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Level : CD

SCHOOL OF INFANTRY

TACTICAL WING

THE 81 mm MORTAR : CHARACTERISTICS  
EMPLOYMENT AND ORGANISATIONS

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A BRIEF ON THE 81mm MORTAR

INTRODUCTION

1. The 81 mm Mortar has been designed to provide quick, accurate and heavy fire power at Battalion, Company or Platoon level, in every phase of war regardless of terrain.
2. The lightness of equipment, ease of carriage, simplicity of deployment, speed in and out of action and the weight of accurate and flexible fire, gives small dispersed units operations on a wide frontage, effective heavy fire support, without in any way impairing mobility.

AIM

3. The aim of this brief is to give students a working knowledge of the Rhodesian Army's only medium support weapon.

WEAPON DATA

4. The 81 mm mortar is classed by the Rhodesian Army as a medium mortar. It is produced by Hotchkiss-Brandt in France, who also produce the 60mm Light mortar and the 120mm heavy mortar. Ranges are as follows:

- a. Maximum Range Long Barrel (146 cm) 1.2 kg round - 5025m  
Long Barrel (146 cm) 3.2 kg round - 4575m  
Short Barrel (114 cm) 3.2 kg round - 4125 m
- b. Minimum Range Long Barrel 4.2 round 75 m  
Long Barrel 3.2 kg round 100 m  
Short Barrel 3.2 kg round 100 m
- c. Note : The maximum range of the Regular Infantry Units' mortars is 4575 m and minimum range 100 m.

CHARACTERISTICS OF 81 mm MORTAR

5. The Mortar's characteristics are broken down into two parts:
  - a. Fire Power.
  - b. Tactical Deployment.
6. Characteristics of Fire Power. The mortar can fire more than twenty rounds per minute, but owing to the following it is not practical to do so:
  - i. Ammunition supply.
  - ii. Beaten zone of the weapon.
  - iii. Pre ignition from barrel heat.
  - b. Thus the rates of fire for fire planning purposes are:
    - i. Very slow round per minute.

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ii.	Slow.	2 rounds per minute.
iii.	Normal.	3 rounds per minute.
iv.	Rapid	5 rounds per minute.
v.	Intense	10 rounds per minute.

- c. Flexibility. The mortar can engage from one baseplate position, any target in an arc of  $360^{\circ}$  between the ranges of 100 m and 4575 m, with very little delay for switches.
- d. Lethality. The HE round has a lethal area of 20m and a danger area of 100m, from the point of impact. The VI9PA fuse, in the nose of the round, enables the round to be fired, either as an instantaneous round or with a delay of .05 of a second. This delay enables the round to penetrate up to 30cm of overhead cover before exploding.
- e. Ability to produce a Smokr Screen.
- f. Ability to Produce Light.
- g. Ability to fire at Unobserved Targets. If a target has not been previously registered and recorded the mortars can still engage a target by means of a predicted shoot. Fire from a predicted shoot will not be as effective or as accurate as observed fire.
- h. Long Time of Flight. Depending on the elevation of the barrel and charge used, rounds will be in flight between 10 and 40 seconds. Thus wind can effect the accuracy of the round considerably.
- j. Small Beaten Zone. At 900m the beaten zone of the mortar is 10m wide by 30m long. The beaten zone increases with range.
- k. Effect of Damp. The accuracy and consistency of the mortar fire is seriously affected by damp ammunition and moisture in the barrel.

7. Characteristics of Tactical Deployment.

- a. High Trajectory. With barrel angles between 137m and 2042m. Thus the mortar can :
  - i. Be fired from behind high cover.
  - ii. Engage targets in dead ground and ground immune to artillery fire, because of crest clearance.
  - iii. Provide overhead fire support to friendly forces.
- b. Mobility. The mortar crew and ammunition are deployed in one vehicle, which can bring the mortar in and out of action quickly. The mortar can also be mule packed, man packed or borne by helicopter.

/c. Vulnerability

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- c. Vulnerability. Due to the high trajectory, long time of flight, muzzle flash and equipment, the mortar is very vulnerable from enemy observation and counter bombardment.
- d. Weight of Stores. Should the mortar have to be manpacked, the weight of stores limit the scope of movement and help is needed to carry ammunition. Weights are as follows:
  - i. Baseplate 14.5 kg.
  - ii. Bipod 12.7 kg.
  - iii. Barrel(long barrel) 16.4 kg.
  - iv. Box of six rounds 30 kg.

AMMUNITION OF THE 81mm MORTAR

- 8. The 81mm mortar can fire the following types of ammunition:
  - a. High explosive round M57D(weight 3.2 kg) with tolite filler.
  - b. High explosive colour round(colours, red, yellow, green and blue).
  - c. Smoke round M57D (weight 3.2. kg) with a Titanium Tetrachloride filler.
  - d. Illuminating round variable timed (not available in Rhodesia).
  - e. Block Powder round explosive with black powder filler (used for marking and practice).
  - f. Practice Inert round(used only for practices).

GLOSSARY OF TERMS

- 9. These are a few terms for the students guidance whilst operating with mortars:
  - a. Mobile Fire Controller(MFC). A fire controller moving with troops with the task of engaging opportunity targets for the infantry.
  - b. Mortar Observation Post. A fire controller, within the forward edge of Battle area, in a static position, with the task of controlling a fire plan and engaging opportunity targets.
  - c. A Platoon of Mortars. Six 81mm (Rhodesian Army, See Appx A).
  - d. A Group of Mortars. Mortars can either be grouped as two groups of three or one group of four and a section.
  - e. A Section of Mortars. Two 81mm mortars, this is the smallest fire unit normally deployed in limited war.

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- f. A Detachment of Mortars. One 81mm mortar, this will only be deployed in COIN.
- g. Link Shoot. This is the term used when two or more fire units engage the same target from different base plate positions.
- h. Base Plate Position. A position on the ground encompassing all the mortars of a fire unit.
- j. Control Post Operator. Normally a corporal who controls the mortar fire unit on a base plate position. He is responsible for converting the switches given by the Fire Controller, with the use of a computing board, to elevation and deflection on the mortar sights.

WARNING

10. Owing to the effect of wind, non-calibration and human error the mortar must be ranged onto the target before effective fire can be guaranteed.

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APPENDIX A TO A BRIEF  
ON THE 81mm MORTAR

PL HQ

Pl cond	(SR A39
Pl 2 IC	(SR A60
Dvr/Op (for $\frac{1}{4}$ ton)	(SR TR28 or A13
*Radio Op(Att)	*(2 x telephones
*Storeman	*(2 x reels of signal
Driver(for 3 ton)	*(cable
$\frac{1}{4}$ ton	
3 ton res ammo	

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No 1 SECT	No 2 SECT	No 3 SECT
Sect Comd (SR A39)		

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No 1 DET	CONTROL POST	No 2 DET
8	!	!
8	!	!
1 x 81mm mortar	Sect 2IC) 2 x SR A39	1 x 81mm Mortar
No 1	Sect Cpl) 1 x SR A60	No 1
No 2	*2 x 1 telephones	No 2
No 3	*2 x reels of signal	No 3
Dvr	cable	Dvr
$1\frac{1}{2}$ ton 120 rds		$1\frac{1}{2}$ ton 120 rds
(96 HE, 24 Smk)		(96 HE, 24 Smk)

\*1 RAR only

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