

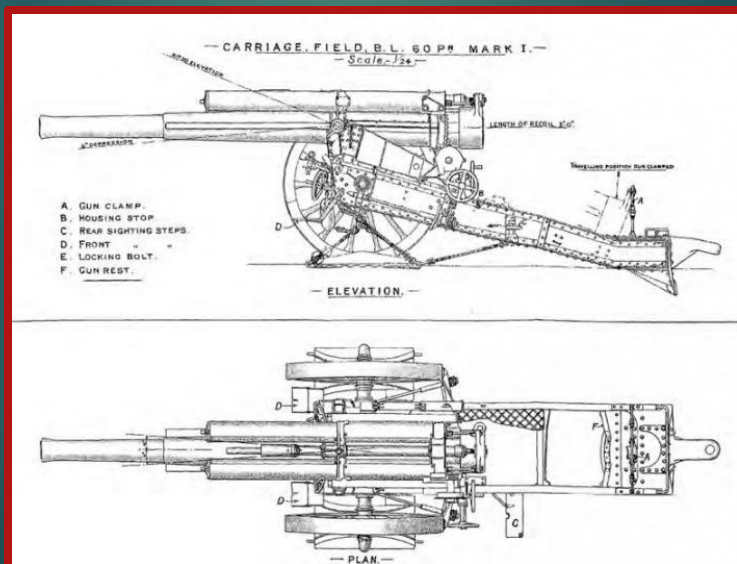


# **Project 2 Field Manual**

LOGAN MUELLER,  
HAYDEN MAYS,  
EVAN WILLS

# Step 1: Target Distance

- ▶ Estimating the range from the cannon to the target
- ▶ To do this some visual queue's will be helpful. For instance: 100m is the length of a football field.

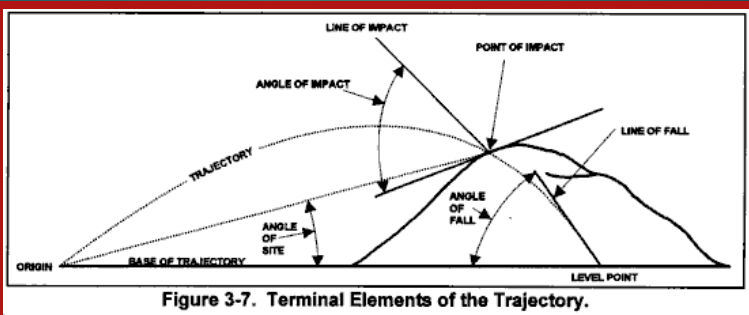


## Step 2: Outlying Conditions

- ▶ Determining if there's other things that could impact the final location of the shell that's fired
- ▶ Some key things that are important to note: Wind and whether the target is moving.
- ▶ After Identify outlying conditions you must estimate how fast and in what direction these forces are coming from

# Step 3: Initial Firing Angle

- ▶ For targets that are within 300m we suggest an initial angle of 25 degrees. For targets between 300 and 900 try an angle of 35. For any target that's farther than 900m try any angle between 40 and 45
- ▶ For reference half a mile is about 805 meters



## Step 4: Firing Power

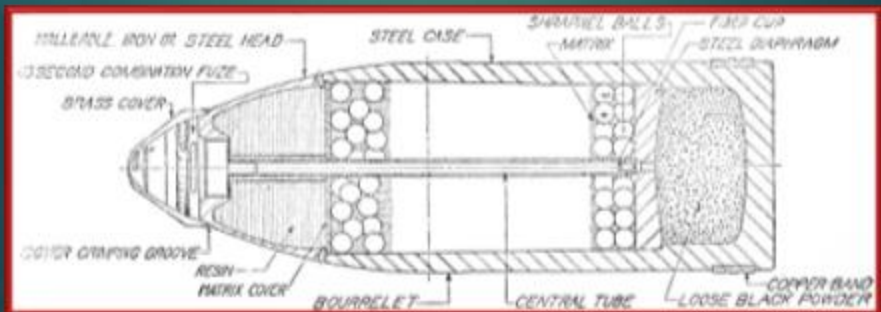
- ▶ With the range in mind comes with the proper amount of gunpowder to load the cannon with to achieve such distance
- ▶ To get around 300m use a low amount of powder, for ranges around 600m use a medium amount of powder and for ranges around 900m use a high amount of powder

## Step 5: Adjusting

- ▶ With the now initial firing power and angle we need to account for the outlying conditions if there were any.
- ▶ For each case you can either raise or lower the angle, or you can use more or less powder that's used.

# Step 6: Preparing to Fire

- ▶ When preparing to fire make sure all safety checks are complete along with making sure the correct amount of powder is being used and that the angle is correct



# Step 7: Firing and Recording Data

- After firing the cannon record how far the shell managed to go so you can more accurately gauge the distance of new targets

FM 6-40

CHARGE  
40

TABLE I  
ROTATION - AZIMUTH

FT 155-AM-2  
PROJ. HE. M107  
FUZE, PD, M557

CORRECTIONS TO AZIMUTH, IN MILS, TO COMPENSATE  
FOR THE ROTATION OF THE EARTH

0 DEGREES LATITUDE

RANGE METERS	AZIMUTH OF TARGET - MILS									
	0 6400	400 6000	800 6800	1200 8200	1600 8800	2000 9400	2400 10000	2800 10600	3200 11200	
500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3500	R0.1L	R0.1L	R0.1L	0.0	0.0	0.0	L0.1R	L0.1R	L0.1R	L0.1R
4000	R0.1L	R0.1L	R0.1L	0.0	0.0	0.0	L0.1R	L0.1R	L0.1R	L0.1R
4500	R0.1L	R0.1L	R0.1L	0.0	0.0	0.0	L0.1R	L0.1R	L0.1R	L0.1R
5000	R0.1L	R0.1L	R0.1L	0.0	L0.1R	L0.1R	L0.1R	L0.1R	L0.1R	L0.1R
5500	R0.2L	R0.2L	R0.1L	R0.1L	0.0	L0.1R	L0.1R	L0.2R	L0.2R	L0.2R
6000	R0.2L	R0.2L	R0.2L	R0.1L	0.0	L0.1R	L0.2R	L0.2R	L0.2R	L0.2R
6500	R0.3L	R0.3L	R0.2L	R0.1L	0.0	L0.1R	L0.2R	L0.3R	L0.3R	L0.3R
7000	R0.4L	R0.3L	R0.2L	R0.1L	0.0	L0.1R	L0.3R	L0.3R	L0.4R	L0.4R
7500	R0.5L	R0.4L	R0.3L	R0.2L	0.0	L0.2R	L0.3R	L0.4R	L0.5R	L0.5R
8000	R0.7L	R0.6L	R0.5L	R0.3L	0.0	L0.3R	L0.5R	L0.6R	L0.7R	L0.7R
8500	R1.3L	R1.2L	R0.9L	R0.5L	0.0	L0.5R	L0.9R	L1.2R	L1.3R	L1.3R
9000	R1.7L	R1.6L	R1.2L	R0.7L	0.0	L0.7R	L1.2R	L1.6R	L1.7R	L1.7R
9500	R2.1L	R2.0L	R1.6L	R0.8L	0.0	L0.8R	L1.5R	L2.0R	L2.1R	L2.1R
10000	R2.5L	R2.3L	R1.8L	R0.9L	0.0	L0.9R	L1.8R	L2.3R	L2.5R	L2.5R
10500	R2.8L	R2.3L	R2.1L	R1.1L	0.0	L1.1R	L2.0R	L2.6R	L2.8R	L2.8R
11000	R3.2L	R3.0L	R2.3L	R1.2L	0.0	L1.2R	L2.3R	L3.0R	L3.2R	L3.2R
11500	R3.6L	R3.4L	R2.6L	R1.4L	0.0	L1.4R	L2.6R	L3.4R	L3.6R	L3.6R
12000	R4.0L	R3.7L	R2.8L	R1.5L	0.0	L1.5R	L2.8R	L3.7R	L4.0R	L4.0R
12500										
13000										
13500										
14000										
14500										
15000										
15500										
16000										
16500										
17000										
17500										
18000										
18500										
19000										
19500										
20000										
20500										
21000										
21500										
22000										
22500										
23000										
23500										
24000										
24500										
25000										
25500										
26000										
26500										
27000										
27500										
28000										
28500										
29000										
29500										
30000										
30500										
31000										
31500										
32000										
32500										
33000										
33500										
34000										
34500										
35000										
35500										
36000										
36500										
37000										
37500										
38000										
38500										
39000										
39500										
40000										
40500										
41000										
41500										
42000										
42500										
43000										
43500										
44000										
44500										
45000										
45500										
46000										
46500										
47000										
47500										
48000										
48500										
49000										
49500										
50000										
50500										
51000										
51500										
52000										
52500										
53000										
53500										
54000										
54500										
55000										
55500										
56000										
56500										
57000										
57500										
58000										
58500										
59000										
59500										
60000										
60500										
61000										
61500										
62000										
62500										
63000										
63500										
64000										
64500										
65000										
65500										
66000										
66500										
67000										
67500										
68000										
68500										
69000										
69500										
70000										
70500										
71000										
71500										
72000										
72500										
73000										
73500										
74000										
74500										
75000										
75500										
76000										
76500										
77000										
77500										
78000										
78500										
79000										
79500										
80000										
80500										
81000										
81500										
82000										
82500										
83000										
83500										
84000										
84500										
85000										
85500										
86000										
86500										
87000										
87500										
88000										
88500										
89000										
89500										
90000										
90500										
91000										
91500										
92000										
92500										
93000										
93500										
94000										
94500										
95000										
95500										

## Step 8: Corrections if Required

- ▶ If the cannon shell missed the target, you can do the following
- ▶ For cannon shells that didn't get close enough to the target try either increasing the firing angle or increasing the amount of powder used. For cannon shells that overshot the target either decrease the angle or decrease the amount of powder used