

Answer

The Theta angle, or mapping angle is formed between the **True geodetic North azimuth and the NC grid North azimuth** is referred to as CONVERGENCE DMS - $1^{\circ} 15' 27.7''$

Magnetic declination to present date can be computed on NOAA's National Geophysical Data Center web site. See below.

<https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml#ushistoric>

At the sit up point the declination in 1842 was +2.97 degrees East

The Theta angle is **positive** to the **east** of the central meridian, and **negative** to the **west** of the central meridian. **The sign of the Theta angle is very important in converting from grid to geodetic (TRUE). The rule is that Grid = Geodetic (TRUE) - (\pm Theta angle). Geodetic (TRUE) = Grid + (\pm Theta angle).**

Grid Bearing	= N 71° 41' 09" E
Grid Azimuth	= 71° 41' 09"
Theta Angle	= <u>1° 15' 27.7</u> West of 79° of Longitude

Geodetic (True) Azimuth	= 70° 25' 41"
True Bearing of line from Mon. A to Mon. B	= N 70° 25' 41" E

Line from Mon. B to Stone	
Magnetic Bearing 1842	= N 70° 30' E
Old Magnetic Azimuth Old =	70 30'
1842 Declination is E	+ <u>2° 58' 12"</u>
Old True Azimuth 1842	= <u>73° 28' 12"</u> = N 73° 28' 12" E

Angle to the right = $180^{\circ} + (73^{\circ} 28' 12'' - 70^{\circ} 25' 41'') = 183^{\circ} 02' 31''$

Horizontal distance to layout from Mon. B to the stone

2chains 1pole 231/2 links = $(66' \times 2c) + (16.5' \times 1p) + (0.66' \times 23.5) = 164.01\text{ft}$
Correction for length chain 66ft/100 links = 0.66 ft.; $0.66\text{ft} \times 1/8 \text{ link} = 0.0825 \text{ ft. per chain.}$ $164.01/66 = 2.4850\text{chains} \times .0825 = 0.205 \text{ ft.}$ $+164.01\text{ft} = 164.215\text{ft}$
Slope correction 4% = $2^{\circ} 17' 26''$; $\text{Cos. } 2^{\circ} 17' 26'' \times 164.215\text{ft} = \underline{164.08 \text{ ft.}}$

4 chains 3poles 20 links = $(66' \times 4) + (16.5' \times 3) + (0.66' \times 20) = 326.70\text{ft}$
Correction for length chain 66ft/100 links = 0.66 ft.; $0.66\text{ft} \times 1/8 \text{ link} = 0.0825\text{ft per chain.}$ $326.70/66 = 4.95\text{chains} \times .0825 = 0.41 \text{ ft.}$ $+326.70\text{ft} = 327.11\text{ft}$
Slope correction 6% = $3^{\circ} 26' 01''$; $\text{Cos. } 3^{\circ} 26' 01'' \times 327.11\text{ft} = \underline{326.52 \text{ ft.}}$

7chains 3poles 41/2 links = $(66' \times 7) + (16.5' \times 3) + (0.66' \times 4.5) = 514.47\text{ft}$

Correction for length chain 66ft/100 links = 0.66 ft.; 0.66ftx1/8 link = 0.0825ft
per chain. $514.47/66 = 7.7958$ chains x .0825 = 0.6431ft +514.47ft = 515.11ft
Slope correction 2% = 1° 08' 48"; Cos. 1° 08' 45" x 515.12 = 515.03 ft.

164.08 ft. + 326.52 ft. + 515.03 ft. = **1,005.63 ft.** **If you fine the stone use it!** I would hope to find the stone within 10 ft. of either side of the line. And at a distance between 1,003.13 ft. and 1,008.13 ft.