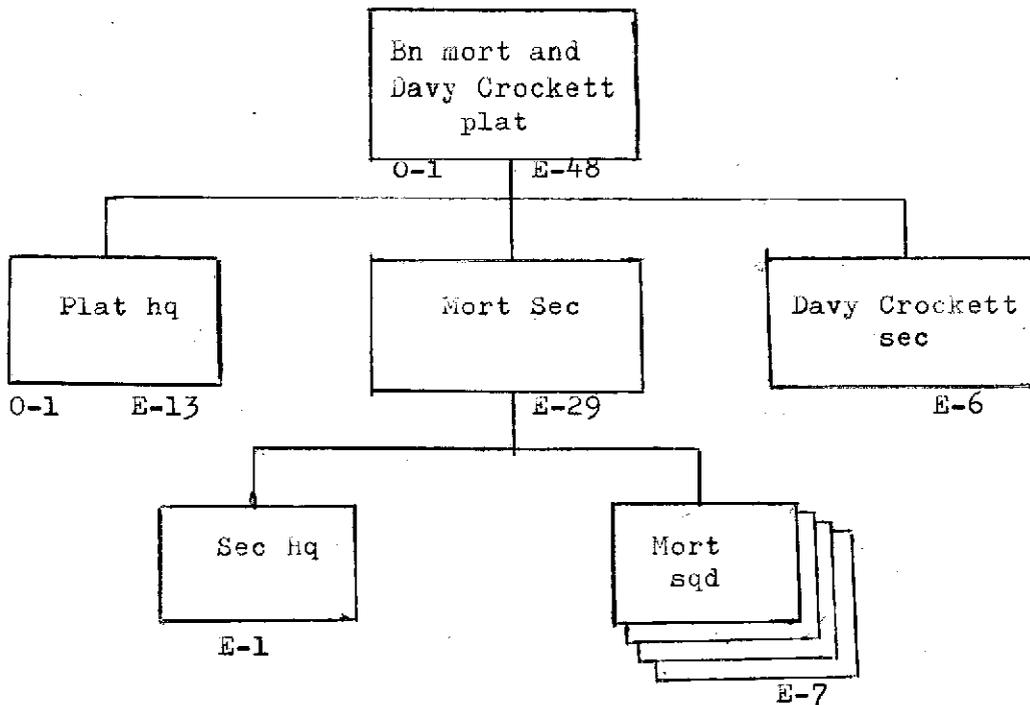
Date:

Approved (disapproved), including (excluding) exceptions.

Signature

ANNEX A--TOE, Mortar Davy Crockett Platoon (1:104)

1. This annex will not include the Davy Crockett Section's personnel and equipment.



Battalion Mortar and Davy Crockett Platoon Headquarters

1 Lt	Platoon Leader	1543
1 PSgt	Platoon Sgt	11270
1 SSgt	C F D Cmpt	11260
3 Sgt	Forward Obsr	11260
2 SP5	F D Cmpt	11220
2 Pfc	Lt Truck Driver	11200 16
4 Pfc	Rad Tel Op	11200

Launcher rocket 3.5 inch.	1
Tlr amph cgo 1/4-T 2 whl.	5
Tlr cgo 3/4-T 2 whl	2
Trk cgo 3/4-T 4x4	2
Trk utility 1/4-T 4x4	5
Control rad set AN/GRA-6.	8
Radiacmeter IM-93/UD.	1
Radio set AN/GRR-5.	2
Radio set AN/PRC-10	6
Radio set AN/VRC-9.	2
Radio set AN/VRC-10	4
Radio set AN/VRC-18	3
Radio set AV/VRQ-3.	2
Swbd tel manual SB-993/GT	1
Swbd tel manual SB-22/PT.	1
Telephone set TA-312/PT	9

Mortar Section Headquarters

1 Sfc	Section Leader	11260
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Mortar Squad (4)

1 Sgt	Squad Leader	11260
1 SP4	Mortar Gunner	11210 11

3 Pfc	Ammo Bearer	11200	43
1 Pfc	Asst Mort Gunner	11200	11
1 Pfc	Lt Truck Driver	11200	

Mortar	4.2-inch on mount	1
Tlr cgo	3/4-T whl.	1
Trk cgo	3/4-T 4x4.	1

ANNEX B--Characteristics of the 4.2 Inch Mortar

1. The 4.2 inch mortar has the following characteristics:
(2:331)

- a. High rate of fire. For the first two minutes one mortar can fire 20 rounds per minute. The next 20 minutes the mortar can fire 6 rounds per minute. The mortar has a sustained rate after 22 minutes of 2 rounds per minute. (3:5)
 - (1) In one hour one mortar is capable of firing 236 rounds. The four mortars of the Mortar Davy Crockett Platoon are capable of firing 944 in one hour. The mortar can place a voluminous amount of fire on a target as compared with other artillery weapons.
 - (2) If two mortars were added to TOE 7-16E, an additional 472 rounds can be fired in one hour. The section now has the capability of firing 1436 rounds in one hour.
- b. Ability to fire in deep defilade. The high angle firing characteristics of the mortar permit wider selection of positions than is normally considered for artillery weapons. Mortars can be positioned in small openings, in woods and close to the base of hills or bluffs; ravines may also be utilized. (2:334)
- c. Steep angle of fall resulting in a large lethal area. The lethal area of the 4.2 inch mortar round is approximately 220 meters wide by 135 meters deep. The fragments of a round have sufficient velocity to be considered dangerous and may kill or wound personnel within this area.
- d. Relatively large dispersion pattern. Dispersion is the scattering of the points of impact when several rounds of the same propellant and projectile lot are fired under conditions as nearly identical as possible. (4:186)
 - (1) As the range increases, the dispersion of rounds increases; a decrease in range decreases dispersion.
- e. Displacement capability and limitations.
 - (1) The 4.2 inch mortar weighs approximately 639.5 pounds. (4:4)
 - (2) The prime mover of the mortar is the 3/4 ton truck with trailer. (1:104)
 - (3) Personnel may carry the mortar by hand for short distances. The mortar may not accompany the battalion conducting foot marches cross-country.
 - (4) The 3/4 ton truck, which is the prime mover of the mortar, limits the mobility of the weapon to roads and trails. However, when suitable road nets are available, the 4.2 inch mortar can be displaced rapidly from one position to another.

f. The minimum range of the 4.2 inch mortar is 850 meters and the maximum range is 5,500 meters.

ANNEX C--Employment During the Attack

1. The battalion may attack on one or two axes, designated the main and supporting attack. (2:102)
2. Priority of fires are usually given to the main attack. (2:72)
3. In order for the mortar section to give continuous support, the section will be employed by splitting into two squads. The two squads will move by bounds in order to support forward companies conducting the attack. The mortar section would not be able to mass the fires of four mortars accurately and with a minimum of time. A forward observer would be required to adjust the fires of each sub-section on the target causing undue delay in massing the sections' fire.
4. To execute an effective fire mission, mortar fire of a suitable density must hit the target at the proper time. (4:168)
5. In order to inflict a maximum number of casualties, the immediate objective is to deliver a mass of accurate and time fire. Such fire also has the most demoralizing effect on an enemy. The number of casualties inflicted in a specific target area can be increased in most instances by surprise fire. Accurate massed fire with one round per weapon from six mortars will be much more effective than six rounds from one mortar, provided they arrive on the target simultaneously. (4:169)
6. The mortar section may remain in one location in order for the section to mass the fires of four mortars. When the attacking elements of the battalion reach the maximum range of the mortar, the section will displace. Until the section reaches its new position and is ready to fire, the battalion will not have organic supporting fires.
7. In today's techniques and tactics, it is possible for a unit to attack with a great amount of speed and momentum. Once a unit has passed beyond the maximum range of the 4.2 inch mortar, the mortar section may not come within range of the attacking units until the conclusion of the attack. When a condition of this nature exists, the mortar section is not accomplishing its primary mission of providing close and continuous support to the attacking elements.

ANNEX D--Employment During the Defense

1. The battalion is capable of conducting a defense on frontages up to 3,000 meters with depths of about 2,500 meters. This is considered to be a maximum frontage. (2:159)
2. The 4.2 inch mortar is capable of supporting the battalion comparing the range of the mortar to the given frontage and depth stated above. If the battalion is to defend frontages above the maximum, the battalion would have to receive additional fire support to cover by fire sections of terrain not physically occupied.
3. The heavy mortar section is normally employed in general support to cover the most dangerous avenues of enemy approach in the defense. (2:72)
4. The heavy mortar section can fire one barrage approximately 180 meters wide. (2:327)
5. When the battalion defends terrain in which there are more than one dangerous avenue of approach, the battalion commander will have to use supporting artillery, if available, to defend additional avenues of approach.
 - a. The addition of two 4.2 inch mortars provides the battalion commander with one or two barrages that can be fired by the mortar section. Each subsection can fire one barrage 150 meters wide. (5:22)
 - b. Additional organic mortars will increase the ability of the battalion to defend its assigned area.
6. The COPL is normally located forward of the FEBA 1,000 to 2,400 meters. Artillery and heavy mortar support are usually provided from within the battle area. When this cannot be done, elements of either, or both, may be positioned forward of the FEBA. (2:164)
 - a. Due to the large dispersion pattern of the mortar at long ranges, two of the mortar squads are normally positioned forward of the FEBA to provide for more accurate fires. The remaining two mortars remain in the primary position located behind the FEBA. Should the enemy conduct an attack with momentum and speed, only two mortars are available at a critical time while the section located on the COPL is withdrawing to the primary position.
 - b. The addition of two mortar squads will provide the needed fire power at a critical point in the defense of the battalion area.
7. Use of the 4.2 inch mortar in Korea indicates it is valued more highly than any other weapon within the infantry regiment. A number of battalion and regimental commanders commented that they would like to see twice as many 4.2s within the infantry regiment, and that they felt that the gain in fighting power, under almost any condition of terrain and climate, would more than justify the added burden. This comment was made by Col Lewis Fuller, after extensive use of the 4.2 in the defense of Koto-ri: "It is a beautiful weapon. With a fast and well trained crew and with all eight mortars

firing, we found it possible to put 96 rounds in
the air before the first one burst." (6:95)

ANNEX X--Bibliography

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6. Infantry Operations And Weapons Usage In Korea, Winter Of 1950-51 (S. L. A. Marshall: Operations Research Office, The Johns Hopkins University, Chevy Chase, Maryland, October 1951).