TU		SOL			LUA					
		AHG	Dec		AHG	v	Dec	d	Ph	
	d h	° ′	° ′		° ′	′	° ′	′		
	20 00	178 05.7	S 0 16.1		148 23.8	11.4	N 6 35.7	11.0	57.7	
	01	193 05.9	15.1		162 54.2	11.3	6 46.7	11.0	57.7	
	02	208 06.1	14.1		177 24.5	11.3	6 57.7	11.0	57.7	
	03	223 06.3	13.1		191 54.8	11.2	7 08.7	10.9	57.7	
	04	238 06.5	12.1		206 25.0	11.2	7 19.6	11.0	57.8	
T	05	253 06.7	11.1		220 55.2	11.1	7 30.6	10.9	57.8	
E	06	268 06.8	S 0 10.1		235 25.3	11.1	N 7 41.5	10.8	57.8	
R	07	283 07.0	09.2		249 55.4	11.0	7 52.3	10.8	57.8	
Ç	08	298 07.2	08.2		264 25.4	11.0	8 03.1	10.8	57.8	
A	09	313 07.4	07.2		278 55.4	10.9	8 13.9	10.7	57.9	
	10	328 07.6	06.2		293 25.3	10.9	8 24.6	10.7	57.9	
F	11	343 07.8	05.2		307 55.2	10.9	8 35.3	10.7	57.9	
E	12	358 07.9	S 0 04.2		322 25.1	10.8	N 8 46.0	10.6	57.9	
I	13	13 08.1	03.2		336 54.9	10.7	8 56.6	10.6	57.9	
R	14	28 08.3	02.2		351 24.6	10.7	9 07.2	10.6	57.9	
A	15	43 08.5	01.3		5 54.3	10.7	9 17.8	10.5	58.0	
	16	58 08.7	S 00.3		20 24.0	10.6	9 28.3	10.4	58.0	
	17	73 08.9	N 00.7		34 53.6	10.5	9 38.7	10.4	58.0	
	18	88 09.1	N 0 01.7		49 23.1	10.5	N 9 49.1	10.4	58.0	
	19	103 09.2	02.7		63 52.6	10.5	9 59.5	10.3	58.0	
	20	118 09.4	03.7		78 22.1	10.4	10 09.8	10.2	58.0	
	21	133 09.6	04.7		92 51.5	10.3	10 20.0	10.2	58.1	
	22	148 09.8	05.7		107 20.8	10.3	10 30.2	10.2	58.1	
	23	163 10.0	06.7		121 50.1	10.2	10 40.4	10.1	58.1	
	21 00	178 10.2	N 0 07.6		136 19.3	10.2	N10 50.5	10.1	58.1	
	01	193 10.3	08.6		150 48.5	10.1	11 00.6	10.0	58.1	
	02	208 10.5	09.6		165 17.6	10.1	11 10.6	9.9	58.1	
	03	223 10.7	10.6		179 46.7	10.0	11 20.5	9.9	58.2	
	04	238 10.9	11.6		194 15.7	9.9	11 30.4	9.8	58.2	
Q	05	253 11.1	12.6		208 44.6	9.9	11 40.2	9.8	58.2	
U	06	268 11.3	N 0 13.6		223 13.5	9.9	N11 50.0	9.7	58.2	
A	07	283 11.5	14.6		237 42.4	9.8	11 59.7	9.6	58.2	
R	08	298 11.6	15.5		252 11.2	9.7	12 09.3	9.6	58.2	
T	09	313 11.8	16.5		266 39.9	9.7	12 18.9	9.5	58.3	
A	10	328 12.0	17.5		281 08.6	9.6	12 28.4	9.4	58.3	
	11	343 12.2	18.5		295 37.2	9.6	12 37.8	9.4	58.3	
	12	358 12.4	N 0 19.5		310 05.8	9.5	N12 47.2	9.3	58.3	
F	13	13 12.6	20.5		324 34.3	9.4	12 56.5	9.3	58.3	
E	14	28 12.8	21.5		339 02.7	9.4	13 05.8	9.1	58.3	
I	15	43 12.9	22.5		353 31.1	9.3	13 14.9	9.1	58.4	
R	16	58 13.1	23.4		7 59.4	9.3	13 24.0	9.1	58.4	
A	17	73 13.3	24.4		22 27.7	9.2	13 33.1	8.9	58.4	
	18	88 13.5	N 0 25.4		36 55.9	9.2	N13 42.0	8.9	58.4	
	19	103 13.7	26.4		51 24.1	9.1	13 50.9	8.8	58.4	
	20	118 13.9	27.4		65 52.2	9.0	13 59.7	8.7	58.4	
	21	133 14.1	28.4		80 20.2	9.0	14 08.4	8.7	58.4	
	22	148 14.2	29.4		94 48.2	8.9	14 17.1	8.6	58.5	
	23	163 14.4	30.4		109 16.1	8.9	14 25.7	8.4	58.5	
	22 00	178 14.6	N 0 31.3		123 44.0	8.8	N14 34.1	8.5	58.5	
	01	193 14.8	32.3		138 11.8	8.7	14 42.6	8.3	58.5	
	02	208 15.0	33.3		152 39.5	8.7	14 50.9	8.2	58.5	
	03	223 15.2	34.3		167 07.2	8.7	14 59.1	8.2	58.5	
	04	238 15.4	35.3		181 34.9	8.5	15 07.3	8.1	58.5	
Q	05	253 15.5	36.3		196 02.4	8.5	15 15.4	7.9	58.6	
U	06	268 15.7	N 0 37.3		210 29.9	8.5	N15 23.3	8.0	58.6	
I	07	283 15.9	38.3		224 57.4	8.4	15 31.3	7.8	58.6	
N	08	298 16.1	39.2		239 24.8	8.3	15 39.1	7.7	58.6	
T	09	313 16.3	40.2		253 52.1	8.3	15 46.8	7.6	58.6	
A	10	328 16.5	41.2		268 19.4	8.2	15 54.4	7.6	58.6	
	11	343 16.7	42.2		282 46.6	8.2	16 02.0	7.4	58.6	
	12	358 16.9	N 0 43.2		297 13.8	8.1	N16 09.4	7.4	58.7	
F	13	13 17.0	44.2		311 40.9	8.0	16 16.8	7.2	58.7	
E	14	28 17.2	45.2		326 07.9	8.0	16 24.0	7.2	58.7	
I	15	43 17.4	46.1		340 34.9	7.9	16 31.2	7.0	58.7	
R	16	58 17.6	47.1		355 01.8	7.9	16 38.2	7.0	58.7	
A	17	73 17.8	48.1		9 28.7	7.8	16 45.2	6.9	58.7	
	18	88 18.0	N 0 49.1		23 55.5	7.8	N16 52.1	6.7	58.7	
	19	103 18.2	50.1		38 22.3	7.7	16 58.8	6.7	58.7	
	20	118 18.3	51.1		52 49.0	7.7	17 05.5	6.6	58.8	
	21	133 18.5	52.1		67 15.7	7.6	17 12.1	6.4	58.8	
	22	148 18.7	53.0		81 42.3	7.5	17 18.5	6.4	58.8	
	23	163 18.9	54.0		96 08.8	7.5	N17 24.9	6.2	58.8	
		SD 16.1	d 1.0		SD 15.8		15.9		16.0	

Lat.	CREP		SOL	LUA - Nascer			
	Naut.	Civil	Nascer	20	21	22	23
°	h m	h m	h m	h m	h m	h m	h m
N 72	03 15	04 45	05 54	06 42	06 29	06 10	05 15
N 70	03 35	04 54	05 55	06 53	06 48	06 44	06 39
68	03 50	05 00	05 56	07 02	07 04	07 09	07 19
66	04 02	05 06	05 57	07 09	07 17	07 28	07 46
64	04 12	05 10	05 58	07 16	07 28	07 44	08 07
62	04 20	05 14	05 58	07 21	07 37	07 57	08 24
60	04 27	05 17	05 59	07 26	07 45	08 08	08 38
N 58	04 33	05 20	06 00	07 31	07 52	08 17	08 51
56	04 39	05 23	06 00	07 34	07 58	08 26	09 01
54	04 43	05 25	06 00	07 38	08 03	08 33	09 11
52	04 47	05 27	06 01	07 41	08 08	08 40	09 19
50	04 51	05 29	06 01	07 44	08 13	08 46	09 26
45	04 58	05 32	06 02	07 50	08 23	09 00	09 43
N 40	05 04	05 35	06 02	07 56	08 31	09 11	09 56
35	05 08	05 37	06 03	08 00	08 38	09 20	10 07
30	05 11	05 39	06 03	08 04	08 45	09 29	10 17
20	05 16	05 41	06 03	08 11	08 56	09 43	10 34
N 10	05 18	05 43	06 04	08 18	09 05	09 56	10 49
0	05 19	05 43	06 04	08 24	09 14	10 08	11 03
S 10	05 19	05 43	06 04	08 30	09 24	10 20	11 17
20	05 16	05 42	06 04	08 36	09 33	10 32	11 32
30	05 12	05 40	06 04	08 43	09 45	10 47	11 50
35	05 09	05 39	06 04	08 48	09 51	10 56	12 00
40	05 05	05 37	06 04	08 53	09 59	11 06	12 12
45	05 00	05 34	06 03	08 58	10 08	11 17	12 26
S 50	04 53	05 31	06 03	09 05	10 18	11 32	12 42
52	04 49	05 29	06 03	09 08	10 23	11 38	12 50
54	04 46	05 28	06 03	09 12	10 29	11 45	12 59
56	04 41	05 25	06 03	09 16	10 35	11 54	13 09
58	04 36	05 23	06 02	09 20	10 42	12 03	13 21
S 60	04 31	05 21	06 02	09 25	10 50	12 14	13 34

Lat.	SOL	CREP		LUA - Pôr			
	Pôr	Civil	Naut.	20	21	22	23
°	h m	h m	h m	h m	h m	h m	h m
N 72	18 23	19 32	21 04	23 13	25 21	01 21	04 11
N 70	18 22	19 23	20 43	22 55	24 49	00 49	02 48
68	18 20	19 17	20 27	22 41	24 25	00 25	02 09
66	18 19	19 11	20 15	22 29	24 07	00 07	01 42
64	18 18	19 06	20 05	22 20	23 52	25 22	01 22
62	18 17	19 02	19 56	22 12	23 40	25 05	01 05
60	18 17	18 58	19 49	22 05	23 29	24 51	00 51
N 58	18 16	18 55	19 43	21 58	23 20	24 40	00 40
56	18 16	18 53	19 37	21 53	23 12	24 29	00 29
54	18 15	18 51	19 33	21 48	23 05	24 20	00 20
52	18 15	18 48	19 28	21 44	22 59	24 12	00 12
50	18 14	18 47	19 25	21 40	22 53	24 05	00 05
45	18 14	18 43	19 17	21 31	22 41	23 50	24 56
N 40	18 13	18 40	19 12	21 24	22 31	23 37	24 42
35	18 12	18 38	19 07	21 18	22 22	23 27	24 30
30	18 12	18 36	19 04	21 13	22 15	23 17	24 19
20	18 11	18 33	18 59	21 03	22 01	23 01	24 01
N 10	18 11	18 32	18 56	20 55	21 50	22 47	23 45
0	18 10	18 31	18 55	20 48	21 39	22 34	23 30
S 10	18 10	18 31	18 56	20 40	21 29	22 21	23 16
20	18 10	18 32	18 58	20 32	21 18	22 07	23 00
30	18 10	18 34	19 02	20 23	21 05	21 51	22 42
35	18 10	18 35	19 05	20 17	20 57	21 41	22 31
40	18 10	18 37	19 09	20 11	20 49	21 31	22 19
45	18 10	18 39	19 14	20 05	20 39	21 18	22 05
S 50	18 10	18 42	19 20	19 56	20 27	21 03	21 47
52	18 10	18 44	19 24	19 52	20 22	20 56	21 39
54	18 10	18 46	19 27	19 48	20 16	20 49	21 30
56	18 11	18 48	19 32	19 44	20 09	20 40	21 20
58	18 11	18 50	19 36	19 38	20 01	20 30	21 08
S 60	18 11	18 52	19 42	19 33	19 53	20 19	20 54

Dia	SOL			LUA			
	ET	(-)	Pass	Pass Merid		Idade	Fase
	00h	12h	Merid	Sup	Inf		
d	m s	m s	h m	h m	h m	d %	
20	07 37	07 29	12 07	14 36	02 11	03 10	
21	07 20	07 11	12 07	15 27	03 01	04 17	
22	07 02	06 53	12 07	16 21	03 53	05 27	