ASSIGNMENT 4

Textbook Assignment: "Celestial Observations and Sight Reduction Methods" continued, chapter 9, pages 9-15 through 9-41.

IN ANSWERING QUESTIONS 4-1 THROUGH 4-9 REFER TO FIGURES 4-A THROUGH 4-E, LOCATED AT THE END OF THIS ASSIGNMENT, TO FIGURE A SUNLINE. THE FOLLOWING INFORMATION IS GIVEN.

DATE:	1 MARCH 1984
DR LATITUDE:	32°14.0'N
DR LONGITUDE:	18°54.O'W
GMT:	11-27-30
HEIGHT OF EYE:	32 FT
ON THE ARC:	1.0'
hs:	41°31.3

4-l. What is the IC correction?

1. 0
2. +l.0
3. -1.0
4. -2.0

4-2. What is the altitude correction?

1. +14.9
2. -14.9
3. +15.2
4. -15.2

4-3. What is the Ho?

1. 41°09.6'
2. 41°24.8'
3. 41°36.5'
4. 41°40.0'

4-4. What is the total GHA?

1. 331°00.0'
2. 335°29.2'
3. 341°54.7'
4. 348°47.2'

4-5. What is the LHA?

1. 324°
2. 330°
3. 346°
4. 356°

4-6. What is the d#?

1. - .5
2. + .5
3. -1.0
4. +l.0

4-7. What is the total declination interpolation correction?

1. 10.7'
2. 20.5'
3. 23.0'
4. 26.3'

4-8. What is the intercept?

1. 22.4 miles away
2. 22.4 miles towards
3. 16.2 miles away
4. 16.2 miles towards

4-9. What is the Zn?

1. 139.2°
2. 139.5°
3. 138.4°
4. 140.2°

UPON FIGURING A SUNLINE YOUR DR LATITUDE IS 37°14.3'N, DECLINATION IS 09°29.4', AND THE LHA IS 300°.

IN ANSWERING QUESTIONS 4-10 AND 4-11 REFER TO FIGURES 9-10 AND 9-11 IN YOUR TEXT.

4-10. What is the d?

1. 35.3
2. 35.4
3. 36.4
4. 36.8

4-11. What is the HC?

1. 28°14.6'
2. 28°15.7'
3. 29°08.4'
4. 29°14.7'

4-12. When plotting a sunline (LOP) which longitude is used to plot the AP on the plotting sheet?

1. The DR longitude
2. The actual longitude
3. The assumed longitude
4. The computed longitude

IN ANSWERING QUESTIONS 4-13 THROUGH 4-17, REFER TO FIGURE 4-F, LOCATED AT THE END OF THIS ASSIGNMENT. FIGURE 4-F PERTAINS TO A CELESTIAL FIX OBTAINED BY THE INTERSECTION OF THREE LINES OF POSITIONS. FIGURE 4-F SHOWS HOW (UNDER IDEAL CONDITIONS) A FIX CAN BE OBTAINED DURING THE DAYTIME BY OBSERVING THE SUN, MOON, AND VENUS. THE SIZE OF THE RESULTING TRIANGLE HAS BEEN ENLARGED IN RELATION TO THE REST OF THE DIAGRAM STRICTLY FOR ILLUSTRATIVE PURPOSES.

4-13. Points A, B, and C in figure 4-F represent

1. known positions
2. assumed positions
3. altitude intercepts
4. azimuth intercepts

4-14. Which line in figure 4-F represents the true azimuth of a celestial body?

1. B-D
2. E-G
3. H-I
4. S-T

4-15. An altitude intercept is represented in figure 4-F by line

1. A-N
2. C-H
3. K-J
4. S-T

4-16. An advanced line of position is represented in figure 4-F by lines

1. B-D and C-H
2. D-F and H-I
3. E-G and L-M
4. K-J and S-T

4-17. In figure 4-F, the 1530 fix should be indicated as being at point

1. W
2. X
3. Y
4. Z

4-18. Which, if any of the LOP, if any, did not need to be advanced?

1. Moon
2. Sirius
3. Venus
4. None of the above

4-19. What is the difference between figuring an LOP of the sun, and the LOP of a star?

1. Subtract SHA from LHA
2. Add SHA to LHA
3. Subtract SHA from LHA
4. Add SHA to GHA

4-20. When figuring planets, which correction(s) is/are applied to GHA?

1. v only
2. d only
3. r factor
4. v and d

4-21. When figuring the Moon, how is the V correction applied?

1. Always added
2. Always subtracted
3. Added in south latitudes only
4. Added in north latitudes only

IN ANSWERING QUESTIONS 4-22 THROUGH 4-34 REFER TO FIGURE 4-C THROUGH 4-E, 4-H AND 4-1, LOCATED AT THE END OF THIS ASSIGNMENT. THE FOLLOWING INFORMATION IS GIVEN.

Body:	ANTARES
DATE:	14 January 1990
DR LATITUDE	36°09.1'N
DR LONGITUDE:	143°27.9E
GMT:	21 18 38
HEIGHT OF EYE:	80 FT
IC:	+3.0'
hs:	21°35.3

4-22. What is the sum of the IC and Dip correction?

1. -5.7'
2. +5.7'
3. -11.7'
4. +11.7'

4-23. What is the Ha?

1. 21° 23.6'
2. 21° 29.6'
3. 21° 41.0'
4. 21° 47.0'

4-24. What is the altitude correction?

1. - 2.4
2. + 2.8
3. +15.0
4. -15.2

4-25. What is the Ho?

1. 21° 18.0'
2. 21° 27.2'
3. 21° 29.6'
4. 21° 30.5'

4-26. What is the total GHA?

1. 73" 44.0'
2. 112° 48.1'
3. 147° 32.8'
4. 186° 32.1'

4-27. What is the assumed longitude?

1. 143° 27.91'
2. 143° 32.1'
3. 143° 37.9'
4. 144° 00.0'

4-28. What is the true Dec?

1. S 26° 18.0'
2. S 26° 21.7'
3. S 26° 24.7'
4. S 26° 33.8'

4-29. What is the Dec INC/d?

1. 18.0 and -39.6'
2. 21.7 and -47.2'
3. 24.7 and +54.0'
4. 33.8 and +54.0'

4-30. What is the total corr?

1. +20.6'
2. -20.6'
3. -19.0'
4. -22.2'

4-31. What is the Hc (Tab)?

1. 21° 24.3'
2. 21° 41.8'
3. 21° 45.5'
4. 21° 50.5'

4-32. What is the computed Hc?

1. 18.0'
2. 28.3'
3. 29.6'
4. 30.5'

4-33. What is the a?

1. 1.3 A
2. 1.3 T
3. 1.6 A
4. 1.8 T

4-34. What is the Zn?

1. 154.0
2. 154.5
3. 205.9
4. 205.8

IN ANSWERING QUESTIONS 4-35 THROUGH 4-44, REDUCING SIGHTS USING H.O. 249, REFER TO FIGURES 9-17, 9-18, AND 9-19 IN YOUR TEXT. THE FOLLOWING INFORMATION IS GIVEN.

DATE:	30 March 1985
LATITUDE:	37° 01.4'N
LONGITUDE:	27° 09.9'W
hs:	49° 41.0' Altair
HEIGHT OF EYE:	40 Feet
GMT:	07 00 00
IC:	+ .7

4-35. What is the dip?

1. -5.4
2. -5.7
3. =6.1
4. -6.3

4-36 What is the Ha?

1. 49° 32.8'
2. 49° 35.6'
3. 49° 53.6'
4. 49° 58.7'

4-37 What is the altitude correction?

1. -.4
2. -.6
3. -.7
4. -.8

4-38. What is the Ho?

1. 49° 23.8'
2. 49° 27.8'
3. 49° 32.9'
4. 49° 34.3'

4-39. What is the total GHA?

1. 291° 36.7'
2. 291° 53.7'
3. 292° 36.7'
4. 292° 46.3'

4-40. What is the LHA?

1. 264°
2. 265°
3. 267°
4. 268°

4-41. What is the Hc?

1. 49° 21.0
2. 49° 23.0
3. 49° 24.0
4. 49° 27.0

4-42. What is the a factor?

1. 10.4 T
2. 10.4 A
3. 12.6 T
4. 12.6 A

4-43. What is the Zn?

1. 120
2. 122
3. 124
4. 126

4-44. What is the assumed longitude?

1. 27° 09.9'
2. 27° 15.4/
3. 27° 36.7'
4. 27° 46.7'

IN ANSWERING QUESTIONS 4-45 THROUGH 4-52, REFER TO FIGURES 4-C, 4-G, AND 4-H, LOCATED AT THE END OF THIS ASSIGNMENT. THE FOLLOWING INFORMATION IS GIVEN TO SOLVE THE LOCAL APPARENT NOON.

DATE:	1 AUGUST 1984
DR LATITUDE:	32°20.1N
DR LONGITUDE:	17°50.0W
ZT LAN OBSERVED:	1218
IC:	1.5
hs:	75°20.1'
HEIGHT OF EYE:	60 FT

4-45. What is the standard meridian?

1. 0°
2. 7 1/2°
3. 15°
4. 22 1/2°

4-46. What is the local mean time of meridian passage?

1. 1206
2. 1218
3. 1230
4. 1300

4-47. What is the zone description?

1. 0
2. +l
3. -1
4. +2

4-48. What is the d correction?

1. +.2
2. -.2
3. +.6
4. -.6

4-49. What is the IC correction?

1. 0
2. (+)1.5
3. (-)1.5
4. +3.0

4-50. What is the Ha?

1. 75°14.1'
2. 75°18.6'
3. 75°21.6'
4. 75°30.0'

4-51. What is the Ho?

1. 75°14.1'
2. 75°18.6'
3. 75°21.6'
4. 75°29.8'

4-52. What is the latitude by LAN?

1. 32°20.0'
2. 32°21.0'
3. 32°21.6'
4. 32°24.2'

4-53. What method(s) is/are used in taking sights of LAN?

1. Maximum altitude only
2. Numerous sights only
3. Altitude suspension
4. Maximum altitude and numerous sights

4-54. Maximum altitude is recommended because of its adaptability to various conditions, and because it develops an insight into how altitude varies near LAN?

1. True
2. False

4-55. When observing LAN, how many minutes prior to the computed time should the observer commence taking sights?

1. 5
2. 10
3. 15
4. 20

4-56. If LAN is accurate, what should the maximum latitude error be?

1. 0.25'
2. 0.50'
3. 1.0'
4. 1.5'

G.M.T.	SUN G.H.A.	SUN Dec	MOON G.H.A.	MOON v	MOON Dec	MOON d	MOON H.P.
d h	° ′	° ′	° ′	′	° ′	′	′
1 00	176 53.4	S 7 35.7	193 39.8	13.6	S18 49.1	9.0	54.0
01	191 53.5	34.8	208 12.4	13.7	18 40.1	8.9	54.0
02	206 53.6	33.8	222 45.1	13.8	18 31.2	9.1	54.0
03	221 53.8	·· 32.9	237 17.9	13.8	18 22.1	9.2	54.0
04	236 53.9	31.9	251 50.7	13.9	18 12.9	9.2	54.0
05	251 54.0	31.0	266 23.6	13.9	18 03.7	9.3	54.0
06	266 54.1	S 7 30.0	280 56.5	14.0	S17 54.4	9.4	54.0
07	281 54.2	29.1	295 29.5	14.0	17 45.0	9.4	54.0
T 08	296 54.4	28.1	310 02.5	14.1	17 35.6	9.5	54.0
H 09	311 54.5	·· 27.2	324 35.6	14.1	17 26.1	9.6	54.0
U 10	326 54.6	26.2	339 08.7	14.2	17 16.5	9.7	54.0
R 11	341 54.7	25.3	353 41.9	14.3	17 06.8	9.7	54.0
S 12	356 54.9	S 7 24.3	8 15.2	14.3	S16 57.1	9.8	54.0
D 13	11 55.0	23.3	22 48.5	14.3	16 47.3	9.8	54.0
A 14	26 55.1	22.4	37 21.8	14.4	16 37.5	10.0	53.9
Y 15	41 55.2	·· 21.4	51 55.2	14.5	16 27.5	10.0	53.9
16	56 55.3	20.5	66 28.7	14.5	16 17.5	10.0	53.9
17	71 55.5	19.5	81 02.2	14.6	16 07.5	10.1	53.9
18	86 55.6	S 7 18.6	95 35.8	14.6	S15 57.4	10.2	53.9
19	101 55.7	17.6	110 09.4	14.6	15 47.2	10.3	53.9
20	116 55.8	16.7	124 43.0	14.8	15 36.9	10.3	53.9
21	131 56.0	·· 15.7	139 16.8	14.7	15 26.6	10.4	53.9
22	146 56.1	14.8	153 50.5	14.8	15 16.2	10.4	53.9
23	161 56.2	13.8	168 24.3	14.9	15 05.8	10.5	53.9
2 00	176 56.3	S 7 12.9	182 58.2	14.9	S14 55.3	10.6	53.9
01	191 56.5	11.9	197 32.1	14.9	14 44.7	10.6	53.9
02	206 56.6	11.0	212 06.0	15.0	14 34.1	10.7	53.9
03	221 56.7	·· 10.0	226 40.0	15.1	14 23.4	10.7	53.9
04	236 56.9	09.0	241 14.1	15.1	14 12.7	10.8	53.9
05	251 57.0	08.1	255 48.2	15.1	14 01.9	10.8	53.9
06	266 57.1	S 7 07.1	270 22.3	15.2	S13 51.1	10.9	53.9
07	281 57.2	06.2	284 56.5	15.2	13 40.2	11.0	53.9
08	296 57.4	05.2	299 30.7	15.3	13 29.2	11.0	53.9
F 09	311 57.5	·· 04.3	314 05.0	15.3	13 18.2	11.0	53.9
R 10	326 57.6	03.3	328 39.3	15.4	13 07.2	11.1	53.9
I 11	341 57.7	02.4	343 13.7	15.4	12 56.1	11.2	53.9
D 12	356 57.9	S 7 01.4	357 48.1	15.4	S12 44.9	11.2	53.9
A 13	11 58.0	7 00.4	12 22.5	15.5	12 33.7	11.2	53.9
Y 14	26 58.1	6 59.5	26 57.0	15.5	12 22.5	11.3	53.9
15	41 58.3	·· 58.5	41 31.5	15.6	12 11.2	11.4	53.9
16	56 58.4	57.6	56 06.1	15.6	11 59.8	11.4	53.9
17	71 58.5	56.6	70 40.7	15.6	11 48.4	11.4	53.9
18	86 58.6	S 6 55.7	85 15.3	15.7	S11 37.0	11.5	53.9
19	101 58.8	54.7	99 50.0	15.7	11 25.5	11.6	53.9
20	116 58.9	53.7	114 24.7	15.7	11 13.9	11.5	53.9
21	131 59.0	·· 52.8	128 59.4	15.8	11 02.4	11.7	53.9
22	146 59.2	51.8	143 34.2	15.8	10 50.7	11.6	53.9
23	161 59.3	50.9	158 09.0	15.9	10 39.1	11.7	53.9
3 00	176 59.4	S 6 49.9	172 43.9	15.8	S10 27.4	11.8	53.9
01	191 59.6	48.9	187 18.7	16.0	10 15.6	11.7	53.9
02	206 59.7	48.0	201 53.7	15.9	10 03.9	11.9	53.9
03	221 59.8	·· 47.0	216 28.6	16.0	9 52.0	11.8	53.9
04	236 59.9	46.1	231 03.6	16.0	9 40.2	11.9	53.9
05	252 00.1	45.1	245 38.6	16.0	9 28.3	12.0	53.9
06	267 00.2	S 6 44.2	260 13.6	16.1	S 9 16.3	11.9	53.9
07	282 00.3	43.2	274 48.7	16.1	9 04.4	12.1	53.9
S 08	297 00.5	42.2	289 23.8	16.1	8 52.3	12.0	53.9
A 09	312 00.6	·· 41.3	303 58.9	16.1	8 40.3	12.1	54.0
T 10	327 00.7	40.3	318 34.0	16.2	8 28.2	12.1	54.0
U 11	342 00.9	39.4	333 09.2	16.2	8 16.1	12.1	54.0
R 12	357 01.0	S 6 38.4	347 44.4	16.2	S 8 04.0	12.2	54.0
D 13	12 01.1	37.4	2 19.6	16.3	7 51.8	12.2	54.0
A 14	27 01.3	36.5	16 54.9	16.2	7 39.6	12.3	54.0
Y 15	42 01.4	·· 35.5	31 30.1	16.3	7 27.3	12.2	54.0
16	57 01.5	34.5	46 05.4	16.3	7 15.1	12.3	54.0
17	72 01.7	33.6	60 40.7	16.4	7 02.8	12.3	54.0
18	87 01.8	S 6 32.6	75 16.1	16.3	S 6 50.5	12.4	54.0
19	102 01.9	31.7	89 51.4	16.4	6 38.1	12.4	54.0
20	117 02.1	30.7	104 26.8	16.4	6 25.7	12.4	54.0
21	132 02.2	·· 29.7	119 02.2	16.4	6 13.3	12.4	54.0
22	147 02.3	28.8	133 37.6	16.4	6 00.9	12.5	54.0
23	162 02.5	27.8	148 13.0	16.5	5 48.4	12.4	54.0
	S.D. 16.2	d 1.0	S.D. 14.7		14.7		14.7

Lat.	Twilight Naut.	Twilight Civil	Sunrise	Moonrise 1	Moonrise 2	Moonrise 3	Moonrise 4
°	h m	h m	h m	h m	h m	h m	h m
N 72	05 04	06 22	07 31	10 18	09 12	08 38	08 12
N 70	05 10	06 20	07 22	09 22	08 47	08 25	08 06
68	05 14	06 19	07 15	08 47	08 28	08 14	08 02
66	05 18	06 17	07 09	08 23	08 13	08 05	07 58
64	05 21	06 16	07 03	08 03	08 01	07 58	07 55
62	05 23	06 15	06 59	07 47	07 50	07 51	07 52
60	05 25	06 13	06 55	07 34	07 41	07 46	07 50
N 58	05 27	06 12	06 52	07 22	07 33	07 41	07 48
56	05 29	06 11	06 49	07 12	07 26	07 36	07 46
54	05 30	06 11	06 46	07 03	07 19	07 32	07 44
52	05 31	06 10	06 43	06 55	07 14	07 29	07 42
50	05 31	06 09	06 41	06 48	07 08	07 25	07 41
45	05 33	06 07	06 36	06 33	06 57	07 18	07 38
N 40	05 33	06 05	06 32	06 20	06 48	07 12	07 35
35	05 33	06 03	06 28	06 09	06 39	07 07	07 33
30	05 33	06 01	06 25	06 00	06 32	07 02	07 31
20	05 31	05 57	06 19	05 43	06 20	06 54	07 27
N 10	05 28	05 53	06 14	05 29	06 09	06 47	07 24
0	05 24	05 48	06 09	05 15	05 59	06 41	07 21
S 10	05 18	05 43	06 04	05 02	05 49	06 34	07 18
20	05 10	05 36	05 58	04 47	05 38	06 27	07 15
30	04 59	05 27	05 52	04 30	05 25	06 19	07 11
35	04 52	05 22	05 48	04 21	05 18	06 14	07 09
40	04 43	05 16	05 44	04 09	05 09	06 08	07 07
45	04 32	05 09	05 39	03 56	04 59	06 02	07 04
S 50	04 19	04 59	05 33	03 40	04 48	05 55	07 01
52	04 12	04 55	05 30	03 32	04 42	05 51	07 00
54	04 04	04 50	05 27	03 24	04 36	05 47	06 58
56	03 56	04 44	05 23	03 14	04 29	05 43	06 56
58	03 46	04 38	05 20	03 03	04 21	05 38	06 54
S 60	03 34	04 31	05 15	02 51	04 12	05 33	06 52

Lat.	Sunset	Twilight Civil	Twilight Naut.	Moonset 1	Moonset 2	Moonset 3	Moonset 4
°	h m	h m	h m	h m	h m	h m	h m
N 72	16 56	18 05	19 23	12 52	15 28	17 29	19 20
N 70	17 04	18 06	19 17	13 47	15 51	17 39	19 23
68	17 11	18 08	19 12	14 20	16 08	17 48	19 25
66	17 17	18 09	19 08	14 44	16 22	17 55	19 26
64	17 22	18 10	19 05	15 02	16 33	18 01	19 27
62	17 27	18 11	19 02	15 17	16 43	18 06	19 29
60	17 30	18 12	19 00	15 30	16 51	18 11	19 30
N 58	17 34	18 13	18 59	15 41	16 58	18 15	19 30
56	17 37	18 14	18 57	15 50	17 05	18 18	19 31
54	17 39	18 15	18 56	15 58	17 10	18 21	19 32
52	17 42	18 16	18 55	16 06	17 15	18 24	19 33
50	17 44	18 16	18 54	16 13	17 20	18 27	19 33
45	17 49	18 18	18 52	16 27	17 30	18 32	19 34
N 40	17 53	18 20	18 52	16 38	17 38	18 37	19 35
35	17 57	18 22	18 51	16 48	17 45	18 41	19 36
30	18 00	18 24	18 52	16 57	17 51	18 44	19 37
20	18 06	18 28	18 53	17 12	18 01	18 50	19 38
N 10	18 11	18 32	18 56	17 25	18 11	18 55	19 39
0	18 15	18 36	19 00	17 37	18 19	19 00	19 40
S 10	18 20	18 42	19 06	17 48	18 28	19 05	19 42
20	18 26	18 48	19 14	18 01	18 37	19 10	19 43
30	18 32	18 56	19 25	18 16	18 47	19 16	19 44
35	18 36	19 01	19 32	18 24	18 53	19 19	19 45
40	18 40	19 07	19 40	18 33	18 59	19 23	19 45
45	18 45	19 15	19 51	18 44	19 07	19 27	19 46
S 50	18 51	19 24	20 04	18 57	19 16	19 32	19 47
52	18 53	19 28	20 11	19 04	19 20	19 35	19 48
54	18 56	19 33	20 18	19 10	19 25	19 37	19 48
56	19 00	19 38	20 27	19 18	19 30	19 40	19 49
58	19 03	19 44	20 36	19 26	19 36	19 43	19 49
S 60	19 07	19 51	20 48	19 36	19 42	19 46	19 50

Day	SUN Eqn. of Time 00ˢ	SUN Eqn. of Time 12ˢ	SUN Mer. Pass.	MOON Mer. Pass. Upper	MOON Mer. Pass. Lower	MOON Age	MOON Phase
	m s	m s	h m	h m	h m	d	
1	12 27	12 21	12 12	11 26	23 48	29	
2	12 15	12 09	12 12	12 09	24 30	30	●
3	12 03	11 56	12 12	12 50	00 30	01	

26NVJ083

Figure 4A.—Nautical Almanac right-hand daily page.

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

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

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Figure 4B.—Nautical Almanac Increments and Corrections page.

ALTITUDE CORRECTION TABLES 10°-90°—SUN, STARS, PLANETS

SUN

OCT.—MAR. App. Alt.	Lower Limb	Upper Limb	APR.—SEPT. App. Alt.	Lower Limb	Upper Limb
°			°		
9 34	+10·8	−21·5	9 39	+10·6	−21·2
9 45	+10·9	−21·4	9 51	+10·7	−21·1
9 56	+11·0	−21·3	10 03	+10·8	−21·0
10 08	+11·1	−21·2	10 15	+10·9	−20·9
10 21	+11·2	−21·1	10 27	+11·0	−20·8
10 34	+11·3	−21·0	10 40	+11·1	−20·7
10 47	+11·4	−20·9	10 54	+11·2	−20·6
11 01	+11·5	−20·8	11 08	+11·3	−20·5
11 15	+11·6	−20·7	11 23	+11·4	−20·4
11 30	+11·7	−20·6	11 38	+11·5	−20·3
11 46	+11·8	−20·5	11 54	+11·6	−20·2
12 02	+11·9	−20·4	12 10	+11·7	−20·1
12 19	+12·0	−20·3	12 28	+11·8	−20·0
12 37	+12·1	−20·2	12 46	+11·9	−19·9
12 55	+12·2	−20·1	13 05	+12·0	−19·8
13 14	+12·3	−20·0	13 24	+12·1	−19·7
13 35	+12·4	−19·9	13 45	+12·2	−19·6
13 56	+12·5	−19·8	14 07	+12·3	−19·5
14 18	+12·6	−19·7	14 30	+12·4	−19·4
14 42	+12·7	−19·6	14 54	+12·5	−19·3
15 06	+12·8	−19·5	15 19	+12·6	−19·2
15 32	+12·9	−19·4	15 46	+12·7	−19·1
15 59	+13·0	−19·3	16 14	+12·8	−19·0
16 28	+13·1	−19·2	16 44	+12·9	−18·9
16 59	+13·2	−19·1	17 15	+13·0	−18·8
17 32	+13·3	19·0	17 48	+13·1	18·7
18 06	+13·4	18·9	18 24	+13·2	18·6
18 42	+13·5	18·8	19 01	+13·3	18·5
19 21	+13·6	18·7	19 42	+13·4	18·4
20 03	+13·7	18·6	20 25	+13·5	18·3
20 48	+13·8	18·5	21 11	+13·6	18·2
21 35	+13·9	18·4	22 00	+13·7	18·1
22 26	+14·0	18·3	22 54	+13·8	18·0
23 22	+14·1	18·2	23 51	+13·9	17·9
24 21	+14·2	18·1	24 53	+14·0	17·8
25 26	+14·3	18·0	26 00	+14·1	17·7
26 36	+14·4	17·9	27 13	+14·2	17·6
27 52	+14·5	17·8	28 33	+14·3	17·5
29 15	+14·6	17·7	30 00	+14·4	17·4
30 46	+14·7	17·6	31 35	+14·5	17·3
32 26	+14·8	17·5	33 20	+14·6	17·2
34 17	+14·9	17·4	35 17	+14·7	17·1
36 20	+15·0	17·3	37 26	+14·8	17·0
38 36	+15·1	17·2	39 50	+14·9	16·9
41 08	+15·2	17·1	42 31	+15·0	16·8
43 59	+15·3	17·0	45 31	+15·1	16·7
47 10	+15·4	16·9	48 55	+15·2	16·6
50 46	+15·5	16·8	52 44	+15·3	16·5
54 49	+15·6	16·7	57 02	+15·4	16·4
59 23	+15·7	16·6	61 51	+15·5	16·3
64 30	+15·8	16·5	67 17	+15·6	16·2
70 12	+15·9	16·4	73 16	+15·7	16·1
76 26	+16·0	16·3	79 43	+15·8	16·0
83 05	+16·1	16·2	86 32	+15·9	15·9
90 00			90 00		

STARS AND PLANETS

App. Alt.	Corrⁿ
°	
9 56	−5·3
10 08	−5·2
10 20	−5·1
10 33	−5·0
10 46	−4·9
11 00	−4·8
11 14	−4·7
11 29	−4·6
11 45	−4·5
12 01	−4·4
12 18	−4·3
12 35	−4·2
12 54	−4·1
13 13	−4·0
13 33	−3·9
13 54	−3·8
14 16	−3·7
14 40	−3·6
15 04	−3·5
15 30	−3·4
15 57	−3·3
16 26	−3·2
16 56	−3·1
17 28	−3·0
18 02	−2·9
18 38	2·8
19 17	2·7
19 58	2·6
20 42	2·5
21 28	2·4
22 19	2·3
23 13	2·2
24 11	2·1
25 14	2·0
26 22	1·9
27 36	1·8
28 56	1·7
30 24	1·6
32 00	1·5
33 45	1·4
35 40	1·3
37 48	1·2
40 08	1·1
42 44	1·0
45 36	0·9
48 47	0·8
52 18	0·7
56 11	0·6
60 28	0·5
65 08	0·4
70 11	0·3
75 34	0·2
81 13	0·1
87 03	0·0
90 00	

App. Alt.	Additional Corrⁿ
1984	
VENUS	
Jan. 1-Dec. 12	
° ′	
60	+0·1
Dec. 13-Dec. 31	
° ′	
0	
41	+0·2
76	+0·1
MARS	
Jan. 1-Mar. 4	
° ′	
0	
60	+0·1
Mar. 5-Apr. 24	
° ′	
0	
41	+0·2
76	+0·1
Apr. 25-June 15	
° ′	
0	
34	+0·3
60	+0·2
80	+0·1
June 16-Aug. 27	
° ′	
0	
41	+0·2
76	+0·1
Aug. 28-Dec. 31	
° ′	
0	
60	+0·1

DIP

Ht. of Eye m	Corrⁿ	Ht. of Eye ft.
2·4	−2·8	8·0
2·6	−2·9	8·6
2·8	−3·0	9·2
3·0	−3·1	9·8
3·2	−3·2	10·5
3·4	−3·3	11·2
3·6	−3·4	11·9
3·8	−3·5	12·6
4·0	−3·6	13·3
4·3	−3·7	14·1
4·5	−3·8	14·9
4·7	−3·9	15·7
5·0	−4·0	16·5
5·2	−4·1	17·4
5·5	−4·2	18·3
5·8	−4·3	19·1
6·1	−4·4	20·1
6·3	−4·5	21·0
6·6	−4·6	22·0
6·9	−4·7	22·9
7·2	−4·8	23·9
7·5	−4·9	24·9
7·9	−5·0	26·0
8·2	−5·1	27·1
8·5	−5·2	28·1
8·8	−5·3	29·2
9·2	−5·4	30·4
9·5	−5·5	31·5
9·9	−5·6	32·7
10·3	−5·7	33·9
10·6	−5·8	35·1
11·0	−5·9	36·3
11·4	−6·0	37·6
11·8	−6·1	38·9
12·2	−6·2	40·1
12·6	−6·3	41·5
13·0	−6·4	42·8
13·4	−6·5	44·2
13·8	−6·6	45·5
14·2	−6·7	46·9
14·7	−6·8	48·4
15·1	−6·9	49·8
15·5	−7·0	51·3
16·0	−7·1	52·8
16·5	−7·2	54·3
16·9	−7·3	55·8
17·4	−7·4	57·4
17·9	−7·5	58·9
18·4	−7·6	60·5
18·8	−7·7	62·1
19·3	−7·8	63·8
19·8	−7·9	65·4
20·4	−8·0	67·1
20·9	−8·1	68·8
21·4		70·5

Ht. of Eye	Corrⁿ
m	
1·0	−1·8
1·5	−2·2
2·0	−2·5
2·5	−2·8
3·0	−3·0
See table ←	
m	
20	−7·9
22	−8·3
24	−8·6
26	−9·0
28	−9·3
30	−9·6
32	−10·0
34	−10·3
36	−10·6
38	−10·8
40	−11·1
42	−11·4
44	−11·7
46	−11·9
48	−12·2
ft.	
2	−1·4
4	−1·9
6	−2·4
8	−2·7
10	−3·1
See table ←	
ft.	
70	−8·1
75	−8·4
80	−8·7
85	−8·9
90	−9·2
95	−9·5
100	−9·7
105	−9·9
110	−10·2
115	−10·4
120	−10·6
125	−10·8
130	−11·1
135	−11·3
140	−11·5
145	−11·7
150	−11·5
155	−12·1

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

26NVJ085

Figure 4C.—Nautical Almanac Altitude Correction Tables.

26NVJ090 **LATITUDE CONTRARY NAME TO DECLINATION** **L.H.A. 30°, 330°**

Dec.	30° Hc	d	Z	31° Hc	d	Z	32° Hc	d	Z	33° Hc	d	Z	34° Hc	d	Z	35° Hc	d	Z	36° Hc	d	Z	37° Hc	d	Z	Dec.
°	° ′	′	°	° ′	′	°	° ′	′	°	° ′	′	°	° ′	′	°	° ′	′	°	° ′	′	°	° ′	′	°	°
0	48 35.4	-45.6	130.9	47 55.8	-46.3	131.7	47 15.6	-47.1	132.5	46 34.7	-47.8	133.3	45 53.2	-48.4	134.1	45 11.2	-49.0	134.8	44 28.7	-49.6	135.5	43 45.6	-50.1	136.2	0
1	47 49.8	46.1	131.9	47 09.5	46.8	132.7	46 28.5	47.5	133.5	45 46.9	48.1	134.2	45 04.8	48.7	134.9	44 22.2	49.3	135.6	43 39.1	49.9	136.3	42 55.5	50.5	136.9	1
2	47 03.7	46.5	132.8	46 22.7	47.3	133.6	45 41.0	47.9	134.3	44 58.8	48.5	135.1	44 16.1	49.1	135.7	43 32.9	49.7	136.4	42 49.2	50.2	137.1	42 05.0	50.7	137.7	2
3	46 17.2	47.0	133.7	45 35.4	47.6	134.5	44 53.1	48.2	135.2	44 10.3	48.8	135.9	43 27.0	49.4	136.5	42 43.2	50.0	137.2	41 59.0	50.5	137.8	41 14.3	51.0	138.4	3
4	45 30.2	47.4	134.6	44 47.8	48.0	135.3	44 04.9	48.6	136.0	43 21.5	49.2	136.7	42 37.6	49.8	137.3	41 53.2	50.2	137.9	41 08.5	50.8	138.5	40 23.3	51.2	139.1	4
5	44 42.8	-47.7	135.5	43 59.8	-48.4	136.2	43 16.3	-49.0	136.8	42 32.3	-49.5	137.5	41 47.8	-50.0	138.1	41 03.0	-50.5	138.7	40 17.7	-50.9	139.2	39 32.1	-51.4	139.8	5
6	43 55.1	48.2	136.3	43 11.4	48.7	137.0	42 27.3	49.2	137.6	41 42.8	49.8	138.2	40 57.8	50.3	138.8	40 12.5	50.8	139.4	39 26.8	51.3	139.9	38 40.7	51.7	140.4	6
7	43 06.9	48.4	137.2	42 22.7	49.0	137.8	41 38.1	49.6	138.4	40 53.0	50.1	139.0	40 07.5	50.5	139.5	39 21.7	51.0	140.1	38 35.5	51.4	140.6	37 49.0	51.9	141.1	7
8	42 18.5	48.8	138.0	41 33.7	49.3	138.6	40 48.5	49.8	139.1	40 02.9	50.3	139.7	39 17.0	50.8	140.2	38 30.7	51.3	140.7	37 44.1	51.7	141.2	36 57.1	52.0	141.7	8
9	41 29.7	49.1	138.8	40 44.4	49.7	139.3	39 58.7	50.1	139.9	39 12.6	50.6	140.4	38 26.2	51.0	140.9	37 39.5	51.5	141.4	36 52.4	51.8	141.9	36 05.1	52.3	142.3	9
10	40 40.6	-49.4	139.5	39 54.7	-49.9	140.1	39 08.6	-50.4	140.6	38 22.0	-50.8	141.1	37 35.2	-51.3	141.6	36 48.0	-51.6	142.1	36 00.6	-52.1	142.5	35 12.8	-52.4	142.9	10
11	39 51.2	49.7	140.3	39 04.8	50.1	140.8	38 18.2	50.6	141.3	37 31.2	51.0	141.8	36 43.9	51.4	142.2	35 56.4	51.9	142.7	35 08.5	52.2	143.1	34 20.4	52.6	143.5	11
12	39 01.5	50.0	141.0	38 14.7	50.4	141.5	37 27.6	50.8	142.0	36 40.2	51.3	142.4	35 52.5	51.7	142.9	35 04.5	52.0	143.3	34 16.3	52.4	143.7	33 27.8	52.8	144.1	12
13	38 11.5	50.2	141.7	37 24.3	50.6	142.2	36 36.8	51.1	142.6	35 48.9	51.4	143.1	34 58.9	51.8	143.5	34 12.5	52.2	143.9	33 23.9	52.6	144.3	32 35.0	52.9	144.7	13
14	37 21.3	50.4	142.4	36 33.7	50.9	142.8	35 45.7	51.3	143.3	34 57.5	51.7	143.7	34 09.0	52.0	144.1	33 20.3	52.4	144.5	32 31.3	52.7	144.9	31 42.1	53.0	145.2	14
15	36 30.9	-50.7	143.1	35 42.8	-51.1	143.5	34 54.4	-51.4	143.9	34 05.8	-51.8	144.3	33 17.0	-52.2	144.7	32 27.9	-52.5	145.1	31 38.6	-52.9	145.4	30 49.1	-53.2	145.8	15
16	35 40.2	50.8	143.7	34 51.7	51.2	144.1	34 03.0	51.6	144.5	33 14.0	52.0	144.9	32 24.8	52.4	145.3	31 35.4	52.7	145.7	30 45.7	53.0	146.0	29 55.9	53.3	146.3	16
17	34 49.4	51.1	144.4	34 00.5	51.5	144.8	33 11.4	51.9	145.2	32 22.0	52.3	145.5	31 32.4	52.5	145.9	30 42.7	52.9	146.2	29 52.7	53.1	146.5	29 02.6	53.5	146.8	17
18	33 58.3	51.3	145.0	33 09.0	51.6	145.4	32 19.5	51.9	145.8	31 29.8	52.3	146.1	30 39.9	52.6	146.4	29 49.8	52.9	146.8	28 59.6	53.3	147.1	28 09.1	53.5	147.4	18
19	33 07.0	51.4	145.6	32 17.4	51.8	146.0	31 27.6	52.2	146.3	30 37.5	52.4	146.7	29 47.3	52.8	147.0	28 56.9	53.1	147.3	28 06.3	53.4	147.6	27 15.6	53.7	147.9	19
20	32 15.6	-51.6	146.2	31 25.6	-52.0	146.6	30 35.4	-52.3	146.9	29 45.1	-52.6	147.2	28 54.5	-52.9	147.5	28 03.8	-53.2	147.8	27 12.9	-53.4	148.1	26 21.9	-53.7	148.4	20
21	31 24.0	51.8	146.8	30 33.6	52.1	147.2	29 43.1	52.4	147.5	28 52.5	52.8	147.8	28 01.6	53.0	148.1	27 10.6	53.3	148.4	26 19.5	53.6	148.6	25 28.2	53.9	148.9	21
22	30 32.2	52.0	147.4	29 41.5	52.3	147.7	28 50.7	52.6	148.0	27 59.7	52.9	148.3	27 08.6	53.2	148.6	26 17.3	53.4	148.9	25 25.9	53.7	149.1	24 34.3	53.9	149.4	22
23	29 40.2	52.1	148.0	28 49.3	52.4	148.3	27 58.1	52.7	148.6	27 06.8	52.9	148.9	26 15.4	53.2	149.1	25 23.9	53.6	149.4	24 32.2	53.8	149.6	23 40.4	54.1	149.8	23
24	28 48.1	52.2	148.6	27 56.9	52.6	148.9	27 05.4	52.8	149.1	26 13.9	53.1	149.4	25 22.2	53.4	149.6	24 30.3	53.6	149.9	23 38.4	53.9	150.1	22 46.3	54.1	150.3	24
25	27 55.9	52.4	149.1	27 04.3	52.6	149.4	26 12.6	52.9	149.7	25 20.8	53.2	149.9	24 28.8	53.5	150.1	23 36.7	53.7	150.4	22 44.5	54.0	150.6	21 52.2	54.2	150.8	25
26	27 03.5	52.4	149.7	26 11.7	52.8	149.9	25 19.7	53.1	150.2	24 27.6	53.3	150.4	23 35.3	53.5	150.6	22 43.0	53.8	150.8	21 50.5	54.0	151.0	20 58.0	54.3	151.2	26
27	26 11.1	52.7	150.2	25 18.9	52.9	150.5	24 26.6	53.1	150.7	23 34.3	53.4	150.9	22 41.8	53.7	151.1	21 49.2	53.9	151.3	20 56.5	54.1	151.5	20 03.7	54.3	151.7	27
28	25 18.4	52.7	150.8	24 26.0	53.0	151.0	23 33.5	53.2	151.2	22 40.9	53.5	151.4	21 48.1	53.7	151.6	20 55.3	54.0	151.8	20 02.4	54.2	152.0	19 09.4	54.4	152.1	28
29	24 25.7	52.8	151.3	23 33.0	53.0	151.5	22 40.3	53.4	151.7	21 47.4	53.6	151.9	20 54.4	53.8	152.1	20 01.3	54.0	152.3	19 08.2	54.3	152.4	18 15.0	54.5	152.6	29
30	23 32.9	-52.9	151.8	22 40.0	-53.2	152.0	21 46.9	-53.4	152.2	20 53.8	-53.7	152.4	20 00.6	-53.9	152.6	19 07.3	54.1	152.7	18 13.9	-54.3	152.9	17 20.5	-54.5	153.0	30
31	22 40.0	53.1	152.3	21 46.8	53.3	152.5	20 53.5	53.5	152.7	20 00.1	53.7	152.9	19 06.7	53.9	153.0	18 13.2	54.2	153.2	17 19.6	54.4	153.3	16 26.0	54.6	153.5	31
32	21 46.9	53.1	152.8	20 53.5	53.4	153.0	20 00.0	53.6	153.2	19 06.4	53.8	153.3	18 12.8	54.1	153.5	17 19.0	54.2	153.6	16 25.2	54.4	153.8	15 31.4	54.6	153.9	32
33	20 53.8	53.2	153.3	20 00.1	53.4	153.5	19 06.4	53.6	153.7	18 12.6	53.9	153.8	17 18.7	54.0	153.9	16 24.8	54.3	154.1	15 30.8	54.5	154.2	14 36.8	54.7	154.3	33
34	20 00.6	53.3	153.8	19 06.7	53.5	154.0	18 12.8	53.8	154.1	17 18.7	53.9	154.3	16 24.7	54.2	154.4	15 30.5	54.3	154.5	14 36.3	54.5	154.6	13 42.1	54.7	154.7	34
35	19 07.3	-53.4	154.3	18 13.2	-53.6	154.5	17 19.0	-53.8	154.6	16 24.8	-54.0	154.7	15 30.5	-54.2	154.8	14 36.2	-54.4	155.0	13 41.8	-54.6	155.1	12 47.4	-54.8	155.2	35
36	18 13.9	53.4	154.8	17 19.6	53.6	154.9	16 25.2	53.8	155.1	15 30.8	54.0	155.2	14 36.3	54.2	155.3	13 41.8	54.4	155.4	12 47.2	54.6	155.5	11 52.6	54.8	155.6	36
37	17 20.5	53.5	155.3	16 26.0	53.7	155.4	15 31.4	53.9	155.5	14 36.8	54.1	155.6	13 42.1	54.3	155.7	12 47.4	54.5	155.8	11 52.6	54.6	155.9	10 57.8	54.8	156.0	37
38	16 27.0	53.6	155.7	15 32.3	53.8	155.9	14 37.5	54.0	156.0	13 42.7	54.2	156.1	12 47.8	54.3	156.2	11 52.9	54.5	156.3	10 58.0	54.7	156.3	10 03.0	54.9	156.4	38
39	15 33.4	53.6	156.2	14 38.5	53.8	156.3	13 43.5	54.0	156.4	12 48.5	54.2	156.5	11 53.5	54.4	156.6	10 58.4	54.6	156.7	10 03.3	54.7	156.8	9 08.1	54.9	156.8	39
40	14 39.8	53.7	156.7	13 44.7	53.9	156.8	12 49.5	54.0	156.9	11 54.3	54.2	157.0	10 59.1	54.4	157.0	10 03.8	54.5	157.1	9 08.6	54.8	157.2	8 13.2	54.9	157.2	40
41	13 46.1	53.7	157.1	12 50.8	53.9	157.2	11 55.5	54.1	157.3	11 00.1	54.3	157.4	10 04.7	54.4	157.5	9 09.3	54.6	157.5	8 13.8	54.8	157.6	7 18.3	54.9	157.6	41
42	12 52.4	53.8	157.6	11 56.9	54.0	157.7	11 01.4	54.1	157.8	10 05.8	54.3	157.8	9 10.3	54.5	157.9	8 14.7	54.7	157.9	7 19.0	54.8	158.0	6 23.4	55.0	158.0	42
43	11 58.6	53.8	158.0	11 02.9	54.0	158.1	10 07.3	54.2	158.2	9 11.5	54.3	158.3	8 15.8	54.5	158.3	7 20.0	54.6	158.4	6 24.2	54.8	158.4	5 28.4	54.9	158.4	43
44	11 04.8	53.9	158.5	10 08.9	54.0	158.6	9 13.1	54.2	158.6	8 17.2	54.4	158.7	7 21.3	54.5	158.7	6 25.4	54.7	158.8	5 29.4	54.8	158.8	4 33.5	55.0	158.8	44
45	10 10.9	-53.9	158.9	9 14.9	-54.0	159.0	8 18.9	-54.2	159.1	7 22.8	-54.3	159.1	6 26.8	-54.4	159.2	5 30.7	-54.7	159.2	4 34.6	-54.8	159.2	3 38.5	-55.0	159.3	45
46	9 17.0	53.9	159.4	8 20.9	54.1	159.4	7 24.7	54.3	159.5	6 28.5	54.4	159.5	5 32.2	54.5	159.6	4 36.0	54.7	159.6	3 39.8	54.9	159.6	2 43.5	55.0	159.6	46
47	8 23.1	54.0	159.8	7 26.8	54.2	159.9	6 30.4	54.3	159.9	5 34.1	54.5	160.0	4 37.7	54.6	160.0	3 41.3	54.7	160.0	2 44.9	54.9	160.0	1 48.5	55.0	160.1	47
48	7 29.1	54.0	160.3	6 32.6	54.1	160.3	5 36.1	54.2	160.4	4 39.6	54.4	160.4	3 43.1	54.6	160.4	2 46.6	54.8	160.4	1 50.0	54.8	160.4	0 53.5	55.0	160.5	48
49	6 35.1	54.0	160.7	5 38.5	54.2	160.8	4 41.9	54.4	160.8	3 45.2	54.5	160.8	2 48.5	54.6	160.8	1 51.8	54.7	160.8	0 55.2	54.9	160.8	0 01.5	-55.0	19.1	49
50	5 41.1	54.0	161.2	4 44.3	-54.1	161.2	3 47.5	54.3	161.2	2 50.7	-54.4	161.2	1 53.9	-54.6	161.2	0 57.1	54.7	161.3	0 00.3	-54.9	161.3	0 56.5	-55.0	18.7	50
51	4 47.1	54.0	161.6	3 50.2	54.2	161.6	2 53.2	54.3	161.6	1 56.3	54.5	161.6	0 59.3	54.6	161.7	0 02.4	54.8	161.7	0 54.6	-54.8	18.3	51
52	3 53.1	54.1	162.0	2 56.0	54.2	162.0	1 58.9	54.3	162.1	1 01.8	54.5	162.1	0 04.7	-54.6	162.1	0 52.4	-54.7	17.9	1 49.4	54.9	17.9	2 46.5	55.0	18.0	52
53	2 59.0	54.1	162.5	2 01.8	54.2	162.5	1 04.6	54.4	162.5	0 07.3	54.4	162.5	0 49.9	-54.6	17.5	1 47.1	54.7	17.5	2 44.3	54.9	17.5	3 41.5	55.0	17.5	53
54	2 04.9	54.1	162.9	1 07.6	54.2	162.9	0 10.2	-54.3	162.9	0 47.1	-54.5	17.1	1 44.5	54.6	17.1	2 41.8	54.7	17.1	3 39.2	54.8	17.1	4 36.5	55.0	17.1	54
55	1 10.8	54.0	163.3	0 13.4	54.2	163.3	0 44.1	-54.4	16.7	1 41.6	-54.5	16.7	2 39.1	-54.6	16.7	3 36.5	-54.7	16.7	4 34.0	-54.8	16.7	5 31.5	-54.9	16.7	55
56	0 16.8	54.1	163.8	0 40.8	-54.3	16.2	1 38.5	54.3	16.2	2 36.1	54.4	16.3	3 33.7	54.5	16.3	4 31.2	54.7	16.3	5 28.8	54.9	16.3	6 26.4	55.0	16.3	56
57	0 37.3	-54.1	15.8	1 35.1	54.2	15.8	2 32.8	54.3	15.8	3 30.5	54.4	15.8	4 28.2	54.6	15.9	5 25.9	54.7	15.9	6 23.7	54.7	15.9	7 21.4	54.9	15.9	57
58	1 31.4	54.1	15.4	2 29.3	54.1	15.4	3 27.1	54.3	15.4	4 24.9	54.3	15.4	5 22.8	54.5	15.4	6 20.6	54.7	15.5	7 18.4	54.8	15.5	8 16.3	54.8	15.5	58
59	2 25.5	54.0	14.9	3 23.4	54.2	14.9	4 21.4	54.3	15.0	5 19.4	54.4	15.0	6 17.3	54.6	15.0	7 15.3	54.6	15.0	8 13.2	54.8	15.1	9 11.1	54.9	15.1	59
60	3 19.5	-54.1	14.5	4 17.6	-54.2	14.5	5 15.7	-54.3	14.5	6 13.8	-54.4	14.6	7 11.9	-54.5	14.6	8 09.9	-54.6	14.6	9 08.0	-54.7	14.7	10 06.0	-54.8	14.7	60
61	4 13.6	54.0	14.1	5 11.8	54.1	14.1	6 10.0	54.3	14.1	7 08.2	54.3	14.1	8 06.4	54.4	14.2	9 04.5	54.6	14.2	10 02.7	54.7	14.3	11 00.8	54.8	14.3	61
62	5 07.6	54.1	13.6	6 05.9	54.2	13.7	7 04.3	54.2	13.7	8 02.5	54.4	13.7	9 00.8	54.5	13.7	9 59.1	54.6	13.8	10 57.4	54.6	13.8	11 55.6	54.8	13.9	62
63	6 01.7	54.0	13.2	7 00.1	54.1	13.2	7 58.5	54.2	13.3	8 56.9	54.3	13.3	9 55.3	54.4	13.3	10 53.7	54.5	13.4	11 52.0	54.6	13.4	12 50.4	54.7	13.5	63
64	6 55.7	53.9	12.8	7 54.2	54.1	12.8	8 52.7	54.2	12.8	9 51.2	54.3	12.9	10 49.7	54.4	12.9	11 48.2	54.4	12.9	12 46.6	54.6	13.0	13 45.1	54.7	13.0	64
65	7 49.6	-54.0	12.3	8 48.3	-54.0	12.3	9 46.9	-54.1	12.4	10 45.5	-54.2	12.4	11 44.1	-54.3	12.5	12 42.6	-54.5	12.5	13 41.2	-54.5	12.6	14 39.8	-54.6	12.6	65
66	8 43.6	53.9	11.9	9 42.3	54.0	11.9	10 41.0	54.1	11.9	11 39.7	54.2	12.0	12 38.4	54.3	12.0	13 37.1	54.4	12.1	14 35.7	54.5	12.1	15 34.4	54.6	12.2	66
67	9 37.5	53.9	11.4	10 36.3	54.0	11.5	11 35.1	54.1	11.5	12 33.9	54.2	11.5	13 32.7	54.2	11.6	14 31.5	54.3	11.6	15 30.2	54.5	11.7	16 29.0	54.5	11.8	67
68	10 31.4	53.9	11.0	11 30.3	53.9	11.0	12 29.2	54.0	11.1	13 28.1	54.1	11.1	14 26.9	54.2	11.2	15 25.8	54.3	11.2	16 24.7	54.3	11.3	17 23.5	54.5	11.3	68
69	11 25.3	53.8	10.5	12 24.2	53.9	10.6	13 23.2	54.0	10.6	14 22.2	54.0	10.7	15 21.1	54.2	10.7	16 20.1	54.2	10.8	17 19.0	54.4	10.8	18 18.0	54.4	10.9	69
70	12 19.1	-53.7	10.1	13 18.1	-53.9	10.1	14 17.2	-53.9	10.2	15 16.2	-54.1	10.2	16 15.3	-54.1	10.3	17 14.3	-54.2	10.3	18 13.4	-54.2	10.4	19 12.4	-54.3	10.4	70
71	13 12.8	53.7	9.6	14 12.0	53.8	9.7	15 11.1	53.9	9.7	16 10.3	53.9	9.8	17 09.4	54.0	9.8	18 08.5	54.1	9.9	19 07.6	54.2	9.9	20 06.7	54.3	10.0	71
72	14 06.5	53.7	9.2	15 05.8	53.7	9.2	16 05.0	53.8	9.3	17 04.2	53.9	9.3	18 03.4	54.0	9.4	19 02.6	54.0	9.4	20 01.8	54.1	9.5	21 01.0	54.2	9.5	72
73	15 00.2	53.6	8.7	15 59.5	53.7	8.7	16 58.8	53.7	8.8	17 58.1	53.8	8.8	18 57.4	53.9	8.9	19 56.6	54.0	8.9	20 55.9	54.1	9.0	21 55.2	54.1	9.1	73
74	15 53.8	53.5	8.2	16 53.2	53.6	8.3	17 52.5	53.7	8.3	18 51.9	53.8	8.4	19 51.3	53.8	8.4	20 50.6	53.9	8.5	21 50.0	53.9	8.5	22 49.3	54.0	8.6	74
75	16 47.3	-53.5	7.8	17 46.8	-53.5	7.8	18 46.2	-53.6	7.9	19 45.7	-53.6	7.9	20 45.1	-53.7	8.0	21 44.5	-53.8	8.0	22 43.9	-53.9	8.1	23 43.3	-54.0	8.1	75
76	17 40.8	53.4	7.3	18 40.3	53.5	7.3	19 39.8	53.6	7.4	20 39.3	53.6	7.4	21 38.8	53.7	7.5	22 38.3	53.7	7.5	23 37.8	53.8	7.6	24 37.3	53.8	7.6	76
77	18 34.2	53.4	6.8	19 33.8	53.4	6.9	20 33.4	53.4	6.9	21 32.9	53.5	6.9	22 32.5	53.6	7.0	23 32.0	53.7	7.0	24 31.6	53.7	7.1	25 31.1	53.8	7.2	77
78	19 27.6	53.2	6.3	20 27.2	53.3	6.4	21 26.8	53.4	6.4	22 26.4	53.5	6.5	23 26.1	53.4	6.5	24 25.7	53.5	6.6	25 25.3	53.6	6.6	26 24.9	53.6	6.7	78
79	20 20.8	53.2	5.8	21 20.5	53.2	5.9	22 20.2	53.3	5.9	23 19.9	53.3	6.0	24 19.5	53.4	6.0	25 19.2	53.4	6.1	26 18.9	53.5	6.1	27 18.5	53.6	6.2	79
80	21 14.0	-53.1	5.3	22 13.7	-53.2	5.4	23 13.5	-53.2	5.4	24 13.2	-53.2	5.5	25 12.9	-53.3	5.5	26 12.6	-53.4	5.6	27 12.4	-53.3	5.6	28 12.1	-53.4	5.7	80
81	22 07.1	53.0	4.8	23 06.9	53.0	4.9	24 06.7	53.0	4.9	25 06.4	53.2	5.0	26 06.2	53.2	5.0	27 06.0	53.2	5.0	28 05.7	53.3	5.1	29 05.5	53.3	5.1	81
82	23 00.1	52.9	4.3	23 59.9	52.9	4.4	24 59.7	53.0	4.4	25 59.6	53.0	4.4	26 59.4	53.0	4.5	27 59.2	53.1	4.5	28 59.0	53.1	4.6	29 58.8	53.2	4.6	82
83	23 53.0	52.8	3.8	24 52.8	52.9	3.9	25 52.7	52.9	3.9	26 52.6	52.9	3.9	27 52.4	53.0	4.0	28 52.3	53.0	4.0	29 52.1	53.0	4.0	30 52.0	53.0	4.1	83
84	24 45.8	52.7	3.3	25 45.7	52.7	3.3	26 45.6	52.7	3.4	27 45.5	52.7	3.4	28 45.4	52.8	3.4	29 45.3	52.8	3.5	30 45.1	52.9	3.5	31 45.0	52.9	3.5	84
85	25 38.5	-52.5	2.8	26 38.4	-52.6	2.8	27 38.3	-52.6	2.8	28 38.2	-52.7	2.8	29 38.2	-52.6	2.9	30 38.1	-52.7	2.9	31 38.0	-52.7	2.9	32 37.9	-52.8	3.0	85
86	26 31.0	52.5	2.2	27 31.0	52.4	2.3	28 30.9	52.5	2.3	29 30.9	52.5	2.3	30 30.8	52.6	2.3	31 30.8	52.5	2.3	32 30.7	52.6	2.4	33 30.7	52.6	2.4	86
87	27 23.5	52.3	1.7	28 23.4	52.4	1.7	29 23.4	52.4	1.7	30 23.4	52.3	1.7	31 23.4	52.3	1.8	32 23.3	52.4	1.8	33 23.3	52.4	1.8	34 23.3	52.4	1.8	87
88	28 15.8	52.2	1.1	29 15.8	52.2	1.1	30 15.8	52.2	1.2	31 15.7	52.3	1.2	32 15.7	52.3	1.2	33 15.7	52.2	1.2	34 15.7	52.2	1.2	35 15.7	52.2	1.2	88
89	29 08.0	52.0	0.6	30 08.0	52.0	0.6	31 08.0	52.0	0.6	32 08.0	52.0	0.6	33 08.0	52.0	0.6	34 07.9	52.1	0.6	35 07.9	52.1	0.6	36 07.9	52.1	0.6	89
90	30 00.0	-51.9	0.0	31 00.0	-51.9	0.0	32 00.0	-51.9	0.0	33 00.0	-51.9	0.0	34 00.0	-51.9	0.0	35 00.0	-51.9	0.0	36 00.0	-51.9	0.0	37 00.0	-51.9	0.0	90
	30°			31°			32°			33°			34°			35°			36°			37°			

S Lat { LHA greater than 180° Zn=180°−Z; LHA less than 180° Zn=180°+Z } **LATITUDE SAME NAME AS DECLINATION** **L.H.A. 150°, 210°**

Figure 4D.—Pub. 229 right-hand sample page.

INTERPOLATION TABLE

Dec Inc	10'	20'	30'	40'	50'	Decimals	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
16.0	2.6	5.3	8.0	10.6	13.3	.0	0.0	0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.5
16.1	2.7	5.3	8.0	10.7	13.4	.1	0.0	0.3	0.6	0.9	1.1	1.4	1.7	2.0	2.2	2.5
16.2	2.7	5.4	8.1	10.8	13.5	.2	0.1	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.3	2.5
16.3	2.7	5.4	8.1	10.9	13.6	.3	0.1	0.4	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.6
16.4	2.7	5.5	8.2	10.9	13.7	.4	0.1	0.4	0.7	0.9	1.2	1.5	1.8	2.0	2.3	2.6
16.5	2.8	5.5	8.3	11.0	13.8	.5	0.1	0.4	0.7	1.0	1.2	1.5	1.8	2.1	2.3	2.6
16.6	2.8	5.5	8.3	11.1	13.8	.6	0.2	0.4	0.7	1.0	1.3	1.5	1.8	2.1	2.4	2.6
16.7	2.8	5.6	8.4	11.2	13.9	.7	0.2	0.5	0.7	1.0	1.3	1.6	1.8	2.1	2.4	2.7
16.8	2.8	5.6	8.4	11.2	14.0	.8	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.1	2.4	2.7
16.9	2.9	5.7	8.5	11.3	14.1	.9	0.2	0.5	0.8	1.1	1.3	1.6	1.9	2.2	2.4	2.7
17.0	2.8	5.6	8.5	11.3	14.1	.0	0.0	0.3	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.6
17.1	2.8	5.7	8.5	11.4	14.2	.1	0.0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
17.2	2.8	5.7	8.6	11.4	14.3	.2	0.1	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
17.3	2.9	5.8	8.6	11.5	14.4	.3	0.1	0.4	0.7	1.0	1.3	1.5	1.8	2.1	2.4	2.7
17.4	2.9	5.8	8.7	11.6	14.5	.4	0.1	0.4	0.7	1.0	1.3	1.6	1.9	2.2	2.4	2.7
17.5	2.9	5.8	8.8	11.7	14.6	.5	0.1	0.4	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8
17.6	2.9	5.9	8.8	11.7	14.7	.6	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.2	2.5	2.8
17.7	3.0	5.9	8.9	11.8	14.8	.7	0.2	0.5	0.8	1.1	1.4	1.7	2.0	2.2	2.5	2.8
17.8	3.0	6.0	8.9	11.9	14.9	.8	0.2	0.5	0.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9
17.9	3.0	6.0	9.0	12.0	15.0	.9	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9
18.0	3.0	6.0	9.0	12.0	15.0	.0	0.0	0.3	0.6	0.9	1.2	1.5	1.8	2.2	2.5	2.8
18.1	3.0	6.0	9.0	12.0	15.1	.1	0.0	0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.5	2.8
18.2	3.0	6.0	9.1	12.1	15.1	.2	0.1	0.4	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8
18.3	3.0	6.1	9.1	12.2	15.2	.3	0.1	0.4	0.7	1.0	1.3	1.6	1.9	2.3	2.6	2.9
18.4	3.1	6.1	9.2	12.3	15.3	.4	0.1	0.4	0.7	1.0	1.4	1.7	2.0	2.3	2.6	2.9
18.5	3.1	6.2	9.3	12.3	15.4	.5	0.2	0.5	0.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9
18.6	3.1	6.2	9.3	12.4	15.5	.6	0.2	0.5	0.8	1.1	1.4	1.7	2.0	2.3	2.7	3.0
18.7	3.1	6.3	9.4	12.5	15.6	.7	0.2	0.5	0.8	1.1	1.4	1.8	2.1	2.4	2.7	3.0
18.8	3.2	6.3	9.4	12.6	15.7	.8	0.2	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0
18.9	3.2	6.3	9.5	12.6	15.8	.9	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.1
19.0	3.1	6.3	9.5	12.6	15.8	.0	0.0	0.3	0.6	1.0	1.3	1.6	1.9	2.3	2.6	2.9
19.1	3.2	6.3	9.5	12.7	15.9	.1	0.0	0.4	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0
19.2	3.2	6.4	9.6	12.8	16.0	.2	0.1	0.4	0.7	1.0	1.4	1.7	2.0	2.3	2.7	3.0
19.3	3.2	6.4	9.6	12.9	16.1	.3	0.1	0.4	0.7	1.1	1.4	1.7	2.0	2.4	2.7	3.0
19.4	3.2	6.5	9.7	12.9	16.2	.4	0.1	0.5	0.8	1.1	1.4	1.8	2.1	2.4	2.7	3.1
19.5	3.3	6.5	9.8	13.0	16.3	.5	0.2	0.5	0.8	1.1	1.5	1.8	2.1	2.4	2.8	3.1
19.6	3.3	6.5	9.8	13.1	16.3	.6	0.2	0.5	0.8	1.2	1.5	1.8	2.1	2.5	2.8	3.1
19.7	3.3	6.6	9.9	13.2	16.4	.7	0.2	0.6	0.9	1.2	1.5	1.9	2.2	2.5	2.8	3.2
19.8	3.3	6.6	9.9	13.2	16.5	.8	0.3	0.6	0.9	1.2	1.6	1.9	2.2	2.5	2.9	3.2
19.9	3.4	6.7	10.0	13.3	16.6	.9	0.3	0.6	0.9	1.3	1.6	1.9	2.2	2.6	2.9	3.2
20.0	3.3	6.6	10.0	13.3	16.6	.0	0.0	0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1
20.1	3.3	6.7	10.0	13.4	16.7	.1	0.0	0.4	0.7	1.1	1.4	1.7	2.1	2.4	2.8	3.1
20.2	3.3	6.7	10.1	13.4	16.8	.2	0.1	0.4	0.8	1.1	1.4	1.8	2.1	2.5	2.8	3.1
20.3	3.4	6.8	10.1	13.5	16.9	.3	0.1	0.4	0.8	1.1	1.5	1.8	2.2	2.5	2.8	3.2
20.4	3.4	6.8	10.2	13.6	17.0	.4	0.1	0.5	0.8	1.2	1.5	1.8	2.2	2.5	2.9	3.2
20.5	3.4	6.8	10.3	13.7	17.1	.5	0.2	0.5	0.9	1.2	1.5	1.9	2.2	2.6	2.9	3.2
20.6	3.4	6.9	10.3	13.7	17.2	.6	0.2	0.5	0.9	1.2	1.6	1.9	2.3	2.6	2.9	3.3
20.7	3.5	6.9	10.4	13.8	17.3	.7	0.2	0.6	0.9	1.3	1.6	1.9	2.3	2.6	3.0	3.3
20.8	3.5	7.0	10.4	13.9	17.4	.8	0.3	0.6	1.0	1.3	1.6	2.0	2.3	2.7	3.0	3.3
20.9	3.5	7.0	10.5	14.0	17.5	.9	0.3	0.6	1.0	1.3	1.7	2.0	2.4	2.7	3.0	3.4
21.0	3.5	7.0	10.5	14.0	17.5	.0	0.0	0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.9	3.2
21.1	3.5	7.0	10.5	14.0	17.6	.1	0.0	0.4	0.8	1.1	1.5	1.8	2.2	2.5	2.9	3.3
21.2	3.5	7.0	10.6	14.1	17.6	.2	0.1	0.4	0.8	1.1	1.5	1.9	2.2	2.6	2.9	3.3
21.3	3.5	7.1	10.6	14.2	17.7	.3	0.1	0.5	0.8	1.2	1.5	1.9	2.3	2.6	3.0	3.3
21.4	3.6	7.1	10.7	14.3	17.8	.4	0.1	0.5	0.9	1.2	1.6	1.9	2.3	2.7	3.0	3.4
21.5	3.6	7.2	10.8	14.3	17.9	.5	0.2	0.5	0.9	1.3	1.6	2.0	2.3	2.7	3.0	3.4
21.6	3.6	7.2	10.8	14.4	18.0	.6	0.2	0.6	0.9	1.3	1.6	2.0	2.4	2.7	3.1	3.4
21.7	3.6	7.3	10.9	14.5	18.1	.7	0.3	0.6	1.0	1.3	1.7	2.0	2.4	2.8	3.1	3.5
21.8	3.7	7.3	10.9	14.6	18.2	.8	0.3	0.6	1.0	1.4	1.7	2.1	2.4	2.8	3.2	3.5
21.9	3.7	7.3	11.0	14.6	18.3	.9	0.3	0.7	1.0	1.4	1.8	2.1	2.5	2.8	3.2	3.5
22.0	3.6	7.3	11.0	14.6	18.3	.0	0.0	0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0	3.4
22.1	3.7	7.3	11.0	14.7	18.4	.1	0.0	0.4	0.8	1.2	1.5	1.9	2.3	2.7	3.0	3.4
22.2	3.7	7.4	11.1	14.8	18.5	.2	0.1	0.4	0.8	1.2	1.6	1.9	2.3	2.7	3.1	3.4
22.3	3.7	7.4	11.1	14.9	18.6	.3	0.1	0.5	0.9	1.2	1.6	2.0	2.4	2.7	3.1	3.5
22.4	3.7	7.5	11.2	14.9	18.7	.4	0.1	0.5	0.9	1.3	1.6	2.0	2.4	2.8	3.1	3.5
22.5	3.8	7.5	11.3	15.0	18.8	.5	0.2	0.6	0.9	1.3	1.7	2.1	2.4	2.8	3.2	3.6
22.6	3.8	7.5	11.3	15.1	18.8	.6	0.2	0.6	1.0	1.3	1.7	2.1	2.5	2.8	3.2	3.6
22.7	3.8	7.6	11.4	15.2	18.9	.7	0.3	0.6	1.0	1.4	1.8	2.1	2.5	2.9	3.3	3.6
22.8	3.8	7.6	11.4	15.2	19.0	.8	0.3	0.7	1.0	1.4	1.8	2.2	2.5	2.9	3.3	3.7
22.9	3.9	7.7	11.5	15.3	19.1	.9	0.3	0.7	1.1	1.5	1.8	2.2	2.6	3.0	3.3	3.7
23.0	3.8	7.6	11.5	15.3	19.1	.0	0.0	0.4	0.8	1.2	1.6	2.0	2.3	2.7	3.1	3.5
23.1	3.8	7.7	11.5	15.4	19.2	.1	0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6
23.2	3.8	7.7	11.6	15.4	19.3	.2	0.1	0.5	0.9	1.3	1.6	2.0	2.4	2.8	3.2	3.6
23.3	3.9	7.8	11.6	15.5	19.4	.3	0.1	0.5	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.6
23.4	3.9	7.8	11.7	15.6	19.5	.4	0.2	0.5	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.7
23.5	3.9	7.8	11.8	15.7	19.6	.5	0.2	0.6	1.0	1.4	1.8	2.2	2.5	2.9	3.3	3.7
23.6	3.9	7.9	11.8	15.7	19.7	.6	0.2	0.6	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8
23.7	4.0	7.9	11.9	15.8	19.8	.7	0.3	0.7	1.1	1.4	1.8	2.2	2.6	3.0	3.4	3.8
23.8	4.0	8.0	11.9	15.9	19.9	.8	0.3	0.7	1.1	1.5	1.9	2.3	2.7	3.1	3.4	3.8
23.9	4.0	8.0	12.0	16.0	20.0	.9	0.4	0.7	1.1	1.5	1.9	2.3	2.7	3.1	3.5	3.9

Double Second Diff and Corr. (Dec Inc 16.0–23.9; each correction applies from the difference on its row up to the next):

Dec Inc	Double Second Diff	Corr.
16.0–17.9	1.0	01
	3.0	02
	4.9	03
	6.9	04
	8.9	05
	10.8	06
	12.8	07
	14.8	08
	16.7	09
	18.7	10
	20.7	11
	22.7	12
	24.6	13
	26.6	14
	28.6	15
	30.5	16
	32.5	17
	34.5	
18.0–19.9	0.9	01
	2.8	02
	4.6	03
	6.5	04
	8.3	05
	10.2	06
	12.0	07
	13.9	08
	15.7	09
	17.6	10
	19.4	11
	21.3	12
	23.1	13
	25.0	14
	26.8	15
	28.7	16
	30.5	17
	32.3	18
	34.2	
20.0–21.9	0.9	01
	2.6	02
	4.4	03
	6.2	04
	7.9	05
	9.7	06
	11.4	07
	13.2	08
	14.9	09
	16.7	10
	18.5	11
	20.2	12
	22.0	13
	23.7	14
	25.5	15
	27.3	16
	29.0	17
	30.8	18
	32.5	19
	34.3	
22.0–23.9	0.8	01
	2.5	02
	4.2	03
	5.9	04
	7.6	05
	9.3	06
	11.0	07
	12.7	08
	14.4	09
	16.1	10
	17.8	11
	19.5	12
	21.2	13
	22.8	14
	24.5	15
	26.2	16
	27.9	17
	29.6	18
	31.3	19
	33.0	20
	34.7	

Dec Inc	10'	20'	30'	40'	50'	Decimals	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
24.0	4.0	8.0	12.0	16.0	20.0	.0	0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.9	3.3	3.7
24.1	4.0	8.0	12.0	16.0	20.1	.1	0.0	0.4	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.7
24.2	4.0	8.0	12.1	16.1	20.1	.2	0.1	0.5	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.8
24.3	4.0	8.1	12.1	16.2	20.2	.3	0.1	0.5	0.9	1.3	1.8	2.2	2.6	3.0	3.4	3.8
24.4	4.1	8.1	12.2	16.3	20.3	.4	0.2	0.6	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8
24.5	4.1	8.2	12.3	16.3	20.4	.5	0.2	0.6	1.0	1.4	1.8	2.2	2.7	3.1	3.5	3.9
24.6	4.1	8.2	12.3	16.4	20.5	.6	0.2	0.7	1.1	1.5	1.9	2.3	2.7	3.1	3.5	3.9
24.7	4.1	8.3	12.4	16.5	20.6	.7	0.3	0.7	1.1	1.5	1.9	2.3	2.7	3.1	3.6	4.0
24.8	4.2	8.3	12.4	16.6	20.7	.8	0.3	0.7	1.1	1.6	2.0	2.4	2.8	3.2	3.6	4.0
24.9	4.2	8.3	12.5	16.6	20.8	.9	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0
25.0	4.1	8.3	12.5	16.6	20.8	.0	0.0	0.4	0.8	1.3	1.7	2.1	2.5	3.0	3.4	3.8
25.1	4.2	8.3	12.5	16.7	20.9	.1	0.0	0.5	0.9	1.3	1.7	2.2	2.6	3.0	3.4	3.9
25.2	4.2	8.4	12.6	16.8	21.0	.2	0.1	0.5	0.9	1.4	1.8	2.2	2.6	3.1	3.5	3.9
25.3	4.2	8.4	12.6	16.9	21.1	.3	0.1	0.6	1.0	1.4	1.8	2.3	2.7	3.1	3.5	4.0
25.4	4.2	8.5	12.7	16.9	21.2	.4	0.2	0.6	1.0	1.4	1.9	2.3	2.7	3.1	3.6	4.0
25.5	4.3	8.5	12.8	17.0	21.3	.5	0.2	0.6	1.1	1.5	1.9	2.3	2.8	3.2	3.6	4.0
25.6	4.3	8.5	12.8	17.1	21.3	.6	0.3	0.7	1.1	1.5	2.0	2.4	2.8	3.2	3.7	4.1
25.7	4.3	8.6	12.9	17.2	21.4	.7	0.3	0.7	1.1	1.6	2.0	2.4	2.8	3.3	3.7	4.1
25.8	4.3	8.6	12.9	17.2	21.5	.8	0.3	0.8	1.2	1.6	2.0	2.5	2.9	3.3	3.7	4.2
25.9	4.4	8.7	13.0	17.3	21.6	.9	0.4	0.8	1.2	1.7	2.1	2.5	2.9	3.4	3.8	4.2
26.0	4.3	8.6	13.0	17.3	21.6	.0	0.0	0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0
26.1	4.3	8.7	13.0	17.4	21.7	.1	0.0	0.5	0.9	1.4	1.8	2.3	2.7	3.1	3.6	4.0
26.2	4.3	8.7	13.1	17.4	21.8	.2	0.1	0.5	1.0	1.4	1.9	2.3	2.7	3.2	3.6	4.1
26.3	4.4	8.8	13.1	17.5	21.9	.3	0.1	0.6	1.0	1.5	1.9	2.3	2.8	3.2	3.7	4.1
26.4	4.4	8.8	13.2	17.6	22.0	.4	0.2	0.6	1.1	1.5	1.9	2.4	2.8	3.3	3.7	4.2
26.5	4.4	8.8	13.3	17.7	22.1	.5	0.2	0.7	1.1	1.5	2.0	2.4	2.9	3.3	3.8	4.2
26.6	4.4	8.9	13.3	17.7	22.2	.6	0.3	0.7	1.1	1.6	2.0	2.5	2.9	3.4	3.8	4.2
26.7	4.5	8.9	13.4	17.8	22.3	.7	0.3	0.8	1.2	1.6	2.1	2.5	3.0	3.4	3.8	4.3
26.8	4.5	9.0	13.4	17.9	22.4	.8	0.4	0.8	1.2	1.7	2.1	2.6	3.0	3.4	3.9	4.3
26.9	4.5	9.0	13.5	18.0	22.5	.9	0.4	0.8	1.3	1.7	2.2	2.6	3.0	3.5	3.9	4.4
27.0	4.5	9.0	13.5	18.0	22.5	.0	0.0	0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.7	4.1
27.1	4.5	9.0	13.5	18.0	22.6	.1	0.0	0.5	1.0	1.4	1.9	2.3	2.8	3.3	3.7	4.2
27.2	4.5	9.0	13.6	18.1	22.6	.2	0.1	0.5	1.0	1.5	1.9	2.4	2.8	3.3	3.8	4.2
27.3	4.5	9.1	13.6	18.2	22.7	.3	0.1	0.6	1.1	1.5	2.0	2.4	2.9	3.3	3.8	4.3
27.4	4.6	9.1	13.7	18.3	22.8	.4	0.2	0.6	1.1	1.6	2.0	2.5	2.9	3.4	3.8	4.3
27.5	4.6	9.2	13.8	18.3	22.9	.5	0.2	0.7	1.1	1.6	2.1	2.5	3.0	3.4	3.9	4.4
27.6	4.6	9.2	13.8	18.4	23.0	.6	0.3	0.7	1.2	1.6	2.1	2.6	3.0	3.5	3.9	4.4
27.7	4.6	9.3	13.9	18.5	23.1	.7	0.3	0.8	1.2	1.7	2.2	2.6	3.1	3.5	4.0	4.4
27.8	4.7	9.3	13.9	18.6	23.2	.8	0.4	0.8	1.3	1.7	2.2	2.7	3.1	3.6	4.0	4.5
27.9	4.7	9.3	14.0	18.6	23.3	.9	0.4	0.9	1.3	1.8	2.2	2.7	3.2	3.6	4.1	4.5
28.0	4.6	9.3	14.0	18.6	23.3	.0	0.0	0.5	0.9	1.4	1.9	2.4	2.8	3.3	3.8	4.3
28.1	4.7	9.3	14.0	18.7	23.4	.1	0.0	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.8	4.3
28.2	4.7	9.4	14.1	18.8	23.5	.2	0.1	0.6	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4
28.3	4.7	9.4	14.1	18.9	23.6	.3	0.1	0.6	1.1	1.6	2.0	2.5	3.0	3.5	3.9	4.4
28.4	4.7	9.5	14.2	18.9	23.7	.4	0.2	0.7	1.1	1.6	2.1	2.6	3.0	3.5	4.0	4.5
28.5	4.8	9.5	14.3	19.0	23.8	.5	0.2	0.7	1.2	1.7	2.1	2.6	3.1	3.6	4.0	4.5
28.6	4.8	9.5	14.3	19.1	23.8	.6	0.3	0.8	1.2	1.7	2.2	2.7	3.1	3.6	4.1	4.6
28.7	4.8	9.6	14.4	19.2	23.9	.7	0.3	0.8	1.3	1.8	2.2	2.7	3.2	3.7	4.1	4.6
28.8	4.8	9.6	14.4	19.2	24.0	.8	0.4	0.9	1.3	1.8	2.3	2.8	3.2	3.7	4.2	4.7
28.9	4.9	9.7	14.5	19.3	24.1	.9	0.4	0.9	1.4	1.9	2.3	2.8	3.3	3.8	4.2	4.7
29.0	4.8	9.6	14.5	19.3	24.1	.0	0.0	0.5	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4
29.1	4.8	9.7	14.5	19.4	24.2	.1	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
29.2	4.8	9.7	14.6	19.4	24.3	.2	0.1	0.6	1.1	1.6	2.1	2.6	3.0	3.5	4.0	4.5
29.3	4.9	9.8	14.6	19.5	24.4	.3	0.1	0.6	1.1	1.6	2.1	2.6	3.1	3.6	4.1	4.6
29.4	4.9	9.8	14.7	19.6	24.5	.4	0.2	0.7	1.2	1.7	2.2	2.7	3.1	3.6	4.1	4.6
29.5	4.9	9.8	14.8	19.7	24.6	.5	0.2	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7
29.6	4.9	9.9	14.8	19.7	24.7	.6	0.3	0.8	1.3	1.8	2.3	2.8	3.2	3.7	4.2	4.7
29.7	5.0	9.9	14.9	19.8	24.8	.7	0.3	0.8	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.8
29.8	5.0	10.0	14.9	19.9	24.9	.8	0.4	0.9	1.4	1.9	2.4	2.9	3.3	3.8	4.3	4.8
29.9	5.0	10.0	15.0	20.0	25.0	.9	0.4	0.9	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.9
30.0	5.0	10.0	15.0	20.0	25.0	.0	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.6	4.1	4.6
30.1	5.0	10.0	15.0	20.0	25.1	.1	0.1	0.6	1.1	1.6	2.1	2.6	3.1	3.6	4.1	4.6
30.2	5.0	10.0	15.1	20.1	25.1	.2	0.1	0.6	1.1	1.6	2.1	2.6	3.2	3.7	4.2	4.7
30.3	5.0	10.1	15.1	20.2	25.2	.3	0.2	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7
30.4	5.1	10.1	15.2	20.3	25.3	.4	0.2	0.7	1.2	1.7	2.2	2.7	3.3	3.8	4.3	4.8
30.5	5.1	10.2	15.3	20.3	25.4	.5	0.3	0.8	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.8
30.6	5.1	10.2	15.3	20.4	25.5	.6	0.3	0.8	1.3	1.8	2.3	2.8	3.4	3.9	4.4	4.9
30.7	5.1	10.3	15.4	20.5	25.6	.7	0.4	0.9	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.9
30.8	5.2	10.3	15.4	20.6	25.7	.8	0.4	0.9	1.4	1.9	2.4	2.9	3.5	4.0	4.5	5.0
30.9	5.2	10.3	15.5	20.6	25.8	.9	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
31.0	5.1	10.3	15.5	20.6	25.8	.0	0.0	0.5	1.0	1.6	2.1	2.6	3.1	3.7	4.2	4.7
31.1	5.2	10.3	15.5	20.7	25.9	.1	0.1	0.6	1.1	1.6	2.2	2.7	3.2	3.7	4.3	4.8
31.2	5.2	10.4	15.6	20.8	26.0	.2	0.1	0.6	1.2	1.7	2.2	2.7	3.3	3.8	4.3	4.8
31.3	5.2	10.4	15.6	20.9	26.1	.3	0.2	0.7	1.2	1.7	2.3	2.8	3.3	3.8	4.4	4.9
31.4	5.2	10.5	15.7	20.9	26.2	.4	0.2	0.7	1.3	1.8	2.3	2.8	3.4	3.9	4.4	4.9
31.5	5.3	10.5	15.8	21.0	26.3	.5	0.3	0.8	1.3	1.8	2.4	2.9	3.4	3.9	4.5	5.0
31.6	5.3	10.5	15.8	21.1	26.3	.6	0.3	0.8	1.4	1.9	2.4	2.9	3.5	4.0	4.5	5.0
31.7	5.3	10.6	15.9	21.2	26.4	.7	0.4	0.9	1.4	1.9	2.5	3.0	3.5	4.0	4.6	5.1
31.8	5.3	10.6	15.9	21.2	26.5	.8	0.4	0.9	1.5	2.0	2.5	3.0	3.6	4.1	4.6	5.1
31.9	5.4	10.7	16.0	21.3	26.6	.9	0.5	1.0	1.5	2.0	2.6	3.1	3.6	4.1	4.7	5.2

Double Second Diff and Corr. (Dec Inc 24.0–31.9):

Dec Inc	Double Second Diff	Corr.
24.0–25.9	0.8	01
	2.5	02
	4.1	03
	5.8	04
	7.4	05
	9.1	06
	10.7	07
	12.3	08
	14.0	09
	15.6	10
	17.3	11
	18.9	12
	20.6	13
	22.2	14
	23.9	15
	25.5	16
	27.2	17
	28.8	18
	30.4	19
	32.1	20
	33.7	21
	35.4	
26.0–27.9	0.8	01
	2.4	02
	4.0	03
	5.7	04
	7.3	05
	8.9	06
	10.5	07
	12.1	08
	13.7	09
	15.4	10
	17.0	11
	18.6	12
	20.2	13
	21.8	14
	23.4	15
	25.1	16
	26.7	17
	28.3	18
	29.9	19
	31.5	20
	33.1	21
	34.7	
28.0–29.9	0.8	01
	2.4	02
	4.0	03
	5.6	04
	7.2	05
	8.8	06
	10.4	07
	12.0	08
	13.6	09
	15.2	10
	16.8	11
	18.4	12
	20.0	13
	21.6	14
	23.2	15
	24.8	16
	26.4	17
	28.0	18
	29.6	19
	31.2	20
	32.8	21
	34.4	
30.0–31.9	0.8	01
	2.4	02
	4.0	03
	5.6	04
	7.2	05
	8.8	06
	10.4	07
	12.0	08
	13.6	09
	15.2	10
	16.8	11
	18.4	12
	20.0	13
	21.6	14
	23.2	15
	24.8	16
	26.4	17
	28.0	18
	29.6	19
	31.2	20
	32.8	21
	34.4	

The Double-Second-Difference correction (Corr.) is always to be added to the tabulated altitude.

26NVJ091

Figure 4E.—Pub. 229 Interpolation table (extract).

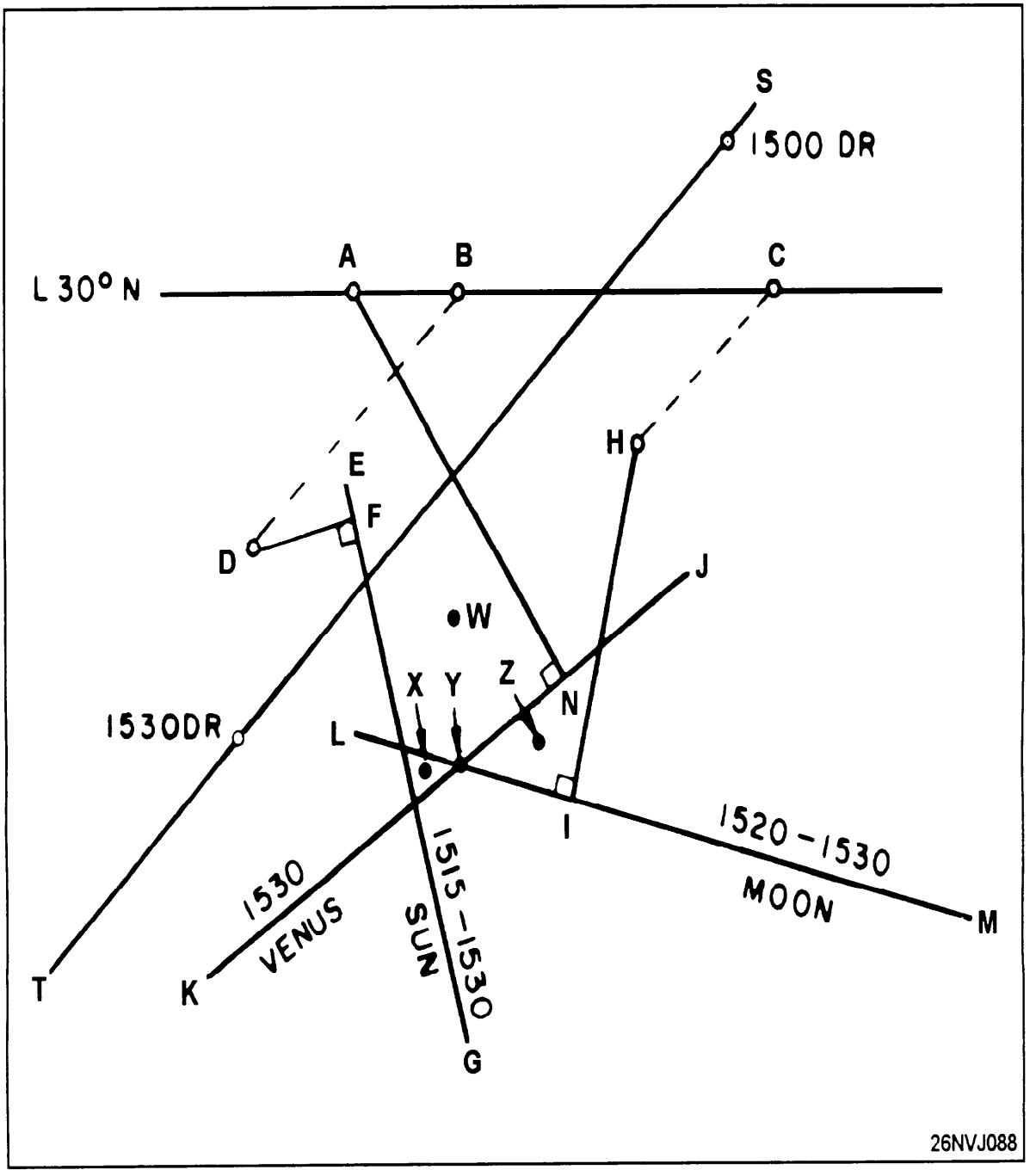

Figure 4F.—Celestial Fix.

G.M.T.	SUN G.H.A.	SUN Dec.	MOON G.H.A.	v	MOON Dec.	d	H.P.
	° ′	° ′	° ′	′	° ′	′	′
1 00	178 25.7	N18 01.8	130 12.1	10.3	N 5 15.1	15.9	60.3
01	193 25.7	01.1	144 41.4	10.2	4 59.2	15.8	60.2
02	208 25.8	18 00.5	159 10.6	10.4	4 43.4	15.8	60.2
03	223 25.8	17 59.9	173 40.0	10.4	4 27.6	15.9	60.2
04	238 25.8	59.3	188 09.4	10.4	4 11.7	15.9	60.2
05	253 25.9	58.6	202 38.8	10.4	3 55.8	15.9	60.2
06	268 25.9	N17 58.0	217 08.2	10.5	N 3 39.9	15.9	60.2
07	283 26.0	57.4	231 37.7	10.5	3 24.0	15.9	60.2
08	298 26.0	56.7	246 07.2	10.6	3 08.1	15.9	60.1
09	313 26.0	56.1	260 36.8	10.6	2 52.2	15.9	60.1
10	328 26.1	55.5	275 06.4	10.7	2 36.3	16.0	60.1
11	343 26.1	54.8	289 36.1	10.6	2 20.3	15.9	60.1
12	358 26.2	N17 54.2	304 05.7	10.7	N 2 04.4	16.0	60.1
13	13 26.2	53.6	318 35.4	10.8	1 48.4	15.9	60.1
14	28 26.2	52.9	333 05.2	10.7	1 32.5	15.9	60.0
15	43 26.3	52.3	347 34.9	10.8	1 16.6	16.0	60.0
16	58 26.3	51.6	2 04.7	10.8	1 00.6	15.9	60.0
17	73 26.4	51.0	16 34.5	10.9	0 44.7	15.9	60.0
18	88 26.4	N17 50.4	31 04.4	10.9	N 0 28.8	15.9	60.0
19	103 26.4	49.7	45 34.3	10.9	N 0 12.9	15.9	59.9
20	118 26.5	49.1	60 04.2	10.9	S 0 03.0	15.9	59.9
21	133 26.5	48.5	74 34.1	10.9	0 18.9	15.9	59.9
22	148 26.6	47.8	89 04.0	11.0	0 34.8	15.8	59.9
23	163 26.6	47.2	103 34.0	11.0	0 50.6	15.9	59.9
2 00	178 26.7	N17 46.5	118 04.0	11.0	S 1 06.5	15.8	59.8
01	193 26.7	45.9	132 34.0	11.0	1 22.3	15.8	59.8
02	208 26.7	45.3	147 04.0	11.0	1 38.1	15.8	59.8
03	223 26.8	44.6	161 34.0	11.1	1 53.9	15.8	59.8
04	238 26.8	44.0	176 04.1	11.0	2 09.7	15.7	59.8
05	253 26.9	43.3	190 34.1	11.1	2 25.4	15.7	59.7
06	268 26.9	N17 42.7	205 04.2	11.1	S 2 41.1	15.7	59.7
07	283 27.0	42.0	219 34.3	11.1	2 56.8	15.7	59.7
08	298 27.0	41.4	234 04.4	11.1	3 12.5	15.6	59.7
09	313 27.1	40.7	248 34.5	11.1	3 28.1	15.6	59.7
10	328 27.1	40.1	263 04.6	11.1	3 43.7	15.6	59.6
11	343 27.2	39.5	277 34.7	11.1	3 59.3	15.6	59.6
12	358 27.2	N17 38.8	292 04.8	11.2	S 4 14.9	15.5	59.6
13	13 27.2	38.2	306 35.0	11.1	4 30.4	15.4	59.6
14	28 27.3	37.5	321 05.1	11.1	4 45.8	15.5	59.5
15	43 27.3	36.9	335 35.2	11.2	5 01.3	15.4	59.5
16	58 27.4	36.2	350 05.4	11.1	5 16.7	15.3	59.5
17	73 27.4	35.6	4 35.5	11.1	5 32.0	15.3	59.5
18	88 27.5	N17 34.9	19 05.6	11.2	S 5 47.3	15.3	59.4
19	103 27.5	34.3	33 35.8	11.1	6 02.6	15.2	59.4
20	118 27.6	33.6	48 05.9	11.1	6 17.8	15.2	59.4
21	133 27.6	33.0	62 36.0	11.1	6 33.0	15.1	59.4
22	148 27.7	32.3	77 06.1	11.2	6 48.1	15.1	59.3
23	163 27.7	31.7	91 36.3	11.1	7 03.2	15.0	59.3
3 00	178 27.8	N17 31.0	106 06.4	11.1	S 7 18.2	15.0	59.3
01	193 27.8	30.4	120 36.5	11.1	7 33.2	14.9	59.3
02	208 27.9	29.7	135 06.6	11.0	7 48.1	14.9	59.3
03	223 27.9	29.1	149 36.6	11.1	8 03.0	14.8	59.2
04	238 28.0	28.4	164 06.7	11.1	8 17.8	14.8	59.2
05	253 28.0	27.7	178 36.8	11.0	8 32.6	14.7	59.2
06	268 28.1	N17 27.1	193 06.8	11.0	S 8 47.3	14.6	59.2
07	283 28.1	26.4	207 36.8	11.0	9 01.9	14.6	59.1
08	298 28.2	25.8	222 06.8	11.0	9 16.5	14.5	59.1
09	313 28.2	25.1	236 36.8	11.0	9 31.0	14.5	59.1
10	328 28.3	24.5	251 06.8	11.0	9 45.5	14.4	59.0
11	343 28.3	23.8	265 36.8	10.9	9 59.9	14.3	59.0
12	358 28.4	N17 23.1	280 06.7	10.9	S10 14.2	14.3	59.0
13	13 28.5	22.5	294 36.6	10.9	10 28.5	14.2	59.0
14	28 28.5	21.8	309 06.5	10.9	10 42.7	14.1	58.9
15	43 28.6	21.2	323 36.4	10.9	10 56.8	14.1	58.9
16	58 28.6	20.5	338 06.3	10.8	11 10.9	14.0	58.9
17	73 28.7	19.8	352 36.1	10.8	11 24.9	13.9	58.9
18	88 28.7	N17 19.2	7 05.9	10.8	S11 38.8	13.8	58.8
19	103 28.8	18.5	21 35.7	10.7	11 52.6	13.8	58.8
20	118 28.8	17.9	36 05.4	10.8	12 06.4	13.7	58.8
21	133 28.9	17.2	50 35.2	10.7	12 20.1	13.6	58.8
22	148 28.9	16.5	65 04.9	10.7	12 33.7	13.5	58.7
23	163 29.0	15.9	79 34.6	10.6	12 47.2	13.5	58.7
	S.D. 15.8	d 0.6	S.D. 16.4		16.2		16.1

WEDNESDAY THURSDAY FRIDAY

Lat	Twilight Naut.	Twilight Civil	Sunrise	Moonrise 1	Moonrise 2	Moonrise 3	Moonrise 4
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	09 05	11 23	13 47	16 48
N 70	////	////	01 36	09 09	11 17	13 28	15 55
68	////	////	02 21	09 12	11 12	13 13	15 22
66	////	00 39	02 50	09 14	11 08	13 01	14 59
64	////	01 46	03 11	09 17	11 04	12 52	14 41
62	////	02 19	03 29	09 19	11 01	12 43	14 26
60	00 36	02 43	03 43	09 20	10 59	12 36	14 14
N 58	01 36	03 02	03 55	09 22	10 56	12 30	14 03
56	02 07	03 18	04 06	09 23	10 54	12 24	13 54
54	02 29	03 31	04 15	09 24	10 52	12 19	13 46
52	02 47	03 42	04 23	09 25	10 51	12 15	13 38
50	03 02	03 52	04 31	09 26	10 49	12 11	13 32
45	03 30	04 13	04 46	09 28	10 46	12 02	13 18
N 40	03 52	04 29	04 59	09 30	10 43	11 55	13 06
35	04 09	04 42	05 10	09 32	10 41	11 49	12 56
30	04 23	04 54	05 20	09 33	10 39	11 43	12 48
20	04 45	05 12	05 36	09 35	10 35	11 34	12 33
N 10	05 02	05 28	05 50	09 38	10 32	11 26	12 21
0	05 16	05 41	06 03	09 40	10 29	11 19	12 09
S 10	05 28	05 54	06 16	09 42	10 26	11 11	11 57
20	05 40	06 06	06 29	09 44	10 24	11 04	11 45
30	05 51	06 19	06 45	09 46	10 20	10 55	11 31
35	05 56	06 27	06 53	09 47	10 18	10 50	11 23
40	06 02	06 35	07 04	09 49	10 16	10 44	11 14
45	06 09	06 44	07 15	09 51	10 14	10 37	11 03
S 50	06 16	06 55	07 30	09 53	10 11	10 30	10 50
52	06 19	06 59	07 36	09 54	10 10	10 26	10 44
54	06 22	07 05	07 44	09 55	10 08	10 22	10 38
56	06 25	07 11	07 52	09 56	10 07	10 18	10 31
58	06 29	07 17	08 01	09 57	10 05	10 13	10 23
S 60	06 33	07 24	08 12	09 59	10 03	10 08	10 13

Lat.	Sunset	Twilight Civil	Twilight Naut.	Moonset 1	Moonset 2	Moonset 3	Moonset 4
°	h m	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	21 55	21 24	20 46	19 33
N 70	22 30	////	////	21 56	21 34	21 08	20 28
68	21 48	////	////	21 56	21 41	21 24	21 01
66	21 20	23 19	////	21 57	21 48	21 38	21 26
64	20 59	22 22	////	21 58	21 54	21 49	21 45
62	20 42	21 50	////	21 58	21 58	21 59	22 01
60	20 28	21 26	23 24	21 58	22 03	22 08	22 14
N 58	20 16	21 08	22 32	21 59	22 06	22 15	22 26
56	20 05	20 53	22 03	21 59	22 10	22 22	22 36
54	19 56	20 40	21 41	21 59	22 13	22 27	22 45
52	19 48	20 29	21 24	22 00	22 16	22 33	22 53
50	19 41	20 19	21 09	22 00	22 18	22 38	23 00
45	19 25	19 59	20 41	22 01	22 24	22 48	23 16
N 40	19 13	19 43	20 20	22 01	22 28	22 57	23 28
35	19 02	19 29	20 03	22 01	22 32	23 04	23 39
30	18 52	19 18	19 49	22 02	22 36	23 11	23 49
20	18 36	19 00	19 27	22 02	22 42	23 23	24 05
N 10	18 23	18 45	19 11	22 03	22 48	23 33	24 20
0	18 10	18 31	18 57	22 03	22 53	23 43	24 34
S 10	17 57	18 19	18 44	22 04	22 58	23 52	24 47
20	17 43	18 06	18 33	22 04	23 03	24 02	00 02
30	17 28	17 53	18 22	22 05	23 10	24 14	00 14
35	17 19	17 46	18 16	22 05	23 13	24 21	00 21
40	17 09	17 38	18 10	22 05	23 17	24 29	00 29
45	16 57	17 29	18 04	22 05	23 22	24 38	00 38
S 50	16 43	17 18	17 57	22 06	23 28	24 49	00 49
52	16 37	17 14	17 54	22 06	23 31	24 55	00 55
54	16 29	17 08	17 51	22 06	23 34	25 00	01 00
56	16 21	17 03	17 48	22 06	23 37	25 07	01 07
58	16 12	16 56	17 44	22 07	23 41	25 14	01 14
S 60	16 01	16 49	17 40	22 07	23 45	25 22	01 22

Day	SUN Eqn. of Time 00ʰ	SUN Eqn. of Time 12ʰ	SUN Mer. Pass.	MOON Mer. Pass. Upper	MOON Mer. Pass. Lower	MOON Age	MOON Phase
	m s	m s	h m	h m	h m	d	
1	06 17	06 15	12 06	15 51	03 26	04	
2	06 13	06 11	12 06	16 41	04 16	05	◐
3	06 09	06 06	12 06	17 31	05 06	06	

Figure 4G—Nautical Almanac right-hand daily page.

UT (GMT)	ARIES	VENUS −4.2		MARS +1.5		JUPITER −2.7		SATURN +0.5	
d h	G.H.A. ° ′	G.H.A. ° ′	Dec. ° ′	G.H.A. ° ′	Dec. ° ′	G.H.A. ° ′	Dec. ° ′	G.H.A. ° ′	Dec. ° ′
13 00	112 12.9	168 57.6	S14 59.5	215 07.9	S23 04.5	18 13.4	N23 18.2	183 48.1	S22 04.9
01	127 15.3	184 01.6	59.2	230 08.5	04.7	33 16.2	18.2	198 50.2	04.8
02	142 17.8	199 05.6	58.9	245 09.0	04.9	48 19.0	18.2	213 52.4	04.8
03	157 20.3	214 09.6	58.7	260 09.6	05.0	63 21.8	18.2	228 54.5	04.8
04	172 22.7	229 13.5	58.4	275 10.1	05.2	78 24.6	18.2	243 56.7	04.7
05	187 25.2	244 17.5	58.1	290 10.7	05.4	93 27.4	18.2	258 58.8	04.7
06	202 27.6	259 21.5	S14 57.8	305 11.2	S23 05.6	108 30.2	N23 18.2	274 01.0	S22 04.7
07	217 30.1	274 25.5	57.5	320 11.7	05.8	123 33.0	18.3	289 03.1	04.6
S 08	232 32.6	289 29.5	57.2	335 12.3	06.0	138 35.8	18.3	304 05.3	04.6
A 09	247 35.0	304 33.5	56.9	350 12.8	06.1	153 38.6	18.3	319 07.4	04.6
T 10	262 37.5	319 37.5	56.7	5 13.4	06.3	168 41.4	18.3	334 09.6	04.5
U 11	277 40.0	334 41.5	56.4	20 13.9	06.5	183 44.2	18.3	349 11.7	04.5
R 12	292 42.4	349 45.5	S14 56.1	35 14.5	S23 06.7	198 46.9	N23 18.3	4 13.9	S22 04.4
D 13	307 44.9	4 49.5	55.8	50 15.0	06.9	213 49.7	18.3	19 16.0	04.4
A 14	322 47.4	19 53.5	55.5	65 15.5	07.1	228 52.5	18.4	34 18.2	04.4
Y 15	337 49.8	34 57.5	55.3	80 16.1	07.2	243 55.3	18.4	49 20.3	04.3
16	352 52.3	50 01.5	55.0	95 16.6	07.4	258 58.1	18.4	64 22.5	04.3
17	7 54.8	65 05.6	54.7	110 17.2	07.6	274 00.9	18.4	79 24.6	04.3
18	22 57.2	80 09.6	S14 54.4	125 17.7	S23 07.8	289 03.7	N23 18.4	94 26.7	S22 04.2
19	37 59.7	95 13.6	54.2	140 18.3	08.0	304 06.5	18.4	109 28.9	04.2
20	53 02.1	110 17.6	53.9	155 18.8	08.1	319 09.3	18.4	124 31.0	04.2
21	68 04.6	125 21.6	53.6	170 19.3	08.3	334 12.1	18.5	139 33.2	04.1
22	83 07.1	140 25.6	53.4	185 19.9	08.5	349 14.9	18.5	154 35.3	04.1
23	98 09.5	155 29.7	53.1	200 20.4	08.7	4 17.7	18.5	169 37.5	04.1
14 00	113 12.0	170 33.7	S14 52.8	215 21.0	S23 08.9	19 20.4	N23 18.5	184 39.6	S22 04.0
01	128 14.5	185 37.7	52.6	230 21.5	09.0	34 23.2	18.5	199 41.8	04.0
02	143 16.9	200 41.7	52.3	245 22.0	09.2	49 26.0	18.5	214 43.9	04.0
03	158 19.4	215 45.8	52.0	260 22.6	09.4	64 28.8	18.5	229 46.1	03.9
04	173 21.9	230 49.8	51.8	275 23.1	09.6	79 31.6	18.6	244 48.2	03.9
05	188 24.3	245 53.8	51.5	290 23.7	09.7	94 34.4	18.6	259 50.4	03.9
06	203 26.8	260 57.9	S14 51.2	305 24.2	S23 09.9	109 37.2	N23 18.6	274 52.5	S22 03.8
07	218 29.2	276 01.9	51.0	320 24.7	10.1	124 40.0	18.6	289 54.7	03.8
08	233 31.7	291 06.0	50.7	335 25.3	10.3	139 42.8	18.6	304 56.8	03.8
S 09	248 34.2	306 10.0	50.5	350 25.8	10.4	154 45.6	18.6	319 59.0	03.7
U 10	263 36.6	321 14.0	50.2	5 26.3	10.6	169 48.3	18.6	335 01.1	03.7
N 11	278 39.1	336 18.1	49.9	20 26.9	10.8	184 51.1	18.7	350 03.3	03.7
D 12	293 41.6	351 22.1	S14 49.7	35 27.4	S23 11.0	199 53.9	N23 18.7	5 05.4	S22 03.6
A 13	308 44.0	6 26.2	49.4	50 28.0	11.1	214 56.7	18.7	20 07.6	03.6
Y 14	323 46.5	21 30.2	49.2	65 28.5	11.3	229 59.5	18.7	35 09.7	03.6
15	338 49.0	36 34.3	48.9	80 29.0	11.5	245 02.3	18.7	50 11.9	03.5
16	353 51.4	51 38.3	48.7	95 29.6	11.7	260 05.1	18.7	65 14.0	03.5
17	8 53.9	66 42.4	48.4	110 30.1	11.8	275 07.9	18.7	80 16.1	03.4
18	23 56.4	81 46.4	S14 48.2	125 30.7	S23 12.0	290 10.6	N23 18.8	95 18.3	S22 03.4
19	38 58.8	96 50.5	47.9	140 31.2	12.2	305 13.4	18.8	110 20.4	03.4
20	54 01.3	111 54.5	47.7	155 31.7	12.3	320 16.2	18.8	125 22.6	03.3
21	69 03.7	126 58.6	47.4	170 32.3	12.5	335 19.0	18.8	140 24.7	03.3
22	84 06.2	142 02.7	47.2	185 32.8	12.7	350 21.8	18.8	155 26.9	03.3
23	99 08.7	157 06.7	46.9	200 33.3	12.8	5 24.6	18.8	170 29.0	03.2
15 00	114 11.1	172 10.8	S14 46.7	215 33.9	S23 13.0	20 27.4	N23 18.8	185 31.2	S22 03.2
01	129 13.6	187 14.8	46.4	230 34.4	13.2	35 30.1	18.9	200 33.3	03.2
02	144 16.1	202 18.9	46.2	245 34.9	13.4	50 32.9	18.9	215 35.5	03.1
03	159 18.5	217 23.0	45.9	260 35.5	13.5	65 35.7	18.9	230 37.6	03.1
04	174 21.0	232 27.0	45.7	275 36.0	13.7	80 38.5	18.9	245 39.8	03.1
05	189 23.5	247 31.1	45.5	290 36.6	13.9	95 41.3	18.9	260 41.9	03.0
06	204 25.9	262 35.2	S14 45.2	305 37.1	S23 14.0	110 44.1	N23 18.9	275 44.1	S22 03.0
07	219 28.4	277 39.3	45.0	320 37.6	14.2	125 46.9	18.9	290 46.2	03.0
08	234 30.9	292 43.3	44.7	335 38.2	14.4	140 49.6	18.9	305 48.4	02.9
M 09	249 33.3	307 47.4	44.5	350 38.7	14.5	155 52.4	19.0	320 50.5	02.9
O 10	264 35.8	322 51.5	44.3	5 39.2	14.7	170 55.2	19.0	335 52.7	02.9
N 11	279 38.2	337 55.6	44.0	20 39.8	14.8	185 58.0	19.0	350 54.8	02.8
D 12	294 40.7	352 59.6	S14 43.8	35 40.3	S23 15.0	201 00.8	N23 19.0	5 57.0	S22 02.8
A 13	309 43.2	8 03.7	43.6	50 40.8	15.2	216 03.6	19.0	20 59.1	02.8
Y 14	324 45.6	23 07.8	43.3	65 41.4	15.3	231 06.3	19.0	36 01.3	02.7
15	339 48.1	38 11.9	43.1	80 41.9	15.5	246 09.1	19.0	51 03.4	02.7
16	354 50.6	53 16.0	42.9	95 42.4	15.7	261 11.9	19.1	66 05.6	02.6
17	9 53.0	68 20.0	42.6	110 43.0	15.8	276 14.7	19.1	81 07.7	02.6
18	24 55.5	83 24.1	S14 42.4	125 43.5	S23 16.0	291 17.5	N23 19.1	96 09.9	S22 02.6
19	39 58.0	98 28.2	42.2	140 44.0	16.2	306 20.2	19.1	111 12.0	02.5
20	55 00.4	113 32.3	42.0	155 44.6	16.3	321 23.0	19.1	126 14.2	02.5
21	70 02.9	128 36.4	41.7	170 45.1	16.5	336 25.8	19.1	141 16.3	02.5
22	85 05.3	143 40.5	41.5	185 45.6	16.6	351 28.6	19.1	156 18.4	02.4
23	100 07.8	158 44.5	41.3	200 46.2	16.8	6 31.4	19.2	171 20.6	02.4
Mer. Pass	h m 16 24.5	v 4.0	d 0.3	v 0.5	d 0.2	v 2.8	d 0.0	v 2.1	d 0.0

STARS		
Name	S.H.A. ° ′	Dec. ° ′
Acamar	315 31.4	S40 20.8
Achernar	335 39.5	S57 17.4
Acrux	173 29.1	S63 02.5
Adhara	255 26.0	S28 57.5
Aldebaran	291 09.3	N16 29.5
Alioth	166 35.7	N56 00.4
Alkaid	153 12.6	N49 21.4
Al Na'ir	28 05.9	S47 00.8
Alnilam	276 03.9	S 1 12.4
Alphard	218 13.1	S 8 36.9
Alphecca	126 26.0	N26 44.6
Alpheratz	358 01.9	N29 02.3
Altair	62 25.7	N 8 50.4
Ankaa	353 32.9	S42 21.8
Antares	112 48.1	S26 24.7
Arcturus	146 11.8	N19 13.7
Atria	108 06.3	S69 00.6
Avior	234 24.7	S59 28.6
Bellatrix	278 50.6	N 6 20.6
Betelgeuse	271 20.0	N 7 24.4
Canopus	264 03.4	S52 41.4
Capella	281 00.1	N45 59.5
Deneb	49 44.0	N45 14.7
Denebola	182 51.3	N14 37.5
Diphda	349 13.5	S18 02.5
Dubhe	194 12.4	N61 48.0
Elnath	278 34.5	N28 36.1
Eltanin	90 54.8	N51 29.1
Enif	34 04.7	N 9 49.7
Fomalhaut	15 43.4	S29 40.6
Gacrux	172 20.7	S57 03.3
Gienah	176 10.3	S17 29.2
Hadar	149 13.3	S60 19.4
Hamal	328 20.6	N23 25.1
Kaus Aust.	84 07.5	S34 23.5
Kochab	137 19.3	N74 11.3
Markab	13 56.1	N15 09.2
Menkar	314 33.3	N 4 03.2
Menkent	148 28.5	S36 19.3
Miaplacidus	221 42.8	S69 40.4
Mirfak	309 05.4	N49 49.9
Nunki	76 20.4	S26 18.7
Peacock	53 47.2	S56 46.2
Pollux	243 48.7	N28 03.1
Procyon	245 17.7	N 5 15.1
Rasalhague	96 23.1	N12 33.8
Regulus	208 01.9	N12 00.8
Rigel	281 28.6	S 8 12.7
Rigil Kent.	140 16.2	S60 47.5
Sabik	102 33.0	S15 42.9
Schedar	350 01.0	N56 29.3
Shaula	96 46.2	S37 05.9
Sirius	258 48.8	S16 42.1
Spica	158 49.8	S11 06.7
Suhail	223 05.1	S43 23.5
Vega	80 51.3	N38 46.3
Zuben'ubi	137 25.0	S16 00.1

	S.H.A. ° ′	Mer. Pass. h m
Venus	57 21.7	12 34
Mars	102 09.0	9 38
Jupiter	266 08.4	22 38
Saturn	71 27.6	11 40

26NVJ096

Figure 4H.—Nautical Almanac right-hand daily page.

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

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

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Figure 4I.—Nautical Almanac Increments and Corrections page.