

14 Dec 2011

$$\begin{array}{r}
 1^{\text{h}} \text{ UT: } \text{GHA}_{\Delta} = 334^{\circ} 16.7 \quad N = 10.8 \\
 \text{GHA}_{\gamma} \quad \quad \quad 97 \quad 21.8 \\
 \hline
 \text{SHA}_{\Delta} \quad \quad \quad 236 \quad 54.9 \quad \Delta = -32.7 \\
 \\
 \delta \quad N \quad 15 \quad 58.0 \quad d = 9.1 \\
 \\
 \text{SD} \quad \quad \quad \quad \quad 15.5
 \end{array}$$

$$\begin{array}{r}
 2^{\text{h}} \text{ UT: } \quad \quad \quad 348^{\circ} 46.5 \\
 \quad \quad \quad \quad \quad \quad \quad 112 \quad 24.3 \\
 \hline
 \quad \quad \quad \quad \quad \quad \quad 236 \quad 22.2 \\
 \\
 \quad \quad \quad \quad \quad \quad \quad 15 \quad 48.9
 \end{array}$$

We observe the moons bright limb (left) passing the (upper) meridian to the south at $T_1 = 0$.

We observe a (fictitious) star with $\text{SHA} = 236^{\circ} 0.0$ passing the same meridian at $T_2 = 1^{\text{m}} 23^{\text{s}}$

$$\begin{array}{r}
 \text{SHA}_{\star} \quad \quad 236^{\circ} 0.0 \\
 \Delta \text{SHA} \quad \quad \quad 20.8 \\
 \hline
 \text{SHA}_{\Delta} \quad \quad 236 \quad 20.8 \\
 \text{SD}' \quad \quad \quad \quad 16.1 \\
 \hline
 \text{SHA}_{\Delta} \quad \quad 236 \quad 36.9 \\
 \text{at } 1^{\text{h}} \text{ UT} \quad 236 \quad \underline{54.9} \\
 \quad \quad \quad \quad \quad -18.0
 \end{array}$$

(Applies increments and corrections for $T_2 - T_1$)

$$\text{SD}' = \text{SD} \cdot \sec \delta = \begin{bmatrix} 1.190 \\ 0.017 \\ 1.207 \end{bmatrix} = 16.1$$

$$\begin{array}{r}
 -18.0 \cdot 3600^{\text{s}} \\
 -32.7 \\
 \hline
 \begin{bmatrix} 1.25527 \\ 3.55630 \\ 4.81157 \\ 1.51455 \\ \hline 3.29702 \end{bmatrix} = 1982^{\text{s}} = 33^{\text{m}} 2^{\text{s}}
 \end{array}$$

$$\text{GHA}_{\Delta} \text{ at } 1^{\text{h}} 33^{\text{m}} 2^{\text{s}} \left\{ \begin{array}{l} 334 \quad 16.7 \\ \quad \quad 7 \quad 52.9 \\ \quad \quad \quad \quad 6.0 \\ \hline 342 \quad 15.6 \end{array} \right\} \text{ incr. and corrections moon}$$

$$\begin{array}{r}
 \text{SD}' \quad \quad \quad \quad \quad 16.1 \\
 \hline
 \text{GHA}_{\Delta} \quad 341 \quad 59.3 = \text{W long} \\
 \quad \quad \quad \quad \quad \quad \quad 359 \quad 60.0 \\
 \hline
 \quad \quad \quad \quad \quad \quad \quad 18^{\circ} 0.7' \quad \text{E long}
 \end{array}$$