

Sunny Sheh

1. FL C $\phi = 26.4^\circ N$, $80.1^\circ W$
S'12 pitch.

$$\theta = \tan^{-1}\left(\frac{S}{12}\right) = 22.62^\circ \quad \alpha = 90 - 22.62 = 67.38^\circ$$

$\sin r_2$

$$\sin(67.38) \sin(26.4) -$$

$$\cos(67.38) \cos(26.4) \cos(-60)$$

$$= 0.41043207 - 0.172253$$

$$= 0.2381788$$

$$\delta = 13.78^\circ$$

$$\cos w = \frac{\sin(67.38) - \sin(13.78) \sin(26.4)}{\cos(13.78) \cos(26.4)}$$

$$= \frac{0.817166}{0.8609} = 0.9393488$$

$$w = 20.06^\circ$$

$$\sigma = 23.45^\circ \sin \left[\frac{360 \cdot (n - 80)}{365} \right]$$

$$\sin^{-1} \frac{13.78}{23.45} = \frac{360(n - 80)}{365}$$

$$35.99 =$$

$$36.00 \quad n = 116.5 \quad \text{or } n = 116$$

$$116 = 4/26$$

$$144 \quad n = 226 = 8/14$$

$$T = .12 + \frac{20.06}{.15} = 13.33733$$

$$13.33 = 1:30$$

$$\frac{80.01 - 75}{.15} \times 60 = 20.04 \quad \begin{array}{r} 212:20 \\ + 1:30 \\ \hline 13:50 \end{array}$$

$$2:50 \quad 4/26 \quad \text{and } 8/14$$

$$2 \quad I_L = 2A, \quad I_0 = 10^{-10} A, \quad R = 300k$$

$$I = I_L - I_0 \left(e^{\frac{qV}{kT}} - 1 \right)$$

$$I_L = I_C \quad @ \quad V = 0$$

$$P_{max} = I_{sc} V_{oc}$$

$$V_{oc} = \frac{kT}{q} \ln \frac{I_L}{I_0}$$

$$V_{oc} = \frac{300 \left(1.38 \times 10^{-23} \text{ J/K} \right)}{1.6 \times 10^{-19} \text{ C}} \ln \frac{2A}{10^{-10} A}$$

$$V_{oc} = 0.5541 \text{ V} \quad P_{max} = 0.5541 \text{ V} (2A)$$

$$= 1.11 \text{ W}$$

$$4. \quad \phi = 40^\circ \text{ N}$$

$$h = L \sin 30^\circ$$

$$d = h / \tan \alpha$$

$$h = 3$$

$$L \sin 90^\circ$$

$$\frac{h}{\sin 90^\circ} = L$$

~~$$L \sin 90^\circ$$~~

$$\frac{3}{\sin 90^\circ} = L$$

~~$$\frac{h}{\sin}$$~~

$$L = 3$$

$$\sin \alpha = 3 \text{ ft}$$

$$d = \frac{h}{\tan \alpha}$$

$$3 \text{ ft} = 0.9144 \text{ m}$$

$$\alpha = 66.06$$

$$d = \frac{3}{\tan 66.06} = \frac{0.9144 \text{ m}}{\tan 66.06}$$

$$d = 0.40597 \text{ m}$$