TABLE 6. — Refraction

To be subtracted from sextant altitude

R_0	Height above sea level in thousands of feet											
	0	5	10	15	20	25	30	35	40	45	50	55
	Sextant Altitude											
′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
0	90	90	90	90	90	90	90	90	90	90	90	90
1	63	59	55	51	46	41	36	31	26	20	17	13
2	33	29	26	22	19	16	14	11	9	7	6	4
3	21	19	16	14	12	10	8	7	5	4	2 40	1 40
4	16	14	12	10	8	7	6	5	3 10	2 20	1 30	0 40
5	12	11	9	8	7	5	4 00	3 10	2 10	1 30	0 39	+0 05
6	10	9	7	5 50	4 50	3 50	3 10	2 20	1 30	0 49	+0 11	-0 19
7	8 10	6 50	5 50	4 50	4 00	3 00	2 20	1 50	1 10	0 24	-0 11	-0 38
8	6 50	5 50	5 00	4 00	3 10	2 30	1 50	1 20	0 38	+0 04	-0 28	-0 54
9	6 00	5 10	4 10	3 20	2 40	2 00	1 30	1 00	0 19	-0 13	-0 42	-1 08
10	5 20	4 30	3 40	2 50	2 10	1 40	1 10	0 35	+0 03	-0 27	-0 53	-1 18
12	4 30	3 40	2 50	2 20	1 40	1 10	0 37	+0 11	-0 16	-0 43	-1 08	-1 31
14	3 30	2 50	2 10	1 40	1 10	0 34	+0 09	-0 14	-0 37	-1 00	-1 23	-1 44
16	2 50	2 10	1 40	1 10	0 37	+0 10	-0 13	-0 34	-0 53	-1 14	-1 35	-1 56
18	2 20	1 40	1 20	0 43	+0 15	-0 08	-0 31	-0 52	-1 08	-1 27	-1 46	-2 05
20	1 50	1 20	0 49	+0 23	-0 02	-0 26	-0 46	-1 06	-1 22	-1 39	-1 57	-2 14
25	1 12	0 44	+0 19	-0 06	-0 28	-0 48	-1 09	-1 27	-1 42	-1 58	-2 14	-2 30
30	0 34	+0 10	-0 13	-0 36	-0 55	-1 14	-1 32	-1 51	-2 06	-2 21	-2 34	-2 49
35	+0 06	-0 16	-0 37	-0 59	-1 17	-1 33	-1 51	-2 07	-2 23	-2 37	-2 51	-3 04
40	-0 18	-0 37	-0 58	-1 16	-1 34	-1 49	-2 06	-2 22	-2 35	-2 49	-3 03	-3 16
45		-0 53	-1 14	-1 31	-1 47	-2 03	-2 18	-2 33	-2 47	-2 59	-3 13	-3 25
50		-1 10	-1 28	-1 44	-1 59	-2 15	-2 28	-2 43	-2 56	-3 08	-3 22	-3 33
55			-1 40	-1 53	-2 09	-2 24	-2 38	-2 52	-3 04	-3 17	-3 29	-3 41
60				-2 03	-2 18	-2 33	-2 46	-3 01	-3 12	-3 25	-3 37	-3 48
							-2 53	-3 07	-3 19	-3 31	-3 42	-3 53

R_0	$R = R_0 \times f$			
	f			
	0.9	1.0	1.1	1.2
	R			
′	′	′	′	′
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	4
4	4	4	4	5
5	5	5	5	6
6	5	6	7	7
7	6	7	8	8
8	7	8	9	10
9	8	9	10	11
10	9	10	11	12
12	11	12	13	14
14	13	14	15	17
16	14	16	18	19
18	16	18	20	22
20	18	20	22	24
25	22	25	28	30
30	27	30	33	36
35	31	35	38	42
40	36	40	44	48
45	40	45	50	54
50	45	50	55	60
55	49	55	60	66
60	54	60	66	72

f	Height above sea level in thousands of feet											
	0	5	10	15	20	25	30	35	40	45	50	55
	Temperature in degrees Celsius (centigrade)											
0.9	+ 47	+ 36	+ 27	+ 18	+ 10	+ 3	- 5	- 13	For these heights no temperature correction is necessary: use $R = R_0$			
1.0	+ 26	+ 16	+ 6	- 4	- 13	- 22	- 31	- 40				
1.1	+ 5	- 5	- 15	- 25	- 36	- 46	- 57	- 68				
1.2	- 16	- 25	- 36	- 46	- 58	- 71	- 83	- 95				
	- 37	- 45	- 56	- 67	- 81	- 95						

f	Refraction $R = R_0 \times f$
0.9	When R_0 is less than 10′ or the height is more than 35, 000 ft.: use $R = R_0$
1.0	
1.1	
1.2	

Choose the column appropriate to height, in units of 1,000 feet, and find the range of altitude in which the sextant altitude lies; thus find R_0. This is the refraction corresponding to the sextant altitude unless conditions are extreme. In that case find f from the lower table corresponding to the range of temperature for the appropriate height, and use the table on the right to find R. Example: at a height of 30,000 feet and temperature (-) 60° C, a celestial body is observed at altitude (-) 2° 36′. R_0 is 50′, f is 1.1 and R is 55′. Subtracting this from the sextant altitude gives (-) 3° 31′.

TABLE 7. — Coriolis (*Z*) Correction

Ground speed knots	Latitude										Ground speed knots
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	
	′	′	′	′	′	′	′	′	′	′	
50	0	0	0	1	1	1	1	1	1	1	**50**
100	0	0	1	1	2	2	2	2	3	3	**100**
150	0	1	1	2	3	3	3	4	4	4	**150**
200	0	1	2	3	3	4	5	5	5	5	**200**
250	0	1	2	3	4	5	6	6	6	7	**250**
300	0	1	3	4	5	6	7	7	8	8	**300**
350	0	2	3	5	6	7	8	9	9	9	**350**
400	0	2	4	5	7	8	9	10	10	10	**400**
450	0	2	4	6	8	9	10	11	12	12	**450**
500	0	2	4	7	8	10	11	12	13	13	**500**
550	0	3	5	7	9	11	12	14	14	14	**550**
600	0	3	5	8	10	12	14	15	16	16	**600**
650	0	3	6	9	11	13	15	16	17	17	**650**
700	0	3	6	9	12	14	16	17	18	18	**700**
750	0	3	7	10	13	15	17	18	19	20	**750**
800	0	4	7	10	13	16	18	20	21	21	**800**
850	0	4	8	11	14	17	19	21	22	22	**850**
900	0	4	8	12	15	18	20	22	23	24	**900**

To be applied by moving the position line a distance *Z* to starboard (right) of the track in northern latitudes and to port (left) in southern latitudes.

STANDARD DOME REFRACTION

To be *subtracted* from observed altitude when using sextant suspension in a perspex dome.

Alt. °	Refn. ′	Alt. °	Refn. ′
10	8	50	4
20	7	60	4
30	6	70	3
40	5	80	3

This table must not be used if a calibration table is fitted to the dome, or if a flat glass plate is provided, or for non-standard domes.

BUBBLE SEXTANT ERROR

Sextant No.

Alt. °	Corr. ′