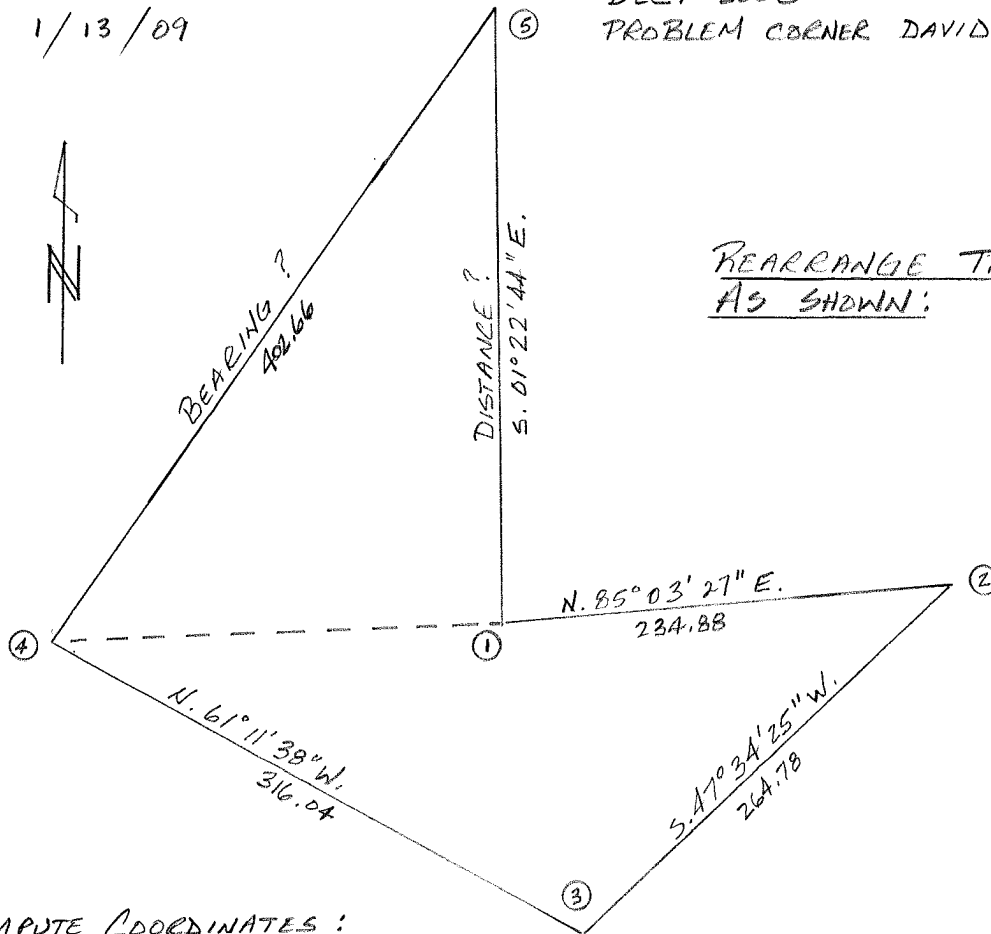


1/13/09

DEC. 2008  
PROBLEM CORNER DAVID LANGHOFF



REARRANGE TRAVERSE LEGS AS SHOWN:

COMPUTE COORDINATES:

POINT	AZIMUTH	DIST	DEP	LAT	COORDINATES	
					EASTING	NORTHING
1					5000.000	5000.000
2	85° 03' 27"	234.88	234.007	20.236	5234.007	5020.236
3	227° 34' 25"	264.78	-195.446	-178.632	5038.561	4841.604
4	298° 48' 22"	316.04	-276.932	152.283	4761.629	4993.887

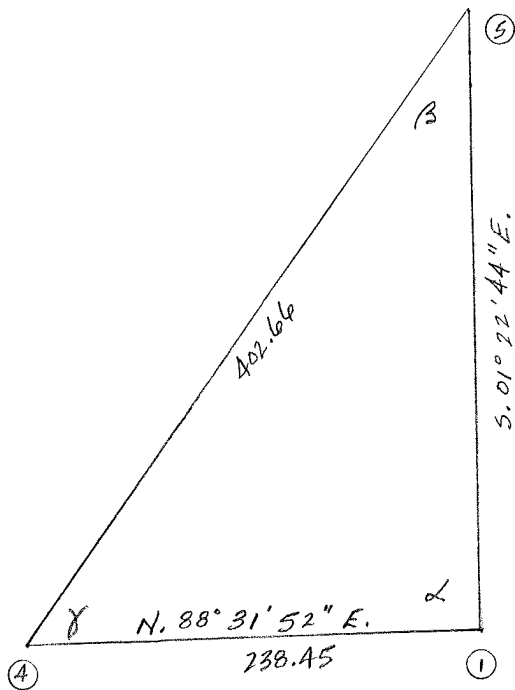
INVERSE:

$$\text{DISTANCE } 4-1 = \sqrt{(4761.629 - 5000.000)^2 + (4993.887 - 5000.000)^2}$$

$$= 238.45$$

$$\text{AZIMUTH } 4-1 = \tan^{-1} \left( \frac{5000.000 - 4761.629}{5000.000 - 4993.887} \right)$$

$$= 88^\circ 31' 52''$$



SOLVE TRIANGLE;

BY INSPECTION,

$$\alpha = 90^{\circ}05'24''$$

USING LAW OF SINES,

$$B = \sin^{-1} \left[ \frac{(238.45)(\sin 90^{\circ}05'24'')}{402.66} \right]$$

$$B = 36^{\circ}18'44''$$

$$\gamma = 180^{\circ} - (\alpha + B)$$

$$\gamma = 53^{\circ}35'52''$$

SOLVING FOR DIST 1-5 USING LAW OF SINES,

$$\text{DIST 1-5} = \frac{(402.66)(\sin 53^{\circ}35'52'')}{\sin 90^{\circ}05'24''} = 324.09$$

SOLVING FOR AZIMUTH 4-5,

$$\begin{aligned} \text{AZ 4-5} &= 88^{\circ}31'52'' - 53^{\circ}35'52'' \\ &= 34^{\circ}56'00'' \end{aligned}$$

SO, BEARING 4-5 = N. 34°56'00" E.

FINALLY, REPRESENTING THE TRAVERSE LEGS IN THEIR ORIGINAL CONFIGURATION YIELDS THE FIGURE SHOWN AT RIGHT.

