# Calculating deployment

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The following is a rough calculation of the relative times involved when deploying from open column forward into line, comparing the method utilizing ***oblique marching*** to that which utilizes ***echelon deployment***.

For the purpose of this exercise I assumed an 8-company battalion, 40 men per company, companies formed in 2 ranks.
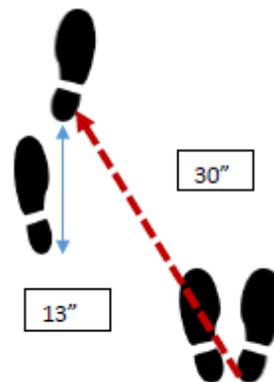- At 20 men per rank and 24" frontage per file, this gives a 480" (40') frontage per company.
- Battalion frontage for an 8-company battalion would be 3840" (320'); length of an open battalion column (formed at wheeling distance) would be the same distance.

Calculating the oblique step
Per the 1792 *Rules & Regulations* (pp. 7-8), the oblique step is a diagonal step by one foot of 19" (13" to the side and 13" forward). This is followed by a 30" diagonal step with the other foot which brings its heel 13" in front of the other foot's heel. When combined, these two paces of oblique marching give us a right triangle of approximately 13" x 26", with a hypotenuse of **30"**—the diagonal distance traveled by two paces of oblique marching.
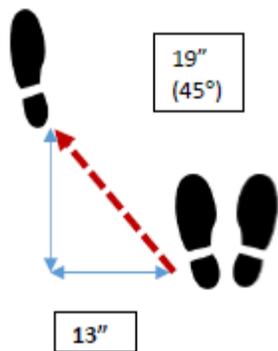

| Oblique marching, 1st step | Oblique marching, 2nd step |

Note that while the initial diagonal step traces an equilateral triangle with an angle of 45°, the second step, which is directly forward, changes the angle of march for the combined two paces of oblique marching. Combined, the two paces trace a right triangle approximately 13" x 26", which produces an oblique angle of march which is **25°** from the perpendicular (or 65° from the company's original alignment).

2 Paces oblique marching
Distance: 30"
Direction: 25°

26"

13"
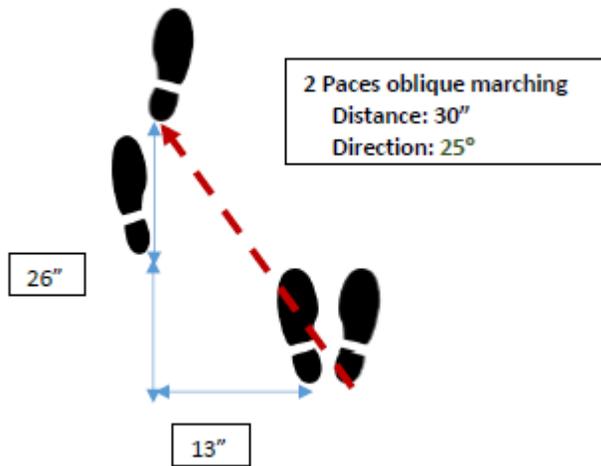
irection of oblique march

Deploying into line

Assuming for the purpose of this exercise that the battalion is to deploy forward on the first company (which does not move), the calculation involves the time it takes for the remaining seven companies to move from open column into line. This exercise looks at the relative times it takes for the last (eighth) company to deploy.

20 files
480" (40')

3360" (280')

4752" (396')
Oblique: 317 paces
Echelon: 158 paces
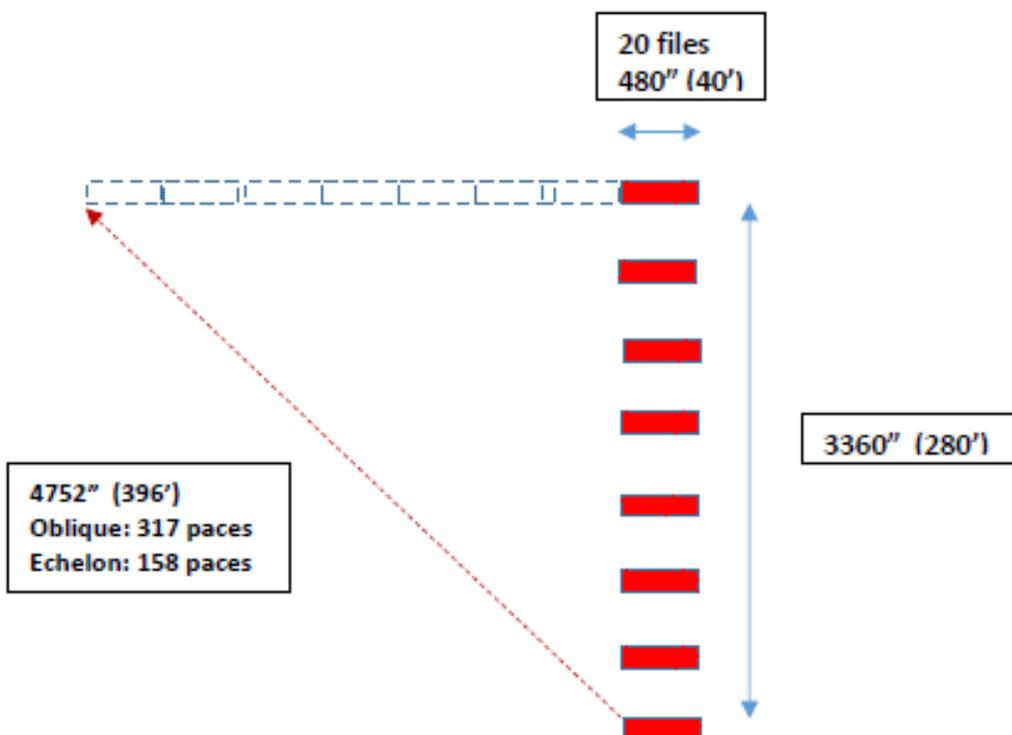
Using the above measurements, the eighth company is 7 companies distant from the head of the column, and its deployment destination in line is 7 companies' width from the left flank of the first company. This gives us an equilateral right triangle that is 3360" (280') on the equal sides, and **4752"** (396') on the hypotenuse—this is the distance the eighth company has to march to deploy into line.

Marching times

As we've seen, two paces of oblique marching covers 30". Thus it takes **317 paces** to cover the 4572" distance for the eighth company to deploy. At the Ordinary Time rate of march (75ppm) it will take the eighth company **4 minutes** to march from its place in column to its place in line. (I provide no Quick Time calculation as it is unlikely oblique marching would be conducted at this rate.)

Echelon marching is conducted directly forwards (after either wheeling backwards ½ wheel, or by shoulders forward). Thus, two paces cover 60". When marching directly, the eighth company uses **158 paces** to cover the distance needed to deploy into line. At Ordinary this distance would be covered in **2 minutes**; at Quick Time (106ppm), this distance would be covered in **1.5 minutes**.

| Marching	Paces	Time
Oblique (ordinary)	317	4 minutes
echelon (ordinary)	158	2 minutes
echelon (quick time)		1.5 minutes

Note the 2 minute difference between oblique and echelon deployments at Ordinary Time would allow the first-deployed opponent six volleys at the rate of 3 volleys/minute; if echelon deployment occurred at Quick Time, the 3.5 minute difference would allow time for seven to eight volleys before the eighth company reached its place in line.

Discussion

This "thought experiment" uses an abstract model for comparative purposes; the only variables being the different number of paces and related rates of march associated with the two deployment versions. Of course, reality would introduce much friction into this model. For example, most re-enactment companies are smaller than those in my model battalion. Also, most reenactors are wider than the 24" per file I allowed. Actual marching time could easily vary from the ideal. Also, I did not allow for wheeling time in the echelon option (I estimate under 10 seconds, less if shoulders forward). But by employing an abstract model we can focus on the essential question of deployment times.

An additional complication: When an open column deploys forward, the companies need to march on a diagonal line 45° from their initial position to arrive at their correct position in line. This is easily done in echelon deployment by wheeling to the correct angle prior to marching. However, as oblique marching creates a 25° angle of march,

companies deploying by this method would need to make some sort of additional lateral adjustment in order to arrive at their correct place in line, with possible attendant complication and delay. As exactly how this would be done is open to conjecture and thus indeterminate, I did not include it in the analysis.

Actual direction of oblique march (25°)

Direction required to deploy (45°)
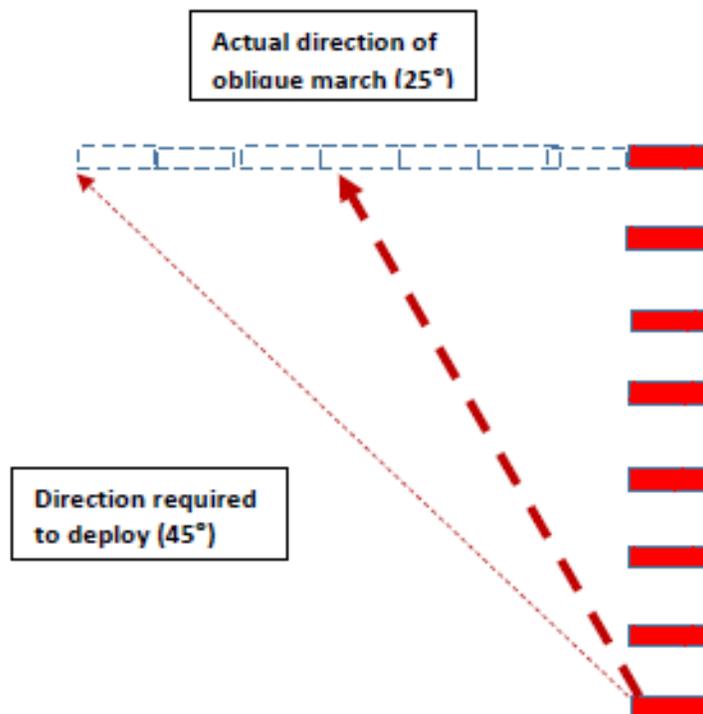
The above analysis suggests the following: because the direct step covers more ground than oblique marching does, whenever celerity is desired manoeuvres which utilize the direct step should be preferred to those which utilize oblique marching. This especially relevant for the deployment from column into line, which is a change from a formation for movement to one for combat. The analysis demonstrates that echelon deployment, which uses the direct step, is more efficient than oblique marching when deploying a battalion forward into line from an open column.

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Addendum: Sources for the oblique step

(**R&R**): *Rules and Regulations for the Formations, Field-exercise and Movements of His Majesty's Forces* [1792; 1812 edn.]. Dublin, A. B. King, 1815.

(**R&R-M&PE**): *Rules and Regulations for the Manual and Platoon Exercises,Formations, Field Exercise, and Movements, of His Majesty's Forces. For the use of the non-comissioned officers of the British Army*. London: T. Egerton, 1807.

R&R	*M&PE*

S. 8. Oblique Step.

To the Left oblique, March,

When the Recruit has acquired the regular length and cadence of the ordinary pace, he is to be taught the oblique step. At the words, *To the Left oblique—March,* without altering his personal squareness of position, he will, when he is to step with his left foot, point and carry it forward 19 inches in the diagonal line, to the left, which gives about 13 inches to the side, and about 13 inches to the front. On the word *Two,* he will bring his right foot 30 inches forward, so that the right heel be placed 13 inches directly before the left one.   In this position he will pause, and on the word *Two,* continue to march, as before directed, by advancing his left foot 19 inches, pausing at each step till confirmed in his position; it being essentially necessary to take the greatest care that his shoulders be preserved square to the front. From the combination of these two movements, the general obliquity gained will amount to an angle of about 25 degrees. When the recruit is habituated to the lengths and directions of the step, he must be made to continue the march, without pausing, with firmness, and in the cadence of the ordinary pace, viz, 75 steps in the minute.

Fig. 1.

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Fig. 1.

Note the *R&R* states the second step is to be 13" in front of the first (heel to heel), while the *M&PE* states this distance is 10". The *M&PE* distance is likely an error, not a revision. The forward distances given in the *R&R* of 13" for each step gives a right triangle of 13" x 26", which would have a hypotenuse of 29", whereas the forward distances in the *M&PE* (13" + 10") give a right triangle of 23" x 13", which would have a hypotenuse of 26.5". Both texts clearly state the foot moves 30" in the second step; this is also the distance shown in the illustration of oblique marching (plate I, figure 1). This

plate also shows the forward motion for the second step to be 13 in both texts. Accordingly, I use the distance values given in the *R&R* in my analysis.

Plate I, figure 1*, R&R*   Plate 1, figure 1**, M&PE**