

22603

Rec. No. 22603

Right Ascension of Polaris and Log Tan P
for upper Transit at Greenwich

Date 1948	R.A.	Diff.	Log Tan P	Diff.
Apr. 0.5	1 ^h 45 ^m 55.77	1.86	8.23267	37
10.5	53.91	0.55	304	38
20.5	54.46	2.86	342	36
May 0.5	57.32	5.08	378	33
10.4	1 46 02.40	7.06	411	29
20.4	09.46	8.80	440	24
30.4	18.26	10.27	464	19
June 9.4	28.53	11.40	483	13
19.3	39.93	12.23	496	7
29.3	52.16	12.74	503	0
July 9.3	1 47 04.90	12.97	503	7
19.2	17.87	12.86	496	13
29.2	30.73	12.50	483	19
Aug. 8.2	43.23	11.85	464	26
18.2	55.08	10.97	438	30
28.1	1 48 06.05	9.86	408	35
Sept. 7.1	15.91	8.54	373	40
17.1	24.45	7.02	333	43
27.1	31.47	5.34	290	44
Oct. 7.0	36.81		246	

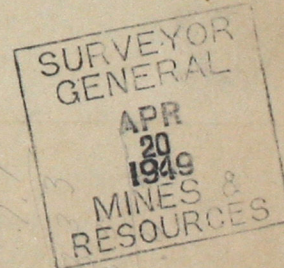
1 p8
C2.09
55 51
27 11 35
70 30
62 9 05

46 09.46
3.17
12.6

1223
47
8521
4892
89481

1 47 43.23
1 47 52

B. Cygni 19 28 41
19 30 15



15.9
18.2
7.7
11.9
11.9
11.9

FOR CALCULATION OF AZIMUTH OBSERVATIONS ON POLARIS

Inclination Factor (tan h)

Township.	Hour Angle of Polaris.				
	0	3 or 21	6 or 18	9 or 15	12
0	1.20	1.18	1.15	1.12	1.10
20	1.28	1.26	1.22	1.19	1.17
40	1.36	1.34	1.30	1.26	1.25
60	1.45	1.43	1.39	1.35	1.33
80	1.55	1.53	1.48	1.44	1.42
100	1.66	1.63	1.58	1.53	1.51
120	1.78	1.75	1.70	1.64	1.62
140	1.90	1.87	1.82	1.77	1.75
160	2.05	2.01	1.96	1.90	1.88
180	2.21	2.18	Log. T _{2.12}	2.05	2.03

Log. Tan.	Log. T.	Log. Tan.	Log. T.	Log. Tan.	Log. T.
7.920	5.31442	8.419	5.31433	8.547	5.31425
8.071	41	.440	32	.558	24
.157	40	.459	31	.570	23
.221	39	.477	30	.581	22
.269	38	.493	29	.591	21
.309	37	.508	28	.601	20
.342	36	.521	27	.610	19
.371	35	.535	26	.619	18
.396	34				

DEPARTMENT OF THE INTERIOR

TOPOGRAPHICAL SURVEYS BRANCH

RECORD

OF

Azimuth Observations

LINE.....

.....

.....

FROM.....

TO.....

COMMENCED..... 19.....

ENDED..... 19.....

..... *K. J. M. Clark* D. L. S.

1948

Chronometer.....

Diff. of longitude.	Chr. err. reduced to.....meridian.	Daily rate.	Remarks.

Errors and Rates of

Chronometer.....

Diff. of longitude.	Chr. err. reduced to.....meridian.	Daily rate.	Remarks.

Place 1 P H 29
 R. O. H 29
 Date May 23 Observer _____

Latitude 60° 30'
 Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
Circle Right Drum Right	1	<u>10°</u>	<u>30'</u>	<u>15"</u>		<u>359</u>	<u>44</u>	<u>47</u>	
	2								
	3								
	Mean								
Circle Left Drum Left	1	<u>190</u>	<u>29</u>	<u>44</u>		<u>179</u>	<u>50</u>	<u>29</u>	
	2	<u>190</u>							
	3								
	Mean								

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
<u>13 22 48</u> <u>13 25 18</u>					
<u>13 25 18</u>					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	<u>359 44 47</u>	<u>179 50 29</u>	Sidereal
" H. C. R. of R. O.	<u>10 30 15</u>	<u>190 29 44</u>	R. A. of Polaris
Angle Pol. to R. O.	<u>349 14 32</u>	<u>349 20 45</u>	t in time
			t in arc
Pol. from collimation. log.	<u>10° 45' 28"</u>	<u>10 39 15</u>	Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.		Amount	Bearing of

	Circle Right	Circle Left	
time	<u>13 22 48</u>	<u>13 25 18</u>	
	<u>3 30</u>	<u>3 30</u>	
time	<u>13 25 18</u>	<u>13 28 48</u>	
	<u>1° 46' 13"</u>	<u>1 46 12</u>	
	<u>11-39-03</u>	<u>11-42-38</u>	
	<u>174° 46' 45"</u>	<u>175° 39' 45"</u>	
P	<u>8.234490</u>	<u>8.234490</u>	
Sec. L	<u>10.247364</u>	<u>10.247364</u>	
sin t	<u>9.99878</u>	<u>9.99874</u>	
	<u>29.48003</u>	<u>8.48059</u>	
	<u>7.50220</u>	<u>7.42210</u>	
	<u>7.01332</u>	<u>7.01332</u>	
Z	<u>7.51552</u>	<u>7.43542</u>	
	<u>5.31442</u>	<u>5.31442</u>	
sec's.	<u>676.0</u>	<u>558-53-00</u>	
Pol.	<u>359° 49' 55"</u>	<u>10 32 15</u>	
R. O.	<u>10 45 28</u>	<u>10-32-15</u>	
R. O.	<u>10° 35' 23"</u>	<u>9' 22"</u>	
	<u>10' 19"</u>	<u>10°-33'-49"</u>	
	<u>359° 49' 41"</u>		
	<u>358° 47' 38"</u>		
R. O.	<u>+ 2' 03"</u>		
Place	<u>10-32-15</u>	<u>10-32-15</u>	

By interpolation 10° 33' 01"
10° 32' 55"
 R.M.C.

Place _____
 R. O. _____
 Date May 23 Observer _____

Instrument Al. Porter 14° 13' 19"
 One turn of micrometer W.T. 14° 09' 49"
 One division of striding level W.C. + 3" 30"

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
Circle Right Drum Right	1	10	29	53		359	50	03	
	2								
	3								
	Mean								
Circle Left Drum Left	1	190	29	44		179	53	16	
	2								
	3								
	Mean								
Mean H. C. R. of Pol.		Circle Right				Circle Left			
Level correction									
Corrected H. C. R. of Pol.		359° 50' 03"				179° 53' 16"			
" H. C. R. of R. O.		10° 29' 53"				190° 29' 44"			
Angle Pol. to R. O.		10° 39' 50"				10° 36' 28"			
Pol. from collimation log.									
One turn micrometer log.									
Altitude Pol. log. sec.									
Sum									
Pol. fr. coll. reduced to horiz'al....									
Level correction									
Microm. angle Pol. fr. coll.									
R. O. from collimation log.									
One turn micrometer log.									
Altitude R. O. log. sec.									
Sum									
Microm. angle R. O. from coll.									
Angle Pol. to R. O.									
Direction of deflection						Amount			

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
13° 33' 32"					
13 30 42					
Circle Right					
time	13 - 33 - 32		13 - 30 - 42		
	3 - 3 - 0		3 - 3 - 0		
time	13 - 37 - 02		13 - 34 - 12		
	1 - 46 - 12		1 - 46 - 12		
	11 - 50 - 52		11 - 48 - 00		
	177° 43' 30"		177° 00' 00"		
P	8.23448	8.23448	8.23448	8.23448	
Sec. L	0.24736	0.30766	0.24736	0.30766	
sin t	9.99963	8.60043	9.99940	8.71889	
	8.48147	7.68207	8.48124	7.26092	
		7.01330		7.98765	
		7.12957		7.24792	
Z	278	7.13577		7.27224	
		5.31442		5.31442	
		2.44349		2.56240	
		2.07019		2.58882	
sec's.					
Pol.	359-55-22	295.25	359-53-55	382.49	
R. O.	10-39-50		10 39 28		
R. O.	10-35-12	41.55	10 33 28		
				6.270	
				10-34-17	
R. O		35.9	5.8' 19		
			5.1' 40		
Place			4.2' 39		

10° 32' 37

10° 32' 47
 24C

Mean 1st time 10° 32' 30"
 10° 34' 03"
 36"

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
Circle Right Drum Right	1	10	F. 29	B. 53		359	F. 53	B. 22	
	2								
	3								
Mean									
Circle Left Drum Left	1	190	F. 29	B. 36		179	F. 58	B. 35	
	2								
	3								
Mean									

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	359-53-22	179-58-35	Sideral
" H. C. R. of R. O.	10 29 53	190 29 36	R. A. of Polaris
Angle Pol. to R. O.	10 36-31	10-31-01	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horizal.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
13° 40' 00"					
13° 41' 46"					

	Circle Right	Circle Left
time	13-40-00 ✓	13-41-46 ✓
	3-30	453-316
time	13-36-30	13-38-16
	1-46-12 ✓	1-46-12 ✓
	11-57-18	11-52-04
	177° 34' 30"	178° 46' 00"
P	8.23448	8.23448
Sec. L	0.24736	0.30766
sin t	9.99970	8.07114
	9.99961	8.63968
	8.48145	6.61367
	8.48153	9.98702
		6.00029
Z		7.17951
	82"	5.31442
		1.71471
		2.30737
sec's.		
Pol. 359-58-38	323.29	359-59-32
R. O. 10 36 31	5' 23"	10 31 01
R. O. 10-35-09	4' 5"	10-30-33
		Mean
		10-32-51
R. O		
Place		

Mean of three 10°-33'-39"
 10° 32' 51" R.M.C.

28"

10 32 51

10° 32' 52" R.M.C.

Place Camp Mile 3.3 near H-37
R. O. on Mountain top
Date May 29 Observer _____

Instrument.....
One turn of micrometer.....
One division of striding level.....

Horizontal Circle Readings													
Position		Pointing No.	Reference Object						Polaris				
			Microscope A			Micro. B			Microscope A			Micro. B	
			F.	B.		F.	B.	F.	B.		F.	B.	
Circle Right Drum Right	1	75° 25' 15"						359	41	29			
	2							1°	48'	16"			
	3												
Mean													
Circle Left Drum Left	1	255° 24' 44"						181°	52'	30"			
	2												
	3												
Mean													

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	1-48-16	181-52-30	Sideral
" H. C. R. of R. O.	75-25-15	255-24-44	R. A. of Polaris
Angle Pol. to R. O.	73-36-59	73-32-14	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount.	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
13 13 11 18 31 35					
18 35 46					

[illegible]

by Interpolⁿ $75^{\circ} 29' 19''$ Mean $75-27-21$
 $75-27-24$ RWK

7.50

8.48019 n

7.48026 +

9.98707 n

7.46733 n

5.31442

2.78175 n

359° 49' 55"

349° 14' 32"

10° - 35' - 23"

10° - 30' - 26"

20° - 65' 49"

8.48059 n

7.42207 +

9.98706 n

7.40913 n

5.31442

2.72355 n

359° 51' 10.4"

349° 20' 45.0"

10° - 30' - 26"

605.0

10' 5"

8.60033

8.60349

60161

158

10' 5"

8° 49"

- 42 30"

529.1

8' 49.1"

Mean 10° - 32' - 55"

8.48148 n

7.14404

9.98704 n

7.13108 n

5.31442

2.44550 n

359° 55' 21"

349° 20' 10"

10° - 35' - 11"

10° - 30' - 23"

20° - 65' 34"

8.48123 n

7.26093

9.98704 n

7.24797 n

5.31442

2.56239 n

359° 53' 55"

349° 23' 32"

10° - 30' - 23"

278.9 n

4' 39"

365.1 n

6' 5"

Mean 10° - 32' - 47"

11 57-18

$$\begin{array}{r} .06578 \\ .07650 \\ \hline 1.8 \quad 14228 \\ \hline .07114 \end{array}$$

11 59-04.

$$\begin{array}{r} 15 \\ 2 \\ \hline 105 \end{array}$$

165

179°-46'-00"

179°-15'

19'-20"

$$\begin{array}{r} 8.23447 \\ 0.24736 \end{array}$$

$$\begin{array}{r} 8.23447 \\ 0.30766 \end{array}$$

$$\begin{array}{r} 8.23447 \\ 0.24736 \end{array}$$

$$\begin{array}{r} 8.23447 \\ 0.30766 \end{array}$$
9.99997ⁿ8.071149.99999ⁿ7.609858.48180ⁿ

6.61327

9.48183ⁿ

6.15198

9.98703ⁿ9.98703ⁿ6.60030ⁿ6.13901ⁿ

5.31442

5.31442

1.91472ⁿ

28.4

1.45343ⁿ

82.2

1' 22"

359° 58' 38"

349° 23' 29"

0° 28'

359° 59' 32"

359° 28' 59"

10° 35' 09"10° 30' 33"10° 65' 42"10° 30' 33"

Mean

10° 32' 51"

Mean of 3:

20° 32' 55"

10° 32' 47"

10° 32' 51"

153"

Mean:

10° 32' 51"

13-40-00
+ 3-30
13-43-30
1-46-12
11-57-18
179-19-30

13-41-46
+ 3-30
13-45-16
1-46-12
11-59-04
179-46-00

8.23447
10.24736
9.99997
8.48180

8.23447
10.30766
8.06028

8.23447
10.24736
9.99999
8.48182

8.23447
10.30766
7.60985
6.15198
9.98702
6.13900
5.31442
1.45342
28.41 (28")
359°59'32"
10 31 01
10-30-33

10-32-52
47
25
124

9.98702
6.58943
5.31442
1.90385

10-32-41
3rd @ H29

80.14 (1'20")
359°58'40"
10 36 31
10-35-11

mean 10°32'52"

8.23447
10.24736
9.99836
8.48019

8.23447
10.30766
8.93813

8.23447
10.24736
9.99875
8.48058

8.23447
10.30766
8.87995

7.48026
9.98708
7.46734
5.31442

2.78176

605"
10'05"

359-49-55
10-45-28

10-35-23
30-26
65-49

1st @ H29
R.W.C.

7.42208
9.98706
7.40914
5.31442
2.72366
529

8'49"
359°51'11"
10 39 15
10-30-26

10°32-55

8.23447
10.24736
9.99965
8.48148

8.23447
10.30766
8.60191
7.14404
9.98703

8.23447
10.24736
9.99940
8.48123

8.23447
10.30766
8.71880
7.26053
9.98704

7.13107
5.31442
2.44549

7.24757
5.31442
2.56199

2nd at H29

279
4'39"
359°55'21"
10 39 50
10-35-11
10-30-23
21 05 34
10-32-47

365
6'05"
359-53-55
10 36 28
10-30-23

$$\begin{array}{r}
 6-38 \\
 10-29-53 \\
 \hline
 10 \quad 36-31
 \end{array}$$

$$\begin{array}{r}
 165 \\
 14-15 \\
 \quad 4-30 \\
 \hline
 179-19-30
 \end{array}$$

$$\begin{array}{r}
 8.0657763 \\
 - \quad 54974 \\
 \hline
 8.0602789
 \end{array}$$

$$\begin{array}{r}
 165 \\
 121-45 \\
 \quad 1-00 \\
 \hline
 179-46-00
 \end{array}$$

$$\begin{array}{r}
 65-44 \\
 32-52
 \end{array}$$

165

12-30

12-30

177-42-30

165

12-0

6034886
15784
2019102

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right	1		F.	B.				F.	B.		
	2	75°	24	29			1°	48	25		
	3										
Mean											
Circle Left Drum Left	1										
	2	255°	24	44			181°	52	00		
	3										
Mean											

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
18 40 50					
18 39 33					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction			Chron. error
Corrected H. C. R. of Pol.	1° 48' 25"	181° 52' 00"	Sideral
" H. C. R. of R. O.	75° 24' 29"	255° 24' 44"	R. A. of Polaris
Angle Pol. to R. O.	73° 36' 04"	73° 32' 44"	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log α
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection		Amount	

	Circle Right	Circle Left
time	18-40-50 ✓ + 1-33 ✓	18-39-33 ✓ + 1-33 ✓
time	18° 42' 23" ✓ 1° 46' -18" ✓ 16-56 05 ✓ 25-40 01' ✓	18-41-02 ✓ 1-46-18 ✓ 16-54 859 ✓ 25-30 42 - 85 ✓
P	8.23438 245-59 7.43978 7.91975 7.92047	8.23438 245-59 7.43978 7.92816 8.87
Sec. L	6.17 6.8	6.17 8.08
sin t	9.98239 ✓ 8.52339 9.99648 8.52007 5.31427 ✓ 3.83434	9.98218 ✓ 8.52288 9.99640 8.51928 5.31427 ✓ 3.83355
Z	6.8288 1° 53' 49"	6.8288 1° 53' 49"
sec's.	1838 ✓	1838 ✓
Pol.	1° 53' 58"	1° 53' 47"
R. O.	73-26-04 75-30-02	73-26-44 75-26-31
R. O.	1° 53' 42"	1° 53' 36"
Place	75° 24' 36"	75° 28' 16"

by interpolation 75 30 14 Mean-75° 28' 16" RMC

Place _____
 R. O. _____
 Date _____ Observer _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object				Polaris					
		Microscope A		Micro. B		Microscope A		Micro. B		Micro. B	
Circle Right Drum Right	1		F.	B.			F.	B.		F.	B.
	2	75	24	29		1°	48	33			
	3										
Mean											
Circle Left Drum Left	1										
	2	255	24	44		181°	53	00			
	3										
Mean											

Instrument *8 Lyrae* Time Star 18 56 60
 One turn of micrometer _____ Chrom. time 18 55 27
 One division of striding level _____

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
18 43 43					
18 46 06					

	Circle Right		Circle Left	
time	18 - 43 - 43	✓	18 - 46 - 06	✓
	+ 1 - 33		+ 1 - 33	
time	18 - 45 - 16	✓	18 - 47 - 39	✓
	1 - 46 - 18	7	1 - 46 - 18	7
	16 - 58	5-8	17 - 01	21
	254° 44'	30	255° 20'	30
P	8.23438	62	8.23438	62
Sec. L	.24559	77	.24559	77
sin t	9.42024	2	9.40335	21
	7.90021	81	7.88332	400
	9.99656	✓	9.99672	✓
Z	8.52463	237	8.52304	73
	5.31427	✓	5.31427	✓
sec's.	6865	✓	6875.6	✓
Pol.	1 54 25	✓	1 54 47	✓
R. O.	73 - 35 - 56	✓	73 - 31 - 44	✓
R. O.	75 - 30 - 21	✓	75 - 26 - 31	✓
	10 55' 01"		10 54' 35"	
			10 54' 48"	
			10 50' 46"	
			+ 4' 02"	
R. O			75° 24' 37"	
Place			75° 28' 01"	

By interpolation 75 30 24 Mean 75° 28' 26" R.M.C.

Mean of 3
 75° 28' 01" R.M.C.
 75° 28' 26" R.M.C.

Place Station 122
 R. O. Station 120
 Date June 2 Observer L. L. Anderson

Instrument 4313
 One turn of micrometer 20.5
 One division of striding level W.C. - 52" 14"
2 Burtis 14 13 19
 Chronometer 15 0533

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object				Polaris					
		Microscope A		Micro. B		Microscope A		Micro. B			
Circle Right Drum Right		F.	B.	F.	B.	F.	B.	F.	B.	F.	B.
	1					359	53	39			
	2	357	24	18		359	53	39			
	3										
Mean											
Circle Left Drum Left		F.	B.	F.	B.	F.	B.	F.	B.	F.	B.
	1										
	2	177	23	58		179	58	11			
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	359-53-39	179-58-11	Sideral
" H. C. R. of R. O.	357-24-18	177-23-58	R. A. of Polaris
Angle Pol. to R. O.	2-29-21	2-34-13	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount.	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
13 50 59	Correct Time				
14 43 13	13 50 59				
13 52 19					
14 44 33	13 52 19				

	Circle Right	Circle Left	
time	13 50 59	13 52 19	
time	13 50 59	13 52 19	
	1 46-21	1-46-21	
	12 04 38	12 05 58	
	181 09 30	181 29 30	
P	8.23473	8.23473	
Sec. L	24 324	30 456	
sin t	9.99991	9.99985	
	8.47788	6.84497	
	9.98714	9.98714	
Z	6.83211	6.94193	
	5.31442	5.31442	
sec's.	2.14653	2.25635	
Pol. 0-02-20	140.11	0-03-00	
R. O. 2 29 21	2' 20"	2 34 13	
R. O. 357-52-59	357-28-47	180.4	
	25 40"	3' 00"	
	350 02 40		
	359 15 50		
	357 02 40		
R. O			
Place			

by Interpol 357 31 07 Mean 357-30-53

Place Sta 122
 R. O. Sta 120
 Date June 2 Observer L

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
			F.	B.			F.	B.		F.	B.
Circle Right	1										
Drum Right	2	177	23	58			180	00	13		
	3										
Mean											
Circle Left	1										
Drum Left	2	357	24	17			359	56	58		
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction			Chron. error
Corrected H. C. R. of Pol.	359-56-58	180-00-13	Sidereal
" H. C. R. of R. O.	357 24 17	177 23 58	R. A. of Polaris
Angle Pol. to R. O.	2-32-41	2-36-15	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection		Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
13	Correct time				
14 48 07	13 55 53				
14 49 28	13 57 14				

	Circle Right	Circle Left	
time	14 - 49 28	14 48 07	
	- 52 14 ✓	52 14 ✓	
time	13 - 59 14 ✓	13 55 53 ✓	
	1 - 46 21 ✓	1 - 46 21 ✓	
	12 10 53 ✓	12 09 32 ✓	
	182 43 15 ✓	182° 23 00 ✓	
P	8.23473	8.23470	
Sec. L	.24324 ✓	.24324 ✓	
sin t	9.99951 ✓	9.99962 ✓	
	18.47748	7.23823	
	+9.98716 ✓	+9.98715 ✓	
Z	7.20176	7.22538	
sec's.	5.31442 ✓	5.31442 ✓	
Pol.	0-05-59	0-04-48	
R. O.	2-36-15	2-36-41	
R. O.	357-29-44	357-35-33	
	0 05 29	5' 37"	
	02 32 41	58' 35"	
	357 32 48	07 02	
R. O		24-07	
Place		31' 09"	

357 30.54 Mean 357-29-58

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object				Polaris					
		Microscope A		Micro. B		Microscope A		Micro. B		Micro. B	
		F.	B.	F.	B.	F.	B.	F.	B.	F.	B.
Circle Right Drum Right	1										
	2	357	24	38		359	59	17			
	3										
Mean											
Circle Left Drum Left	1										
	2	177	24	14		180	03	47			
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	359-59-17	180-03-47	Sideral
" H. C. R. of R. O.	357-24-38	177-24-14	R. A. of Polaris
Angle Pol. to R. O.	2-34-39	2-39-33	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.			Bearing of
		Amount.	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
14 54 17	Correct Time 14 02 03				
14 55 58	14 03 44				

	Circle Right	Circle Left	
time	14 54 17	14 55 58	
	52 14	52 14	
time	14 02 03	14 03 44	
	1-46-21	1-46-21	
	12 15 42	12 17 23	
	183 55 30	184 20 45	
P	8.23473	8.23473	
Sec. L	2.4324	2.4324	
sin t	9.99898	9.99898	
	8.45384	8.45384	
	8.47675	8.47672	
Z	7.37467	7.41832	
	9.98717	9.98718	
	7.36184	7.40550	
	5.31442	5.31442	
sec's.	475	475	
Pol.	0-07-55	0-08-45	
R. O.	2-34-39	2-39-33	
R. O.	357-33-16	357-29-12	
		08' 25"	
		00' 32"	
		6' 53"	
		357' 24' 26"	
		357' 31' 19"	
R. O			
Place			

357° 31' 33" Mean 357-31-14"

RMC
 Mean of 3 - 357°-30-56"
 Error + 2' 11"
 Mean 357° 31' 07"

Place Sta 168
 R. O. Sta 167
 Date June 2 Observer L. L. Anderson

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

*See Page "A"
 following B.M.C.*

		Horizontal Circle Readings													
Position	Painting No.	Reference Object						Polaris							
		Microscope A			Micro. B			Microscope A			Micro. B.				
Circle Right Drum Right			F.	B.		F.	B.		F.	B.		F.	B.		
	1														
	2	43°	36'	20"				0°	11'	08"					
	3														
Mean															
Circle Left Drum Left															
	1														
	2	223	36	00				180	15	40					
	3														
Mean															
		Circle Right						Circle Left							
Mean H. C. R. of Pol.														Mean chron.	
Level correction														Chron. error	
Corrected H. C. R. of Pol.		0 11 08						180 15 40						Sideral	
" H. C. R. of R. O.		43 36 20						223 36 00						R. A. of Polaris	
Angle Pol. to R. O.		43 25 12						43 20 20						t in time	
		✓												t in arc	
Pol. from collimation log.														Log tan	
One turn micrometer log.														Log tan &	
Altitude Pol. log. sec.														Log cos &	
Sum														Sum	
Pol. fr. coll. reduced to horiz'al....														Log $\frac{1}{1-m}$	
Level correction														Log tan	
Microm. angle Pol. fr. coll.														Log T	
R. O. from collimation log.														Log a	
One turn micrometer log.														Azimuth of	
Altitude R. O. log. sec.														Angle Pol. to	
Sum														Azimuth of	
Microm. angle R. O. from coll.														Mean	
Angle Pol. to R. O.														Convergence	
														Bearing of	
Direction of deflection								Amount							

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
16 04 05	15 11 51		16-04-05	- 52-14	
			sid. 15-11-51		
16 06 55	15 14 41		16-06-55	- 52-14	
			15 14-41		

		Circle Right		Circle Left	
time		15-11-51		15-14-41	
		7-46		7-46	not true correction
time		15-19 37		15-22 27	
		1-46-21		1-46-21	
		13-33 16		13-36 06	
		203° 19' 00"		204-01-30	
P	8.23473	8.23473		8.23473	8.23473
Sec. L	.24177	.30344		.24177	.30344
sin t	9.96300	9.59749		9.96065	9.60974
	8.43950	8.13566		8.43715	8.14791
		9.98823			9.98828
Z		8.12389			8.13619
		5.31440			5.31440
		3.43829			3.45039
sec's.					
Pol.	0 45 43	2743.1		0 47 02	2822
R. O.	43 25 12	45' 43"		44 09 22	47' 02"
R. O.	44-10 55			46' 23"	
				13' 24	
				32' 59	
R. O		43		36-10	
Place					

44° 05' 30" 44-10-08

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

See Page "B"
Following RMC

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Dum Right	1		F.	B.				F.	B.		
	2	43°	36	09			0	13	43		
	3										
	Mean										
Circle Left Dum Left	1										
	2	223	36	00			180	16	56		
	3										
	Mean										
		Circle Right					Circle Left				
Mean H. C. R. of Pol.											
Level correction											
Corrected H. C. R. of Pol.		0 13 43					180 - 16 56				
" H. C. R. of R. O.		43 36 09					223 36 00				
Angle Pol. to R. O.		43 22 26					43 29 04				
Pol. from collimation log.											
One turn micrometer log.											
Altitude Pol. log. sec.											
Sum											
Pol. fr. coll. reduced to horiz'al.											
Level correction											
Microm. angle Pol. fr. coll.											
R. O. from collimation log.											
One turn micrometer log.											
Altitude R. O. log. sec.											
Sum											
Microm. angle R. O. from coll.											
Angle Pol. to R. O.											
Direction of deflection							Amount				

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
16 09 41	15 17 33		16-09-47		
			- 52-14		
			15-17-33		
16 08 45	15 16 31		16-08-45		
			- 52-14		
			15-16-31		
Circle Right			Circle Left		
time	15-17-33		15-16-31		
	7-46		+ 7-46		
time	15-25-19		15-24-17		
	1-46-21		1-46-21		
	13-38-58		13-37-56		
	204° 44' 30"		204° 29-00		
P	8.23473	8.23473	8.23473	8.23473	
Sec. L	.24177	.30344	.24177	.30344	
sin t	9.95818	9.62172	9.95908	9.61745	
	8.43468	8.15989	8.43558	8.15562	
		9.98836		9.98836	
Z		8.14825		8.14398	
		5-31-44		5-31-44	
sec's.		3 46 26.5		3.45838	
Pol.		2902.		2873,	
R. O.		48' 22"		47' 5-3	
R. O.			48' 08		
			15' 20		
			32-48		
			36-04		
R. O					
Place					

44 05 09

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

See Page "C"
following R.M.C.

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right	1		F.	B.			F.	B.		F.	B.
	2	43	36	09			0	15	37		
	3										
	Mean										
Circle Left Drum Left	1										
	2	223	35	51			180	19	14		
	3										
	Mean										

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
16 13 52	15 21 38		16-13-52		
			- 52-14		
			15 21-38		
16 14 57	15 22 43		16-14-57		
			- 52-14		
			15 22-43		

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chren.
Level correction.			Chron. error
Corrected H. C. R. of Pol.			Sidereal
" H. C. R. of R. O.			R. A. of Polaris
Angle Pol. to R. O.			t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.			Bearing of
		Amount	

	Circle Right	Circle Left	
time	15-21-38	15-22-43	
	7-46	7-46	
time	15-29 24	15-30-29	
	1-46-21	1-46-21	
	13-43-03	13-44-08	
	205°-45'-45"	206°-2-00"	
P	8.23473	8.23473	8.23473
Sec. L	24177	30344	24177
sin t	9.95452	9.63814	9.95354
	8.43102	8.17631	8.43004
	9.98844		9.98844
	8.16475		8.16897
Z	5.31440		5.31440
	3.47913		3.48337
sec's.			
Pol.	3014.		3044.
R. O.	50' 14"		50' 44"
R. O.		50' 29"	
		0' 17' 25"	
		33 04	
R. O	43° 36'-00"		44° 09' 04"
Place			

Mean 44° 09' 04"

44 05 22

Place H-160 (RNC)
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
Circle Right Drum Right	1		F.	B.			F.	B.	
	2								
	3								
Mean									
Circle Left Drum Left	1								
	2								
	3								
Mean									

	Circle Right	Circle Left	Mean chron.
Mean H. C. R. of Pol.			time
Level correction.			Chron. error
Corrected H. C. R. of Pol.	0° 11' 08"	180° 15' 40"	Sideral
" H. C. R. of R. O.	43° 36' 20"	223° 36' 00"	R. A. of Polaris
Angle Pol. to R. O.	43° 25' 12"	43° 20' 20"	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount.	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
15-11-51	already corrected by - 52' 14"				
15-14-41					

	Circle Right	Circle Left
time	15-11-51 ✓	15-14-41 ✓
time	1-46.21	1-46.21
	13 25.30 ✓	13-28 20 ✓
	201° 22' 30 ✓	202° 05' 00" ✓
P	8.23473	8.23473
Sec. L	.24177	.24177
sin t	9.96906 ✓	9.96691
	8.44555 ✓	8.44341 ✓
	9.98807 ✓	9.98807 ✓
Z	8.08790	8.10138
	5.31441	5.31441
sec's.	3.40231 ✓	3.41579
Pol.	42° 05"	43° 25"
R. O.		
R. O.	0° 42' 45"	
	0° 13' 24"	
	29' 21"	
R. O	43° 36' 10"	
Place		

44° 05' 31" ✓ RNC

Place H-168 (R.N.C.)
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

72 "B"

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
		F.	B.	F.	B.	F.	B.	F.	B.
Circle Right	1								
Drum Right	2	43°	36'	09"		0°	13'	43"	
	3								
Mean									
Circle Left	1								
Drum Left	2	223°	36'			180°	16'	56"	
	3								
Mean		223°	36'	03"		0°	15'	20"	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
15-17-33	already corrected by				
	- 52' 14"				
15-16-31					

	Circle Right	Circle Left	Mean chron.
Mean H. C. R. of Pol.			time
Level correction.			Chron. error
Corrected H. C. R. of Pol.	0° 13' 43"	180° 16' 56"	Sideral
" H. C. R. of R. O.	43° 36' 09"	223° 36' 05"	R. A. of Polaris
Angle Pol. to R. O.	43° 22' 26"	43° 12' 09"	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log α
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.			Bearing of
		Amount	

	Circle Right	Circle Left
time	15-17-33 ✓	15-16-31 ✓
time	1-46-21	1-46-21
	13-31-12 ✓	13-30-10
	202° 48' 00" ✓	202° 32' 30" ✓
P	8.23473	8.23473
Sec. L	.24177	.24177
sin t	9.96467	9.96549
	8.44117	8.44199
	8.12646	8.12177
	9.98817	9.98817
Z	8.11463	8.10994
	5:31' 44"	5:31' 44"
sec's.	2686.	2657
Pol.	48° 06"	44° 17' ✓
R. O.	44° 46' 00" R.N.C.	
R. O.	0° 46' 12"	
	0° 15' 20"	
	30° 52"	
R. O	43° 36' 03"	
Place		

44° 06' 57"
 44° 05' 19" R.N.C.
 Error 4' 14"
 44° 02' 39"

Place H-160 (R.N.C.)
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right			F.	B.				F.	B.		
	1	43°		36' 59"			0°	15'	33"		
	2										
	3										
Mean											
Circle Left Drum Left											
	1										
	2	223°		35' 51"			180°	19'	14"		
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	0° 15' 37"	180° 19' 14"	Sidereal
" H. C. R. of R. O.	43° 36' 09"	223° 35' 51"	R. A. of Polaris
Angle Pol. to R. O.	43° 20' 32"	43° 16' 37"	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horizal.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
15-21	-38	already corrected by			
		-52° 14'			R.N.C.
15-22	-43				

	Circle Right	Circle Left
time	15-21-38 ✓	15-22-43 ✓
time	1-46-21	1-46-21
	13-35-17 ✓	13-36-22 ✓
	203° 49' 15" ✓	204° 05' 30" ✓
P	8.23473	8.23473
Sec. L	.24177	.24177
sin t	9.96133	9.96041
	8.43783	8.43691
	9.98828	9.98828
Z	8.13270	8.13732
	5.31440	5.31441
sec's.	3.44710 ✓	2830 ✓
Pol.	46° 39" ✓	47° 10" ✓
R. O.	0°	46° 54"
R. O.	0°	17° 26'
		+29° 28'
R. O	43°	36-00
Place		

44° 05' 28"
 44° 05' 29" R.N.C.

Mean of 3 sets 44° 05' 26" R.N.C.

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Painting No.	Horizontal Circle Readings										Chron. Time	Micrometer Readings		Level				
		Reference Object					Polaris						Polaris	R. O.	W.	E.	Corrn.		
		Microscope A		Micro. B		Microscope A		Micro. B											
			F.	B.		F.	B.		F.	B.		F.	B.						
Circle Right Drum Right	1																		
	2	68°	39'	55"															
	3																		
Mean																			
Circle Left Drum Left	1																		
	2																		
	3																		
Mean																			

	Circle Right	Circle Left	Mean chron.	time	Circle Right	Circle Left
Mean H. C. R. of Pol.			Mean chron.			
Level correction			Chron. error			
Corrected H. C. R. of Pol.			Sidereal	time		
" H. C. R. of R. O.			R. A. of Polaris			
Angle Pol. to R. O.			t in time			
			t in arc			
Pol. from collimation log.			Log tan	P		
One turn micrometer log.			Log tan &	Sec. L		
Altitude Pol. log. sec.			Log cos &	sin t		
Sum			Sum			
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$			
Level correction			Log tan	Z		
Microm. angle Pol. fr. coll.			Log T			
R. O. from collimation log.			Log a	sec's.		
One turn micrometer log.			Azimuth of	Pol.		
Altitude R. O. log. sec.			Angle Pol. to	R. O.		
Sum			Azimuth of	R. O.		
Microm. angle R. O. from coll.			Mean			
Angle Pol. to R. O.			Convergence			
			Bearing of	R. O		
Direction of deflection		Amount		Place		

Place Montague Camp Station ^{W 230} ~~W 223~~ Latitude 61° 41'
 R. O. W 122 W 229
 Date July 23 Observer L. L. Anderson

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Painting No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right		F.	B.	F.	B.		F.	B.	F.	B.	
	1										
	2	154	57	24			1	49	34		
	3										
Mean											
Circle Left Drum Left		F.	B.	F.	B.		F.	B.	F.	B.	
	1										
	2	334°	55	50			181	55	00		
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	1 49 34	181 55 00	Sideral
" H. C. R. of R. O.	154 57 24	334 55 50	R. A. of Polaris
Angle Pol. to R. O.	153 07 50 ✓	153 00 59	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
17 57 02					
17 58 20					

	Circle Right	Circle Left	
time	17 57 02	17 58 20	
	01 08	01 08	
time	17 58 10 ✓	17 59 28 ✓	
	1 47 24	1 47 24	
	16 10 46 ✓	16 12 04 ✓	
	242 41' 30" ✓	243 01" 00" ✓	
P	8.23490	8.23490	
Sec. L	.21037	.270371	
sin t	9.66160 ✓	9.65680	
	8.16687	8.16207	
	8.50890 ✓	8.51017	
	9.99367 ✓	9.99374	
Z	8.50257 ✓	8.50391	
	5.31428	5.31428	
sec's.	3.81785	3.81819	
Pol.	6559 6574.15	6579	
R. O.	1° 49' 44"	1° 49' 49"	
R. O.	153° 07' 50"	153° 00' 50"	
	154° 57' 34"	154° 50' 39"	
	54° 57' - 05"	53° - 52"	
R. O		154° 54' 07"	
Place			

Place Montague Camp Sta. W230
 R. O. W 222
 Date July 23 Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Painting No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right	1	F.	B.	F.	B.	F.	B.	F.	B.	F.	B.
	2	154	56	49				1	50	01	
	3										
	Mean										
Circle Left Drum Left	1										
	2	334°	55'	50				181	55	08	
	3										
	Mean										

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
18 01 30					
18 00 35					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.			Sideral
" H. C. R. of R. O.			R. A. of Polaris
Angle Pol. to R. O.			t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.			Bearing of
		Amount	

	Circle Right	Circle Left	
time 18 01 30	18 00 35		
01 08	01 08		
time 18 02 38	18 01 43		
1 47 24	1 47 24		
16 15 14	16 14 19		
243 48' 30"	243 34' 45"		
P 8.23490	8.23490	8.23490	8.23490
Sec. L .27037	.32532	.27037	.32532
sin t 9.64481	9.95295	9.64845	9.95206
8.15008	8.51317	8.15372	8.51228
	9.99391		9.99386
Z	8.50708		8.50614
	5.31428		5.31428
sec's.	3.82136		3.82042
Pol.	6628		6613
R. O.	1°50' 28"		1°50' 13"
R. O.	153° 05' 48"		153° 00' 42"
	154° 56' 16"		154° 50' 55"
R. O		154° 53' 36"	
Place			

Place _____
 R. O. _____
 Date July 23 Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Lyrae 18-35-14
 Chronometer reading 18 34 06
 1^m 08"

Position	Pacing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right	1	F.	B.	F.	B.	F.	B.	F.	B.	F.	B.
	2	154° 56' 49				1 51 44					
	3										
	Mean										
Circle Left Drum Left	1										
	2	334 56 48				481 55 25					
	3										
	Mean										

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
18 03 37					
18 04 51					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction			Chron. error
Corrected H. C. R. of Pol.	1 51 44	181 55 25	Sideral
" H. C. R. of R. O.	154 56 47	334 56 48	R. A. of Polaris
Angle Pol. to R. O.	153 05 05	153 01 23	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection		Amount	Bearing of

	Circle Right	Circle Left	
time 18 03 37	18 04 51		
01 08	01 08		
time 18 04 45	18 05 59		
1 47 24	1 47 24		
16 17 21	16 18 35		
244 20" 15"	244 38" 45"		
P 8.23490	8.23490	8.23490	8.23490
Sec. L .27037	.32532	.27037	.32532
sin t 9.63650	9.95489	9.63167	9.95601
8.14177	8.51511	8.13694	8.51623
	9.99402		9.99409
Z	8.50913		8.51032
	5.31428		5.31428
sec's.	3.82341		3.82560
Pol.	6659		6693
R. O.	1° 50' 59"		1° 51' 33"
R. O.	153° 05' 05"		153° 01' 23"
	154° 56' 04"		154° 52' 56"
R. O		154° 54' 30"	
Place			

Place

R. O.

Date July 25 Observer

Instrument

One turn of micrometer

One division of striding level

Position	Pointing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
Circle Right Drum Right	1		F.	B.			F.	B.	
	2	154°	57'	22"		1	28	30	
	3								
Mean									
Circle Left Drum Left	1								
	2	334	56	43		181	34	25	
	3								
Mean									

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
16 49 58					
16 52 59					

	Circle Right	Circle Left	Mean chron.
Mean H. C. R. of Pol.			
Level correction			Chron. error
Corrected H. C. R. of Pol.	1 28 30	181 34 25	Sidereal
" H. C. R. of R. O.	54 57 22	334 56 43	R. A. of Polaris
Angle Pol. to R. O.	153° 28' 52"	153° 22' 22"	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection		Amount	Bearing of

	Circle Right	Circle Left
time	16 49 58 52	16 52 59 52
time	16 50 50 1 47 26 15 03 24 225 51 00	16 53 51 1 47 26 15 06 25 226 36 15
P	8.23488	8.23488
Sec. L	.27037	.27037
sin t	9.84295	9.83698
	8.34820	8.34223
	8.41603	8.42151
	9.99043	9.99056
Z	8.40646	8.41207
	5.31433	5.31433
sec's.	3.72079	3.72640
Pol.	1 27 38	1° 28' 46"
R. O.	153 28 52	153 22 22
R. O.	154 56 30	154 51 09
	154° 53' 49"	
R. O		
Place		

Place _____
 R. O. _____
 Date July 25 Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
			F.	B.			F.	B.	F.	B.	
Circle Right Drum Right	1										
	2	154	57	12			1	32	00		
	3										
Mean											
Circle Left Drum Left	1										
	2	334	56	43			181	35	38		
	3										
Mean											

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
16 57 21					
16 56 17					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	1 32 00	181 35 38	Sideral
" H. C. R. of R. O.	154 57 12	334 56 43	R. A. of Polaris
Angle Pol. to R. O.	153 25 12	153 21 05	t in time
			t in arc
Pol. from collimation.log.			Log tan
One turn micrometer.log.			Log tan &
Altitude Pol.log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation.log.			Log a
One turn micrometer.log.			Azimuth of
Altitude R. O.log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
Direction of deflection.			Bearing of
		Amount.	

	Circle Right	Circle Left	
time	16 57 21	16 56 17	
	52	52	
time	16 57 73	16 57 09	
	1 47 26	1 47 26	
	15 10 47	15 09 43	
	227 41 45	227 25 45	
P	8.23488	8.23488	8.23488
Sec. L	.27037	.27037	.27037
sin t	9.82805	9.86899	9.83020
	8.33330	8.42919	8.33545
	9.99074		9.99070
Z	8.41993		8.41804
	5.31433		5.31433
sec's.	3.73426		3.73287
Pol.	1° 30 25		1° 30 00"
R. O.	153 25 12		153 21 05
R. O.	154 55 37		154 51 05
	154 53 21		
R. O			
Place			

Place _____
 R. O. _____
 Date July 25 Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____

8 Hercules 17 12 39
 Chronometer 17 11 47
 W.C. + 0^h 0^m 52^s

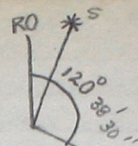
Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right	1	F.	B.	F.	B.		F.	B.	F.	B.	
	2	154	57	12			1	32	42		
	3										
	Mean										
Circle Left Drum Left	1	F.	B.	F.	B.		F.	B.	F.	B.	
	2	334	56	55			181	37	49		
	3										
	Mean										
		Circle Right				Circle Left					
Mean H. C. R. of Pol.										Mean chron.	
Level correction										Chron. error	
Corrected H. C. R. of Pol.		1 32 42				181 37 49				Sideral	
" H. C. R. of R. O.		154 57 12				334 56 55				R. A. of Polaris	
Angle Pol. to R. O.		153 24 30				153 19 06				t in time	
										t in arc	
Pol. from collimation log.										Log tan	
One turn micrometer log.										Log tan &	
Altitude Pol. log. sec.										Log cos &	
Sum										Sum	
Pol. fr. coll. reduced to horiz'al.										Log $\frac{1}{1-m}$	
Level correction										Log tan	
Microm. angle Pol. fr. coll.										Log T	
R. O. from collimation log.										Log a	
One turn micrometer log.										Azimuth of	
Altitude R. O. log. sec.										Angle Pol. to	
Sum										Azimuth of	
Microm. angle R. O. from coll.										Mean	
Angle Pol. to R. O.										Convergence	
										Bearing of	
Direction of deflection						Amount					

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
17 00 08					
17 01 35					
		Circle Right	Circle Left		
time	17 00 08		17 01 35		
	52		52		
time	17 01 00		17 02 27		
	1 47 26		1 47 26		
	15 13 34		15 15 01		
	228 23 30		228 45 15		
P	8.23488	8.23488	8.23488	8.23488	
Sec. L	0.27037	0.27037	0.27037	0.27037	
sin t	9.82219	9.87372	9.81908	9.87616	
	8.32744	8.43392	8.32433	8.43636	
		9.99087		9.99093	
Z		8.42479		8.42729	
		3.31433		3.31433	
sec's.		3.73912		3.74162	
Pol.		1° 31' 24"		1° 31' 56"	
R. O.		153 24 30		153 19 06	
R. O.		154 55 54		154 51 02	
			154 53 28		
R. O.					
Place					

Mean Az 154 53 49

Place Camp beside the Nordenskiöld
 R. O. R.H. Tree on Mountain Top
 Date 2 Aug 48 Observer [Signature]

Instrument WILD
 One turn of micrometer
 One division of striding level



Position		Pointing No.	Horizontal Circle Readings										Chron. Time	Micrometer Readings		Level		
			Reference Object				Polaris							Polaris	R. O.	W.	E.	Corrn.
			Microscope A		Micro. B		Microscope A		Micro. B									
Circle Right Drum Right	1			F.	B.		F.	B.		F.	B.							
	2		359	43	54					2°	02'	16						
	3		(Assumed)															
	Mean																	
Circle Left Drum Left	1																	
	2		179	42	30					182°	06'	05						
	3																	
	Mean																	

	Circle Right	Circle Left	Mean chron.	time	Circle Right	Circle Left
Mean H. C. R. of Pol.				18 26 44 ✓	18 27 49 ✓	
Level correction.				+ 18	18	
Corrected H. C. R. of Pol.	2° 02' 16"	182 06 05	Sideral	18 27 02 ✓	18 28 07 ✓	
" H. C. R. of R. O.	359 43 54	179 42 30	R. A. of Polaris	1 47 37 ✓	1 47 37 ✓	
Angle Pol. to R. O.	2° 18' 22"	2° 23' 35"	t in time	16 39 25	16 40 30 ✓	
			t in arc	249 51 15 ✓	250 07 30 ✓	
Pol. from collimation log.			Log tan	P 8.23474	8.23474	8.23474
One turn micrometer log.			Log tan &	Sec. L .27433	.32839	.32839
Altitude Pol. log. sec.			Log cos &	sin t 9.53208	9.97258	9.53144
Sum			Sum	8.04615	8.53571	8.04051
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$		9.99520	9.99526
Level correction.			Log tan	Z	8.53091	8.53172
Microm. angle Pol. fr. coll.			Log T		5.31426	5.31426
R. O. from collimation log.			Log a	sec's.	3.84517	3.84598
One turn micrometer log.			Azimuth of	Pol.	1 56 41 ✓	1 56 54
Altitude R. O. log. sec.			Angle Pol. to	R. O.	2 18 22	2 23 35
Sum			Azimuth of	R. O.	35 9 38 19	35 9 33 19
Microm. angle R. O. from coll.			Mean			
Angle Pol. to R. O.			Convergence		359	35 49
Direction of deflection.		Amount.	Bearing of	R. O		
				Place		

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument *S Aquilae 19 22 54* *Chron 19 22 35* *19 48 17*
 One turn of micrometer *19 5* *17 3*
 One division of striding level *M.W.C. + 18 5*

Position	Pointing No.	Horizontal Circle Readings										Chron. Time	Micrometer Readings		Level			
		Reference Object						Polaris					Polaris	R. O.	W.	E.	Corrn.	
		Microscope A		Micro. B		Microscope A		Micro. B										
Circle Right Drum Right	1		F.	B.		F.	B.		F.	B.		F.	B.					
	2	359	43	06				2°	03	22								
	3																	
Mean																		
Circle Left Drum Left	1																	
	2	179°	42	30				182°	07	57								
	3																	
Mean																		
		Circle Right		Circle Left								Circle Right		Circle Left				
Mean H. C. R. of Pol.								Mean chron.		time		18 31 35		18 30 29				
Level correction.								Chron. error		time		1 47 37		1 47 37				
Corrected H. C. R. of Pol.		2 03 22		182 07 57				Sideral		time		16 43 58		16 42 52				
" H. C. R. of R. O.		359 43 06		179 42 30				R. A. of Polaris				18		18				
Angle Pol. to R. O.		2 20 16		2 25 27				t in time				16 44 16		16 43 10				
								t in arc				251 04 00		250 47 30				
Pol. from collimation. log.								Log tan		P		8.23474		8.23474		8.23474		
One turn micrometer. log.								Log tan &		Sec. L		0.27433		0.32839		0.32839		
Altitude Pol. log. sec.								Log cos &		sin t		9.51112		9.97584		9.97512		
Sum								Sum				8.02024		8.53897		8.02627		
Pol. fr. coll. reduced to horiz'al.								Log $\frac{1}{1-m}$				9.99548		9.99541				
Level correction.								Log tan		Z		6.53445		8.53366				
Microm. angle Pol. fr. coll.								Log T				5.31426		5.31426				
R. O. from collimation. log.								Log a		sec's.		3.84870		3.84792				
One turn micrometer. log.								Azimuth of		Pol.		1 57 30		1 57 26				
Altitude R. O. log. sec.								Angle Pol. to		R. O.		2 20 16		2 25 27				
Sum								Azimuth of		R. O.		359 37 23		359 31 59				
Microm. angle R. O. from coll.								Mean										
Angle Pol. to R. O.								Convergence				359		34 41				
Direction of deflection.								Bearing of		R. O								
								Amount		Place								

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument *Alidade*
 One turn of micrometer _____
 One division of striding level _____

Position	Pointing No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
		F.	B.	F.	B.		F.	B.	F.	B.	
Circle Right Drum Right	1										
	2	359°	43' 06"				2°	04 59			
	3										
Mean											
Circle Left Drum Left	1										
	2	179	43 28				182°	09 11			
	3										
Mean											
Mean H. C. R. of Pol.		Circle Right				Circle Left				Mean chron.	
Level correction										Chron. error	
Corrected H. C. R. of Pol.		2 04 59				182 09 11				Sideral	
" H. C. R. of R. O.		359 43 06				179 43 28				R. A. of Polaris	
Angle Pol. to R. O.		2 21 53				2 25 43				t in time	
Pol. from collimation log.										t in arc	
One turn micrometer log.										Log tan	
Altitude Pol. log. sec.										Log tan &	
Sum										Log cos &	
Pol. fr. coll. reduced to horiz'al. . .										Sum	
Level correction										Log $\frac{1}{1-m}$	
Microm. angle Pol. fr. coll.										Log tan	
R. O. from collimation log.										Log T	
One turn micrometer log.										Log a	
Altitude R. O. log. sec.										Azimuth of	
Sum										Angle Pol. to	
Microm. angle R. O. from coll. . . .										Azimuth of	
Angle Pol. to R. O.										Mean	
Direction of deflection										Convergence	
										Bearing of	
										Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
18 38 05					
18 39 11					
Circle Right		Circle Left			
time	18 38 05	18 39 11			
	18	18			
time	18 38 23	18 39 29			
	1 47 37	1 47 37			
	16 50 46	16 51 52			
	252 41 30	252 58 00			
P	8.23474	8.23474	8.23474	8.23474	
Sec. L	0.27433	32839	.27433	.32839	
sin t	9.47351	9.97987	9.46676	9.98052	
	7.98258	8.54300	7.97583	8.54365	
		9.99585		9.99592	
Z		8.53885		8.53957	
		5.31426		5.31425	
sec's.		3.85311		3.85382	
Pol.		1 58 51		1 59 02	
R. O.		2 21 53		2 25 48	
R. O.		359 36 58		359 33 19	
R. O.		359		3508	
Place					

359 35 12

Just South of Carmacks

Place

R. O.

Date

Instrument

One turn of micrometer

One division of striding level

Horizontal Circle Readings

Position		Pointing No.	Horizontal Circle Readings										
			Reference Object						Polaris				
			Microscope A		Micro. B		Microscope A		Micro. B				
Circle Right Drum Right			F.	B.		F.	B.		F.	B.		F.	B.
	1												
	2	328	51	43				3	21	12			
	3												
Mean													
Circle Left Drum Left													
	1												
	2	148	54	30				183	22	32			
	3												
Mean													

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction.			Chron. error
Corrected H. C. R. of Pol.	3 21 12	183 22 32	Sideral
" H. C. R. of R. O.	328 57 43	148 54 30	R. A. of Polaris
Angle Pol. to R. O.	325 36 31	325 31 58	t in time
			t in arc
Pol. from collimation. log.			Log tan
One turn micrometer. log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction.			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation. log.			Log a
One turn micrometer. log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection.		Amount.	

Micrometer Readings

Level

Chron. Time

Polaris

R. O.

W.

E.

Corrn.

19^h 04' 22"

19 10 30

Circle Right

Circle Left

time

time

time

P

Sec. L

sin t

Z

sec's.

Pol.

R. O.

R. O.

R. O.

Place

19 04 22	19 10 30
1 34	1 34
19 02 48	19 08 56
1 47 52	1 47 52
17 14 56	17 21 04
258 44 00	260 16 00
8.23444	8.23444
10.27585	10.27585
9.29087	9.22805
7.80116	7.73834
8.55557	8.55772
9.99726	9.99763
8.55283	8.55535
5.31424	5.31424
3.86767	3.86959
2 02 43	2 03 26
325 36 31	325 31 58
327 39 14	327 35 24
327 37 19	

Place _____
 R. O. _____
 Date _____ Observer _____

Instrument _____
 One turn of micrometer _____
 One division of striding level _____
B. Cygni 19 28 41
Chubb 19 30 15
W.C. — 1^m 34^s

Position	Pacing No.	Horizontal Circle Readings							
		Reference Object				Polaris			
		Microscope A		Micro. B		Microscope A		Micro. B	
		F.	B.	F.	B.	F.	B.	F.	B.
Circle Right Drum Right	1								
	2	148	54	30		183	23	55	
	3								
Mean									
Circle Left Drum Left	1								
	2	328	53	40		3	19	27	
	3								
Mean									

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.
19 15 30					
19 17 17					

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction			Chron. error
Corrected H. C. R. of Pol.	183 23 55	3 19 27	Sideral
" H. C. R. of R. O.	148 54 30	328 53 40	R. A. of Polaris
Angle Pol. to R. O.	325 30 35	325 34 13	t in time
			t in arc
Pol. from collimation log.			Log tan
One turn micrometer log.			Log tan &
Altitude Pol. log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al.			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation log.			Log a
One turn micrometer log.			Azimuth of
Altitude R. O. log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.			Mean
Angle Pol. to R. O.			Convergence
			Bearing of
Direction of deflection		Amount	

	Circle Right	Circle Left	
time	19 15 30	19 17 17	
	- 1 34	- 1 34	
time	19 13 56	19 15 43	
	1 47 52	1 47 52	
	17 26 04	17 27 51	
	261 31 00	261 57 45	
P	8.23444	8.23444	8.23444
Sec. L	0.27585	.32958	0.27585
sin t	9.16886	9.99522	9.14557
	7.67915		7.65586
	9.99793		9.99804
Z	8.55717		8.55778
	5.31424		5.31424
sec's.	3.87141		3.87202
Pol.	2 03 57		2 04 08
R. O.	325 30 35		325 34 13
R. O.	327 34 32		327 38 21
	327°	30' 26"	
R. O.			
Place			

Mean 327 36 52

Place

R. O.

Date Observer

Instrument

One turn of micrometer

One division of striding level

Position	Painting No.	Horizontal Circle Readings									
		Reference Object					Polaris				
		Microscope A		Micro. B			Microscope A		Micro. B		
Circle Right Drum Right			F.	B.		F.	B.		F.	B.	
	1										
	2										
	3										
Mean											
Circle Left Drum Left											
	1										
	2										
	3										
Mean											

	Circle Right	Circle Left	
Mean H. C. R. of Pol.			Mean chron.
Level correction			Chron. error
Corrected H. C. R. of Pol.			Sidereal
" H. C. R. of R. O.			R. A. of Polaris
Angle Pol. to R. O.			t in time
			t in arc
Pol. from collimation.....log.			Log tan
One turn micrometer.....log.			Log tan &
Altitude Pol.....log. sec.			Log cos &
Sum			Sum
Pol. fr. coll. reduced to horiz'al....			Log $\frac{1}{1-m}$
Level correction			Log tan
Microm. angle Pol. fr. coll.			Log T
R. O. from collimation.....log.			Log a
One turn micrometer.....log.			Azimuth of
Altitude R. O.....log. sec.			Angle Pol. to
Sum			Azimuth of
Microm. angle R. O. from coll.....			Mean
Angle Pol. to R. O.....			Convergence
			Bearing of
Direction of deflection		Amount	

Chron. Time	Micrometer Readings		Level		
	Polaris	R. O.	W.	E.	Corrn.

	Circle Right	Circle Left
time		
time		
P		
Sec. L		
$\sin t$		
Z		
sec's.		
Pol.		
R. O.		
R. O.		
R. O		
Place		

$$\text{Log} \frac{1}{1-m}$$

Log m	0	1	2	3	4	5	6	7	8	9	Log m
8.60	+0.0 1764	1768	1773	1777	1781	1785	1789	1794	1798	1802	8.60
8.59	+0.0 1723	1727	1732	1736	1740	1744	1748	1752	1756	1760	8.59
58	1683	1687	1691	1695	1699	1703	1707	1711	1715	1719	58
57	1644	1648	1652	1656	1660	1664	1668	1672	1676	1679	57
56	1606	1610	1614	1618	1621	1625	1629	1633	1637	1640	56
55	1569	1573	1576	1580	1584	1587	1591	1595	1599	1602	55
54	1533	1536	1540	1543	1547	1551	1554	1558	1562	1565	54
53	1497	1501	1504	1508	1511	1515	1518	1522	1525	1529	53
52	1462	1466	1469	1473	1476	1480	1483	1487	1490	1494	52
51	1429	1432	1435	1439	1442	1445	1449	1452	1456	1459	51
50	1396	1399	1402	1405	1409	1412	1415	1419	1422	1425	50
8.49	+0.0 1363	1367	1370	1373	1376	1379	1383	1386	1389	1392	8.49
48	1332	1335	1338	1341	1344	1347	1351	1354	1357	1360	48
47	1301	1304	1307	1310	1313	1316	1319	1323	1326	1329	47
46	1271	1274	1277	1280	1283	1286	1289	1292	1295	1298	46
45	1242	1245	1247	1250	1253	1256	1259	1262	1265	1268	45
44	1213	1216	1219	1222	1224	1227	1230	1233	1236	1239	44
43	1185	1188	1191	1193	1196	1199	1202	1205	1207	1210	43
42	1158	1160	1163	1166	1169	1171	1174	1177	1179	1182	42
41	1131	1134	1136	1139	1142	1144	1147	1150	1152	1155	41
40	1105	1107	1110	1113	1115	1118	1120	1123	1126	1128	40
8.39	+0.0 1079	1082	1084	1087	1090	1092	1095	1097	1100	1102	8.39
38	1055	1057	1059	1062	1064	1067	1069	1072	1074	1077	38
37	1030	1033	1035	1037	1040	1042	1045	1047	1050	1052	37
36	1007	1009	1011	1014	1016	1018	1021	1023	1025	1028	36
35	0983	0986	0988	0990	0993	0995	0997	1000	1002	1004	35
34	0961	0963	0965	0967	0970	0972	0974	0977	0979	0981	34
33	0939	0941	0943	0945	0947	0950	0952	0954	0956	0958	33
32	0917	0919	0921	0923	0926	0928	0930	0932	0934	0936	32
31	0896	0898	0900	0902	0904	0906	0909	0911	0913	0915	31
30	0875	0877	0879	0881	0884	0886	0888	0890	0892	0894	30
8.29	+0.0 0855	0857	0859	0861	0863	0865	0867	0869	0871	0873	8.29
28	0836	0838	0839	0841	0843	0845	0847	0849	0851	0853	28
27	0816	0818	0820	0822	0824	0826	0828	0830	0832	0834	27
26	0798	0799	0801	0803	0805	0807	0809	0811	0813	0814	26
25	0779	0781	0783	0785	0787	0788	0790	0792	0794	0796	25

1
009924

$$\text{Log} \frac{1}{1-m}$$

Log m	0	1	2	3	4	5	6	7	8	9	Log m
8.24	+0.0	0761	0763	0765	0767	0769	0770	0772	0774	0776	8.24
23		0744	0746	0747	0749	0751	0753	0754	0756	0758	23
22		0727	0729	0730	0732	0734	0735	0737	0739	0740	22
21		0710	0712	0713	0715	0717	0718	0720	0722	0723	21
20		0694	0695	0697	0699	0700	0702	0704	0705	0707	20
8.19	+0.0	0678	0680	0681	0683	0684	0686	0687	0689	0691	8.19
18		0662	0664	0665	0667	0669	0670	0672	0673	0675	18
17		0647	0649	0650	0652	0653	0655	0656	0658	0659	17
16		0632	0634	0635	0637	0638	0640	0641	0643	0644	16
15		0618	0619	0621	0622	0624	0625	0627	0628	0631	15
14		0604	0605	0607	0608	0609	0611	0612	0614	0615	14
13		0590	0591	0593	0594	0595	0597	0598	0600	0601	13
12		0576	0578	0579	0580	0582	0583	0584	0586	0587	12
11		0563	0564	0566	0567	0568	0570	0571	0572	0574	11
10		0550	0552	0553	0554	0555	0557	0558	0559	0561	10
8.09	+0.0	0538	0539	0540	0541	0543	0544	0545	0546	0548	8.09
03		0525	0527	0528	0529	0530	0531	0533	0534	0535	03
07		0513	0515	0516	0517	0518	0519	0521	0522	0523	07
06		0502	0503	0504	0505	0506	0507	0509	0510	0511	06
05		0490	0491	0492	0494	0495	0496	0497	0498	0499	05
04		0479	0480	0481	0482	0483	0484	0486	0487	0488	04
03		0468	0469	0470	0471	0472	0473	0474	0476	0477	03
02		0457	0458	0459	0460	0461	0463	0464	0465	0466	02
01		0447	0448	0449	0450	0451	0452	0453	0454	0455	01
00		0437	0438	0439	0440	0441	0442	0443	0444	0445	00
7.9	+0.0	0346	0355	0363	0371	0380	0389	0398	0407	0417	7.9
8		0275	0281	0288	0295	0302	0309	0316	0323	0331	8
7		0218	0223	0229	0234	0239	0245	0251	0257	0263	7
6		0173	0177	0181	0186	0190	0194	0199	0204	0208	6
5		0138	0141	0144	0147	0151	0154	0158	0162	0165	5
4		0109	0112	0114	0117	0120	0123	0125	0128	0131	4
3		0037	0039	0091	0093	0095	0097	0100	0102	0104	3
2		0069	0071	0072	0074	0076	0077	0079	0081	0083	2
1		0055	0056	0057	0059	0060	0061	0063	0064	0066	1
0		0044	0045	0046	0047	0048	0049	0050	0051	0052	0

$$\text{Log} \frac{1}{1-m}$$

Log m	0	1	2	3	4	5	6	7	8	9	Log m
6.9	+0.0	0035	0035	0036	0037	0038	0039	0040	0041	0042	6.9
8		0027	0028	0029	0029	0030	0031	0032	0032	0033	8
7		0022	0022	0023	0023	0024	0024	0025	0026	0026	7
6		0017	0018	0018	0019	0019	0019	0020	0020	0021	6
5		0014	0014	0014	0015	0015	0015	0016	0016	0017	5
4		0011	0011	0011	0012	0012	0012	0013	0013	0013	4
3		0009	0009	0009	0009	0010	0010	0010	0010	0011	3
2		0007	0007	0007	0007	0008	0008	0008	0008	0009	2
1		0006	0006	0006	0006	0006	0006	0006	0006	0007	1
0		0004	0004	0005	0005	0005	0005	0005	0005	0005	0
5.	+0.0	0000	0001	0001	0001	0001	0001	0002	0002	0003	5.
5. n	10.0	0000	9999	9999	9999	9999	9999	9998	9998	9997	5. n
6.0n	9.9	9996	9996	9996	9995	9995	9995	9995	9995	9995	6.0n
1n		9995	9994	9994	9994	9994	9994	9994	9994	9993	1n
2n		9993	9993	9993	9993	9993	9992	9992	9992	9992	2n
3n		9991	9991	9991	9991	9991	9990	9990	9990	9990	3n
4n		9989	9989	9989	9988	9988	9988	9988	9987	9987	4n
5n		9986	9986	9986	9985	9985	9985	9984	9984	9984	5n
6n		9983	9982	9982	9982	9981	9981	9980	9980	9979	6n
7n		9978	9978	9977	9977	9976	9976	9975	9974	9974	7n
8n		9973	9972	9971	9971	9970	9969	9969	9968	9967	8n
9n		9966	9965	9964	9963	9962	9961	9960	9960	9959	9n
7.0n	9.9	9957	9956	9955	9954	9952	9951	9950	9949	9948	7.0n
1n		9945	9944	9943	9942	9940	9939	9937	9936	9934	1n
2n		9931	9930	9928	9926	9925	9923	9921	9919	9917	2n
3n		9913	9911	9909	9907	9905	9903	9901	9898	9896	3n
4n		9891	9889	9886	9883	9881	9878	9875	9872	9869	4n
5n		9863	9860	9856	9853	9850	9846	9843	9839	9835	5n
6n		9827	9823	9819	9815	9811	9806	9802	9797	9793	6n
7n		9783	9778	9773	9767	9762	9757	9751	9745	9739	7n
8n		9727	9721	9714	9707	9701	9694	9687	9679	9672	8n
9n		9656	9648	9640	9632	9623	9615	9606	9597	9587	9n

9.99889 3

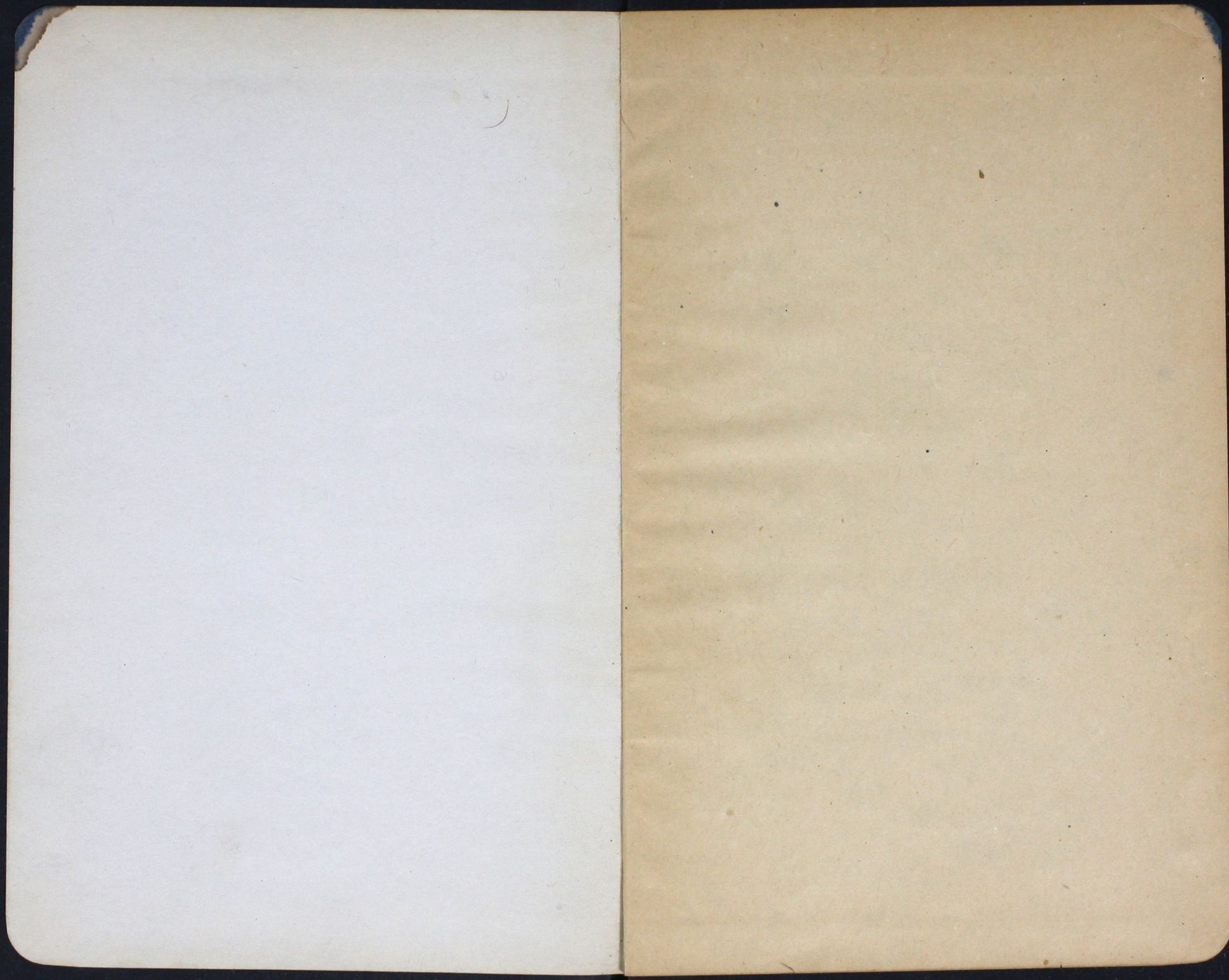
9.99726

$$\text{Log} \frac{1}{1-m}$$

Log m	0	1	2	3	4	5	6	7	8	9	Log m
8.00n	9.9 9568	9567	9566	9565	9564	9563	9562	9561	9560	9559	8.00n
01n		9558	9557	9556	9555	9554	9553	9552	9551	9550	01n
02n		9548	9547	9546	9545	9543	9542	9541	9540	9539	02n
03n		9537	9536	9535	9534	9533	9532	9531	9530	9529	03n
04n		9526	9525	9524	9523	9522	9521	9520	9519	9518	04n
05n		9515	9514	9513	9512	9511	9510	9509	9508	9507	05n
06n		9504	9503	9502	9501	9500	9499	9497	9496	9495	06n
07n		9493	9492	9490	9489	9488	9487	9486	9485	9483	07n
08n		9481	9480	9479	9477	9476	9475	9474	9473	9471	08n
09n		9469	9468	9467	9465	9464	9463	9462	9460	9458	09n
8.10n	9.9 9457	9455	9454	9453	9452	9450	9449	9448	9447	9445	8.10n
11n		9444	9443	9442	9440	9439	9438	9436	9435	9434	11n
12n		9431	9430	9429	9427	9426	9425	9423	9422	9421	12n
13n		9418	9417	9415	9414	9413	9411	9410	9409	9407	13n
14n		9405	9403	9402	9401	9399	9398	9396	9395	9394	14n
15n		9391	9389	9388	9387	9385	9384	9382	9381	9380	15n
16n		9377	9375	9374	9373	9371	9370	9368	9367	9365	16n
17n		9362	9361	9359	9358	9357	9355	9354	9352	9351	17n
18n		9348	9346	9345	9343	9342	9340	9339	9337	9336	18n
19n		9333	9331	9330	9328	9326	9325	9323	9322	9320	19n
8.20n	9.9 9317	9316	9314	9312	9311	9309	9308	9306	9305	9303	8.20n
21n		9301	9300	9298	9297	9295	9293	9292	9290	9288	21n
22n		9285	9284	9282	9280	9279	9277	9275	9274	9272	22n
23n		9269	9267	9265	9264	9262	9260	9259	9257	9255	23n
24n		9252	9250	9248	9247	9245	9243	9241	9240	9238	24n
25n		9235	9233	9231	9229	9228	9226	9224	9222	9220	25n
26n		9217	9215	9213	9211	9210	9208	9206	9204	9202	26n
27n		9199	9197	9195	9193	9191	9190	9188	9186	9184	27n
28n		9180	9178	9177	9175	9173	9171	9169	9167	9165	28n
29n		9161	9159	9158	9156	9154	9152	9150	9148	9146	29n
8.30n	9.9 9142	9140	9138	9136	9134	9132	9130	9128	9126	9124	8.30n
31n		9122	9120	9118	9116	9114	9112	9110	9108	9106	31n
32n		9102	9100	9098	9096	9094	9092	9090	9088	9086	32n
33n		9081	9079	9077	9075	9073	9071	9069	9066	9064	33n
34n		9060	9058	9056	9054	9052	9049	9047	9045	9043	34n

$$\text{Log} \frac{1}{1-m}$$

Log m	0	1	2	3	4	5	6	7	8	9	Log m
8.35n	9.9 9039	9036	9034	9032	9030	9027	9025	9023	9021	9019	8.35n
36n		9016	9014	9012	9010	9007	9005	9003	9001	8998	36n
37n		8994	8991	8989	8987	8985	8982	8980	8978	8975	37n
38n		8971	8968	8966	8963	8961	8959	8956	8954	8952	38n
39n		8947	8944	8942	8940	8937	8935	8932	8930	8928	39n
8.40n	9.9 8923	8920	8918	8915	8913	8910	8908	8905	8903	8900	8.40n
41n		8898	8895	8893	8890	8888	8885	8883	8880	8878	41n
42n		8873	8870	8867	8865	8862	8860	8857	8854	8852	42n
43n		8847	8844	8841	8839	8836	8833	8831	8828	8825	43n
44n		8820	8817	8815	8812	8809	8807	8804	8801	8798	44n
45n		8793	8790	8787	8785	8782	8779	8776	8774	8771	45n
46n		8765	8762	8760	8757	8754	8751	8748	8745	8743	46n
47n		8737	8734	8731	8728	8725	8722	8720	8717	8714	47n
48n		8708	8705	8702	8699	8696	8693	8690	8687	8684	48n
49n		8678	8675	8672	8669	8666	8663	8660	8657	8654	49n
8.50n	9.9 8648	8645	8642	8639	8636	8633	8629	8626	8623	8620	8.50n
51n		8617	8614	8611	8608	8604	8601	8598	8595	8592	51n
52n		8585	8582	8579	8576	8572	8569	8566	8563	8559	52n
53n		8553	8550	8546	8543	8540	8536	8533	8530	8526	53n
54n		8520	8516	8513	8510	8506	8503	8499	8496	8493	54n
55n		8486	8482	8479	8476	8472	8469	8465	8462	8458	55n
56n		8451	8448	8444	8441	8437	8434	8430	8426	8423	56n
57n		8416	8412	8409	8405	8401	8398	8394	8390	8387	57n
58n		8380	8376	8372	8368	8365	8361	8357	8354	8350	58n
59n		8342	8339	8335	8331	8327	8324	8320	8316	8312	59n
8.60n	9.9 8305	8301	8297	8293	8289	8285	8281	8278	8274	8270	8.60n



110 30
51 28
68 02

h m s
40 05 5

360° in 20 min
12° in 1 h

120

119 30

57 23

62 07

31 03

119 40
70 33
49 07

24 37
114 31

58 57

480
45

175 03 20

165

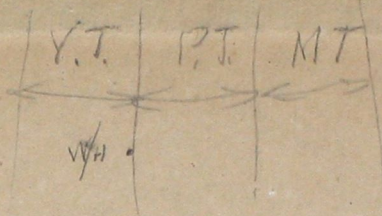
10 30

8 45

175 38 45

29° 40'

150 135 120 105



5^h 48^m

5^h 42

7 30

13^h 12^m

over 12 hrs low tide as per
in 1 h with off shore

120 38 30

359 35 12

480 13 42

120 13 42

300 13 42

300 26 45

300 26 45

