



Innovation or Folly? Planning for the Somme Offensive



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Order of march

- Organisation and structure
- Command and control
- Doctrine and tactics



Artillery organisation and structure

- **Divisional Artillery**
 - Field pieces of limited range and mobility
 - Permanently allotted and moved with parent formation
- **Corps Artillery**
 - Heavy guns, but still mobile enough to follow advancing troops
- **Army Artillery**
 - Heavy, ‘super heavy’, and railway guns
 - Cannot move quickly and require special arrangements to do so



Mortars

- First mortars introduced in response to trench warfare but also supplement to artillery
- Standardised types and organisations introduced in early 1916
- Divisional artillery
 - 1 x Heavy Mortar Battery
 - 3 x Medium Mortar Batteries
- Infantry brigades
 - 2 x Light Mortar Battery



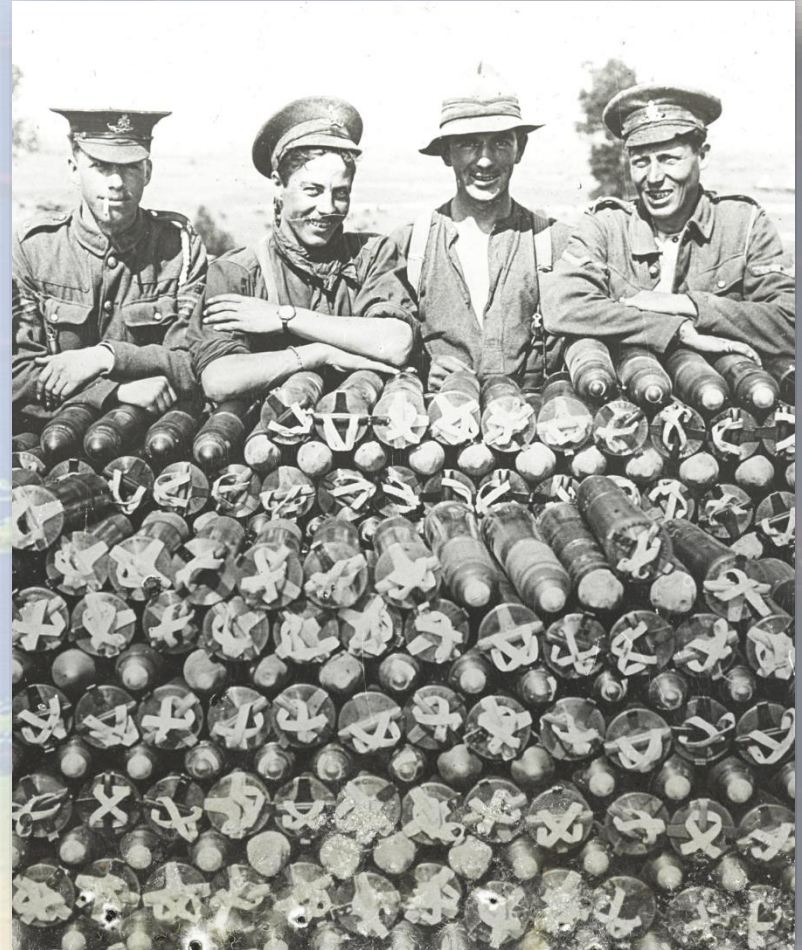
Artillery command and control

- Increasing levels of:
 - Centralisation
 - Command authority
- Limited staffs
- Subordinate role in planning
- Wide variety of approaches
 - Control versus innovation?



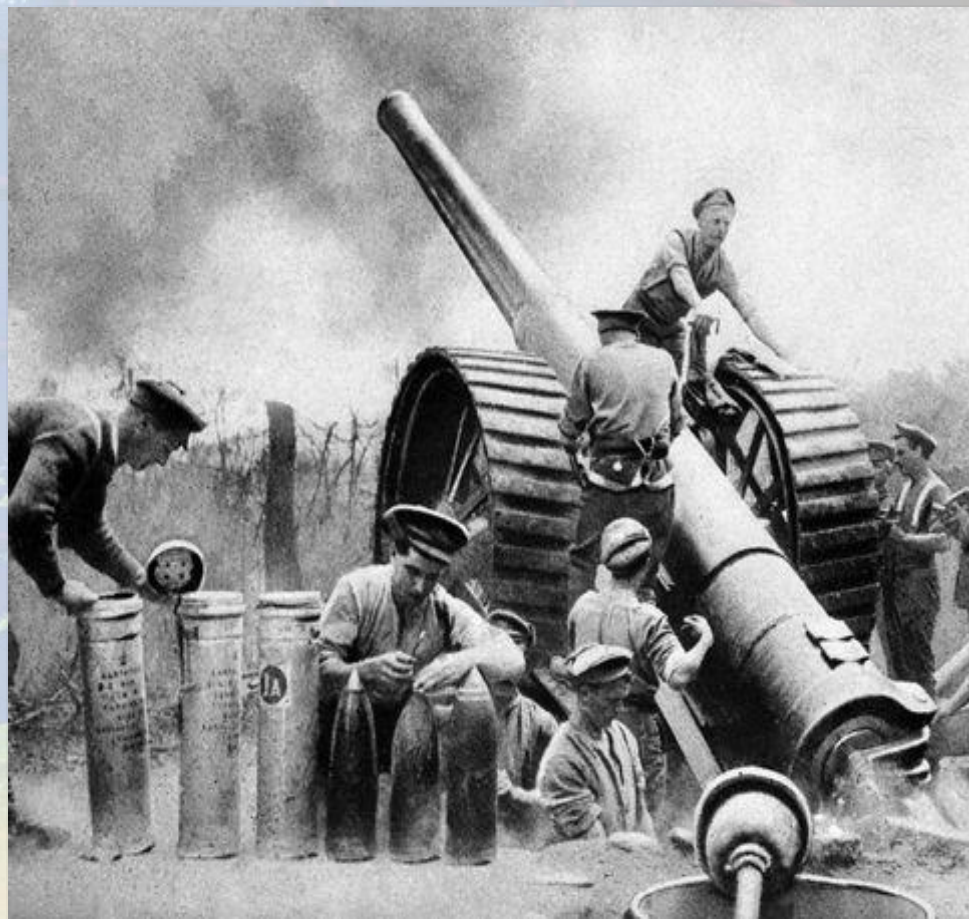
A formula for destruction

- New BEF doctrine, *Artillery in the Attack* published May 1916
- Success of attack rested on destruction of enemy position
- Viewed as a mathematical problem
- Offensive artillery had two principal components:
 - Bombardment
 - Barrage



Artillery challenges on the Somme

- Destructive capacity of artillery overrated
- Targeting difficulties outside visual range
- Under-developed infantry-artillery cooperation
- German exploitation of lifting barrage's weakness
- Responding to the unforeseen
- Enemy artillery



Somme legacy

- Creeping barrage
- Superimposition
- Air ground liaison
 - Contact patrols
 - Zone calls
 - Aerial observation
- Counter battery fire
- Artillery intelligence





Technical annex





Aircraft can warn of the build-up of enemy troops before an attack



Support trench

Communication trenches: allow troops and supplies to be brought up to the front line

Long-range artillery is placed about 10km behind the front line. These guns fire at advancing enemy troops

Front line trench: Built in a zig-zag with angular 'fire-bays' to minimise the effect of shell fire and to prevent the enemy firing down the length of the trench

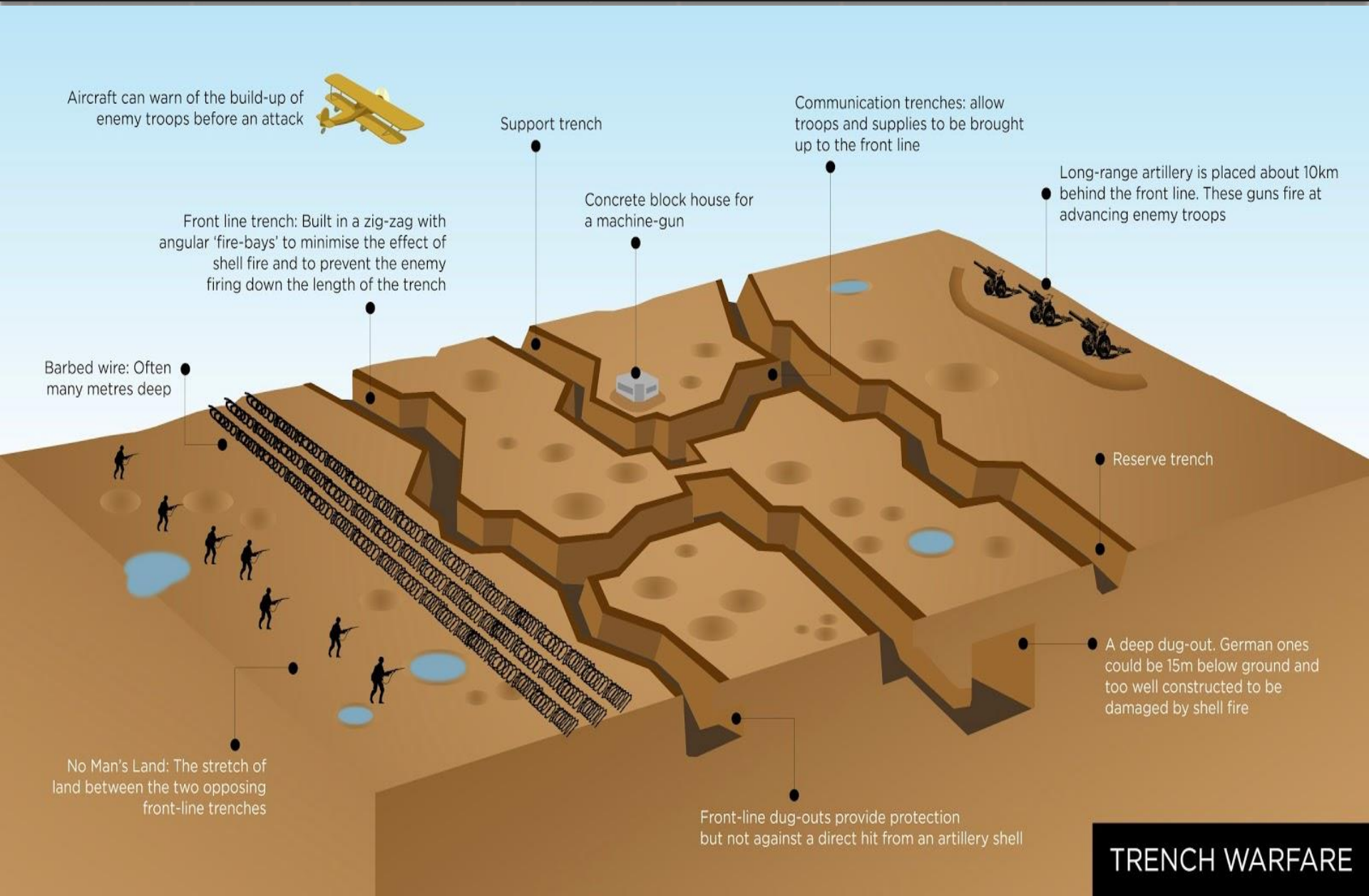
Concrete block house for a machine-gun

Barbed wire: Often many metres deep

Reserve trench

No Man's Land: The stretch of land between the two opposing front-line trenches

Front-line dug-outs provide protection but not against a direct hit from an artillery shell



BEF artillery standardisation - division

Category	Equipment				Det.	Traction	Ammunition		
	Ordnance (Mk)		Calibre	Weight			Maximum Range	Weight	Natures
Divisional	18-pounder QF Field Gun	I-II	3.3 in (84 mm)	2912 lb (1321 kg)	6500 yd (5940 m)	10	horse	18 lb (8.2 kg)	HE, shrapnel, smoke, star, chemical
		IV		3531 lb (1602 kg)	10900 yd (9970 m)				
	4.5-inch QF Field Howitzer		4.5 in (114 mm)	3009 lb (1365 kg)	7300 yd (6675 m)	10	horse	35 lb (15.9 kg)	HE, shrapnel, smoke, star, chemical, incendiary

Guns operated by AIF artillery shaded

BEF artillery standardisation - corps

Category	Equipment				Det.	Traction	Ammunition		
	Ordnance (Mk)	Calibre	Weight	Maximum Range			Weight	Natures	
Corps	6-inch BL Field Gun	VII	6 in (152.4 mm)	56502 lb (25629 kg)	13700 yd (12527 m)	9	tractor	100 lb (45.4 kg)	HE, shrapnel, chemical
		XIX		22791 lb (10338 kg)	18750 yd (17145 m)				
	60-pounder BL Field Gun		5 in (127 mm)	11228 lb (5093 kg)	12300 yd (11247 m)	10	tractor	60 lb (27.2 kg)	HE, shrapnel, chemical
	6-inch 26cwt BL Howitzer		6 in (152.4 mm)	8141 lb (3693 kg)	9500 yd (8700 m)	10	horse or tractor	100 lb (45.4 kg)	HE, shrapnel, chemical
	8-inch BL howitzer	I-V	8 in (203.2 mm)	30683 lb (13918 kg)	10500 yd (9600 m)	12	Tractor	200 lb (90.7 kg)	HE, shrapnel
VI		19107 lb (8667 kg)		10760 yd (9838 m)	11				
VII-VIII		19879 lb (9017 kg)		12300 yd (11247 m)					

BEF artillery standardisation - army

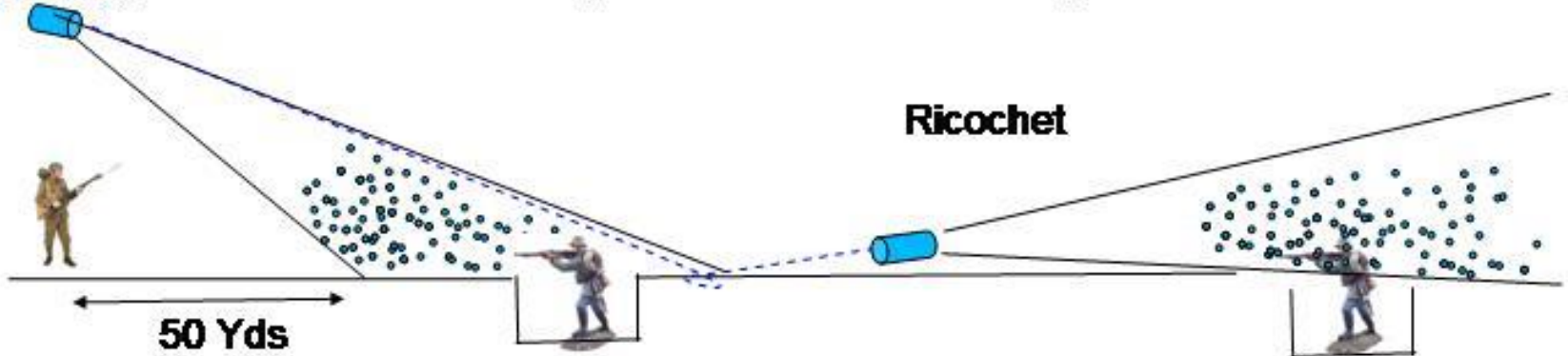
Category	Equipment				Det.	Traction	Ammunition		
	Ordnance (Mk)	Calibre	Weight	Maximum Range			Weight	Natures	
Army	9.2-inch BL Railway Gun	X	9.2 in (234 mm)	202944 lb (92054 kg)	21000 yd (19202 m)	12	railway	380 lb (172.3 kg)	HE, shrapnel
		XIII–XIV		194824 lb (88371 kg)	22600 yd (20665 m)				
	9.2-inch BL howitzer*	I	9.2 in (234 mm)	29932 lb (13577 kg)	10060 yd (9200 m)	12	tractor	290 lb (132 kg)	HE
		II		36288 lb (16460 kg)	13935 yd (12740 m)				
	12-inch BL Railway Howitzer	I	12 in (304.8 mm)	129611 lb (58791 kg)	11132 yd (10179 m)	14	railway	750 lb (340.2 kg)	HE
		III		136080 lb (61725 kg)	15000 yd (13716 m)				
		V		170141 lb (77175 kg)	14350 yd (13122 m)				
	12-inch BL Siege Howitzer	II		81983 lb (37187 kg)	11340 yd (10369 m)	14	tractor		
		IV		82880 lb (37594 kg)	14350 yd (13122 m)				

BEF artillery standardisation - mortars

Class	Calibre	Weight (barrel, mounting, and bed/baseplate)		Projectile Weight	Range		Maximum rate of fire	Det.
					Max.	Min.		
Heavy	9.45 in (240 mm)	Mk I	1486 lb (674 kg)	152 lb (69 kg)	1140 yd (1042 m)	600 yd (549 m)	1 round per six minutes	7
		Mk II-IV	1813 lb (822 kg)					
Medium	spigot: 2 in (50.8) spherical bomb: 9 in diameter (230 mm)	367 lb (166 kg)		51 lb (23.1 kg)	573 yd (524 m)	100 yd (91 m)	1 round per two minutes	5
Medium (Newton)	6 in (152.4 mm)	644 lb (292 kg)		52 lb (23.6 kg)	1420 yd (1300 m)	100 yd (91 m)	8 rounds per minute	7
Light (Stokes)	3 in (76.2 mm)	104 lb (47 kg)		10 lb 11 oz (5.8 kg)	430 yd (393 m)	100 yd (91 m)	25 rounds pr minute	5

Shrapnel Barrage

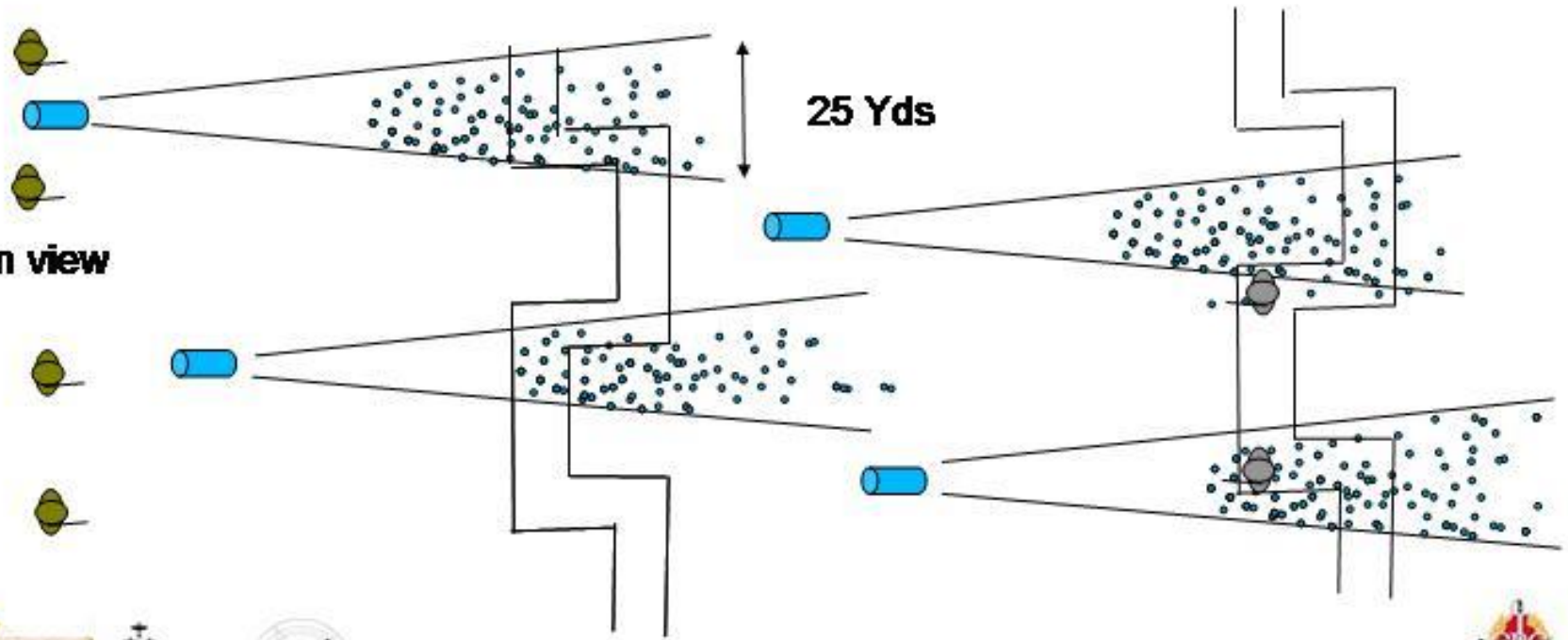
Side View



Ricochet

50 Yds

Plan view



25 Yds

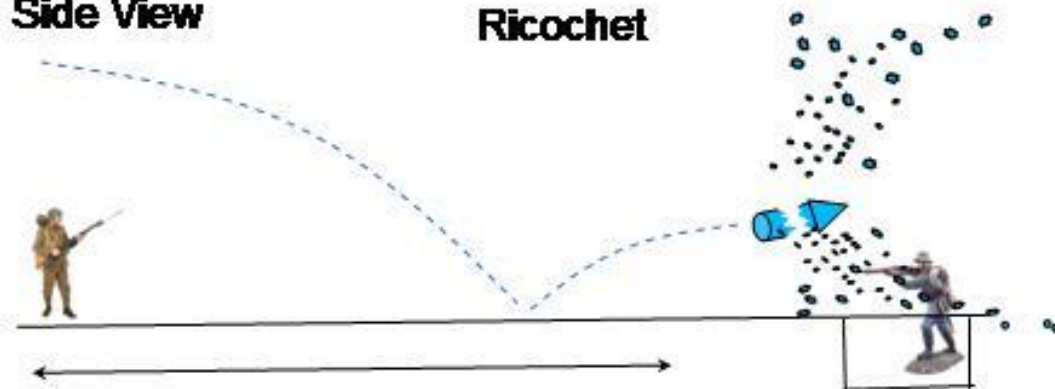
200 Yds



HE Splinter Pattern

Side View

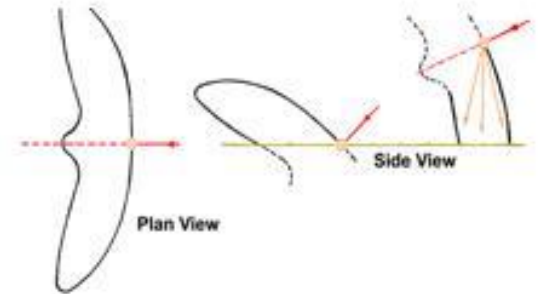
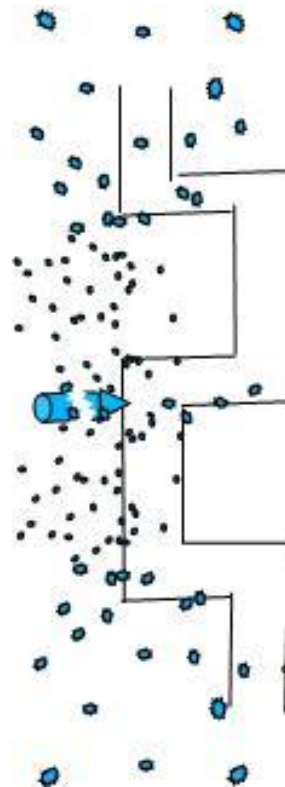
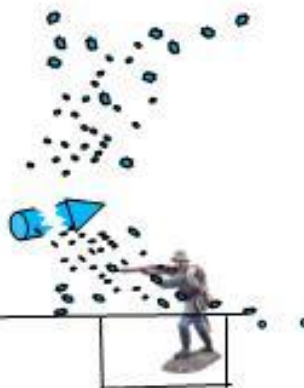
Ricochet



200 Yds

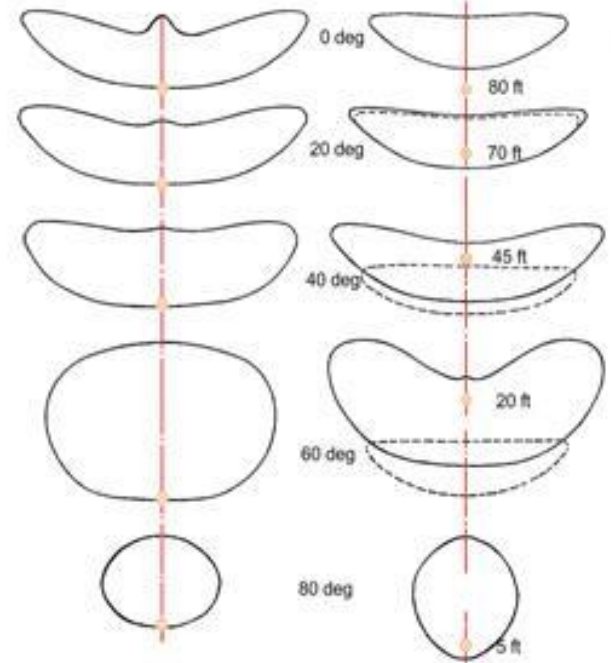


Plan view



Ground Bursts

Air Bursts



Angle of Descent

Height of Burst

