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ANNEXURE 1

EXAMINATION NOTES AND DEVIATION CARD

1. All relevant working must be shown on the answer sheet.
2. All work done on the chart must be done lightly, using a 2B pencil.
3. Corrections applicable to courses and bearings must be calculated correct to the nearest 1° and plotted to a similar accuracy.

DEVIATION CARD

Mag. Head	Dev.	Comp. Head	Mag. Head	Dev.	Comp. Head
000	4° E	356	180	3° E	177
010	5° E	005	190	4° E	186
020	4° E	016	200	5° E	195
030	3° E	027	210	4° E	206
040	2° E	038	220	3° E	217
050	1° E	049	230	2° E	228
060	1° W	061	240	1° E	239
070	2° W	072	250	0°	250
080	3° W	083	260	1° W	261
090	4° W	094	270	2° W	272
100	5° W	105	280	3° W	283
110	4° W	114	290	4° W	294
120	3° W	123	300	5° W	305
130	2° W	132	310	4° W	314
140	1° W	141	320	3° W	323
150	0°	150	330	2° W	332
160	1° E	159	340	1° W	341
170	2° E	168	350	2° E	348

ANNEXURE 2

PREDICTED HOURLY HEIGHTS in METRES																													
WALVIS BAY															NOVEMBER 2001														
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
Thur 1	0.86	1.19	1.47	1.61	1.57	1.39	1.11	0.78	0.50	0.37	0.41	0.59	0.86	1.17	1.46	1.62	1.60	1.43	1.14	0.78	0.44	0.25	0.26	0.42					
Fri 2	0.69	1.02	1.34	1.56	1.61	1.50	1.27	0.96	0.63	0.41	0.36	0.48	0.70	0.99	1.30	1.54	1.62	1.53	1.30	0.98	0.62	0.34	0.24	0.32					
Sat 3	0.54	0.83	1.16	1.44	1.59	1.57	1.41	1.14	0.81	0.52	0.37	0.41	0.57	0.81	1.11	1.38	1.55	1.58	1.42	1.17	0.84	0.51	0.30	0.29					
Sun 4	0.43	0.67	0.96	1.26	1.49	1.56	1.49	1.30	1.02	0.70	0.47	0.40	0.49	0.67	0.91	1.18	1.40	1.50	1.47	1.31	1.06	0.74	0.47	0.35					
Mon 5	0.40	0.56	0.78	1.05	1.31	1.46	1.49	1.40	1.20	0.92	0.64	0.48	0.48	0.58	0.75	0.96	1.19	1.36	1.42	1.37	1.23	0.99	0.70	0.5					
Tues 6	0.44	0.51	0.66	0.86	1.09	1.28	1.40	1.41	1.32	1.14	0.88	0.66	0.55	0.57	0.85	0.78	0.97	1.15	1.28	1.33	1.31	1.18	0.97	0.73					
Wed 7	0.59	0.56	0.61	0.71	0.88	1.08	1.24	1.33	1.35	1.29	1.12	0.90	0.72	0.64	0.64	0.67	0.77	0.92	1.08	1.20	1.27	1.28	1.19	1.01					
Thur 8	0.81	0.70	0.65	0.65	0.71	0.85	1.02	1.17	1.26	1.33	1.30	1.16	0.96	0.81	0.71	0.65	0.64	0.70	0.84	0.99	1.14	1.28	1.32	1.25					
Fri 9	1.09	0.92	0.78	0.69	0.63	0.67	0.80	0.96	1.12	1.27	1.37	1.36	1.23	1.05	0.88	0.72	0.60	0.55	0.61	0.75	0.93	1.12	1.30	1.39					
Sat 10	1.34	1.19	1.00	0.82	0.66	0.57	0.60	0.74	0.92	1.12	1.32	1.46	1.46	1.32	1.12	0.89	0.67	0.49	0.43	0.52	0.68	0.91	1.16	1.4					
Sun 11	1.50	1.44	1.27	1.04	0.79	0.58	0.48	0.54	0.70	0.92	1.17	1.42	1.58	1.56	1.39	1.14	0.84	0.55	0.36	0.33	0.44	0.65	0.94	1.26					
Mon 12	1.51	1.61	1.52	1.30	1.02	0.71	0.47	0.40	0.50	0.69	0.96	1.27	1.55	1.68	1.62	1.41	1.10	0.73	0.41	0.23	0.25	0.41	0.66	1.02					
Tues 13	1.38	1.63	1.66	1.55	1.29	0.94	0.60	0.37	0.35	0.48	0.72	1.04	1.39	1.66	1.75	1.64	1.37	1.00	0.60	0.28	0.16	0.23	0.44	0.75					
Wed 14	1.14	1.50	1.71	1.71	1.53	1.21	0.82	0.48	0.30	0.33	0.51	0.79	1.14	1.49	1.73	1.78	1.59	1.28	0.87	0.46	0.19	0.14	0.26	0.52					
Thur 15	0.87	1.27	1.59	1.74	1.68	1.46	1.10	0.70	0.38	0.28	0.36	0.57	0.88	1.24	1.58	1.73	1.70	1.50	1.16	0.74	0.37	0.17	0.19	0.35					
Fri 16	0.64	1.00	1.38	1.64	1.72	1.61	1.35	0.97	0.59	0.34	0.30	0.42	0.66	0.97	1.31	1.58	1.67	1.60	1.37	1.02	0.62	0.33	0.22	0.29					
Sat 17	0.49	0.78	1.13	1.44	1.63	1.65	1.50	1.22	0.84	0.51	0.34	0.36	0.51	0.75	1.06	1.35	1.53	1.57	1.47	1.23	0.89	0.56	0.35	0.32					
Sun 18	0.43	0.63	0.91	1.22	1.46	1.57	1.54	1.38	1.08	0.74	0.49	0.40	0.46	0.61	0.84	1.11	1.33	1.45	1.45	1.33	1.10	0.80	0.55	0.43					
Mon 19	0.45	0.57	0.77	1.02	1.26	1.43	1.49	1.43	1.25	0.98	0.70	0.52	0.49	0.56	0.71	0.91	1.12	1.28	1.35	1.33	1.22	1.01	0.76	0.59					
Tues 20	0.54	0.58	0.70	0.87	1.08	1.26	1.37	1.40	1.33	1.16	0.91	0.70	0.59	0.59	0.65	0.78	0.94	1.10	1.21	1.26	1.24	1.13	0.96	0.78					
Wed 21	0.67	0.65	0.69	0.78	0.93	1.08	1.23	1.30	1.32	1.26	1.10	0.90	0.75	0.68	0.67	0.71	0.81	0.94	1.06	1.15	1.19	1.18	1.10	0.96					
Thur 22	0.83	0.75	0.73	0.75	0.82	0.94	1.07	1.18	1.25	1.28	1.22	1.09	0.93	0.81	0.74	0.70	0.72	0.80	0.91	1.02	1.11	1.17	1.18	1.11					
Fri 23	1.00	0.90	0.82	0.77	0.76	0.81	0.92	1.04	1.15	1.24	1.28	1.23	1.12	0.98	0.86	0.75	0.69	0.69	0.77	0.88	1.00	1.11	1.20	1.21					
Sat 24	1.16	1.06	0.95	0.84	0.75	0.73	0.78	0.89	1.02	1.15	1.26	1.31	1.27	1.15	1.01	0.86	0.71	0.63	0.64	0.73	0.86	1.01	1.16	1.26					
Sun 25	1.28	1.21	1.10	0.96	0.81	0.70	0.68	0.76	0.88	1.03	1.20	1.33	1.37	1.31	1.17	0.99	0.79	0.62	0.55	0.59	0.71	0.88	1.07	1.25					
Mon 26	1.35	1.35	1.25	1.10	0.92	0.74	0.63	0.63	0.73	0.89	1.09	1.28	1.41	1.43	1.33	1.15	0.91	0.68	0.51	0.47	0.55	0.72	0.94	1.17					
Tues 27	1.36	1.44	1.39	1.28	1.06	0.83	0.64	0.56	0.61	0.75	0.95	1.19	1.39	1.48	1.46	1.30	1.06	0.78	0.54	0.40	0.42	0.58	0.78	1.05					
Wed 28	1.30	1.47	1.50	1.40	1.21	0.96	0.70	0.53	0.51	0.61	0.79	1.04	1.31	1.50	1.55	1.45	1.23	0.94	0.63	0.40	0.33	0.41	0.61	0.88					
Thur 29	1.19	1.44	1.56	1.53	1.37	1.12	0.82	0.57	0.45	0.48	0.64	0.88	1.16	1.43	1.58	1.56	1.40	1.12	0.78	0.48	0.30	0.30	0.45	0.7					
Fri 30	1.02	1.33	1.55	1.61	1.51	1.29	0.99	0.67	0.46	0.40	0.50	0.70	0.98	1.29	1.52	1.61	1.53	1.31	0.99	0.63	0.36	0.25	0.32	0.52					

ANNEXURE 3

A2 ALTITUDE CORRECTION TABLES 10°–90° – SUN, STARS, PLANETS

OCT.—MAR. SUN			APR.—SEPT.			STARS AND PLANETS				DIP				
App. Alt.	Lower Limb	Upper Limb	App. Alt.	Lower Limb	Upper Limb	App. Alt.	Corr ⁿ	App. Alt.	Additional Corr ⁿ	Ht. of Eye	Corr ⁿ	Ht. of Eye	Ht. of Eye	Corr ⁿ
9 34	+10.8	–21.5	9 39	+10.6	–21.2	9 56	–5.3	1997		m		ft.	m	
9 45	+10.9	–21.4	9 51	+10.7	–21.1	10 08	–5.2	VENUS		2.4	–2.8	8.0	1.0	–1.8
9 56	+11.0	–21.3	10 03	+10.8	–21.0	10 20	–5.1	Jan. 1–Sept. 26		2.6	–2.9	8.6	1.5	–2.2
10 08	+11.1	–21.2	10 15	+10.9	–20.9	10 33	–5.0	0		2.8	–3.0	9.2	2.0	–2.5
10 21	+11.2	–21.1	10 27	+11.0	–20.8	10 46	–4.9	60 +0.1		3.0	–3.1	9.8	2.5	–2.8
10 34	+11.3	–21.0	10 40	+11.1	–20.7	11 00	–4.8	Sept. 27–Nov. 16		3.2	–3.2	10.5	3.0	–3.0
10 47	+11.4	–20.9	10 54	+11.2	–20.6	11 14	–4.7	0		3.4	–3.3	11.2	See table	
11 01	+11.5	–20.8	11 08	+11.3	–20.5	11 29	–4.6	0 +0.2		3.6	–3.4	11.9	←	
11 15	+11.6	–20.7	11 23	+11.4	–20.4	11 45	–4.5	41 +0.1		3.8	–3.5	12.6	m	
11 30	+11.7	–20.6	11 38	+11.5	–20.3	12 01	–4.4	76 +0.1		4.0	–3.6	13.3	20	–7.9
11 46	+11.8	–20.5	11 54	+11.6	–20.2	12 18	–4.3	Nov. 17–Dec. 10		4.3	–3.7	14.1	22	–8.3
12 02	+11.9	–20.4	12 10	+11.7	–20.1	12 35	–4.2	0		4.5	–3.8	14.9	24	–8.6
12 19	+12.0	–20.3	12 28	+11.8	–20.0	12 54	–4.1	0 +0.3		4.7	–3.9	15.7	26	–9.0
12 37	+12.1	–20.2	12 46	+11.9	–19.9	13 13	–4.0	34 +0.2		5.0	–4.0	16.5	28	–9.3
12 55	+12.2	–20.1	13 05	+12.0	–19.8	13 33	–3.9	60 +0.1		5.2	–4.1	17.4		
13 14	+12.3	–20.0	13 24	+12.1	–19.7	13 54	–3.8	Dec. 11–Dec. 25		5.5	–4.2	18.3	30	–9.6
13 35	+12.4	–19.9	13 45	+12.2	–19.6	14 16	–3.7	0		5.8	–4.3	19.1	32	–10.0
13 56	+12.5	–19.8	14 07	+12.3	–19.5	14 40	–3.6	0 +0.4		6.1	–4.4	20.1	34	–10.3
14 18	+12.6	–19.7	14 30	+12.4	–19.4	15 04	–3.5	29 +0.3		6.3	–4.5	21.0	36	–10.6
14 42	+12.7	–19.6	14 54	+12.5	–19.3	15 30	–3.4	51 +0.2		6.6	–4.6	22.0	38	–10.8
15 06	+12.8	–19.5	15 19	+12.6	–19.2	15 57	–3.3	68 +0.1		6.9	–4.7	22.9		
15 32	+12.9	–19.4	15 46	+12.7	–19.1	16 26	–3.2	83 +0.1		7.2	–4.8	23.9	40	–11.1
15 59	+13.0	–19.3	16 14	+12.8	–19.0	16 56	–3.1	Dec. 26–Dec. 31		7.5	–4.9	24.9	42	–11.4
16 28	+13.1	–19.2	16 44	+12.9	–18.9	17 28	–3.0	0		7.9	–5.0	26.0	44	–11.7
16 59	+13.2	–19.1	17 15	+13.0	–18.8	18 02	–2.9	26 +0.5		8.2	–5.1	27.1	46	–11.9
17 32	+13.3	–19.0	17 48	+13.1	–18.7	18 38	–2.8	46 +0.4		8.5	–5.2	28.1	48	–12.2
18 06	+13.4	–18.9	18 24	+13.2	–18.6	19 17	–2.7	60 +0.3		8.8	–5.3	29.2		
18 42	+13.5	–18.8	19 01	+13.3	–18.5	19 58	–2.6	73 +0.2		9.2	–5.4	30.4	ft.	
19 21	+13.6	–18.7	19 42	+13.4	–18.4	20 42	–2.5	84 +0.1		9.5	–5.5	31.5	2	–1.4
20 03	+13.7	–18.6	20 25	+13.5	–18.3	21 28	–2.4	MARS		9.9	–5.6	32.7	4	–1.9
20 48	+13.8	–18.5	21 11	+13.6	–18.2	22 19	–2.3	Jan. 1–Jan. 20		10.3	–5.7	33.9	6	–2.4
21 35	+13.9	–18.4	22 00	+13.7	–18.1	23 13	–2.2	May 25–Dec. 31		10.6	–5.8	35.1	8	–2.7
22 26	+14.0	–18.3	22 54	+13.8	–18.0	24 11	–2.1	0		11.0	–5.9	36.3	10	–3.1
23 22	+14.1	–18.2	23 51	+13.9	–17.9	25 14	–2.0	0 +0.1		11.4	–6.0	37.6	See table	
24 21	+14.2	–18.1	24 53	+14.0	–17.8	26 22	–1.9	60 +0.1		11.8	–6.1	38.9	←	
25 26	+14.3	–18.0	26 00	+14.1	–17.7	27 36	–1.8	Jan. 21–May 24		12.2	–6.2	40.1	ft.	
26 36	+14.4	–17.9	27 13	+14.2	–17.6	28 56	–1.7	0		12.6	–6.3	41.5	70	–8.1
27 52	+14.5	–17.8	28 33	+14.3	–17.5	30 24	–1.6	0 +0.2		13.0	–6.4	42.8	75	–8.4
29 15	+14.6	–17.7	30 00	+14.4	–17.4	32 00	–1.5	41 +0.1		13.4	–6.5	44.2	80	–8.7
30 46	+14.7	–17.6	31 35	+14.5	–17.3	33 45	–1.4	76 +0.1		13.8	–6.6	45.5	85	–8.9
32 26	+14.8	–17.5	33 20	+14.6	–17.2	35 40	–1.3			14.2	–6.7	46.9	90	–9.2
34 17	+14.9	–17.4	35 17	+14.7	–17.1	37 48	–1.2			14.7	–6.8	48.4	95	–9.5
36 20	+15.0	–17.3	37 26	+14.8	–17.0	40 08	–1.1			15.1	–6.9	49.8		
38 36	+15.1	–17.2	39 50	+14.9	–16.9	42 44	–1.0			15.5	–7.0	51.3	100	–9.7
41 08	+15.2	–17.1	42 31	+15.0	–16.8	45 36	–0.9			16.0	–7.1	52.8	105	–9.9
43 59	+15.3	–17.0	45 31	+15.1	–16.7	48 47	–0.8			16.5	–7.2	54.3	110	–10.2
47 10	+15.4	–16.9	48 55	+15.2	–16.6	52 18	–0.7			16.9	–7.3	55.8	115	–10.4
50 46	+15.5	–16.8	52 44	+15.3	–16.5	56 11	–0.6			17.4	–7.4	57.4	120	–10.6
54 49	+15.6	–16.7	57 02	+15.4	–16.4	60 28	–0.5			17.9	–7.5	58.9	125	–10.8
59 23	+15.7	–16.6	61 51	+15.5	–16.3	65 08	–0.4			18.4	–7.6	60.5		
64 30	+15.8	–16.5	67 17	+15.6	–16.2	70 11	–0.3			18.8	–7.7	62.1	130	–11.1
70 12	+15.9	–16.4	73 16	+15.7	–16.1	75 34	–0.2			19.3	–7.8	63.8	135	–11.3
76 26	+16.0	–16.3	79 43	+15.8	–16.0	81 13	–0.1			19.8	–7.9	65.4	140	–11.5
83 05	+16.1	–16.2	86 32	+15.9	–15.9	87 03	0.0			20.4	–8.0	67.1	145	–11.7
90 00			90 00			90 00				20.9	–8.1	68.8	150	–11.9
										21.4		70.5	155	–12.1

App. Alt. = Apparent altitude = Sextant altitude corrected for index error and dip.

ANNEXURE 4

1997 JULY 30, 31, AUG. 1 (WED., THURS., FRI.)

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UT	SUN		MOON						Lat.	Twilight		Sunrise	Moonrise					
										Naut.	Civil		30	31	1	2		
	GHA	Dec	GHA	<i>v</i>	Dec	<i>d</i>	HP	h			m		h	m	h	m	h	m
30 WEDNESDAY	00	178 23.9	N18 33.1	231 25.4	9.8	N17 40.2	2.8	56.4	N 72	00	00	01 17	23 03	24 00	00 00	01 19		
	01	193 24.0	32.5	245 54.2	9.9	17 43.0	2.7	56.4	N 70	00	00	02 10	23 45	24 41	00 41	01 51		
	02	208 24.0	31.9	260 23.1	9.8	17 45.7	2.6	56.4	68	00	00	02 41	24 14	00 14	01 08	02 15		
	03	223 24.0	31.3	274 51.9	9.9	17 48.3	2.5	56.4	66	00	00	03 05	24 35	00 35	01 29	02 34		
	04	238 24.0	30.7	289 20.8	9.8	17 50.8	2.5	56.3	64	00	00	02 11	03 23	00 09	01 46	02 49		
	05	253 24.1	30.1	303 49.6	9.9	17 53.3	2.3	56.3	62	00	00	02 37	03 38	00 22	01 07	02 01		
	06	268 24.1	N18 29.5	318 18.5	9.9	N17 55.6	2.2	56.3	60	01	25	02 57	03 51	00 34	01 19	02 13		
	07	283 24.1	28.9	332 47.4	9.9	17 57.8	2.2	56.3	N 58	01	59	03 13	04 02	00 44	01 30	02 23		
	08	298 24.1	28.3	347 16.3	9.9	18 00.0	2.0	56.2	56	02	23	03 27	04 12	00 53	01 40	02 32		
	09	313 24.2	27.7	1 45.2	9.9	18 02.0	1.9	56.2	54	02	42	03 38	04 20	01 01	01 48	02 41		
	10	328 24.2	27.1	16 14.1	9.9	18 03.9	1.9	56.2	52	02	57	03 49	04 28	01 08	01 56	02 48		
	11	343 24.2	26.5	30 43.0	10.0	18 05.8	1.7	56.2	50	03	27	04 10	04 44	01 23	02 12	03 04		
	12	358 24.2	N18 25.8	45 12.0	10.0	N18 07.5	1.6	56.2	45	03	49	04 27	04 57	01 36	02 25	03 17		
	13	13 24.3	25.2	59 41.0	9.9	18 09.1	1.6	56.1	N 40	04	07	04 41	05 09	01 47	02 36	03 28		
	14	28 24.3	24.6	74 09.9	10.0	18 10.7	1.4	56.1	35	04	21	04 52	05 18	01 56	02 46	03 37		
	15	43 24.3	24.0	88 38.9	10.0	18 12.1	1.4	56.1	30	04	44	05 11	05 35	02 13	03 03	03 54		
	16	58 24.3	23.4	103 07.9	10.0	18 13.5	1.3	56.1	20	04	04	05 11	05 35	02 13	03 03	03 54		
	17	73 24.4	22.8	117 36.9	10.1	18 14.8	1.1	56.0	N 10	05	01	05 27	05 49	02 27	03 18	04 09		
	18	88 24.4	N18 22.2	132 06.0	10.0	N18 15.9	1.1	56.0	0	05	16	05 41	06 03	02 40	03 32	04 22		
	19	103 24.4	21.6	146 35.0	10.1	18 17.0	0.9	56.0	S 10	05	29	05 54	06 16	02 54	03 46	04 36		
	20	118 24.5	21.0	161 04.1	10.0	18 17.9	0.9	56.0	20	05	40	06 07	06 30	03 08	04 00	04 50		
	21	133 24.5	20.4	175 33.1	10.1	18 18.8	0.8	56.0	30	05	52	06 21	06 46	03 25	04 18	05 07		
	22	148 24.5	19.7	190 02.2	10.2	18 19.6	0.6	55.9	35	05	58	06 28	06 55	03 34	04 27	05 16		
	23	163 24.5	19.1	204 31.4	10.1	18 20.2	0.6	55.9	40	06	04	06 37	07 06	03 45	04 39	05 27		
31 THURSDAY	00	178 24.6	N18 18.5	219 00.5	10.2	N18 20.8	0.5	55.9	45	06	11	06 46	07 18	03 58	04 52	05 40		
	01	193 24.6	17.9	233 29.7	10.1	18 21.3	0.4	55.9	S 50	06	18	06 58	07 33	04 14	05 09	05 56		
	02	208 24.6	17.3	247 58.8	10.2	18 21.7	0.3	55.8	52	06	22	07 03	07 40	04 22	05 16	06 04		
	03	223 24.7	16.7	262 28.0	10.2	18 22.0	0.1	55.8	54	06	25	07 08	07 48	04 30	05 25	06 12		
	04	238 24.7	16.0	276 57.2	10.3	18 22.1	0.1	55.8	56	06	29	07 14	07 56	04 39	05 34	06 21		
	05	253 24.7	15.4	291 26.5	10.2	18 22.2	0.0	55.8	58	06	33	07 21	08 06	04 50	05 45	06 31		
	06	268 24.8	N18 14.8	305 55.7	10.3	N18 22.2	0.1	55.8	S 60	06	37	07 28	08 17	05 02	05 58	06 43		
	07	283 24.8	14.2	320 25.0	10.3	18 22.1	0.2	55.7	Lat.		Sunset		Twilight		Moonset			
	08	298 24.8	13.6	334 54.3	10.3	18 21.9	0.2	55.7			Civil		Naut.		30	31	1	2
	09	313 24.8	13.0	349 23.6	10.4	18 21.7	0.4	55.7	Naut.	Civil	Naut.	h m	h m	h m	h m	h m	h m	
	10	328 24.9	12.3	3 53.0	10.4	18 21.3	0.5	55.7										
	11	343 24.9	11.7	18 22.4	10.4	18 20.8	0.6	55.7	N 72	00	00	01 17	23 03	24 00	00 00	01 19		
	12	358 24.9	N18 11.1	32 51.8	10.4	N18 20.2	0.6	55.6	N 70	00	00	02 10	23 45	24 41	00 41	01 51		
	13	13 25.0	10.5	47 21.2	10.4	18 19.6	0.8	55.6	68	00	00	02 41	24 14	00 14	01 08	02 15		
	14	28 25.0	09.9	61 50.6	10.5	18 18.8	0.9	55.6	66	00	00	03 05	24 35	00 35	01 29	02 34		
	15	43 25.0	09.2	76 20.1	10.5	18 17.9	0.9	55.6	64	00	00	02 11	03 23	00 09	01 46	02 49		
	16	58 25.1	08.6	90 49.6	10.5	18 17.0	1.1	55.6	62	00	00	02 37	03 38	00 22	01 07	02 01		
	17	73 25.1	08.0	105 19.1	10.6	18 15.9	1.1	55.5	60	01	25	02 57	03 51	00 34	01 19	02 13		
	18	88 25.1	N18 07.4	119 48.7	10.6	N18 14.8	1.2	55.5	N 58	01	59	03 13	04 02	00 44	01 30	02 23		
	19	103 25.2	06.7	134 18.3	10.6	18 13.6	1.3	55.5	56	02	23	03 27	04 12	00 53	01 40	02 32		
	20	118 25.2	06.1	148 47.9	10.6	18 12.3	1.4	55.5	54	02	42	03 38	04 20	01 01	01 48	02 41		
	21	133 25.2	05.5	163 17.5	10.7	18 10.9	1.5	55.5	52	02	57	03 49	04 28	01 08	01 56	02 48		
	22	148 25.3	04.9	177 47.2	10.7	18 09.4	1.6	55.5	50	03	27	04 10	04 44	01 23	02 12	03 04		
	23	163 25.3	04.2	192 16.9	10.7	18 07.8	1.7	55.4	45	03	49	04 27	04 57	01 36	02 25	03 17		
1 FRIDAY	00	178 25.4	N18 03.6	206 46.6	10.8	N18 06.1	1.8	55.4	N 40	03	49	04 27	04 57	01 36	02 25	03 17		
	01	193 25.4	03.0	221 16.4	10.8	18 04.3	1.9	55.4	35	04	07	04 41	05 09	01 47	02 36	03 28		
	02	208 25.4	02.4	235 46.2	10.8	18 02.4	1.9	55.4	30	04	21	04 52	05 18	01 56	02 46	03 37		
	03	223 25.5	01.7	250 16.0	10.9	18 00.5	2.1	55.4	20	04	44	05 11	05 35	02 13	03 03	03 54		
	04	238 25.5	01.1	264 45.9	10.9	17 58.4	2.1	55.3	N 10	05	01	05 27	05 49	02 27	03 18	04 04		
	05	253 25.5	18 00.5	279 15.8	10.9	17 56.3	2.2	55.3	0	05	16	05 41	06 03	02 40	03 32	04 22		
	06	268 25.6	N17 59.8	293 45.7	10.9	N17 54.1	2.3	55.3	S 10	05	29	05 54	06 16	02 54	03 46	04 36		
	07	283 25.6	59.2	308 15.6	11.0	17 51.8	2.4	55.3	20	05	40	06 07	06 30	03 08	04 00	04 50		
	08	298 25.6	58.6	322 45.6	11.0	17 49.4	2.5	55.3	30	05	52	06 21	06 46	03 25	04 18	05 07		
	09	313 25.7	57.9	337 15.6	11.1	17 46.9	2.6	55.3	35	05	58	06 28	06 55	03 34	04 27	05 16		
	10	328 25.7	57.3	351 45.7	11.1	17 44.3	2.7	55.2	40	06	04	06 37	07 06	03 45	04 39	05 27		
	11	343 25.8	56.7	6 15.8	11.1	17 41.6	2.7	55.2	45	06	08	06 46	07 18	03 58	04 52	05 40		
	12	358 25.8	N17 56.0	20 45.9	11.2	N17 38.9	2.8	55.2	N 50	06	16	06 58	07 33	04 14	05 09	05 56		
	13	13 25.8	55.4	35 16.1	11.2	17 36.1	3.0	55.2	52	06	22	07 03	07 40	04 22	05 16	06 04		
	14	28 25.9	54.8	49 46.3	11.2	17 33.1	3.0	55.2	54	06	26	07 05	07 48	04 30	05 25	06 12		
	15	43 25.9	54.1	64 16.5	11.3	17 30.1	3.1	55.1	56	06	30	07 09	07 52	04 39	05 34	06 21		
	16	58 26.0	53.5	78 46.8	11.3	17 27.0	3.1	55.1	58	06	34	07 13	07 56	04 48	05 43	06 31		
	17	73 26.0	52.9	93 17.1	11.3	17 23.9	3.3	55.1	S 60	06	38	07 17	08 00	04 57	05 52	06 39		
	18	88 26.0	N17 52.2	107 47.4	11.4	N17 20.6	3.3	55.1	SUN		MOON							
	19	103 26.1	51.6	122 17.8	11.4	17 17.3	3.5	55.1	Day	Eqn. of Time	Mer.	Mer. Pass.	Upper	Lower	Age	Phase		
	20	118 26.1	51.0	136 48.2	11.4	17 13.8	3.5	55.1										
	21	133 26.2	50.3	151 18.6	11.5	17 10.3	3.5	55.0	d	m s	m s	h m	h m	h m	d	%		
	22	148 26.2	49.7	165 49.1	11.6	17 06.8	3.7	55.0	30	06 24	06 23	12 06	08 53	21 18	26 14			
	23	163 26.2	49.1	180 19.7	11.5	N17 03.1	3.8	55.0	31	06 22	06 20	12 06	09 44	22 09	27 8			
	SD 15.8	<i>d</i> 0.6	SD 15.3	15.2	15.0			1	06 19	06 17	12 06	10 34	22 59	28 3				

ANNEXURE 5

CONVERSION OF ARC TO TIME

0°-59°			60°-119°			120°-179°			180°-239°			240°-299°			300°-359°			0-00	0-25	0-50	0-75
°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	m	s	s	s
0	0	00	60	4	00	120	8	00	180	12	00	240	16	00	300	20	00	0	0	00	0
1	0	04	61	4	04	121	8	04	181	12	04	241	16	04	301	20	04	1	0	04	1
2	0	08	62	4	08	122	8	08	182	12	08	242	16	08	302	20	08	2	0	08	2
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	12	3
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	16	4
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	20	5
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	24	6
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	28	7
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	32	8
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	36	9
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	40	10
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	44	11
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	48	12
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	52	13
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	56	14
15	1	00	75	5	00	135	9	00	195	13	00	255	17	00	315	21	00	15	1	00	15
16	1	04	76	5	04	136	9	04	196	13	04	256	17	04	316	21	04	16	1	04	16
17	1	08	77	5	08	137	9	08	197	13	08	257	17	08	317	21	08	17	1	08	17
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	12	18
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	16	19
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	20	20
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	24	21
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	28	22
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	32	23
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	36	24
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	40	25
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	44	26
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	48	27
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	52	28
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	56	29
30	2	00	90	6	00	150	10	00	210	14	00	270	18	00	330	22	00	30	2	00	30
31	2	04	91	6	04	151	10	04	211	14	04	271	18	04	331	22	04	31	2	04	31
32	2	08	92	6	08	152	10	08	212	14	08	272	18	08	332	22	08	32	2	08	32
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	12	33
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	16	34
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	20	35
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	24	36
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	28	37
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	32	38
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	36	39
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	40	40
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	44	41
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	48	42
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	52	43
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	56	44
45	3	00	105	7	00	165	11	00	225	15	00	285	19	00	345	23	00	45	3	00	45
46	3	04	106	7	04	166	11	04	226	15	04	286	19	04	346	23	04	46	3	04	46
47	3	08	107	7	08	167	11	08	227	15	08	287	19	08	347	23	08	47	3	08	47
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	12	48
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	16	49
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	20	50
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	24	51
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	28	52
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	32	53
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	36	54
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	40	55
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	44	56
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	48	57
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	52	58
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	56	59

The above table is for converting expressions in arc to their equivalent in time; its main use in this Almanac is for the conversion of longitude for application to L.M.T. (added if west, subtracted if east) to give UT or vice versa, particularly in the case of sunrise, sunset, etc.

ANNEXURE 6

44^m

INCREMENTS AND CORRECTIONS

45^m

44 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	45 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	11 00-0	11 01-8	10 29-9	0-0	0-0	6-0	00	11 15-0	11 16-8	10 44-3	0-0	0-0	6-0
01	11 00-3	11 02-1	10 30-2	0-1	0-1	6-1	01	11 15-3	11 17-1	10 44-5	0-1	0-1	6-1
02	11 00-5	11 02-3	10 30-4	0-2	0-1	6-2	02	11 15-5	11 17-3	10 44-7	0-2	0-2	6-2
03	11 00-8	11 02-6	10 30-6	0-3	0-2	6-3	03	11 15-8	11 17-6	10 45-0	0-3	0-2	6-3
04	11 01-0	11 02-8	10 30-9	0-4	0-3	6-4	04	11 16-0	11 17-9	10 45-2	0-4	0-3	6-4
05	11 01-3	11 03-1	10 31-1	0-5	0-4	6-5	05	11 16-3	11 18-1	10 45-4	0-5	0-4	6-5
06	11 01-5	11 03-3	10 31-4	0-6	0-4	6-6	06	11 16-5	11 18-4	10 45-7	0-6	0-5	6-6
07	11 01-8	11 03-6	10 31-6	0-7	0-5	6-7	07	11 16-8	11 18-6	10 45-9	0-7	0-5	6-7
08	11 02-0	11 03-8	10 31-8	0-8	0-6	6-8	08	11 17-0	11 18-9	10 46-2	0-8	0-6	6-8
09	11 02-3	11 04-1	10 32-1	0-9	0-7	6-9	09	11 17-3	11 19-1	10 46-4	0-9	0-7	6-9
10	11 02-5	11 04-3	10 32-3	1-0	0-7	7-0	10	11 17-5	11 19-4	10 46-6	1-0	0-8	7-0
11	11 02-8	11 04-6	10 32-6	1-1	0-8	7-1	11	11 17-8	11 19-6	10 46-9	1-1	0-8	7-1
12	11 03-0	11 04-8	10 32-8	1-2	0-9	7-2	12	11 18-0	11 19-9	10 47-1	1-2	0-9	7-2
13	11 03-3	11 05-1	10 33-0	1-3	1-0	7-3	13	11 18-3	11 20-1	10 47-4	1-3	1-0	7-3
14	11 03-5	11 05-3	10 33-3	1-4	1-0	7-4	14	11 18-5	11 20-4	10 47-6	1-4	1-1	7-4
15	11 03-8	11 05-6	10 33-5	1-5	1-1	7-5	15	11 18-8	11 20-6	10 47-8	1-5	1-1	7-5
16	11 04-0	11 05-8	10 33-8	1-6	1-2	7-6	16	11 19-0	11 20-9	10 48-1	1-6	1-2	7-6
17	11 04-3	11 06-1	10 34-0	1-7	1-3	7-7	17	11 19-3	11 21-1	10 48-3	1-7	1-3	7-7
18	11 04-5	11 06-3	10 34-2	1-8	1-3	7-8	18	11 19-5	11 21-4	10 48-5	1-8	1-4	7-8
19	11 04-8	11 06-6	10 34-5	1-9	1-4	7-9	19	11 19-8	11 21-6	10 48-8	1-9	1-4	7-9
20	11 05-0	11 06-8	10 34-7	2-0	1-5	8-0	20	11 20-0	11 21-9	10 49-0	2-0	1-5	8-0
21	11 05-3	11 07-1	10 34-9	2-1	1-6	8-1	21	11 20-3	11 22-1	10 49-3	2-1	1-6	8-1
22	11 05-5	11 07-3	10 35-2	2-2	1-6	8-2	22	11 20-5	11 22-4	10 49-5	2-2	1-7	8-2
23	11 05-8	11 07-6	10 35-4	2-3	1-7	8-3	23	11 20-8	11 22-6	10 49-7	2-3	1-7	8-3
24	11 06-0	11 07-8	10 35-7	2-4	1-8	8-4	24	11 21-0	11 22-9	10 50-0	2-4	1-8	8-4
25	11 06-3	11 08-1	10 35-9	2-5	1-9	8-5	25	11 21-3	11 23-1	10 50-2	2-5	1-9	8-5
26	11 06-5	11 08-3	10 36-1	2-6	1-9	8-6	26	11 21-5	11 23-4	10 50-5	2-6	2-0	8-6
27	11 06-8	11 08-6	10 36-4	2-7	2-0	8-7	27	11 21-8	11 23-6	10 50-7	2-7	2-0	8-7
28	11 07-0	11 08-8	10 36-6	2-8	2-1	8-8	28	11 22-0	11 23-9	10 50-9	2-8	2-1	8-8
29	11 07-3	11 09-1	10 36-9	2-9	2-2	8-9	29	11 22-3	11 24-1	10 51-2	2-9	2-2	8-9
30	11 07-5	11 09-3	10 37-1	3-0	2-2	9-0	30	11 22-5	11 24-4	10 51-4	3-0	2-3	9-0
31	11 07-8	11 09-6	10 37-3	3-1	2-3	9-1	31	11 22-8	11 24-6	10 51-6	3-1	2-4	9-1
32	11 08-0	11 09-8	10 37-6	3-2	2-4	9-2	32	11 23-0	11 24-9	10 51-9	3-2	2-4	9-2
33	11 08-3	11 10-1	10 37-8	3-3	2-4	9-3	33	11 23-3	11 25-1	10 52-1	3-3	2-5	9-3
34	11 08-5	11 10-3	10 38-0	3-4	2-5	9-4	34	11 23-5	11 25-4	10 52-4	3-4	2-6	9-4
35	11 08-8	11 10-6	10 38-3	3-5	2-6	9-5	35	11 23-8	11 25-6	10 52-6	3-5	2-7	9-5
36	11 09-0	11 10-8	10 38-5	3-6	2-7	9-6	36	11 24-0	11 25-9	10 52-8	3-6	2-7	9-6
37	11 09-3	11 11-1	10 38-8	3-7	2-7	9-7	37	11 24-3	11 26-1	10 53-1	3-7	2-8	9-7
38	11 09-5	11 11-3	10 39-0	3-8	2-8	9-8	38	11 24-5	11 26-4	10 53-3	3-8	2-9	9-8
39	11 09-8	11 11-6	10 39-2	3-9	2-9	9-9	39	11 24-8	11 26-6	10 53-6	3-9	3-0	9-9
40	11 10-0	11 11-8	10 39-5	4-0	3-0	10-0	40	11 25-0	11 26-9	10 53-8	4-0	3-0	10-0
41	11 10-3	11 12-1	10 39-7	4-1	3-0	10-1	41	11 25-3	11 27-1	10 54-0	4-1	3-1	10-1
42	11 10-5	11 12-3	10 40-0	4-2	3-1	10-2	42	11 25-5	11 27-4	10 54-3	4-2	3-2	10-2
43	11 10-8	11 12-6	10 40-2	4-3	3-2	10-3	43	11 25-8	11 27-6	10 54-5	4-3	3-3	10-3
44	11 11-0	11 12-8	10 40-4	4-4	3-3	10-4	44	11 26-0	11 27-9	10 54-7	4-4	3-3	10-4
45	11 11-3	11 13-1	10 40-7	4-5	3-3	10-5	45	11 26-3	11 28-1	10 55-0	4-5	3-4	10-5
46	11 11-5	11 13-3	10 40-9	4-6	3-4	10-6	46	11 26-5	11 28-4	10 55-2	4-6	3-5	10-6
47	11 11-8	11 13-6	10 41-1	4-7	3-5	10-7	47	11 26-8	11 28-6	10 55-5	4-7	3-6	10-7
48	11 12-0	11 13-8	10 41-4	4-8	3-6	10-8	48	11 27-0	11 28-9	10 55-7	4-8	3-6	10-8
49	11 12-3	11 14-1	10 41-6	4-9	3-6	10-9	49	11 27-3	11 29-1	10 55-9	4-9	3-7	10-9
50	11 12-5	11 14-3	10 41-9	5-0	3-7	11-0	50	11 27-5	11 29-4	10 56-2	5-0	3-8	11-0
51	11 12-8	11 14-6	10 42-1	5-1	3-8	11-1	51	11 27-8	11 29-6	10 56-4	5-1	3-9	11-1
52	11 13-0	11 14-8	10 42-3	5-2	3-9	11-2	52	11 28-0	11 29-9	10 56-7	5-2	3-9	11-2
53	11 13-3	11 15-1	10 42-6	5-3	3-9	11-3	53	11 28-3	11 30-1	10 56-9	5-3	4-0	11-3
54	11 13-5	11 15-3	10 42-8	5-4	4-0	11-4	54	11 28-5	11 30-4	10 57-1	5-4	4-1	11-4
55	11 13-8	11 15-6	10 43-1	5-5	4-1	11-5	55	11 28-8	11 30-6	10 57-4	5-5	4-2	11-5
56	11 14-0	11 15-8	10 43-3	5-6	4-2	11-6	56	11 29-0	11 30-9	10 57-6	5-6	4-2	11-6
57	11 14-3	11 16-1	10 43-5	5-7	4-2	11-7	57	11 29-3	11 31-1	10 57-9	5-7	4-3	11-7
58	11 14-5	11 16-3	10 43-8	5-8	4-3	11-8	58	11 29-5	11 31-4	10 58-1	5-8	4-4	11-8
59	11 14-8	11 16-6	10 44-0	5-9	4-4	11-9	59	11 29-8	11 31-6	10 58-3	5-9	4-5	11-9
60	11 15-0	11 16-8	10 44-3	6-0	4-5	12-0	60	11 30-0	11 31-9	10 58-6	6-0	4-6	12-0

ANNEXURE 7

W

56^m

INCREMENTS AND CORRECTIONS

57^m

56 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	57 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	14 00-0	14 02-3	13 21-7	0-0 0-0	6-0 5-7	12-0 11-3	00	14 15-0	14 17-3	13 36-1	0-0 0-0	6-0 5-8	12-0 11-5
01	14 00-3	14 02-6	13 22-0	0-1 0-1	6-1 5-7	12-1 11-4	01	14 15-3	14 17-6	13 36-3	0-1 0-1	6-1 5-8	12-1 11-6
02	14 00-5	14 02-8	13 22-2	0-2 0-2	6-2 5-8	12-2 11-5	02	14 15-5	14 17-8	13 36-5	0-2 0-2	6-2 5-9	12-2 11-7
03	14 00-8	14 03-1	13 22-4	0-3 0-3	6-3 5-9	12-3 11-6	03	14 15-8	14 18-1	13 36-8	0-3 0-3	6-3 6-0	12-3 11-8
04	14 01-0	14 03-3	13 22-7	0-4 0-4	6-4 6-0	12-4 11-7	04	14 16-0	14 18-3	13 37-0	0-4 0-4	6-4 6-1	12-4 11-9
05	14 01-3	14 03-6	13 22-9	0-5 0-5	6-5 6-1	12-5 11-8	05	14 16-3	14 18-6	13 37-2	0-5 0-5	6-5 6-2	12-5 12-0
06	14 01-5	14 03-8	13 23-2	0-6 0-6	6-6 6-2	12-6 11-9	06	14 16-5	14 18-8	13 37-5	0-6 0-6	6-6 6-3	12-6 12-1
07	14 01-8	14 04-1	13 23-4	0-7 0-7	6-7 6-3	12-7 12-0	07	14 16-8	14 19-1	13 37-7	0-7 0-7	6-7 6-4	12-7 12-2
08	14 02-0	14 04-3	13 23-6	0-8 0-8	6-8 6-4	12-8 12-1	08	14 17-0	14 19-3	13 38-0	0-8 0-8	6-8 6-5	12-8 12-3
09	14 02-3	14 04-6	13 23-9	0-9 0-8	6-9 6-5	12-9 12-1	09	14 17-3	14 19-6	13 38-2	0-9 0-9	6-9 6-6	12-9 12-4
10	14 02-5	14 04-8	13 24-1	1-0 0-9	7-0 6-6	13-0 12-2	10	14 17-5	14 19-8	13 38-4	1-0 1-0	7-0 6-7	13-0 12-5
11	14 02-8	14 05-1	13 24-4	1-1 1-0	7-1 6-7	13-1 12-3	11	14 17-8	14 20-1	13 38-7	1-1 1-1	7-1 6-8	13-1 12-6
12	14 03-0	14 05-3	13 24-6	1-2 1-1	7-2 6-8	13-2 12-4	12	14 18-0	14 20-3	13 38-9	1-2 1-2	7-2 6-9	13-2 12-7
13	14 03-3	14 05-6	13 24-8	1-3 1-2	7-3 6-9	13-3 12-5	13	14 18-3	14 20-6	13 39-2	1-3 1-2	7-3 7-0	13-3 12-7
14	14 03-5	14 05-8	13 25-1	1-4 1-3	7-4 7-0	13-4 12-6	14	14 18-5	14 20-9	13 39-4	1-4 1-3	7-4 7-1	13-4 12-8
15	14 03-8	14 06-1	13 25-3	1-5 1-4	7-5 7-1	13-5 12-7	15	14 18-8	14 21-1	13 39-6	1-5 1-4	7-5 7-2	13-5 12-9
16	14 04-0	14 06-3	13 25-6	1-6 1-5	7-6 7-2	13-6 12-8	16	14 19-0	14 21-4	13 39-9	1-6 1-5	7-6 7-3	13-6 13-0
17	14 04-3	14 06-6	13 25-8	1-7 1-6	7-7 7-3	13-7 12-9	17	14 19-3	14 21-6	13 40-1	1-7 1-6	7-7 7-4	13-7 13-1
18	14 04-5	14 06-8	13 26-0	1-8 1-7	7-8 7-3	13-8 13-0	18	14 19-5	14 21-9	13 40-3	1-8 1-7	7-8 7-5	13-8 13-2
19	14 04-8	14 07-1	13 26-3	1-9 1-8	7-9 7-4	13-9 13-1	19	14 19-8	14 22-1	13 40-6	1-9 1-8	7-9 7-6	13-9 13-3
20	14 05-0	14 07-3	13 26-5	2-0 1-9	8-0 7-5	14-0 13-2	20	14 20-0	14 22-4	13 40-8	2-0 1-9	8-0 7-7	14-0 13-4
21	14 05-3	14 07-6	13 26-7	2-1 2-0	8-1 7-6	14-1 13-3	21	14 20-3	14 22-6	13 41-1	2-1 2-0	8-1 7-8	14-1 13-5
22	14 05-5	14 07-8	13 27-0	2-2 2-1	8-2 7-7	14-2 13-4	22	14 20-5	14 22-9	13 41-3	2-2 2-1	8-2 7-9	14-2 13-6
23	14 05-8	14 08-1	13 27-2	2-3 2-2	8-3 7-8	14-3 13-5	23	14 20-8	14 23-1	13 41-5	2-3 2-2	8-3 8-0	14-3 13-7
24	14 06-0	14 08-3	13 27-5	2-4 2-3	8-4 7-9	14-4 13-6	24	14 21-0	14 23-4	13 41-8	2-4 2-3	8-4 8-1	14-4 13-8
25	14 06-3	14 08-6	13 27-7	2-5 2-4	8-5 8-0	14-5 13-7	25	14 21-3	14 23-6	13 42-0	2-5 2-4	8-5 8-1	14-5 13-9
26	14 06-5	14 08-8	13 27-9	2-6 2-4	8-6 8-1	14-6 13-7	26	14 21-5	14 23-9	13 42-3	2-6 2-5	8-6 8-2	14-6 14-0
27	14 06-8	14 09-1	13 28-2	2-7 2-5	8-7 8-2	14-7 13-8	27	14 21-8	14 24-1	13 42-5	2-7 2-6	8-7 8-3	14-7 14-1
28	14 07-0	14 09-3	13 28-4	2-8 2-6	8-8 8-3	14-8 13-9	28	14 22-0	14 24-4	13 42-7	2-8 2-7	8-8 8-4	14-8 14-2
29	14 07-3	14 09-6	13 28-7	2-9 2-7	8-9 8-4	14-9 14-0	29	14 22-3	14 24-6	13 43-0	2-9 2-8	8-9 8-5	14-9 14-3
30	14 07-5	14 09-8	13 28-9	3-0 2-8	9-0 8-5	15-0 14-1	30	14 22-5	14 24-9	13 43-2	3-0 2-9	9-0 8-6	15-0 14-4
31	14 07-8	14 10-1	13 29-1	3-1 2-9	9-1 8-6	15-1 14-2	31	14 22-8	14 25-1	13 43-4	3-1 3-0	9-1 8-7	15-1 14-5
32	14 08-0	14 10-3	13 29-4	3-2 3-0	9-2 8-7	15-2 14-3	32	14 23-0	14 25-4	13 43-7	3-2 3-1	9-2 8-8	15-2 14-6
33	14 08-3	14 10-6	13 29-6	3-3 3-1	9-3 8-8	15-3 14-4	33	14 23-3	14 25-6	13 43-9	3-3 3-2	9-3 8-9	15-3 14-7
34	14 08-5	14 10-8	13 29-8	3-4 3-2	9-4 8-9	15-4 14-5	34	14 23-5	14 25-9	13 44-2	3-4 3-3	9-4 9-0	15-4 14-8
35	14 08-8	14 11-1	13 30-1	3-5 3-3	9-5 8-9	15-5 14-6	35	14 23-8	14 26-1	13 44-4	3-5 3-4	9-5 9-1	15-5 14-9
36	14 09-0	14 11-3	13 30-3	3-6 3-4	9-6 9-0	15-6 14-7	36	14 24-0	14 26-4	13 44-6	3-6 3-5	9-6 9-2	15-6 15-0
37	14 09-3	14 11-6	13 30-6	3-7 3-5	9-7 9-1	15-7 14-8	37	14 24-3	14 26-6	13 44-9	3-7 3-5	9-7 9-3	15-7 15-0
38	14 09-5	14 11-8	13 30-8	3-8 3-6	9-8 9-2	15-8 14-9	38	14 24-5	14 26-9	13 45-1	3-8 3-6	9-8 9-4	15-8 15-1
39	14 09-8	14 12-1	13 31-0	3-9 3-7	9-9 9-3	15-9 15-0	39	14 24-8	14 27-1	13 45-4	3-9 3-7	9-9 9-5	15-9 15-2
40	14 10-0	14 12-3	13 31-3	4-0 3-8	10-0 9-4	16-0 15-1	40	14 25-0	14 27-4	13 45-6	4-0 3-8	10-0 9-6	16-0 15-3
41	14 10-3	14 12-6	13 31-5	4-1 3-9	10-1 9-5	16-1 15-2	41	14 25-3	14 27-6	13 45-8	4-1 3-9	10-1 9-7	16-1 15-4
42	14 10-5	14 12-8	13 31-8	4-2 4-0	10-2 9-6	16-2 15-3	42	14 25-5	14 27-9	13 46-1	4-2 4-0	10-2 9-8	16-2 15-5
43	14 10-8	14 13-1	13 32-0	4-3 4-0	10-3 9-7	16-3 15-3	43	14 25-8	14 28-1	13 46-3	4-3 4-1	10-3 9-9	16-3 15-6
44	14 11-0	14 13-3	13 32-2	4-4 4-1	10-4 9-8	16-4 15-4	44	14 26-0	14 28-4	13 46-5	4-4 4-2	10-4 10-0	16-4 15-7
45	14 11-3	14 13-6	13 32-5	4-5 4-2	10-5 9-9	16-5 15-5	45	14 26-3	14 28-6	13 46-8	4-5 4-3	10-5 10-1	16-5 15-8
46	14 11-5	14 13-8	13 32-7	4-6 4-3	10-6 10-0	16-6 15-6	46	14 26-5	14 28-9	13 47-0	4-6 4-4	10-6 10-2	16-6 15-9
47	14 11-8	14 14-1	13 32-9	4-7 4-4	10-7 10-1	16-7 15-7	47	14 26-8	14 29-1	13 47-3	4-7 4-5	10-7 10-3	16-7 16-0
48	14 12-0	14 14-3	13 33-2	4-8 4-5	10-8 10-2	16-8 15-8	48	14 27-0	14 29-4	13 47-5	4-8 4-6	10-8 10-4	16-8 16-1
49	14 12-3	14 14-6	13 33-4	4-9 4-6	10-9 10-3	16-9 15-9	49	14 27-3	14 29-6	13 47-7	4-9 4-7	10-9 10-4	16-9 16-2
50	14 12-5	14 14-8	13 33-7	5-0 4-7	11-0 10-4	17-0 16-0	50	14 27-5	14 29-9	13 48-0	5-0 4-8	11-0 10-5	17-0 16-3
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52	14 13-0	14 15-3	13 34-1	5-2 4-9	11-2 10-5	17-2 16-2	52	14 28-0	14 30-4	13 48-5	5-2 5-0	11-2 10-7	17-2 16-5
53	14 13-3	14 15-6	13 34-4	5-3 5-0	11-3 10-6	17-3 16-3	53	14 28-3	14 30-6	13 48-7	5-3 5-1	11-3 10-8	17-3 16-6
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56	14 14-0	14 16-3	13 35-1	5-6 5-3	11-6 10-9	17-6 16-6	56	14 29-0	14 31-4	13 49-4	5-6 5-4	11-6 11-1	17-6 16-9
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58	14 14-5	14 16-8	13 35-6	5-8 5-5	11-8 11-1	17-8 16-8	58	14 29-5	14 31-9	13 49-9	5-8 5-6	11-8 11-3	17-8 17-1
59	14 14-8	14 17-1	13 35-8	5-9 5-6	11-9 11-2	17-9 16-9	59	14 29-8	14 32-1	13 50-1	5-9 5-7	11-9 11-4	17-9 17-2
60	14 15-0	14 17-3	13 36-1	6-0 5-7	12-0 11-3	18-0 17-0	60	14 30-0	14 32-4	13 50-4	6-0 5-8	12-0 11-5	18-0 17-3

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