206

H.O. PUB No. 221 (206)

RATE [illegible]

LORAN TABLE

AREA

PREFACE

This table contains necessary data for the establishment of hyperbolic loran lines of position for the pertinent rate and the area of coverage indicated by the included chartlet. The tabular data are arranged for entering with the loran reading obtained from the loran receiver-indicator and the latitude or longitude, with convenient arrangement for interpolating for the other coordinates. Sky-wave corrections are included for reduction of sky-wave readings to corresponding ground-wave readings. These together with the chartlet displaying the loran lattice precede the tabular data. Illustrative examples are also supplied. When necessary, corrections for matching ground wave to sky wave will be included.

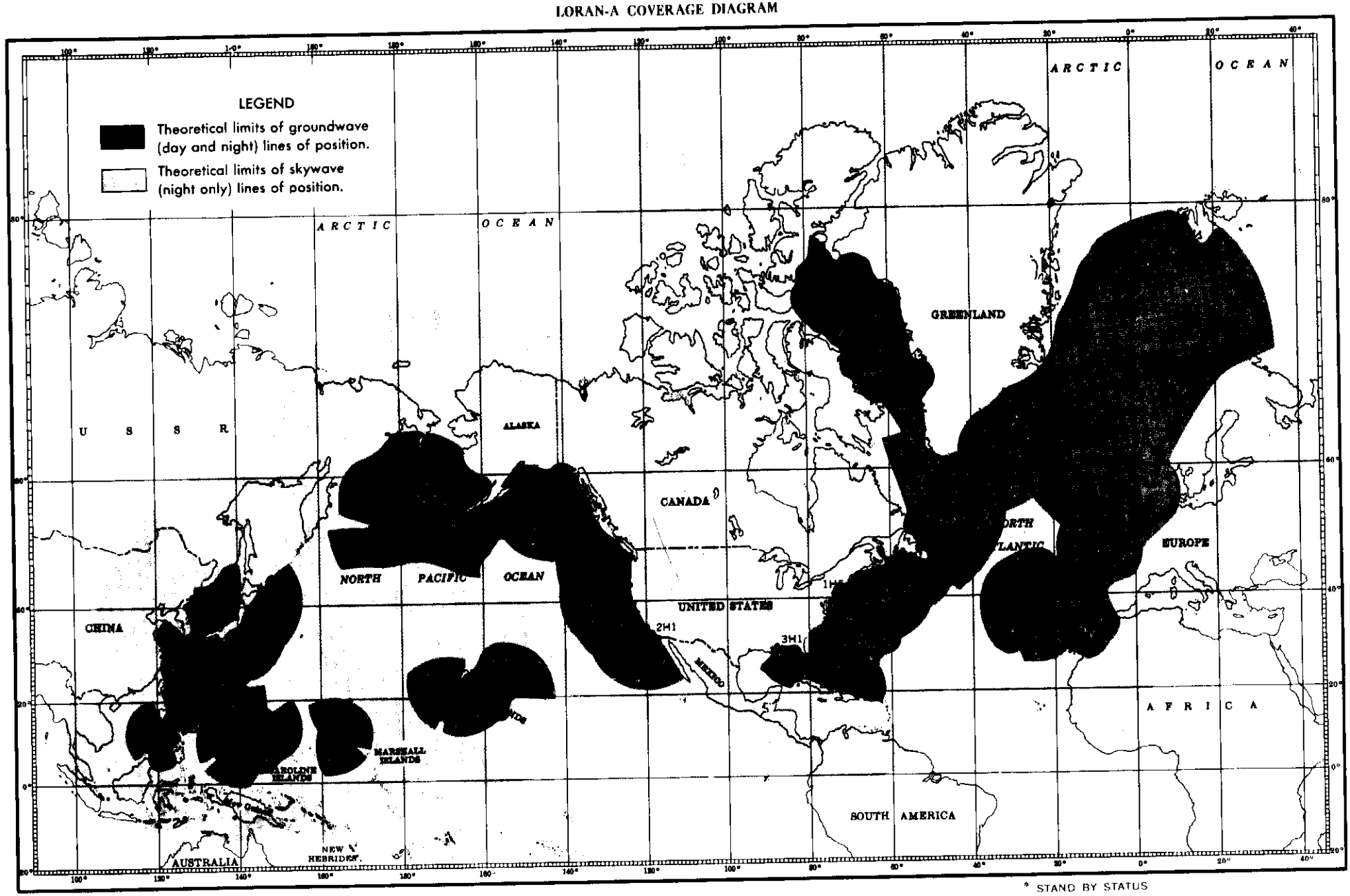
The information herein provided in tabular form is the counterpart of the loran charts. An index of loran charts is available in H. O. Pub. No. 1-N, Catalog of Nautical Charts and Publications, and in H. O. Pub. No. 1-V, Catalog of Aeronautical Charts and Publications. The table may be used, if desired, for constructing loran charts of any locality within the area of coverage.

In effecting economies in production and printing the Hydrographic Office is providing this table in a somewhat revised format from that formerly used. The table was reproduced from computer copy and is printed in black, whereas previously tables were printed in the same color used on the charts for the respective rate. The introduction included in previous loran tables has been eliminated since basic loran information is presently included in available navigation manuals and additional material is supplied in manufacturers' handbooks which are usually obtained with the receiver-indicators. The loran table series starting with 221 (101) will henceforth be reproduced, distributed and made available as separate rates, enabling the navigator to acquire only the rates desired. The publication number has been retained but with pertinent suffix which together with the rate will fully identify the table for requisitioning purposes. Future reprints of previously published tables will be reproduced as separate items. Existing volumes may still be ordered as in the past by volume number; the included rates will not be available as separate items until the present printings are exhausted.

Plans for air defense of the continental United States may require temporary suspension of the operation of certain electronic aids to navigation with little or no advance notice. In the case of loran it is possible the coding delay might be changed without notice.

The tabular data of this table is identical to the 1L5 rate printed in H.O. Pub. No. 221-D in 1954.

LORAN-A COVERAGE DIAGRAM



* STAND BY STATUS

EXAMPLE 1

The 1030 DR position of a merchant ship is latitude 19°24.′0N, longitude 128°25.′0 E. The ship is on course 030°, speed 15 knots. Loran readings are taken as follows:

1025	2H4	T_G	3084	1030	2H3	T_G	3347

Required.—The 1030 loran fix.

Solution.—Enter the tables with the tabulated value of T nearest the observed readings.

* Rate 2H4 Table IA, page 44 T=3080 T_G=3084 T_G −T=+4

Long.	Tab. Lat.	Δ
128°E	19°45.′0N	+21
129°E	19°03.′3N	+25

Lat. Change	Interpolated Lat.
(+4)×(+.21)= +0.′8	19°45.′8N
(+4)×(+.25)= +1.′0	19°04.′3N

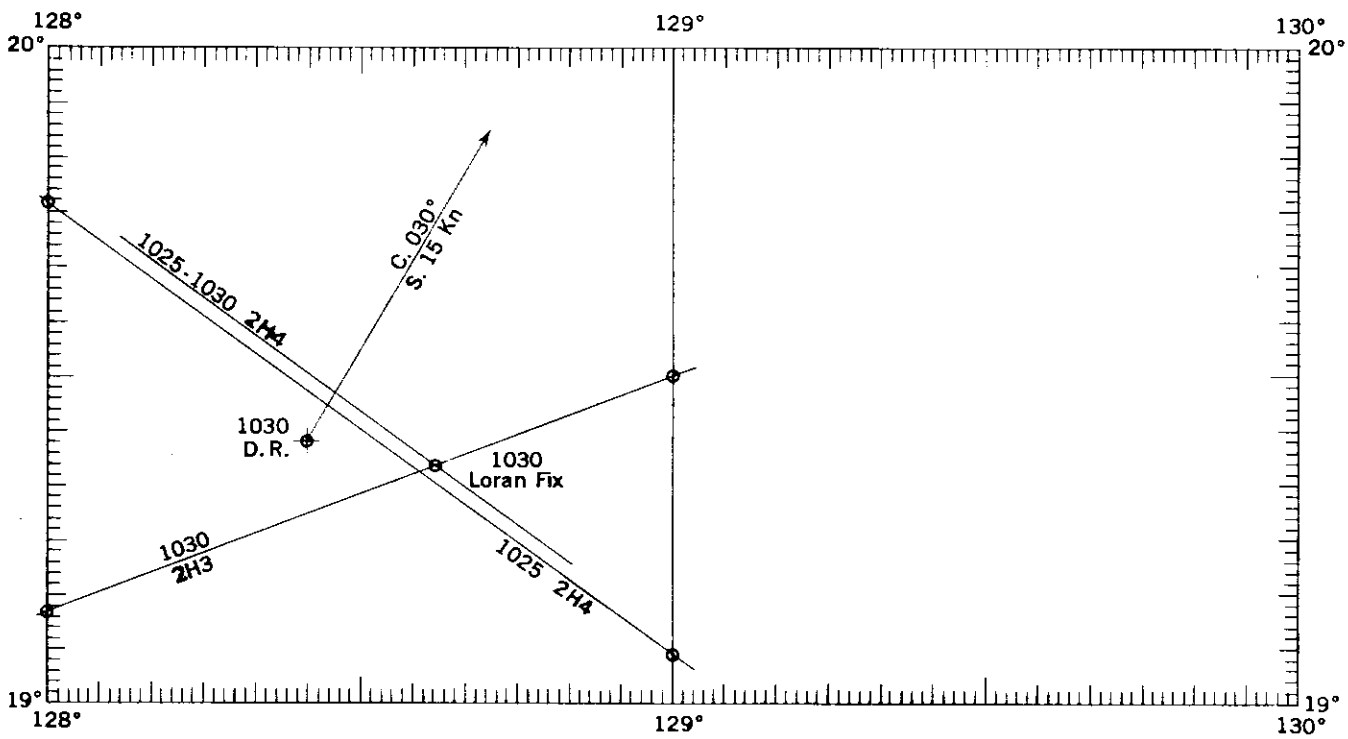
Rate 2H3 Table DA, page 52 T=3340 T_G=3347 T_G −T=+7

Long.	Tab. Lat.	Δ
128°E	19°09.′5N	−16
129°E	19°31.′3N	−18

Lat. Change	Interpolated Lat.
(+7)×(−.16)= −1.′1	19°08.′4N
(+7)×(−.18)= −1.′3	19°30.′0N

The Fix.—Loran lines are plotted through the positions above and the 1030 loran fix is:

Latitude: 19°22.′0N
Longitude: 128°37.′4E



*Taken from H. O. Pub. No. 221 (205).

EXAMPLE 2

The 2200 DR position of a destroyer is latitude 17°40.′0N, longitude 132°25.′0E. The ship is on course 190°, speed 25 knots. Loran readings are taken as follows:

2155	2H4	T_S	3245	2200	2H3	T_S	4104

Required.—The 2200 loran fix.

Solution.—Enter the tables first for sky wave corrections and apply to determine T_G; then enter time difference tables with the value of T nearest each T_G reading.

* Rate 2H4 Table IA, page 46 T=3240 T_G =3245+2=3247 T_G −T=+7

Long.	Tab. Lat.	Δ
132°E	17°52.′1N	+34
133°E	17°14.′8N	+38

Lat. Change	Interpolated Lat.
(+7)×(+.34)=+2.′4	17°54.′5N
(+7)×(+.38)=+2.′7	17°17.′5N

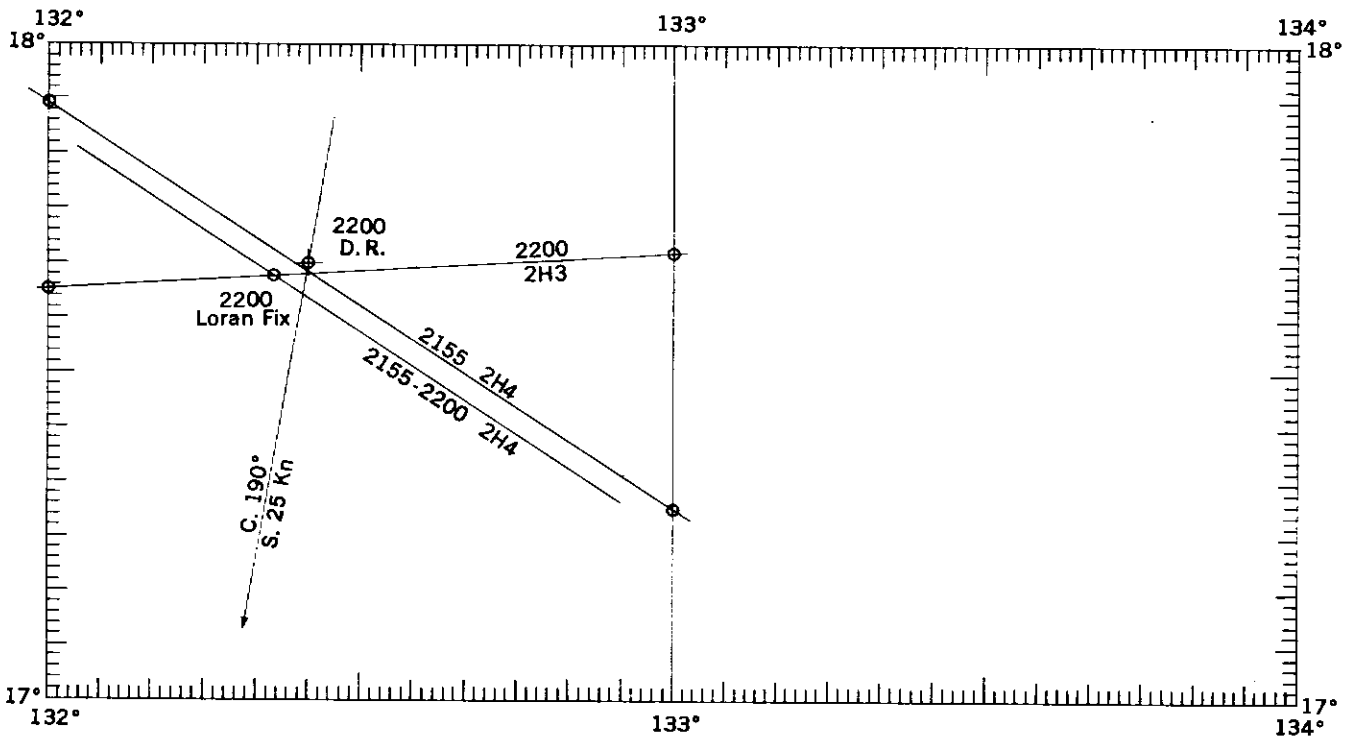
Rate 2H3 Table DA, page 68 T=4120 T_G =4104+7=4111 T_G −T=−9

Long.	Tab. Lat.	Δ
132°E	17°35.′4N	−22
133°E	17°38.′7N	−25

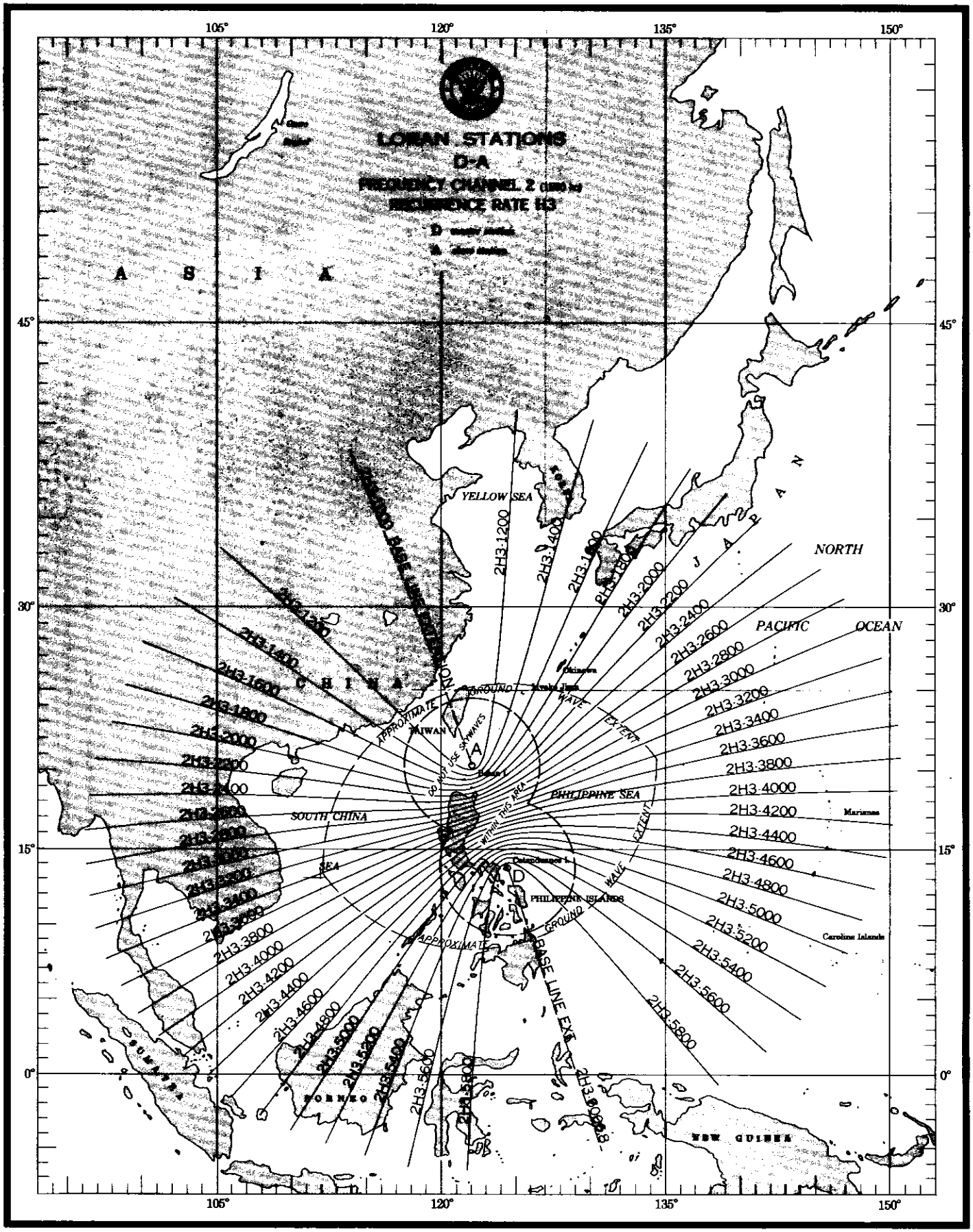
Lat. Change	Interpolated Lat.
(−9) × (−.22)= +2.′0	17°37.′4N
(−9) × (−.25)= +2.′2	17°40.′9N

The Fix.—Loran lines are plotted through the positions above and the 2200 loran fix is:

Latitude: 17°38.′7N
Longitude: 132°21.′6E



*Taken from H. O. Pub. No. 221 (205).



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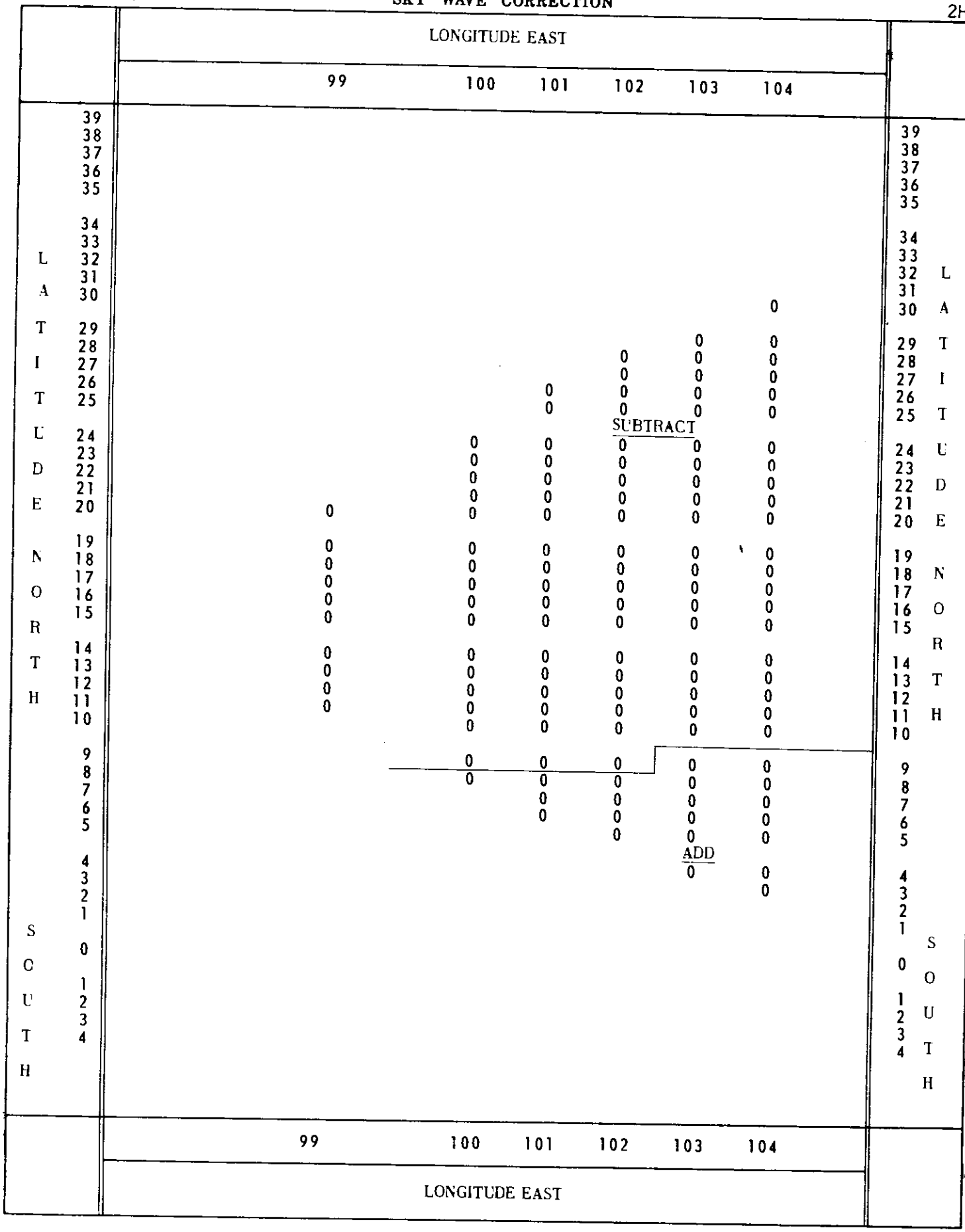
SKY WAVE CORRECTION



LATITUDE NORTH	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
39															
38												0	0	0	0
37									0	0	0	0	0	0	0
36							0	0	0	0	0	0	0	0	0
35						0	0	0	0	0	0	0	1	1	1
34				0	0	0	0	0	0	1	1	1	1	2	2
33			0	0	0	0	0	0	1	1	2	2	3	3	4
32		0	0	0	0	0	1	1	2	2	3	4	4	5	5
31	0	0	0	0	0	1	1	2	3	4	5	5	6	7	8
30	0	0	0	0	1	1	2	3	4	5	6	7	9	10	11
29	0	0	0	1	1	2	3	4	6	7	8	10	11	14	15
28	0	0	0	1	2	3	4	6	7	9	11	13	15	17	19
27	0	0	1	1	2	4	5	7	9	11	14	16	19	22	25
26	0	0	1	2	3	4	6	8	10	14	16	20	24	28	32
25	0	0	1	2	4	5	7	9	12	15	19	24	29	35	42
		SUBTRACT										SUBTRACT			
24	0	1	1	3	4	6	8	10	14	17	22	28	35	44	55
23	0	1	2	3	4	6	9	11	14	19	24	31	41	54	
22	0	1	2	3	5	7	9	11	15	19	25	33	46	DO NOT USE	
21	0	1	2	3	5	7	8	11	14	19	25	34	48	SKY WAVES IN	
20	0	1	1	3	5	6	8	11	13	18	24	32	45	THIS REGION	
19	0	1	1	3	4	6	7	9	12	16	21	27	39	55	
18	0	1	1	2	4	5	6	7	10	13	17	21	29	39	54
17	0	0	1	2	3	4	5	6	8	9	12	15	18	23	28
16	0	0	1	2	2	3	4	4	5	6	7	8	8	7	5
15	0	0	0	1	2	2	2	3	3	3	3	2	0	4	12
14	0	0	0	1	1	1	1	1	1	0	1	3	6	12	22
13	0	0	0	0	1	1	0	0	1	2	4	6	10	17	27
12	0	0	0	0	0	0	1	1	2	3	5	8	13	19	28
11	0	0	0	0	0	1	1	2	3	4	6	9	13	19	27
10	0	0	0	0	0	1	1	2	3	5	6	9	13	18	24
9	0	0	0	0	0	1	1	2	3	5	6	8	12	16	20
8	0	0	0	0	0	0	1	2	3	5	6	8	11	14	17
7	0	0	0	0	0	0	1	2	3	4	6	7	9	12	14
6	0	0	0	0	0	0	1	1	2	3	5	6	8	9	11
5	0	0	0	0	0	0	0	1	1	2	3	5	6	8	9
		ADD										ADD			
4	0	0	0	0	0	0	0	0	1	2	2	3	5	6	7
3	0	0	0	0	0	0	0	0	0	1	1	2	3	4	5
2	0	0	0	0	0	0	0	0	0	0	1	1	2	3	3
1		0	0	0	0	0	0	0	0	0	0	1	1	1	2
SOUTH 0			0	0	0	0	0	0	0	0	0	0	0	1	1
1					0	0	0	0	0	0	0	0	0	0	0
2							0	0	0	0	0	0	0	0	0
3									0	0	0	0	0	0	0
4												0	0	0	0

LONGITUDE EAST

LONGITUDE EAST

LATITUDE NORTH / SOUTH	LONGITUDE EAST 120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
39			0	0	0	0	0	0							
38	0	0	0	0	0	0	0	0	0	0	0	0	0		
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
34	2	2	2	2	2	2	2	1	1	1	1	0	0	0	0
33	4	4	4	4	4	3	3	3	2	2	1	1	0	0	0
32	6	6	6	6	6	5	5	4	4	3	2	2	1	1	0
31	8	9	9	9	8	8	7	6	5	4	3	3	2	1	1
30	11	12	12	12	11	10	10	9	7	6	5	4	3	2	1
		SUBTRACT										SUBTRACT			
29	16	16	16	16	15	14	13	11	9	8	7	5	4	3	2
28	21	21	22	21	20	18	16	14	12	10	8	7	5	4	3
27	27	28	29	28	26	23	20	17	14	12	9	8	6	5	3
26	35	37	38	36	34	30	25	21	17	13	11	8	6	5	4
25	48	52	54	51	46	39	31	25	20	15	12	8	7	5	4
24		DO NOT USE				51	39	29	22	16	12	9	6	5	3
23		SKY WAVES					47	33	24	17	12	8	5	4	3
22		IN THIS REGION					54	36	23	16	11	7	4	3	2
21							55	33	20	13	8	5	3	1	1
20							46	26	13	7	4	1	0	0	1
19						54	26	12	3	0	2	3	3	2	2
18					37	11	4	10	11	10	9	8	7	5	4
17	30	28	14	9	33	46	44	37	29	22	17	13	10	8	6
16	2	18	47						47	33	23	18	13	10	7
15	26	52				DO NOT USE				43	29	22	16	12	9
14	39					SKY WAVES				48	34	24	18	13	10
13	44					IN THIS REGION				49	34	25	19	14	10
12	43									45	32	25	18	14	10
11	38	52							52	39	30	23	17	13	10
10	31	42	52					51	42	33	26	20	16	13	9
			ADD										ADD		
9	26	32	39	44	47	47	44	38	33	27	22	18	14	11	8
8	21	26	29	32	34	34	33	30	26	22	18	15	12	9	7
7	17	20	23	25	26	26	25	23	20	18	15	12	10	7	5
6	14	16	17	19	20	20	19	18	16	14	11	10	8	6	4
5	10	12	14	14	15	15	14	14	12	10	9	7	6	4	3
4	8	9	10	10	11	11	10	10	9	7	7	5	4	3	2
3	6	6	7	7	8	8	7	7	6	6	5	4	3	2	1
2	4	4	5	5	5	5	5	5	4	4	3	2	2	1	1
1	2	3	3	3	3	3	3	3	3	2	2	1	1	0	0
0	1	1	2	2	2	2	2	2	1	1	1	0	0	0	0
1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0			
4	0	0	0	0	0	0	0	0	0						

LONGITUDE EAST 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134

LATITUDE NORTH / SOUTH	135	136	137	138	139	140	141	142	143	144	145	146	147	148
39														
38														
37	0													
36	0	0	0											
35	0	0	0	0	0									
34	0	0	0	0	0	0	0							
33	0	0	0	0	0	0	0	0						
32	0	0	0	0	0	0	0	0	0					
31	0	0	0	0	0	0	0	0	0	0				
30	1	0	0	0	0	0	0	0	0	0	0			
						SUBTRACT								
29	1	1	0	0	0	0	0	0	0	0	0	0		
28	1	0	0	0	0	0	0	0	0	0	0	0		
27	2	1	0	0	0	0	0	0	0	0	0	0	0	
26	3	2	1	0	0	0	0	0	0	0	0	0	0	
25	3	2	1	0	0	0	0	0	0	0	0	0	0	0
24	2	2	1	0	0	0	0	0	0	0	0	0	0	0
23	2	1	1	0	0	0	0	0	0	0	0	0	0	0
22	1	1	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1	1	1	1	0	0	0	0	0	0	0	0	0	0
19	2	2	2	1	1	0	0	0	0	0	0	0	0	0
18	4	3	2	2	1	0	0	0	0	0	0	0	0	0
17	5	4	3	2	1	0	0	0	0	0	0	0	0	0
16	6	5	4	2	1	0	0	0	0	0	0	0	0	
15	7	5	4	3	1	1	0	0	0	0	0	0	0	
14	8	6	4	3	1	1	0	0	0	0	0	0	0	
13	8	6	4	3	1	1	0	0	0	0	0	0		
12	8	6	4	2	1	0	0	0	0	0	0	0		
11	8	6	4	2	1	0	0	0	0	0	0	0		
10	7	5	3	2	1	0	0	0	0	0	0			
							ADD							
9	6	4	3	1	1	0	0	0	0	0	0			
8	5	3	2	1	0	0	0	0	0	0				
7	4	3	1	1	0	0	0	0	0					
6	3	2	1	0	0	0	0	0	0					
5	2	1	1	0	0	0	0	0						
4	1	1	0	0	0	0	0							
3	1	0	0	0	0	0								
2	0	0	0	0	0									
1	0	0	0	0										
0	0	0	0											
1	0													
2														
3														
4														

LONGITUDE EAST

135 136 137 138 139 140 141 142 143 144 145 146 147 148

T	Base Line Ext. 1000		1020		1040		1060		1080		T
Lat ° '	L0 ° '	Δ	L0 ° '	Δ	L0 ° '	Δ	L0 ° '	Δ	L0 ° '	Δ	Long ° '
36 N	115 04.9E	--	111 33.3E	--	109 54.9E	--	-----	--	-----	--	
35 N	115 35.9E	--	112 18.8E	--	110 47.4E	-417	109 31.8E	-359	108 23.8E	-330	
34	116 06.1	--	113 03.0	--	111 38.2	387	110 28.4	332	109 25.5	304	
33	116 35.5	--	113 46.0	--	112 27.7	357	111 23.2	306	110 25.3	280	
32	117 04.2	--	114 27.9	--	113 15.8	328	112 16.5	281	111 23.3	257	
31	117 32.2	--	115 08.8	--	114 02.7	301	113 08.5	257	112 19.8	235	
30	117 59.6	--	115 48.7	--	114 48.5	274	113 59.1	234	113 14.8	214	
29 N	118 26.4E	--	116 27.8E	--	115 33.3E	-248	114 48.6E	-212	114 08.5E	-193	
28	118 52.7	--	117 06.1	--	116 17.1	223	115 37.0	190	115 01.1	173	
27	119 18.4	--	117 43.6	--	117 00.1	198	116 24.4	169	115 52.5	154	
26	119 43.7	--	118 20.5	--	117 42.3	174	117 11.0	148	116 43.0	135	
25	120 08.5	--	118 56.9	--	118 24.0	150	117 57.0	128	117 32.8	117	
24 N	120 32.9E	--	119 32.9E	--	119 05.2E	-126	118 42.4E	-108	118 22.1E	-98	
23	120 56.8	--	120 08.6	--	119 46.3	102	119 27.8	88	119 11.2	80	
22	121 20.4	--	120 44.7	--	120 27.8	77	120 13.8	67	120 01.1	62	
21 45 N			120 53.8E	--	120 38.4E	-71	120 25.6E	-61	120 13.9E	-57	
21 30			121 03.1	--	120 49.2	64	120 37.5	56	120 26.9	52	
21 15			121 12.6	--	121 00.3	57	120 49.8	50	120 40.3	47	
21	121 43.7E	--	121 22.4	--	121 11.8	49	121 02.7	44	120 54.2	42	
20 45 N			121 32.8E	--	121 24.0E	-41	121 16.3E	-37	121 09.1E	-36	
20 30 N			121 44.6E	--	121 38.1E	-32	121 32.0E	-30	121 25.9E	-30	
	L0		L0		L0		L0		L0		
			L' °		L' °		L' °		L' °		
			20 29.5N	--	20 24.1N	-22	20 20.6N	-16	20 17.9N	-13	121 45 E
			20 21.6N	--	20 19.6N	-9	20 17.8N	-9	20 16.1N	-9	122 E
			L		L		L		L		
	L0 ° '		L0 ° '		L0 ° '		L0 ° '		L0 ° '		
20 30 N			122 03.0E	--	122 06.6E	+17	122 09.8E	+15	122 12.8E	+15	
20 45			122 03.1	--	122 08.8	25	122 13.3	21	122 17.2	19	
21 N	121 43.7E	--	122 01.8E	--	122 09.0E	+32	122 14.7E	+27	122 19.6E	+23	
21 15		--	121 59.8	--	122 08.5	39	122 15.2	31	122 21.0	27	
21 30			121 57.4	--	122 07.5	45	122 15.2	36	122 21.8	31	
21 45			121 54.8	--	122 06.2	50	122 14.8	40	122 22.2	35	
22 N	121 20.4E	--	121 52.1E	--	122 04.6E	+55	122 14.2E	+44	122 22.3E	+38	
23	120 56.8	--	121 39.9	--	121 57.0	75	122 09.9	60	122 20.9	51	
24 N	120 32.9E	--	121 26.7E	--	121 48.0E	+94	122 04.2E	+74	122 17.8E	+64	
	L0		L0		L0		L0		L0		
T	Base Line Ext. 1000		1020		1040		1060		1080		T

T	Base Line Ext. 1000		1020		1040		1060		1080		T
Lat ° ′	L_0 ° ′	△	L_0 ° ′	△	L_0 ° ′	△	L_0 ° ′	△	L_0 ° ′	△	Long ° ′
25 N	120 08.5 E	--	121 12.8 E	--	121 38.3 E	+112	121 57.6 E	+ 89	122 13.8 E	+ 76	
26	119 43.7	--	120 58.5	--	121 28.1	130	121 50.5	103	122 09.3	88	
27	119 18.4	--	120 43.7	--	121 17.4	148	121 42.9	117	122 04.3	100	
28	118 52.7	--	120 28.5	--	121 06.4	166	121 35.0	132	121 59.0	113	
29	118 26.4	--	120 12.9	--	120 55.0	185	121 26.8	146	121 53.4	125	
30 N	117 59.6 E	--	119 56.9 E	--	120 43.3 E	+203	121 18.3 E	+161	121 47.6 E	+138	
31	117 32.2	--	119 40.6	--	120 31.3	222	121 09.5	176	121 41.6	150	
32	117 04.2	--	119 23.8	--	120 18.9	242	121 00.5	191	121 35.3	163	
33	116 35.5	--	119 06.7	--	120 06.2	261	120 51.2	207	121 28.9	177	
34	116 06.1	--	118 49.1	--	119 53.2	282	120 41.7	222	121 22.2	190	
35 N	115 35.9 E	--	118 31.0 E	--	119 39.9 E	+302	120 31.9 E	+239	121 15.3 E	+204	
36	115 04.9	--	118 12.4	--	119 26.2	323	120 21.8	255	121 08.2	218	
37	114 33.1	--	117 53.4	--	119 12.1	345	120 11.4	272	121 00.9	233	
38	114 00.3	--	117 33.8	--	118 57.6	367	120 00.7	290	120 53.4	247	
39 N	113 26.5 E	--	117 13.6 E	--	118 42.6 E	+390	119 49.7 E	+308	120 45.7 E	+263	
	L_0		L_0		L_0		L_0		L_0		
T	Base Line Ext. 1000		1020		1040		1060		1080		T

T	Base Line Ext. 1000		1020		1040		1060		1080		T
Lat ° ′	L o ° ′	△	L o ° ′	△	L o ° ′	△	L o ° ′	△	L o ° ′	△	Long ° ′
25 N	120 08.5 E	--	121 12.8 E	--	121 38.3 E	+112	121 57.6 E	+ 89	122 13.8 E	+ 76	
26	119 43.7	--	120 58.5	--	121 28.1	130	121 50.5	103	122 09.3	88	
27	119 18.4	--	120 43.7	--	121 17.4	148	121 42.9	117	122 04.3	100	
28	118 52.7	--	120 28.5	--	121 06.4	166	121 35.0	132	121 59.0	113	
29	118 26.4	--	120 12.9	--	120 55.0	185	121 26.8	146	121 53.4	125	
30 N	117 59.6 E	--	119 56.9 E	--	120 43.3 E	+203	121 18.3 E	+161	121 47.6 E	+138	
31	117 32.2	--	119 40.6	--	120 31.3	222	121 09.5	176	121 41.6	150	
32	117 04.2	--	119 23.8	--	120 18.9	242	121 00.5	191	121 35.3	163	
33	116 35.5	--	119 06.7	--	120 06.2	261	120 51.2	207	121 28.9	177	
34	116 06.1	--	118 49.1	--	119 53.2	282	120 41.7	222	121 22.2	190	
35 N	115 35.9 E	--	118 31.0 E	--	119 39.9 E	+302	120 31.9 E	+239	121 15.3 E	+204	
36	115 04.9	--	118 12.4	--	119 26.2	323	120 21.8	255	121 08.2	218	
37	114 33.1	--	117 53.4	--	119 12.1	345	120 11.4	272	121 00.9	233	
38	114 00.3	--	117 33.8	--	118 57.6	367	120 00.7	290	120 53.4	247	
39 N	113 26.5 E	--	117 13.6 E	--	118 42.6 E	+390	119 49.7 E	+308	120 45.7 E	+263	
	L o		L o		L o		L o		L o		
T	Base Line Ext. 1000		1020		1040		1060		1080		T

T	1100	1120	1140	1160	1180	T
Lat	L Δ	L Δ	L Δ	L Δ	L Δ	Long
° ′	° ′	° ′	° ′	° ′	° ′	° ′
	35 17.6 N - 282	34 25.5 N - 244	33 39.8 N - 216	32 59.0 N - 194	32 22.1 N - 177	107 E
	34 24.2 271	33 34.2 234	32 50.5 207	32 11.5 186	31 36.3 169	108
	33 29.1 259	32 41.5 223	31 59.8 197	31 22.7 176	30 49.3 160	109
	32 32.5 N - 246	31 47.3 N - 212	31 07.8 N - 186	30 32.7 N - 167	30 01.1 N - 151	110 E
	31 34.2 232	30 51.6 199	30 14.4 175	29 41.4 157	29 11.7 142	111
	30 34.3 N - 217	29 54.4 N - 186	29 19.7 N - 164	28 48.9 N - 146	28 21.2 N - 132	112 E
	L	L	L	L	L	
	° L_0 ′	° L_0 ′	° L_0 ′	L_0 ′	° L_0 ′	
31 N	111 34.4 E - 222	110 51.0 E - 214	110 08.9 E - 209	109 27.5 E - 206	108 46.4 E - 205	
30	112 33.6 202	111 54.2 194	111 15.9 189	110 38.4 187	110 01.3 185	
29 N	113 31.3 E - 182	112 55.7 E - 175	112 21.2 E - 171	111 47.4 E - 168	111 14.0 E - 167	
28	114 27.6 163	113 55.8 157	113 24.9 153	112 54.7 150	112 24.8 149	
27	115 22.8 145	114 54.5 139	114 27.1 135	114 00.3 133	113 33.9 132	
26	116 17.0 127	115 52.1 122	115 28.1 119	115 04.6 117	114 41.5 116	
25	117 10.3 110	116 48.9 105	116 28.1 103	116 07.8 101	115 47.8 100	
24 N	118 03.1 E - 93	117 45.0 E - 89	117 27.5 E - 87	117 10.3 E - 85	116 53.4 E - 84	
23	118 55.8 76	118 40.9 73	118 26.6 71	118 12.5 70	117 58.6 69	
22	119 49.2 58	119 37.7 57	119 26.5 55	119 15.5 55	119 04.6 54	
21 45 N	120 02.9 E - 54	119 52.2 E - 52	119 41.9 E - 51	119 31.7 E - 51	119 21.5 E - 51	
21 30	120 16.8 50	120 07.1 48	119 57.5 47	119 48.1 47	119 38.7 47	
21 15 N	120 31.1 E - 45	120 22.3 E - 44	120 13.6 E - 43	120 04.9 E - 43	119 56.3 E - 43	
	L_0	L_0	L_0	L_0	L_0	
	° L ′	° L ′	° L ′	° L ′	° L ′	
	21 48.1 N - 60	21 37.1 N - 51	21 27.7 N - 44	21 19.3 N - 39	21 11.9 N - 35	120 E
	21 16.2 47	21 07.6 40	21 00.2 35	20 53.7 31	20 47.9 28	120 30
	20 46.8 N - 33	20 40.8 N - 28	20 35.5 N - 25	20 30.9 N - 22	20 26.8 N - 20	121 E
	20 33.8 26	20 29.1 22	20 25.0 19	20 21.4 18	20 18.0 16	121 15
	20 22.9 18	20 19.5 16	20 16.5 14	20 13.8 13	20 11.2 13	121 30
	20 15.4 12	20 13.2 11	20 11.2 10	20 09.2 10	20 07.2 10	121 45
	20 14.4 N - 8	20 12.7 N - 8	20 11.0 N - 8	20 09.3 N - 8	20 07.7 N - 8	122 E
	20 28.6 N - 30	20 24.1 N - 20	20 20.7 N - 16	20 17.8 N - 13	20 15.3 N - 12	122 15 E
	L	L	L	L	L	
	° L_0 ′	° L_0 ′	° L_0 ′	° L_0 ′	° L_0 ′	
20 15 N	122 01.8 E + 18	122 05.6 E + 17	122 08.8 E + 15	122 11.8 E + 15	122 14.6 E + 14	
20 30	122 15.7 14	122 18.5 14	122 21.3 14	122 24.2 14	122 27.0 14	
20 45 N	122 20.9 E + 18	122 24.4 E + 17	122 27.8 E + 17	122 31.1 E + 16	122 34.3 E + 16	
	L_0	L_0	L_0	L_0	L_0	
T	1100	1120	1140	1160	1180	T

T	1100	1120	1140	1160	1180	T
Lat ° ′	Lo ° ′	Δ	Lo ° ′	Δ	Lo ° ′	Δ	Lo ° ′	Δ	Lo ° ′	Δ	Long ° ′
21 N	122 24.1	E + 22	122 28.3	E + 20	122 32.2	E + 19	122 36.1	E + 19	122 39.8	E + 18	
21 15	122 26.2	25	122 31.0	23	122 35.6	22	122 39.9	21	122 44.1	21	
21 30	122 27.7	28	122 33.1	26	122 38.2	25	122 43.1	24	122 47.7	23	
21 45	122 28.8	31	122 34.8	29	122 40.4	27	122 45.7	26	122 50.8	25	
22 N	122 29.5	E + 34	122 36.1	E + 32	122 42.2	E + 30	122 48.0	E + 28	122 53.5	E + 27	
23	122 30.5	46	122 39.3	42	122 47.4	39	122 55.0	37	123 02.3	35	
24	122 29.8	57	122 40.6	52	122 50.7	49	123 00.1	46	123 09.0	43	
25 N	122 28.1	E + 68	122 41.0	E + 62	122 52.9	E + 58	123 04.0	E + 54	123 14.6	E + 51	
26	122 25.8	79	122 40.7	72	122 54.5	67	123 07.4	63	123 19.6	59	
27	122 23.1	89	122 40.1	82	122 55.7	76	123 10.4	71	123 24.2	67	
28	122 20.1	100	122 39.1	92	122 56.7	85	123 13.1	80	123 28.5	75	
29	122 16.8	111	122 37.9	102	122 57.4	94	123 15.6	88	123 32.7	84	
30 N	122 13.3	E + 122	122 36.6	E + 112	122 58.0	E + 104	123 18.0	E + 97	123 36.8	E + 92	
31	122 09.7	134	122 35.1	122	122 58.5	113	123 20.3	106	123 40.9	100	
32	122 05.9	145	122 33.4	132	122 58.8	123	123 22.5	115	123 44.9	109	
33	122 01.9	157	122 31.7	143	122 59.1	133	123 24.7	124	123 48.8	118	
34	121 57.7	169	122 29.8	154	122 59.3	143	123 26.9	134	123 52.9	127	
35 N	121 53.4	E + 181	122 27.8	E + 165	122 59.5	E + 153	123 29.0	E + 143	123 56.9	E + 136	
36	121 49.0	194	122 25.8	177	122 59.6	164	123 31.2	153	124 01.0	145	
37	121 44.4	207	122 23.6	188	122 59.7	174	123 33.4	163	124 05.1	155	
38	121 39.6	220	122 21.4	200	122 59.7	185	123 35.5	174	124 09.3	165	
39	121 34.7	233	122 19.0	213	122 59.7	197	123 37.7	185	124 13.6	175	
40 N	121 29.6	E + 247	122 16.6	E + 225	122 59.7	E + 209	123 40.0	E + 196	124 17.9	E + 185	
	Lo		Lo		Lo		Lo		Lo		
T	1100	1120	1140	1160	1180	T

T	1200	1220	1240	1260	1280	T
Lat ° ′	L ° ′ / △	L ° ′ / △	L ° ′ / △	L ° ′ / △	L ° ′ / △	Long ° ′
	33 13.6 N / −176	32 39.8 N / −163	32 08.3 N / −152	31 38.9 N / −143	31 11.2 N / −135	105 E
	32 31.6 / 169	31 59.1 / 157	31 28.9 / 146	31 00.6 / 137	30 34.0 / 129	106
	31 48.4 / 162	31 17.3 / 150	30 48.4 / 140	30 21.4 / 131	29 56.0 / 123	107
	31 04.1 / 155	30 34.5 / 143	30 06.9 / 133	29 41.2 / 125	29 17.1 / 117	108
	30 18.7 / 147	29 50.6 / 136	29 24.5 / 126	29 00.1 / 118	28 37.3 / 111	109
	29 32.2 N / −138	29 05.7 N / −128	28 41.1 N / −119	28 18.1 N / −111	27 56.6 N / −104	110 E
	28 44.6 / 130	28 19.8 / 120	27 56.7 / 111	27 35.2 / 104	27 15.1 / 98	111
	27 56.0 / 121	27 32.9 / 111	27 11.4 / 103	26 51.5 / 97	26 32.8 / 91	112
	27 06.3 / 111	26 45.0 / 103	26 25.3 / 95	26 06.9 / 89	25 49.7 / 83	113
	26 15.7 / 102	25 56.3 / 94	25 38.3 / 87	25 21.6 / 81	25 05.9 / 76	114
	25 24.2 N / − 91	25 06.8 N / − 84	24 50.6 N / − 78	24 35.6 N / − 73	24 21.5 N / − 68	115 E
	24 32.0 / 81	24 16.6 / 74	24 02.4 / 69	23 49.1 / 64	23 36.7 / 60	116
	23 39.4 / 70	23 26.1 / 64	23 13.8 / 59	23 02.4 / 55	22 51.8 / 52	117
	22 46.6 / 58	22 35.6 / 53	22 25.4 / 49	22 15.9 / 46	22 07.1 / 43	118
	21 54.6 / 45	21 46.0 / 42	21 37.9 / 39	21 30.5 / 36	21 23.5 / 34	119
	21 05.2 N / − 32	20 59.0 N / − 30	20 53.3 N / − 28	20 47.9 N / − 26	20 42.9 N / − 24	120 E
	20 42.6 / 25	20 37.7 / 23	20 33.2 / 22	20 29.0 / 21	20 25.0 / 19	120 30
	20 22.9 N / − 18	20 19.4 N / − 17	20 16.1 N / − 16	20 12.9 N / − 15	20 09.9 N / − 15	121 E
	20 14.9 / 15	20 12.0 / 14	20 09.3 / 13	20 06.6 / 13	20 04.1 / 12	121 15
	20 08.8 / 12	20 06.4 / 11	20 04.2 / 11	20 02.0 / 11	19 59.9 / 10	121 30
	20 05.3 / 9	20 03.5 / 9	20 01.6 / 9	19 59.8 / 9	19 58.0 / 9	121 45
	20 06.0 N / − 8	20 04.3 N / − 8	20 02.6 N / − 8	20 00.9 N / − 8	19 59.2 N / − 8	122 E
	20 13.0 / 11	20 10.8 / 11	20 08.8 / 10	20 06.8 / 10	20 04.8 / 10	122 15
	20 30.4 N / − 23	20 26.2 N / − 20	20 22.6 N / − 17	20 19.4 N / − 15	20 16.4 N / − 14	122 30 E
	L	L	L	L	L	
	L_0 ° ′	L_0 ° ′	L_0 ° ′	L_0 ° ′	L_0 ° ′	
20 15 N	122 17.5 E / + 14	122 20.2 E / + 14	122 23.0 E / + 14	122 25.8 E / + 14	122 28.5 E / + 14	
20 30	122 29.7 / 14	122 32.5 / 14	122 35.4 / 14	122 38.2 / 14	122 41.0 / 14	
20 45	122 37.5 / 16	122 40.7 / 16	122 43.8 / 16	122 46.9 / 15	122 50.0 / 15	
21 N	122 43.4 E / + 18	122 46.9 E / + 18	122 50.4 E / + 17	122 53.9 E / + 17	122 57.3 E / + 17	
21 15	122 48.1 / 20	122 52.1 / 20	122 55.9 / 19	122 59.7 / 19	123 03.5 / 19	
21 30	122 52.2 / 22	122 56.5 / 22	123 00.8 / 21	123 04.9 / 21	123 09.0 / 20	
21 45	122 55.7 / 24	123 00.4 / 23	123 05.1 / 23	123 09.6 / 22	123 14.0 / 22	
22 N	122 58.9 E / + 26	123 04.0 E / + 25	123 09.0 E / + 25	123 13.9 E / + 24	123 18.6 E / + 24	
23	123 09.2 / 34	123 15.9 / 33	123 22.3 / 32	123 28.6 / 31	123 34.7 / 30	
24	123 17.4 / 42	123 25.6 / 40	123 33.5 / 39	123 41.1 / 38	123 48.5 / 37	
25 N	123 24.6 E / + 49	123 34.2 E / + 47	123 43.5 E / + 46	123 52.5 E / + 44	124 01.2 E / + 43	
26	123 31.2 / 57	123 42.3 / 55	123 53.0 / 53	124 03.3 / 51	124 13.4 / 50	
27	123 37.3 / 64	123 49.9 / 62	124 02.0 / 60	124 13.8 / 58	124 25.2 / 56	
28	123 43.3 / 72	123 57.4 / 69	124 10.9 / 67	124 24.0 / 65	124 36.8 / 63	
29 N	123 49.1 E / + 80	124 04.7 E / + 77	124 19.7 E / + 74	124 34.2 E / + 72	124 48.3 E / + 70	
	L_0	L_0	L_0	L_0	L_0	
T	1200	1220	1240	1260	1280	T

T	1200	1220	1240	1260	1280	T
Lat ° ′	L0 ° ′ Δ	L0 ° ′ Δ	L0 ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	Long ° ′
30 N	123 54.8 E + 88	124 11.9 E + 84	124 28.4 E + 81	124 44.4 E + 79	124 59.8 E + 76	
31	124 00.4 96	124 19.2 92	124 37.2 89	124 54.6 86	125 11.5 83	
32	124 06.1 104	124 26.4 100	124 46.0 96	125 04.9 93	125 23.2 90	
33	124 11.8 112	124 33.7 108	124 54.9 104	125 15.3 100	125 35.1 98	
34	124 17.5 121	124 41.2 116	125 03.9 112	125 25.8 108	125 47.1 105	
35 N	124 23.3 E + 129	124 48.7 E + 124	125 13.0 E + 120	125 36.6 E + 116	125 59.4 E + 113	
36	124 29.2 138	124 56.3 133	125 22.3 128	125 47.5 124	126 11.9 120	
37	124 35.2 148	125 04.1 142	125 31.9 136	125 58.7 132	126 24.7 128	
38	124 41.4 157	125 12.0 151	125 41.6 145	126 10.1 141	126 37.8 137	
39	124 47.6 167	125 20.2 160	125 51.5 154	126 21.8 149	126 51.2 145	
40 N	124 54.0 E + 176	125 28.5 E + 169	126 01.7 E + 163	126 33.8 E + 158	127 04.9 E + 154	
	L0	L0	L0	L0	L0	
T	1200	1220	1240	1260	1280	T

T	1300	1320	1340	1360	1380	T
Lat ° ′	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	Long ° ′
	31 54.5 N - 138	31 27.6 N - 131	31 02.1 N - 125	30 37.6 N - 120	30 14.2 N - 115	103 E
	31 20.1 133	30 54.3 126	30 29.7 120	30 06.2 115	29 43.6 110	104
	30 45.0 N - 128	30 20.1 N - 121	29 56.5 N - 116	29 33.9 N - 110	29 12.3 N - 106	105 E
	30 08.9 122	29 45.2 116	29 22.5 111	29 01.0 106	28 40.3 101	106
	29 32.1 117	29 09.4 111	28 47.8 105	28 27.2 101	28 07.5 96	107
	28 54.3 111	28 32.8 105	28 12.3 100	27 52.7 96	27 34.1 91	108
	28 15.8 105	27 55.4 99	27 36.0 95	27 17.5 90	26 59.9 86	109
	27 36.4 N - 99	27 17.2 N - 93	26 59.0 N - 89	26 41.6 N - 85	26 25.1 N - 81	110 E
	26 56.2 92	26 38.2 87	26 21.2 83	26 05.0 79	25 49.6 76	111
	26 15.2 86	25 58.6 81	25 42.8 77	25 27.8 73	25 13.5 70	112
	25 33.5 79	25 18.2 74	25 03.7 71	24 50.0 67	24 36.8 64	113
	24 51.2 72	24 37.3 68	24 24.1 64	24 11.6 61	23 59.6 58	114
	24 08.3 N - 64	23 55.9 N - 61	23 44.1 N - 58	23 32.8 N - 55	23 22.1 N - 52	115 E
	23 25.1 57	23 14.1 53	23 03.7 51	22 53.8 48	22 44.4 46	116
	22 41.8 49	22 32.3 46	22 23.4 44	22 14.9 42	22 06.7 40	117
	21 58.8 40	21 50.9 38	21 43.5 36	21 36.4 35	21 29.6 33	118
	21 17.0 32	21 10.8 30	21 04.9 29	20 59.3 27	20 54.0 26	119
	20 38.2 N - 23	20 33.8 N - 22	20 29.5 N - 21	20 25.4 N - 20	20 21.5 N - 19	120 E
	20 21.2 18	20 17.6 18	20 14.1 17	20 10.8 16	20 07.6 16	120 30
	20 07.1 N - 14	20 04.3 N - 14	20 01.6 N - 13	19 59.0 N - 13	19 56.5 N - 12	121 E
	20 01.7 12	19 59.3 12	19 57.0 11	19 54.7 11	19 52.5 11	121 15
	19 57.9 10	19 55.8 10	19 53.8 10	19 51.9 10	19 49.9 10	121 30
	19 56.2 9	19 54.5 9	19 52.7 9	19 50.9 9	19 49.2 9	121 45
	19 57.6 N - 8	19 55.9 N - 8	19 54.2 N - 8	19 52.5 N - 8	19 50.8 N - 8	122 E
	20 02.9 9	20 01.0 9	19 59.2 9	19 57.4 9	19 55.6 9	122 15
	20 13.7 N - 13	20 11.2 N - 12	20 08.8 N - 12	20 06.4 N - 11	20 04.2 N - 11	122 30 E
	L	L	L	L	L	
	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	
20 N	122 08.4 E + 24	122 12.8 E + 20	122 16.6 E + 19	122 20.2 E + 17	122 23.6 E + 17	
20 15	122 31.3 14	122 34.1 14	122 36.9 14	122 39.7 14	122 42.5 14	
20 30	122 43.8 14	122 46.7 14	122 49.5 14	122 52.4 14	122 55.2 14	
20 45	122 53.1 15	122 56.2 15	122 59.2 15	123 02.3 15	123 05.4 15	
21 N	123 00.7 E + 17	123 04.0 E + 17	123 07.4 E + 17	123 10.7 E + 17	123 14.1 E + 17	
21 15	123 07.2 18	123 10.9 18	123 14.5 18	123 18.2 18	123 21.8 18	
21 30	123 13.0 20	123 17.0 20	123 21.0 20	123 24.9 20	123 28.8 19	
21 45	123 18.4 22	123 22.7 21	123 26.9 21	123 31.1 21	123 35.3 21	
22 N	123 23.3 E + 23	123 27.9 E + 23	123 32.5 E + 23	123 37.0 E + 22	123 41.5 E + 22	
23	123 40.6 30	123 46.5 29	123 52.3 29	123 57.9 28	124 03.5 28	
24 N	123 55.8 E + 36	124 02.9 E + 35	124 09.8 E + 35	124 16.7 E + 34	124 23.4 E + 34	
	L0	L0	L0	L0	L0	
T	1300	1320	1340	1360	1380	T

T	1300	1320	1340	1360	1380	T
Lat ° ′	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	Long ° ′
25 N	124 09.8 E + 42	124 18.1 E + 41	124 26.3 E + 40	124 34.3 E + 40	124 42.2 E + 39	
26	124 23.2 48	124 32.7 47	124 42.1 46	124 51.3 46	125 00.4 45	
27	124 36.2 55	124 47.1 54	124 57.7 53	125 08.1 52	125 18.3 51	
28	124 49.2 61	125 01.3 60	125 13.1 59	125 24.7 58	125 36.2 57	
29	125 02.0 68	125 15.4 66	125 28.5 65	125 41.4 64	125 54.0 63	
30 N	125 14.9 E + 74	125 29.6 E + 73	125 44.0 E + 71	125 58.1 E + 70	126 12.0 E + 69	
31	125 27.9 81	125 43.9 79	125 59.6 78	126 15.0 76	126 30.2 75	
32	125 41.0 88	125 58.4 86	126 15.5 84	126 32.2 83	126 48.6 82	
33	125 54.3 95	126 13.1 93	126 31.5 91	126 49.6 89	127 07.3 88	
34	126 07.8 102	126 28.1 100	126 47.9 98	127 07.3 96	127 26.4 95	
35 N	126 21.6 E + 110	126 43.3 E + 107	127 04.5 E + 105	127 25.4 E + 103	127 45.8 E + 102	
36	126 35.7 117	126 58.8 115	127 21.5 112	127 43.8 110	128 05.7 109	
37	126 50.0 125	127 14.7 122	127 38.9 120	128 02.7 118	128 26.0 116	
38	127 04.7 133	127 31.0 130	127 56.8 128	128 22.0 125	128 46.9 123	
39	127 19.8 141	127 47.7 138	128 15.0 135	128 41.9 133	129 08.3 131	
40 N	127 35.2 E + 150	128 04.8 E + 146	128 33.8 E + 144	129 02.3 E + 141	129 30.3 E + 139	
	L0	L0	L0	L0	L0	
T	1300	1320	1340	1360	1380	T

T	1400	1420	1440	1460	1480	T
Lat. ° ′	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	Long ° ′
	29 51.7 N - 110	29 30.1 N - 106	29 09.2 N - 103	28 49.0 N - 99	28 29.5 N - 96	103 E
	29 22.0 106	29 01.2 102	28 41.1 99	28 21.7 95	28 03.0 92	104
	28 51.6 N - 102	28 31.6 N - 98	28 12.4 N - 94	27 53.8 N - 91	27 35.9 N - 88	105 E
	28 20.5 97	28 01.4 94	27 43.1 90	27 25.3 87	27 08.2 84	106
	27 48.7 93	27 30.5 89	27 13.0 86	26 56.2 83	26 39.9 80	107
	27 16.2 88	26 59.0 84	26 42.4 81	26 26.4 79	26 11.0 76	108
	26 43.0 83	26 26.8 80	26 11.2 77	25 56.1 74	25 41.5 72	109
	26 09.2 N - 78	25 54.0 N - 75	25 39.3 N - 72	25 25.2 N - 69	25 11.5 N - 67	110 E
	25 34.8 73	25 20.6 70	25 06.9 67	24 53.7 65	24 41.0 63	111
	24 59.7 67	24 46.6 65	24 33.9 62	24 21.7 60	24 10.0 58	112
	24 24.2 62	24 12.1 59	24 00.5 57	23 49.3 55	23 38.5 53	113
	23 48.2 56	23 37.2 54	23 26.7 52	23 16.5 50	23 06.7 48	114
	23 11.9 N - 50	23 02.0 N - 48	22 52.6 N - 46	22 43.5 N - 45	22 34.7 N - 43	115 E
	22 35.4 44	22 26.7 42	22 18.4 41	22 10.4 39	22 02.7 38	116
	21 59.0 38	21 51.5 37	21 44.4 35	21 37.5 34	21 30.8 33	117
	21 23.2 32	21 17.0 30	21 11.0 29	21 05.2 28	20 59.7 27	118
	20 48.8 25	20 43.9 24	20 39.1 23	20 34.5 23	20 30.1 22	119
	20 17.7 N - 19	20 14.1 N - 18	20 10.5 N - 17	20 07.1 N - 17	20 03.8 N - 16	120 E
	20 04.5 15	20 01.5 15	19 58.6 14	19 55.7 14	19 53.0 14	120 30
	19 54.1 N - 12	19 51.7 N - 12	19 49.3 N - 12	19 47.0 N - 11	19 44.7 N - 11	121 E
	19 50.3 11	19 48.2 11	19 46.1 10	19 44.0 10	19 42.0 10	121 15
	19 48.0 10	19 46.1 10	19 44.2 9	19 42.3 9	19 40.5 9	121 30
	19 47.4 9	19 45.7 9	19 44.0 9	19 42.2 9	19 40.5 9	121 45
	19 49.2 N - 8	19 47.5 N - 8	19 45.8 N - 8	19 44.1 N - 8	19 42.4 N - 8	122 E
	19 53.8 9	19 52.0 9	19 50.2 9	19 48.5 9	19 46.7 9	122 15
	20 02.0 11	19 59.9 10	19 57.9 10	19 55.8 10	19 53.9 10	122 30
	20 14.7 N - 14	20 12.0 N - 14	20 09.3 N - 13	20 06.8 N - 12	20 04.3 N - 12	122 45 E
	L	L	L	L	L	
	L ° ′	L ° ′	L ° ′	L ° ′	L ° ′	
20 N	122 26.9 E + 16	122 30.1 E + 16	122 33.2 E + 16	122 36.3 E + 15	122 39.4 E + 15	
20 15	122 45.3 14	122 48.1 14	122 50.9 14	122 53.8 14	122 56.6 14	
20 30	122 58.1 14	123 01.0 15	123 04.0 15	123 06.9 15	123 09.9 15	
20 45	123 08.5 15	123 11.6 16	123 14.7 16	123 17.8 16	123 21.0 16	
21 N	123 17.4 E + 17	123 20.8 E + 17	123 24.1 E + 17	123 27.5 E + 17	123 30.8 E + 17	
21 15	123 25.4 18	123 29.0 18	123 32.6 18	123 36.2 18	123 39.7 18	
21 30	123 32.7 19	123 36.5 19	123 40.4 19	123 44.2 19	123 48.0 19	
21 45	123 39.5 21	123 43.6 21	123 47.7 20	123 51.8 20	123 55.9 20	
22 N	123 45.9 E + 22	123 50.3 E + 22	123 54.6 E + 22	123 59.0 E + 22	124 03.3 E + 22	
23	124 09.1 28	124 14.6 27	124 20.0 27	124 25.4 27	124 30.8 27	
24 N	124 30.1 E + 33	124 36.7 E + 33	124 43.2 E + 32	124 49.6 E + 32	124 56.1 E + 32	
	L0	L0	L0	L0	L0	
T	1400	1420	1440	1460	1480	T

T	1400	1420	1440	1460	1480	T
Lat ° ′	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	L0 ° ′ △	Long ° ′
25 N	124 50.0 E + 39	124 57.7 E + 38	125 05.3 E + 38	125 12.8 E + 38	125 20.3 E + 37	
26	125 09.3 44	125 18.1 44	125 26.8 43	125 35.5 43	125 44.0 43	
27	125 28.4 50	125 38.4 49	125 48.2 49	125 57.9 48	126 07.6 48	
28	125 47.4 56	125 58.5 55	126 09.5 55	126 20.3 54	126 31.1 54	
29	126 06.5 62	126 18.7 61	126 30.9 60	126 42.9 60	126 54.8 59	
30 N	126 25.7 E + 68	126 39.1 E + 67	126 52.5 E + 66	127 05.6 E + 66	127 18.7 E + 65	
31	126 45.1 74	126 59.8 73	127 14.3 72	127 28.7 72	127 42.9 71	
32	127 04.8 80	127 20.7 79	127 36.5 78	127 52.1 78	128 07.5 77	
33	127 24.8 87	127 42.0 86	127 59.0 85	128 15.9 84	128 32.6 83	
34	127 45.2 93	128 03.7 92	128 22.0 91	128 40.2 90	128 58.1 89	
35 N	128 06.0 E + 100	128 25.9 E + 99	128 45.5 E + 98	129 05.0 E + 97	129 24.2 E + 96	
36	128 27.3 107	128 48.5 106	129 09.6 105	129 30.4 104	129 51.0 103	
37	128 49.0 114	129 11.7 113	129 34.2 112	129 56.4 111	130 18.4 110	
38 N	129 11.4 E + 122	129 35.5 E + 120	129 59.4 E + 119	130 23.0 E + 118	130 46.5 E + 117	
	L0	L0	L0	L0	L0	
T	1400	1420	1440	1460	1480	T

T	1500	1520	1540	1560	1580	T
Lat ° ′	L ° ′ △	L ° ′ △	L ° ′ △	L ° ′ △	L ° ′ △	Long ° ′
	29 00.1 N - 101	28 40.3 N - 98	28 21.0 N - 95	28 02.2 N - 93	27 43.9 N - 90	101 E
	28 35.6 97	28 16.5 94	27 57.9 92	27 39.8 89	27 22.2 87	102
	28 10.5 93	27 52.1 91	27 34.2 88	27 16.8 86	26 59.9 84	103
	27 44.8 90	27 27.2 87	27 10.0 85	26 53.3 82	26 37.1 80	104
	27 18.5 N - 86	27 01.6 N - 83	26 45.2 N - 81	26 29.2 N - 79	26 13.7 N - 77	105 E
	26 51.6 82	26 35.5 79	26 19.8 77	26 04.6 75	25 49.8 73	106
	26 24.1 78	26 08.8 75	25 53.9 73	25 39.5 71	25 25.4 69	107
	25 56.1 74	25 41.6 71	25 27.5 69	25 13.8 67	25 00.5 66	108
	25 27.4 69	25 13.8 67	25 00.5 65	24 47.7 64	24 35.1 62	109
	24 58.3 N - 65	24 45.5 N - 63	24 33.1 N - 61	24 21.0 N - 60	24 09.3 N - 58	110 E
	24 28.7 61	24 16.8 59	24 05.2 57	23 54.0 55	23 43.0 54	111
	23 58.6 56	23 47.6 54	23 36.9 53	23 26.5 51	23 16.4 50	112
	23 28.1 51	23 18.0 50	23 08.2 48	22 58.6 47	22 49.4 46	113
	22 57.3 47	22 48.1 45	22 39.2 44	22 30.6 43	22 22.1 41	114
	22 26.2 N - 42	22 18.0 N - 40	22 10.0 N - 39	22 02.3 N - 38	21 54.8 N - 37	115 E
	21 55.2 37	21 47.9 36	21 40.9 35	21 34.1 34	21 27.4 33	116
	21 24.4 32	21 18.1 31	21 12.1 30	21 06.2 29	21 00.4 28	117
	20 54.3 27	20 49.1 26	20 44.0 25	20 39.0 24	20 34.2 24	118
	20 25.8 21	20 21.6 21	20 17.5 20	20 13.5 20	20 09.6 19	119
	20 00.6 N - 16	19 57.4 N - 16	19 54.3 N - 15	19 51.3 N - 15	19 48.3 N - 15	120 E
	19 50.2 13	19 47.6 13	19 44.9 13	19 42.4 13	19 39.8 13	120 30
	19 42.5 N - 11	19 40.3 N - 11	19 38.1 N - 11	19 35.9 N - 11	19 33.8 N - 11	121 E
	19 39.9 10	19 37.9 10	19 35.9 10	19 33.9 10	19 32.0 10	121 15
	19 38.6 9	19 36.7 9	19 34.9 9	19 33.1 9	19 31.3 9	121 30
	19 38.7 9	19 37.0 9	19 35.3 9	19 33.6 9	19 31.8 9	121 45
	19 40.7 N - 8	19 39.1 N - 8	19 37.4 N - 8	19 35.7 N - 8	19 34.0 N - 8	122 E
	19 45.0 9	19 43.2 9	19 41.5 9	19 39.8 9	19 38.0 9	122 15
	19 51.9 10	19 50.0 10	19 48.1 10	19 46.2 9	19 44.3 9	122 30
	20 02.0 12	19 59.7 11	19 57.4 11	19 55.2 11	19 53.0 11	122 45
	20 15.5 N - 15	20 12.6 N - 14	20 09.8 N - 14	20 07.2 N - 13	20 04.6 N - 13	123 E
	L	L	L	L	L	
	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	
20 N	122 42.4 E + 15	122 45.5 E + 15	122 48.5 E + 15	122 51.5 E + 15	122 54.5 E + 15	
20 15	122 59.5 14	123 02.4 14	123 05.3 15	123 08.2 15	123 11.2 15	
20 30	123 12.8 15	123 15.8 15	123 18.8 15	123 21.8 15	123 24.9 15	
20 45	123 24.1 16	123 27.3 16	123 30.5 16	123 33.7 16	123 36.9 16	
21 N	123 34.2 E + 17	123 37.5 E + 17	123 40.9 E + 17	123 44.3 E + 17	123 47.7 E + 17	
21 15	123 43.3 18	123 46.9 18	123 50.5 18	123 54.1 18	123 57.8 18	
21 30	123 51.9 19	123 55.7 19	123 59.5 19	124 03.4 19	124 07.2 19	
21 45 N	123 59.9 E + 20	124 04.0 E + 20	124 08.1 E + 20	124 12.2 E + 20	124 16.2 E + 20	
	L0	L0	L0	L0	L0	
T	1500	1520	1540	1560	1580	T

T	1500	1520	1540	1560	1580	T
Lat ° ′	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	Long ° ′
22 N	124 07.6 E + 22	124 12.0 E + 22	124 16.3 E + 22	124 20.6 E + 22	124 24.9 E + 22	
23	124 36.1 27	124 41.4 27	124 46.7 26	124 52.0 26	124 57.3 26	
24	125 02.4 32	125 08.8 32	125 15.1 31	125 21.4 31	125 27.6 31	
25 N	125 27.7 E + 37	125 35.1 E + 37	125 42.4 E + 37	125 49.7 E + 36	125 57.0 E + 36	
26	125 52.5 42	126 00.9 42	126 09.3 42	126 17.6 42	126 26.0 41	
27	126 17.1 48	126 26.6 47	126 36.1 47	126 45.5 47	126 54.8 47	
28	126 41.8 53	126 52.4 53	127 02.9 53	127 13.4 52	127 23.8 52	
29	127 06.6 59	127 18.3 58	127 29.9 58	127 41.5 58	127 53.0 58	
30 N	127 31.6 E + 64	127 44.5 E + 64	127 57.2 E + 64	128 09.9 E + 63	128 22.6 E + 63	
31	127 57.0 70	128 11.0 70	128 25.0 69	128 38.8 69	128 52.6 69	
32	128 22.8 76	128 38.0 76	128 53.2 75	129 08.2 75	129 23.2 75	
33	128 49.1 82	129 05.6 82	129 21.9 81	129 38.2 81	129 54.3 81	
34	129 15.9 89	129 33.6 88	129 51.2 88	130 08.7 87	130 26.2 87	
35 N	129 43.4 E + 95	130 02.4 E + 95	130 21.2 E + 94	130 40.0 E + 94	130 58.8 E + 94	
36	130 11.4 102	130 31.8 101	130 52.0 101	131 12.1 100	131 32.1 100	
37	130 40.2 109	131 01.9 108	131 23.5 108	131 45.0 107	132 06.4 107	
38 N	131 09.7 E + 116	131 32.9 E + 115	131 55.9 E + 115	132 18.8 E + 114	132 41.6 E + 114	
	L0	L0	L0	L0	L0	
T	1500	1520	1540	1560	1580	T

T	1600	1620	1640	1660	1680	T
Lat ° ′	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	Long ° ′
	27 46.6 N - 92	27 28.5 N - 90	27 10.8 N - 88	26 53.4 N - 86	26 36.4 N - 84	100 E
	27 26.0 88	27 08.6 86	26 51.5 85	26 34.7 83	26 18.3 81	101
	27 04.9 85	26 48.1 83	26 31.7 81	26 15.6 80	25 59.8 78	102
	26 43.3 82	26 27.2 80	26 11.4 78	25 55.9 77	25 40.8 75	103
	26 21.2 78	26 05.7 77	25 50.6 75	25 35.7 73	25 21.2 72	104
	25 58.5 N - 75	25 43.7 N - 73	25 29.3 N - 72	25 15.1 N - 70	25 01.3 N - 69	105 E
	25 35.4 71	25 21.3 70	25 07.5 68	24 54.0 67	24 40.8 65	106
	25 11.7 68	24 58.3 66	24 45.2 65	24 32.5 63	24 19.9 62	107
	24 47.5 64	24 34.9 63	24 22.5 61	24 10.4 60	23 58.6 58	108
	24 22.9 60	24 11.0 59	23 59.4 57	23 48.0 56	23 36.9 55	109
	23 57.9 N - 56	23 46.7 N - 55	23 35.8 N - 54	23 25.2 N - 53	23 14.8 N - 51	110 E
	23 32.4 53	23 22.0 51	23 11.9 50	23 02.0 49	22 52.3 48	111
	23 06.5 49	22 56.9 47	22 47.6 46	22 38.4 45	22 29.5 44	112
	22 40.4 45	22 31.6 43	22 23.0 42	22 14.6 41	22 06.4 41	113
	22 14.0 40	22 06.0 39	21 58.2 38	21 50.6 38	21 43.1 37	114
	21 47.4 N - 36	21 40.3 N - 35	21 33.3 N - 35	21 26.5 N - 34	21 19.8 N - 33	115 E
	21 21.0 32	21 14.7 31	21 08.5 30	21 02.5 30	20 56.6 29	116
	20 54.8 28	20 49.4 27	20 44.1 26	20 38.9 26	20 33.8 25	117
	20 29.5 23	20 24.9 23	20 20.4 22	20 16.1 22	20 11.8 21	118
	20 05.8 19	20 02.1 18	19 58.5 18	19 54.9 18	19 51.4 17	119
	19 45.4 N - 14	19 42.5 N - 14	19 39.7 N - 14	19 36.9 N - 14	19 34.2 N - 14	120 E
	19 37.3 12	19 34.9 12	19 32.5 12	19 30.1 12	19 27.7 12	120 30
	19 31.7 N - 11	19 29.6 N - 10	19 27.5 N - 10	19 25.4 N - 10	19 23.4 N - 10	121 E
	19 30.0 10	19 28.1 10	19 26.1 10	19 24.2 10	19 22.3 10	121 15
	19 29.4 9	19 27.6 9	19 25.8 9	19 24.0 9	19 22.2 9	121 30
	19 30.1 9	19 28.4 9	19 26.7 9	19 24.9 9	19 23.2 9	121 45
	19 32.3 N - 8	19 30.6 N - 8	19 28.9 N - 8	19 27.2 N - 8	19 25.6 N - 8	122 E
	19 36.3 9	19 34.6 9	19 32.9 9	19 31.2 9	19 29.4 9	122 15
	19 42.4 9	19 40.6 9	19 38.7 9	19 36.9 9	19 35.1 9	122 30
	19 50.9 11	19 48.9 10	19 46.8 10	19 44.8 10	19 42.8 10	122 45
	20 02.0 N - 12	19 59.6 N - 12	19 57.2 N - 12	19 54.9 N - 12	19 52.6 N - 11	123 E
	L	L	L	L	L	
	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	L0 ° ′	
19 45 N	122 35.0 E + 18	122 38.5 E + 17	122 42.0 E + 17	122 45.4 E + 17	122 48.7 E + 17	
20 N	122 57.5 E + 15	123 00.5 E + 15	123 03.5 E + 15	123 06.5 E + 15	123 09.6 E + 15	
20 15	123 14.1 15	123 17.1 15	123 20.1 15	123 23.1 15	123 26.1 15	
20 30	123 27.9 15	123 31.0 15	123 34.1 16	123 37.3 16	123 40.4 16	
20 45 N	123 40.1 E + 16	123 43.3 E + 16	123 46.6 E + 16	123 49.9 E + 16	123 53.2 E + 17	
	L0	L0	L0	L0	L0	
T	1600	1620	1640	1660	1680	T

T	1600	1620	1640	1660	1680	T
Lat ° ′	Lo ° ′ △	Lo ° ′ △	Lo ° ′ △	Lo ° ′ △	Lo ° ′ △	Long ° ′
21 N	123 51.1 E + 17	123 54.6 E + 17	123 58.0 E + 17	124 01.5 E + 17	124 05.0 E + 18	
21 15	124 01.4 18	124 05.0 18	124 08.7 18	124 12.4 18	124 16.1 19	
21 30	124 11.1 19	124 14.9 19	124 18.8 19	124 22.7 19	124 26.6 20	
21 45	124 20.3 20	124 24.4 20	124 28.5 21	124 32.6 21	124 36.7 21	
22 N	124 29.2 E + 22	124 33.5 E + 22	124 37.9 E + 22	124 42.2 E + 22	124 46.5 E + 22	
23	125 02.6 26	125 07.8 26	125 13.1 26	125 18.4 26	125 23.7 26	
24	125 33.9 31	125 40.1 31	125 46.4 31	125 52.6 31	125 58.8 31	
25 N	126 04.3 E + 36	126 11.5 E + 36	126 18.7 E + 36	126 26.0 E + 36	126 33.2 E + 36	
26	126 34.2 41	126 42.5 41	126 50.8 41	126 59.0 41	127 07.2 41	
27	127 04.1 47	127 13.4 46	127 22.7 46	127 32.0 46	127 41.3 46	
28	127 34.2 52	127 44.6 52	127 54.9 52	128 05.2 52	128 15.6 52	
29	128 04.5 57	128 16.0 57	128 27.4 57	128 38.8 57	128 50.2 57	
30 N	128 35.2 E + 63	128 47.8 E + 63	129 00.3 E + 63	129 12.9 E + 63	129 25.4 E + 63	
31	129 06.4 69	129 20.1 69	129 33.8 68	129 47.5 68	130 01.2 68	
32	129 38.1 75	129 53.0 74	130 07.9 74	130 22.8 74	130 37.6 74	
33	130 10.5 81	130 26.6 80	130 42.7 80	130 58.8 80	131 14.8 80	
34	130 43.6 87	131 00.9 87	131 18.3 87	131 35.6 87	131 52.9 87	
35 N	131 17.4 E + 93	131 36.1 E + 93	131 54.7 E + 93	132 13.3 E + 93	132 31.9 E + 93	
36	131 52.1 100	132 12.1 100	132 32.1 100	132 52.0 100	133 12.0 100	
37	132 27.8 107	132 49.1 107	133 10.4 107	133 31.8 107	133 53.1 107	
38 N	133 04.4 E + 114	133 27.2 E + 114	133 49.9 E + 114	134 12.7 E + 114	134 35.5 E + 114	
	Lo	Lo	Lo	Lo	Lo	
T	1600	1620	1640	1660	1680	T

T	1700	1720	1740	1760	1780	T
Lat ° ′	L ° ′ △	L ° ′ △	L ° ′ △	L ° ′ △	L ° ′ △	Long ° ′
	26 19.7 N - 83	26 03.4 N - 81	25 47.3 N - 80	25 31.5 N - 78	25 15.9 N - 77	100 E
	26 02.3 80	25 46.5 78	25 31.0 77	25 15.8 76	25 00.8 74	101
	25 44.3 77	25 29.1 75	25 14.2 74	24 59.6 73	24 45.2 71	102
	25 25.9 74	25 11.3 72	24 57.0 71	24 43.0 70	24 29.2 68	103
	25 07.0 70	24 53.1 69	24 39.4 68	24 26.0 67	24 12.8 66	104
	24 47.7 N - 67	24 34.4 N - 66	24 21.3 N - 65	24 08.5 N - 64	23 55.9 N - 63	105 E
	24 27.9 64	24 15.2 63	24 02.8 62	23 50.6 60	23 38.6 59	106
	24 07.7 61	23 55.7 59	23 43.9 58	23 32.3 57	23 21.0 56	107
	23 47.0 57	23 35.7 56	23 24.6 55	23 13.7 54	23 02.9 53	108
	23 26.0 54	23 15.3 53	23 04.9 52	22 54.6 51	22 44.5 50	109
	23 04.6 N - 50	22 54.6 N - 49	22 44.8 N - 48	22 35.2 N - 48	22 25.7 N - 47	110 E
	22 42.8 47	22 33.5 46	22 24.4 45	22 15.5 44	22 06.7 44	111
	22 20.7 43	22 12.1 42	22 03.7 42	21 55.5 41	21 47.3 40	112
	21 58.4 40	21 50.5 39	21 42.8 38	21 35.2 38	21 27.8 37	113
	21 35.8 36	21 28.7 35	21 21.7 35	21 14.8 34	21 08.1 33	114
	21 13.3 N - 32	21 06.9 N - 32	21 00.6 N - 31	20 54.4 N - 31	20 48.4 N - 30	115 E
	20 50.8 29	20 45.2 28	20 39.6 27	20 34.2 27	20 28.8 27	116
	20 28.8 25	20 23.9 24	20 19.1 24	20 14.3 23	20 09.7 23	117
	20 07.5 21	20 03.4 21	19 59.3 20	19 55.3 20	19 51.4 20	118
	19 47.9 17	19 44.6 17	19 41.2 17	19 37.9 16	19 34.7 16	119
	19 31.5 N - 13	19 28.9 N - 13	19 26.2 N - 13	19 23.6 N - 13	19 21.1 N - 13	120 E
	19 25.3 12	19 23.0 12	19 20.7 11	19 18.4 11	19 16.2 11	120 30
	19 21.3 N - 10	19 19.3 N - 10	19 17.3 N - 10	19 15.3 N - 10	19 13.3 N - 10	121 E
	19 20.4 10	19 18.5 9	19 16.6 9	19 14.7 9	19 12.9 9	121 15
	19 20.4 9	19 18.6 9	19 16.8 9	19 15.0 9	19 13.2 9	121 30
	19 21.5 9	19 19.8 9	19 18.0 9	19 16.3 9	19 14.6 9	121 45
	19 23.9 N - 8	19 22.2 N - 8	19 20.5 N - 8	19 18.8 N - 8	19 17.1 N - 8	122 E
	19 27.7 9	19 26.0 9	19 24.3 9	19 22.6 9	19 20.9 9	122 15
	19 33.3 9	19 31.5 9	19 29.7 9	19 27.9 9	19 26.2 9	122 30
	19 40.8 10	19 38.8 10	19 36.9 10	19 35.0 10	19 33.1 10	122 45
	19 50.3 N - 11	19 48.1 N - 11	19 46.0 N - 11	19 43.8 N - 11	19 41.7 N - 10	123 E
	L	L	L	L	L	
	° L_0 ′	° L_0 ′	° L_0 ′	° L_0 ′	° L_0 ′	
19 45 N	122 52.0 E + 16	122 55.3 E + 16	122 58.6 E + 16	123 01.8 E + 16	123 05.0 E + 16	
20 N	123 12.6 E + 15	123 15.7 E + 15	123 18.7 E + 15	123 21.8 E + 15	123 24.9 E + 16	
20 15	123 29.2 15	123 32.3 15	123 35.4 16	123 38.5 16	123 41.6 16	
20 30	123 43.6 16	123 46.8 16	123 50.0 16	123 53.2 16	123 56.5 16	
20 45 N	123 56.5 E + 17	123 59.9 E + 17	124 03.2 E + 17	124 06.6 E + 17	124 10.1 E + 17	
	L_0	L_0	L_0	L_0	L_0	
T	1700	1720	1740	1760	1780	T

T	1700	1720	1740	1760	1780	T
Lat ° ′	L o ° ′ E △	L o ° ′ E △	L o ° ′ E △	L o ° ′ E △	L o ° ′ E △	Long ° ′
21 N	124 08.5 E + 18	124 12.0 E + 18	124 15.6 E + 18	124 19.2 E + 18	124 22.8 E + 18	
21 15	124 19.8 19	124 23.5 19	124 27.3 19	124 31.0 19	124 34.9 19	
21 30	124 30.5 20	124 34.5 20	124 38.4 20	124 42.4 20	124 46.4 20	
21 45	124 40.9 21	124 45.0 21	124 49.2 21	124 53.4 21	124 57.7 21	
22 N	124 50.9 E + 22	124 55.3 E + 22	124 59.7 E + 22	125 04.1 E + 22	125 08.6 E + 22	
23	125 28.9 26	125 34.2 27	125 39.6 27	125 44.9 27	125 50.3 27	
24	126 05.1 31	126 11.4 31	126 17.6 31	126 23.9 32	126 30.3 32	
25 N	126 40.4 E + 36	126 47.7 E + 36	126 54.9 E + 36	127 02.2 E + 36	127 09.5 E + 37	
26	127 15.5 41	127 23.7 41	127 32.0 41	127 40.3 42	127 48.6 42	
27	127 50.6 46	127 59.9 46	128 09.2 47	128 18.5 47	128 27.9 47	
28	128 25.9 52	128 36.3 52	128 46.6 52	128 57.0 52	129 07.5 52	
29	129 01.7 57	129 13.1 57	129 24.6 57	129 36.1 58	129 47.6 58	
30 N	129 38.0 E + 63	129 50.5 E + 63	130 03.1 E + 63	130 15.7 E + 63	130 28.3 E + 63	
31	130 14.9 69	130 28.6 69	130 42.3 69	130 56.1 69	131 09.9 69	
32	130 52.5 74	131 07.4 75	131 22.3 75	131 37.3 75	131 52.3 75	
33	131 30.9 81	131 47.1 81	132 03.2 81	132 19.4 81	132 35.7 81	
34	132 10.3 87	132 27.7 87	132 45.1 87	133 02.6 88	133 20.1 88	
35 N	132 50.6 E + 93	133 09.3 E + 94	133 28.0 E + 94	133 46.8 E + 94	134 05.7 E + 95	
36	133 32.0 100	133 52.0 100	134 12.1 101	134 32.3 101	134 52.6 102	
37 N	134 14.5 E + 107	134 36.0 E + 107	134 57.5 E + 108	135 19.1 E + 108	135 40.9 E + 109	
	L o	L o	L o	L o	L o	
T	1700	1720	1740	1760	1780	T

T	1800	1820	1840	1860	1880	T
Lat ° '	L Δ	L Δ	L Δ	L Δ	L Δ	Long ° '
	25 14.8 N - 79	24 59.2 N - 78	24 43.7 N - 76	24 28.6 N - 75	24 13.6 N - 74	99 E
	25 00.6 N - 76	24 45.6 N - 75	24 30.7 N - 74	24 16.1 N - 73	24 01.6 N - 72	100 E
	24 46.0 73	24 31.5 72	24 17.2 71	24 03.1 70	23 49.2 69	101
	24 31.0 70	24 17.1 69	24 03.3 68	23 49.8 67	23 36.5 66	102
	24 15.6 67	24 02.2 66	23 49.1 65	23 36.1 64	23 23.3 64	103
	23 59.8 64	23 47.0 63	23 34.4 63	23 22.0 62	23 09.7 61	104
	23 43.5 N - 61	23 31.3 N - 61	23 19.3 N - 60	23 07.5 N - 59	22 55.8 N - 58	105 E
	23 26.8 58	23 15.2 58	23 03.8 57	22 52.6 56	22 41.5 55	106
	23 09.8 55	22 58.8 55	22 48.0 54	22 37.3 53	22 26.8 52	107
	22 52.4 52	22 42.0 51	22 31.8 51	22 21.7 50	22 11.8 49	108
	22 34.6 49	22 24.8 48	22 15.2 48	22 05.8 47	21 56.5 46	109
	22 16.5 N - 46	22 07.4 N - 45	21 58.4 N - 45	21 49.5 N - 44	21 40.8 N - 43	110 E
	21 58.1 43	21 49.6 42	21 41.2 41	21 33.0 41	21 24.9 40	111
	21 39.4 40	21 31.5 39	21 23.8 38	21 16.2 38	21 08.8 37	112
	21 20.5 36	21 13.3 36	21 06.3 35	20 59.3 35	20 52.4 34	113
	21 01.5 33	20 55.0 32	20 48.6 32	20 42.2 31	20 36.0 31	114
	20 42.4 N - 30	20 36.6 N - 29	20 30.8 N - 29	20 25.2 N - 28	20 19.6 N - 28	115 E
	20 23.6 26	20 18.4 26	20 13.3 25	20 08.3 25	20 03.3 25	116
	20 05.1 23	20 00.6 22	19 56.2 22	19 51.8 22	19 47.5 21	117
	19 47.5 19	19 43.7 19	19 39.9 19	19 36.2 18	19 32.5 18	118
	19 31.5 16	19 28.3 16	19 25.2 16	19 22.1 15	19 19.1 15	119
	19 18.5 N - 13	19 16.0 N - 13	19 13.5 N - 12	19 11.0 N - 12	19 08.6 N - 12	120 E
	19 13.9 11	19 11.7 11	19 09.5 11	19 07.3 11	19 05.1 11	120 30
	19 11.3 N - 10	19 09.3 N - 10	19 07.4 N - 10	19 05.4 N - 10	19 03.4 N - 10	121 E
	19 11.0 9	19 09.1 9	19 07.2 9	19 05.4 9	19 03.5 9	121 15
	19 11.5 9	19 09.7 9	19 07.9 9	19 06.1 9	19 04.3 9	121 30
	19 12.9 9	19 11.1 9	19 09.4 9	19 07.7 9	19 06.0 9	121 45
	19 15.4 N - 8	19 13.7 N - 8	19 12.0 N - 8	19 10.3 N - 8	19 08.6 N - 8	122 E
	19 19.2 9	19 17.5 9	19 15.8 9	19 14.1 9	19 12.4 9	122 15
	19 24.4 9	19 22.6 9	19 20.9 9	19 19.1 9	19 17.4 9	122 30
	19 31.2 9	19 29.3 9	19 27.4 9	19 25.6 9	19 23.7 9	122 45
	19 39.6 N - 10	19 37.6 N - 10	19 35.5 N - 10	19 33.5 N - 10	19 31.5 N - 10	123 E
	20 30.3 N - 17	20 26.9 N - 17	20 23.5 N - 16	20 20.3 N - 16	20 17.2 N - 15	124 E
	L	L	L	L	L	
	L0 ° '	L0 ° '	L0 ° '	L0 ° '	L0 ° '	
20 15 N	123 44.8 E + 16	123 48.0 E + 16	123 51.2 E + 16	123 54.4 E + 16	123 57.7 E + 16	
20 30	123 59.7 16	124 03.1 17	124 06.4 17	124 09.8 17	124 13.1 17	
20 45	124 13.5 17	124 17.0 17	124 20.5 18	124 24.0 18	124 27.6 18	
21 N	124 26.4 E + 18	124 30.1 E + 18	124 33.7 E + 18	124 37.5 E + 19	124 41.2 E + 19	
21 15	124 38.7 19	124 42.5 19	124 46.4 19	124 50.3 20	124 54.3 20	
21 30	124 50.5 20	124 54.5 20	124 58.6 21	125 02.7 21	125 06.9 21	
21 45 N	125 01.9 E + 21	125 06.2 E + 21	125 10.5 E + 22	125 14.8 E + 22	125 19.2 E + 22	
	L0	L0	L0	L0	L0	
T	1800	1820	1840	1860	1880	T

T	1800	1820	1840	1860	1880	T
Lat ° ′	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	L0 ° ′ Δ	Long ° ′
22 N	125 13.0 E + 22	125 17.5 E + 23	125 22.1 E + 23	125 26.6 E + 23	125 31.2 E + 23	
23	125 55.7 27	126 01.1 27	126 06.5 27	126 12.0 27	126 17.5 28	
24	126 36.6 32	126 43.0 32	126 49.4 32	126 55.8 32	127 02.3 32	
25 N	127 16.8 E + 37	127 24.2 E + 37	127 31.6 E + 37	127 39.0 E + 37	127 46.5 E + 37	
26	127 57.0 42	128 05.3 42	128 13.7 42	128 22.2 42	128 30.7 43	
27	128 37.2 47	128 46.7 47	128 56.1 47	129 05.6 48	129 15.2 48	
28	129 17.9 52	129 28.4 53	129 38.9 53	129 49.5 53	130 00.2 53	
29	129 59.1 58	130 10.7 58	130 22.4 58	130 34.1 59	130 45.9 59	
30 N	130 41.0 E + 64	130 53.8 E + 64	131 06.6 E + 64	131 19.5 E + 65	131 32.4 E + 65	
31	131 23.8 69	131 37.7 70	131 51.7 70	132 05.7 71	132 19.9 71	
32	132 07.4 76	132 22.5 76	132 37.7 76	132 53.0 77	133 08.4 77	
33	132 52.0 82	133 08.4 82	133 24.9 83	133 41.5 83	133 58.2 84	
34	133 37.7 88	133 55.5 89	134 13.3 89	134 31.2 90	134 49.2 91	
35 N	134 24.7 E + 95	134 43.8 E + 96	135 03.0 E + 96	135 22.3 E + 97	135 41.7 E + 98	
36 N	135 13.0 E + 102	135 33.5 E + 103	135 54.1 E + 103	136 14.9 E + 104	136 35.8 E + 105	
	L0	L0	L0	L0	L0	
T	1800	1820	1840	1860	1880	T

T	1900	1920	1940	1960	1980	T
Lat ° ′	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	L ° ′ Δ	Long ° ′
	23 58.8 N - 74	23 44.2 N - 73	23 29.7 N - 72	23 15.5 N - 71	23 01.4 N - 70	99 E
	23 47.3 N - 71	23 33.3 N - 70	23 19.4 N - 69	23 05.6 N - 68	22 52.0 N - 68	100 E
	23 35.5 68	23 22.0 67	23 08.6 67	22 55.3 66	22 42.3 65	101
	23 23.3 65	23 10.3 65	22 57.4 64	22 44.7 63	22 32.2 62	102
	23 10.7 63	22 58.2 62	22 45.9 61	22 33.7 60	22 21.7 60	103
	22 57.7 60	22 45.7 59	22 34.0 58	22 22.4 58	22 10.9 57	104
	22 44.3 N - 57	22 32.9 N - 56	22 21.7 N - 56	22 10.7 N - 55	21 59.7 N - 54	105 E
	22 30.6 54	22 19.8 54	22 09.1 53	21 58.6 52	21 48.2 52	106
	22 16.5 51	22 06.3 51	21 56.2 50	21 46.2 50	21 36.4 49	107
	22 02.0 49	21 52.4 48	21 42.9 47	21 33.5 47	21 24.2 46	108
	21 47.3 46	21 38.2 45	21 29.3 44	21 20.5 44	21 11.8 43	109
	21 32.3 N - 43	21 23.8 N - 42	21 15.4 N - 42	21 07.2 N - 41	20 59.0 N - 40	110 E
	21 16.9 40	21 09.1 39	21 01.3 39	20 53.6 38	20 46.1 38	111
	21 01.4 37	20 54.1 36	20 47.0 36	20 39.9 35	20 32.9 35	112
	20 45.7 34	20 39.0 33	20 32.5 33	20 26.0 32	20 19.6 32	113
	20 29.9 30	20 23.8 30	20 17.9 30	20 12.0 29	20 06.1 29	114
	20 14.1 N - 27	20 08.6 N - 27	20 03.3 N - 27	19 58.0 N - 26	19 52.7 N - 26	115 E
	19 58.5 24	19 53.6 24	19 48.9 24	19 44.2 23	19 39.5 23	116
	19 43.3 21	19 39.1 21	19 34.9 21	19 30.8 20	19 26.7 20	117
	19 28.9 18	19 25.3 18	19 21.8 18	19 18.2 17	19 14.8 17	118
	19 16.1 15	19 13.1 15	19 10.1 15	19 07.2 15	19 04.3 14	119
	19 06.1 N - 12	19 03.7 N - 12	19 01.3 N - 12	18 58.9 N - 12	18 56.5 N - 12	120 E
	19 02.9 11	19 00.7 11	18 58.6 11	18 56.4 11	18 54.3 11	120 30
	19 01.5 N - 10	18 59.6 N - 10	18 57.6 N - 10	18 55.7 N - 10	18 53.7 N - 10	121 E
	19 01.7 9	18 59.8 9	18 58.0 9	18 56.1 9	18 54.3 9	121 15
	19 02.5 9	19 00.8 9	18 59.0 9	18 57.2 9	18 55.4 9	121 30
	19 04.3 9	19 02.5 9	19 00.8 9	18 59.1 9	18 57.4 9	121 45
	19 06.9 N - 8	19 05.2 N - 8	19 03.5 N - 8	19 01.8 N - 8	19 00.1 N - 9	122 E
	19 10.7 9	19 09.0 9	19 07.3 9	19 05.6 8	19 03.9 9	122 15
	19 15.6 9	19 13.9 9	19 12.1 9	19 10.4 9	19 08.7 9	122 30
	19 21.9 9	19 20.0 9	19 18.2 9	19 16.4 9	19 14.6 9	122 45
	19 29.5 N - 10	19 27.6 N - 10	19 25.6 N - 10	19 23.7 N - 10	19 21.7 N - 10	123 E
	20 14.1 N - 15	20 11.2 N - 15	20 08.2 N - 14	20 05.4 N - 14	20 02.6 N - 14	124 E
	L	L	L	L	L	
	L_0 ° ′	L_0 ° ′	L_0 ° ′	L_0 ° ′	L_0 ° ′	
20 N	123 43.8 E + 16	123 47.1 E + 16	123 50.3 E + 16	123 53.6 E + 16	123 56.9 E + 17	
20 15	124 00.9 16	124 04.3 17	124 07.6 17	124 11.0 17	124 14.4 17	
20 30	124 16.6 17	124 20.0 17	124 23.5 17	124 27.0 18	124 30.5 18	
20 45 N	124 31.1 E + 18	124 34.8 E + 18	124 38.4 E + 18	124 42.1 E + 18	124 45.8 E + 19	
	L_0	L_0	L_0	L_0	L_0	
T	1900	1920	1940	1960	1980	T