

March 2000 Q.1

Dep: $33^{\circ} 56' S$ 2153.59 $018^{\circ} 26' E$
 A $36^{\circ} 45' S$ 2359.87 $019^{\circ} 00' E$

 $2^{\circ} 49'$ 206.285 $34 E$

$$\text{True Course} = \frac{D' \text{ long}}{DMP}$$

$$\text{True Co.} = \frac{34}{206.28} = 9.359596 E$$

$$D' \text{ lat} = \text{Dist} \times \cos \text{Co.}$$

$$\text{Dist} = \frac{D' \text{ lat}}{\cos \text{Co.}} = \frac{169}{\cos 9.359596} = \underline{\underline{171.28 \text{ mi}}}$$

A = $36^{\circ} 45' S$ 2359.87 $019^{\circ} 00' E$
 M $40^{\circ} 00' S$ 2607.64 $055^{\circ} 00' E$

 $3^{\circ} 15' S$ 247.77 $216^{\circ} E$
 195

$$\text{True Course} = \frac{D' \text{ long}}{DMP} = \frac{2160}{247.77}$$

$$\text{Course} = 83.456297 E$$

$$\text{Dist} = \frac{D' \text{ lat}}{\cos \text{Co.}} = \frac{195}{\cos 83.456297} = \underline{\underline{1711.11}}$$

M $40^{\circ} 00' S$ $55^{\circ} 00' E$
 S $40^{\circ} 00' S$ $100^{\circ} 00' E$

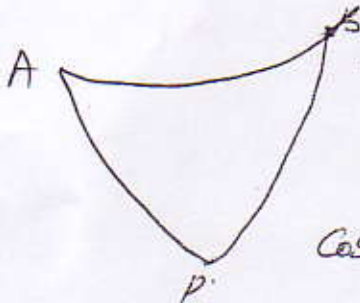
 $45^{\circ} 00'$ $2700 E$

$$= \frac{Dep}{D' \text{ long}} = \cos \text{m' lat}$$

$$Dep = D' \text{ long} \times \cos \text{lat}$$

$$Dep = 2700 \times \cos 40 = \underline{\underline{2068.32}}$$

S $40^{\circ} 00' S$ $100^{\circ} 00' E$
 ARRIVAL $34^{\circ} 54' S$ $138^{\circ} 25' E$



PA = 50
 PB = 55.1
 P = 38.41667

$$\cos AB = \cos P \times \sin PA \times \sin PB + \cos PA \times \cos PB$$

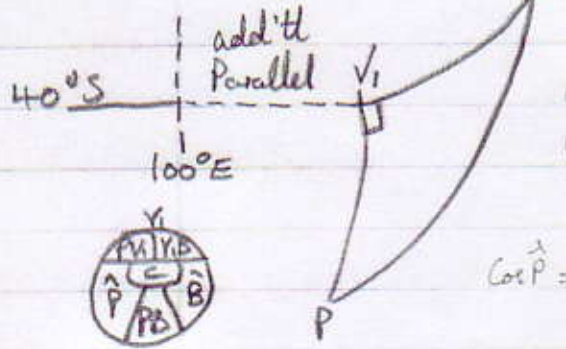
$$\begin{aligned} \cos AB &= \cos 38.41667 \times \sin 50 \times \sin 55.1 + \cos 50 \times \cos 55.1 \\ &= 30.68027 \\ &= \underline{\underline{1840.81 \text{ miles}}} \end{aligned}$$

$$\text{Total distance} = 57.91.53 \text{ miles} + 25$$

$$\text{Final total distance} = \underline{\underline{5816.53 \text{ miles}}}$$

2/1 SEA: Mar 2000, alternative final leg to stay North of 40°S

Q1



Adelaide 'B' = 34° 54' S 138° 25' E

PV1 = 50°, PB = 55°

$$\cos PB = \cos V1B \therefore V1B = \cos^{-1}(\cos 55^\circ) = 27.11406$$

$$\cos PV1 = \cos 50^\circ \therefore PV1 = \frac{27.11406}{\cos 50^\circ} = 1626.84$$

$$\cos P = \frac{\tan PV1}{\tan PB} = \frac{\tan 50^\circ}{\tan 55^\circ} \therefore P = 33.75936 = 33^\circ 45.6' W$$

$$\text{Long 'B'} = 138^\circ 25' 0'' E$$

$$\text{Long V1} = 104^\circ 39.4'' E$$

$$100^\circ E$$

$$D_{\text{long}} = 4^\circ 39.4'' E = 279.41$$

$$\text{Dep} = D_{\text{long}} \cos lat = 279.4 \times \cos 40^\circ = 214.03$$

$$+ 1626.84$$

$$+ 2068.32$$

$$+ 1711.11$$

$$+ 171.28$$

$$\hline 5791.58$$

$$+ 25$$

$$\text{Total Distance} = 5816.58 \text{ miles}$$

Ques 2 March 2000

Using frigate initial pos find 1st Approx
Steps CT using CT + start time find the first
 Approx run time.
 Using run time

Soln

① CT @ $52^{\circ}00' \text{S}$ = 0658 LMT

LIT $56^{\circ}48' \text{W}$ = 0347

GMT = 10 45 16^m

Start = 20 40 15^m

1st Approx run = 14 05 @ 18K = 253.5'

Dlat = Dist x Cos Co
 = 253.5 x Cos 248
 = 95' S

Frigate Initial Pos $52^{\circ}00' \text{S}$ $056^{\circ}48' \text{W}$
 dlat $1^{\circ}35' \text{S}$ $6^{\circ}28.6' \text{W}$
 $53^{\circ}35' \text{S}$ $63^{\circ}16.6' \text{W}$

M'lat = $52^{\circ}47.5' \text{S}$

Dep = Dist x Sin Co
 = 253.5 x Sin 248
 = 235' W

CT @ 52°S = 0658

CT @ 54°S = 0704

CT @ $53^{\circ}35' \text{S}$ = 0703

LIT $063^{\circ}16.6' \text{W}$ = 0413

Dlong = Dep / Cos lat
 = $\frac{235}{\text{Cos } 52^{\circ}47.5'}$
 = 388.6' W

GMT = 11:16 on 16^m

Start = 20:40 on 15^m

2nd run = 14:36 @ 18K = 262.8'

$262.2 \times \text{Cos } 248$
 = 98.4' S

Initial Pos $52^{\circ}00' \text{S}$ $056^{\circ}48' \text{W}$
 $1^{\circ}38.4' \text{S}$ $6^{\circ}43.3' \text{W}$
 $53^{\circ}38.4' \text{S}$ $63^{\circ}31.3' \text{W}$

M'lat = $52^{\circ}49.2' \text{S}$

$\frac{243.7}{\text{Cos } 52^{\circ}49.1}$
 = 403.3'

①① OICF Pos = $50^{\circ}32' \text{S}$ $065^{\circ}15' \text{W}$
 RV Pos = $53^{\circ}38.4' \text{S}$ $063^{\circ}31.3' \text{W}$
 $3^{\circ}06.4' \text{S}$ $01^{\circ}43.7' \text{E}$
 $186.4' \text{S}$ $103.7' \text{E}$
 M'lat = $52^{\circ}05.2' \text{S}$

Dep = Dlong x Cos lat
 = 63.72' E

Tan Co = dep / dlat

Co = 518.87°E

Dist = Dlat / Cos Co = 197' Ans
 Steer = $161.1^{\circ} (7)$ for 197' Spd = $\frac{197}{14.6} = 13.49 \text{Kt}$