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Crystal chemistry of titanian chondrodite and titanian clinohumite of high-pressure origin[1]

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Abstract

The crystal structures of titanian chondrodite [$Mg_{3.89}Fe_{0.67}Mn_{0.01}Ni_{0.01}Ti_{0.42}(SiO_4)_2OH_{1.15}O_{0.85}$; a = 4.7271(7), b = 10.318(1), c = 7.9053(9)A, α = 109.333(8)°, $P2_1/b$, Z = 2] and titanian clinohumite [$Mg_{7.44}Fe_{1.09}Mn_{0.02}Ni_{0.02}Ti_{0.43}(SiO_4)_4OH_{1.14}O_{0.86}$; a = 4.745(1), b = 10.283(2), c = 13.699(3)A, α = 101.00(2)°, $P2_1/b$, Z = 2] from the Buell Park (Arizona) kimberlite have been refined by full-matrix least-squares methods to R = 0.035 and 0.026, respectively. The results have established that Ti in the both structures is exclusively concentrated in the M(3) site located in Mg(OH)O layers. This situation explains the fact that attainable substitution of Ti for Mg in chondrodite is higher than that in clinohumite.

The final difference Fourier synthesis of titanian clinohumite has brought out hydrogen positions, H and H′, which are related to each other by inversion, the separation between H and H′ being 0.87A, and O–H = 1.02A. This feature implies that if the positions were fully occupied by hydrogen atoms as in the OH end-member, there would arise a strong hydrogen-hydrogen repulsion. The substitution, Mg + 2(OH) → Ti + 2(O), that reduces the number of OH groups in the structure, would therefore play a role in reducing the effect of repulsion to stabilize the structure, thus explaining the non-occurrence in nature of OH end-members of the humite-group minerals; the substitution of F for OH would then play the same role.

Introduction

The minerals of the humite group are known so far to occur typically in metamorphosed and metasomatised limestones and dolomites and in skarns associated with ore deposits at contacts with acid plutonic rocks. Recently, McGetchin *et al.* (1970) pointed out that titanian clinohumite in the Moses Rock kimberlite had possibly equilibrated in the upper mantle at depths ranging from about 50 to 150 km at modest temperatures, generally less than 1000°C.

In experimental investigations under high pressure of the system $MgO–SiO_2–H_2O$, Yamamoto and Akimoto (1974, 1977) synthesized crystals of hydroxyl-clinohumite and -chondrodite at pressures between 29 and 77 kbar and temperatures between 700 and 1200°C. This suggested that clinohumite and chondrodite might be stable between 70 and 120 km depth in the upper mantle, and in fact Aoki *et al.* (1976) discovered titanian chondrodite and clinohumite in the Buell Park (Arizona) kimberlite, and gave a detailed account of the petrological significance of these minerals.

The present paper is a crystallographic counterpart of the investigation of these high-Ti minerals. Robinson *et al.* (1973) suggested a random distribution of Ti among octahedral positions, whereas Kocman and Rucklidge (1973) found Ti exclusively concentrated in the "Mg(OH,F)O layers", the notation of which was initiated by Ribbe *et al.* (1968) to substitute for "$Mg(OH,F)_2$ layers" in the humite group minerals. Our materials are suited to resolve this conflict because of their high Ti contents.

Material

Crystals of titanian chondrodite and clinohumite (abbreviated Ti–Ch and Ti–Cl, respectively) used in our study were collected from the heavy-mineral con-

[1] According to the suggestion made by Dr. A. Kato, chairman, Commission on New Minerals and Mineral Names, National Science Museum, Tokyo, Japan and Dr. C. A. Francis, Department of Geological Sciences, Virginia Polytechnic Institute and State University, we use in this paper the terminology titanian chondrodite and titanian clinohumite instead of titanochondrodite and titanoclinohumite to express Ti-bearing chondrodite and clinohumite respectively.

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TABLE 6. OBSERVED AND CALCULATED STRUCTURE AMPLITUDES.

Ti-Chondrodite

K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
18	1	13.32	13.66	0	-10	8	8.47	9.32	0	-4	13	25.06	24.72	0	4	8	43.33	43.76
18	4	21.65	19.57	0	-10	9	22.63	22.02	0	-4	14	8.98	9.13	0	4	11	19.69	19.83
18	6	11.77	12.33	0	-10	10	13.64	12.74	0	-2	1	43.48	39.36	0	6	0	65.48	64.06
18	7	11.01	10.66	0	-10	12	33.69	32.55	0	-2	2	33.75	31.52	0	6	1	143.96	146.46
16	1	24.52	23.99	0	-8	2	27.49	26.31	0	-2	3	24.56	22.73	0	6	2	54.45	54.64
16	2	17.89	17.82	0	-8	3	27.39	28.72	0	-2	4	21.30	20.86	0	6	3	21.93	21.60
16	3	14.21	15.18	0	-8	4	27.26	28.04	0	-2	5	48.86	49.90	0	6	5	51.67	52.41
16	4	21.56	21.41	0	-8	5	25.94	26.01	0	-2	7	41.44	41.74	0	6	6	60.37	60.32
16	6	30.51	30.17	0	-8	6	22.89	24.10	0	-2	8	6.53	6.80	0	6	7	25.15	25.69
16	8	13.92	11.50	0	-8	7	5.96	7.32	0	-2	10	35.42	35.06	0	6	8	15.71	16.18
16	9	19.77	18.76	0	-8	8	15.07	14.29	0	-2	12	27.17	26.84	0	6	9	13.75	12.19
16	11	26.50	25.60	0	-8	9	34.91	34.98	0	0	2	28.88	26.29	0	6	10	33.50	33.63
-14	1	16.05	15.76	0	-8	10	11.72	11.83	0	0	3	48.60	45.07	0	6	11	15.48	15.66
-14	2	21.86	20.56	0	-8	11	26.92	26.78	0	0	4	20.32	20.57	0	8	0	35.43	36.36
-14	4	22.95	23.54	0	-8	14	22.00	22.12	0	0	5	160.46	159.55	0	8	1	10.22	10.03
-14	5	15.93	15.02	0	-6	1	28.62	28.91	0	0	7	15.98	15.03	0	8	2	20.08	21.49
-14	6	10.19	10.42	0	-6	2	34.77	36.64	0	0	8	41.98	42.04	0	8	3	24.30	25.19
-14	7	19.81	19.58	0	-6	3	55.68	55.92	0	0	9	22.64	22.18	0	8	5	25.36	25.18
-14	8	12.42	11.47	0	-6	4	129.37	142.22	0	0	10	47.33	47.55	0	8	6	21.77	21.28
-14	9	17.06	18.19	0	-6	5	38.71	41.14	0	0	12	15.24	14.48	0	8	8	12.71	13.00
-14	10	26.44	25.32	0	-6	6	21.78	22.94	0	0	13	23.42	24.16	0	8	10	11.36	10.98
-14	12	12.10	12.27	0	-6	7	41.94	43.13	0	2	1	56.85	51.71	0	10	0	10.23	9.37
-12	2	41.75	41.65	0	-6	8	17.91	18.46	0	2	2	32.19	28.96	0	10	1	33.52	34.11
-12	3	44.24	45.28	0	-6	9	55.12	55.25	0	2	3	6.20	5.69	0	10	2	21.59	21.50
-12	4	28.63	27.46	0	-6	10	19.72	20.34	0	2	4	48.00	47.19	0	10	3	22.09	22.11
-12	5	34.66	35.19	0	-6	12	29.00	28.97	0	2	5	36.92	38.14	0	10	4	35.34	36.74
-12	7	30.03	29.51	0	-6	14	15.89	15.12	0	2	6	20.80	20.85	0	10	6	13.94	13.20
-12	8	29.29	28.24	0	-4	1	13.52	13.35	0	2	7	20.20	21.00	0	10	7	20.98	21.00
-12	9	16.06	15.68	0	-4	2	27.68	25.92	0	2	8	9.63	9.53	0	12	0	28.36	29.28
-12	10	19.80	19.19	0	-4	3	54.88	55.80	0	2	9	27.69	27.08	0	12	1	34.27	35.03
-12	11	11.38	11.56	0	-4	4	36.42	38.03	0	2	10	23.53	23.07	0	12	2	32.39	31.39
-12	12	13.34	14.31	0	-4	5	44.13	45.53	0	4	0	49.88	47.08	0	12	3	33.59	33.78
-10	1	26.03	26.38	0	-4	6	12.31	11.74	0	4	1	8.94	8.73	0	12	5	11.74	11.32
-10	2	46.74	47.65	0	-4	7	13.37	14.51	0	4	2	22.08	22.48	0	12	6	29.38	30.91
-10	4	38.74	39.93	0	-4	8	48.04	49.03	0	4	3	60.05	58.47	0	14	1	19.23	20.47
-10	5	13.42	13.50	0	-4	9	26.75	27.08	0	4	4	16.29	16.56	0	14	2	11.80	12.56
-10	6	7.77	9.41	0	-4	10	16.81	17.11	0	4	5	20.39	21.21	0	14	3	13.12	11.54
-10	7	48.81	50.98	0	-4	12	17.59	16.09	0	4	6	30.06	30.50	0	14	4	14.87	12.96

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
0	16	1	16.24	18.35	1	-9	2	5.66	4.30	1	-5	3	24.11	24.95	1	-1	6	26.16	26.69
1	-17	4	18.63	17.29	1	-9	4	39.64	41.88	1	-5	4	30.61	29.80	1	-1	7	56.00	56.12
1	-17	9	17.99	18.06	1	-9	5	45.85	44.73	1	-5	5	17.30	17.82	1	-1	8	23.95	24.69
1	-16	1	9.36	9.08	1	-9	6	20.40	20.62	1	-5	6	35.68	35.91	1	-1	11	13.28	13.61
1	-16	8	9.06	8.53	1	-9	8	8.81	10.02	1	-5	7	7.70	7.10	1	-1	12	29.82	30.66
1	-15	4	27.42	28.04	1	-9	9	33.02	33.47	1	-5	8	24.65	25.35	1	0	1	24.55	22.01
1	-15	7	8.78	9.28	1	-9	10	15.22	14.80	1	-5	10	6.99	7.08	1	0	2	17.71	16.46
1	-15	8	12.88	11.51	1	-9	14	17.75	17.32	1	-5	11	14.07	14.36	1	0	4	12.74	12.60
1	-14	3	9.71	10.13	1	-8	1	20.50	20.83	1	-5	13	14.42	13.67	1	0	6	23.97	25.06
1	-14	4	17.88	18.50	1	-8	2	20.01	19.97	1	-4	1	75.86	79.01	1	0	7	12.57	12.40
1	-14	9	14.59	13.98	1	-8	4	20.68	22.27	1	-4	5	15.46	15.23	1	0	9	9.27	9.10
1	-13	1	37.85	38.67	1	-8	5	20.87	21.12	1	-4	6	28.79	28.65	1	0	11	12.41	11.87
1	-13	2	17.31	17.47	1	-8	6	16.45	15.95	1	-4	7	9.53	9.62	1	1	0	13.89	14.84
1	-13	3	10.71	10.76	1	-8	7	9.55	8.76	1	-4	8	12.43	12.24	1	1	1	53.31	52.81
1	-13	4	27.54	28.24	1	-8	9	7.65	7.97	1	-4	10	11.18	11.22	1	1	2	89.94	83.30
1	-13	6	31.08	30.58	1	-8	10	9.64	7.93	1	-3	1	68.85	66.80	1	1	3	23.00	21.80
1	-13	7	17.95	18.51	1	-8	11	11.13	10.62	1	-3	2	86.04	83.58	1	1	4	27.76	27.91
1	-13	8	10.95	11.09	1	-7	1	15.38	16.86	1	-3	3	24.67	23.66	1	1	6	8.67	9.83
1	-13	9	27.94	27.51	1	-7	2	80.73	82.08	1	-3	4	20.06	19.87	1	1	7	40.58	41.26
1	-13	11	14.77	14.78	1	-7	3	4.76	3.62	1	-3	5	75.49	76.93	1	1	9	22.96	22.71
1	-13	12	16.84	16.87	1	-7	5	44.21	45.60	1	-3	6	22.76	22.68	1	1	10	9.15	9.87
1	-12	1	7.77	8.14	1	-7	6	29.57	30.56	1	-3	7	38.27	38.81	1	1	11	9.16	8.31
1	-12	5	7.49	6.68	1	-7	7	47.54	47.57	1	-3	10	44.03	43.99	1	1	12	10.31	11.[illegible]1
1	-12	6	10.36	11.18	1	-7	8	7.23	8.71	1	-3	12	8.34	7.96	1	2	0	32.25	30.69
1	-12	10	8.43	7.33	1	-7	10	31.40	31.51	1	-2	1	13.56	12.96	1	2	1	5.76	6.01
1	-11	1	7.43	6.53	1	-7	11	21.06	22.18	1	-2	2	26.13	25.18	1	2	2	71.26	71.29
1	-11	3	25.08	25.13	1	-7	12	17.30	18.75	1	-2	3	73.07	74.53	1	2	3	31.12	31.03
1	-11	5	24.38	25.47	1	-7	13	12.81	12.37	1	-2	4	18.29	19.00	1	2	4	8.57	7.81
1	-11	6	8.41	7.32	1	-6	1	14.81	14.89	1	-2	5	11.38	12.69	1	2	5	15.17	16.51
1	-11	8	9.52	9.34	1	-6	2	12.30	13.07	1	-2	6	8.16	8.35	1	2	6	8.24	7.24
1	-11	9	7.96	8.85	1	-6	5	10.67	11.54	1	-2	7	10.96	11.43	1	2	7	10.66	10.46
1	-11	10	18.70	18.55	1	-6	6	17.35	18.27	1	-2	8	13.77	12.87	1	2	8	16.20	16.35
1	-10	1	6.18	6.58	1	-6	7	5.91	6.46	1	-2	9	7.96	7.35	1	2	9	8.92	10.34
1	-10	2	9.62	10.38	1	-6	8	5.77	4.68	1	-1	1	12.10	9.70	1	3	0	71.83	67.69
1	-10	4	10.44	10.63	1	-6	10	10.59	10.75	1	-1	2	67.61	65.57	1	3	1	59.92	55.49
1	-10	5	12.97	13.51	1	-6	11	11.12	11.30	1	-1	3	68.56	65.80	1	3	2	6.67	5.85
1	-10	9	14.79	14.69	1	-5	1	37.81	38.25	1	-1	4	41.16	39.96	1	3	3	68.94	68.36
1	-9	1	29.93	30.65	1	-5	2	18.09	17.46	1	-1	5	8.69	8.83	1	3	4	47.64	48.26

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
1	3	5	29.31	30.37	1	8	2	5.20	5.42	2	-16	4	8.90	8.52	2	-10	5	22.69	21.99
1	3	6	52.42	51.50	1	8	4	15.67	15.73	2	-16	6	21.67	21.92	2	-10	6	7.93	8.22
1	3	7	15.97	15.87	1	8	6	12.02	12.16	2	-16	7	24.14	23.22	2	-10	7	46.96	47.71
1	3	8	25.22	23.88	1	8	7	7.98	8.48	2	-15	2	12.66	11.48	2	-10	8	12.25	10.77
1	3	9	14.55	14.72	1	8	9	10.00	9.76	2	-15	4	14.63	14.27	2	-10	9	10.28	10.27
1	3	10	13.95	13.72	1	9	0	60.31	59.67	2	-15	5	9.06	7.72	2	-10	11	8.35	7.74
1	3	11	28.83	28.03	1	9	1	27.40	28.34	2	-15	6	8.58	7.42	2	-10	12	27.86	27.84
1	3	12	14.97	14.13	1	9	2	14.73	14.37	2	-15	7	9.59	9.70	2	-9	2	14.96	16.16
1	4	0	4.31	3.65	1	9	3	18.58	18.27	2	-15	9	12.57	12.17	2	-9	3	12.18	11.35
1	4	1	4.26	2.72	1	9	4	17.53	16.95	2	-14	1	7.13	7.65	2	-9	4	10.07	8.89
1	4	2	12.61	12.43	1	9	5	35.40	36.96	2	-14	3	23.26	22.36	2	-9	5	19.56	19.98
1	4	3	7.06	5.73	1	9	6	13.79	14.56	2	-14	4	10.08	10.27	2	-9	7	14.45	14.81
1	4	4	29.77	29.71	1	9	7	16.94	16.55	2	-14	5	12.86	13.13	2	-9	9	9.69	9.93
1	4	5	5.68	6.09	1	9	8	20.13	20.16	2	-14	8	20.92	19.72	2	-9	10	11.60	12.34
1	4	9	7.14	5.46	1	10	0	14.28	14.27	2	-14	10	10.48	9.32	2	-9	12	10.10	10.23
1	5	0	43.05	42.88	1	11	0	14.42	14.43	2	-13	1	10.56	11.41	2	-8	1	24.76	25.19
1	5	1	42.25	42.20	1	11	1	7.02	7.03	2	-13	3	17.31	16.99	2	-8	2	52.57	53.06
1	5	3	45.13	44.36	1	11	2	23.69	24.17	2	-13	5	7.24	6.92	2	-8	3	11.35	11.23
1	5	4	12.73	13.51	1	11	3	7.27	7.25	2	-13	6	11.73	10.42	2	-8	4	29.22	29.03
1	5	5	20.08	21.58	1	11	4	18.75	17.33	2	-13	8	11.50	12.52	2	-8	5	7.04	8.52
1	5	6	15.31	15.92	1	11	7	12.92	11.33	2	-13	10	9.23	7.99	2	-8	6	22.17	21.08
1	5	7	7.21	6.03	1	12	1	12.85	13.07	2	-12	2	14.21	15.15	2	-8	7	27.37	26.89
1	5	8	35.79	36.07	1	12	3	8.91	8.72	2	-12	5	18.37	18.15	2	-8	9	18.93	18.97
1	6	0	12.38	11.52	1	12	6	14.88	15.13	2	-12	6	7.59	8.26	2	-8	10	11.19	11.10
1	6	2	19.60	20.82	1	13	0	14.17	13.39	2	-12	10	21.40	21.55	2	-8	11	8.30	8.78
1	6	4	6.47	7.42	1	13	1	13.37	12.52	2	-12	12	10.85	11.65	2	-7	1	16.56	17.64
1	6	5	16.34	16.71	1	13	3	15.43	16.75	2	-11	1	9.36	9.22	2	-7	2	15.91	17.01
1	6	7	15.63	14.52	1	13	4	26.96	27.68	2	-11	2	17.24	16.26	2	-7	3	10.58	11.35
1	6	10	11.57	12.83	1	13	5	10.59	11.37	2	-11	4	18.88	19.23	2	-7	4	29.47	30.21
1	7	0	20.95	22.15	1	14	1	10.94	11.94	2	-11	5	10.89	9.99	2	-7	6	18.82	18.50
1	7	1	6.57	6.47	1	14	2	9.30	8.05	2	-11	6	8.33	7.79	2	-7	7	11.72	11.55
1	7	3	65.50	65.38	1	14	3	8.17	9.47	2	-11	7	15.15	14.45	2	-7	8	8.06	8.35
1	7	6	13.88	13.55	1	15	1	30.32	29.36	2	-11	9	14.18	13.61	2	-7	9	13.79	14.49
1	7	7	10.55	10.49	2	-17	3	8.31	8.02	2	-11	12	9.43	9.34	2	-7	11	13.86	12.94
1	7	8	27.11	28.29	2	-17	4	7.88	8.38	2	-10	1	7.73	6.66	2	-6	2	19.42	20.47
1	7	10	9.74	9.36	2	-16	1	16.04	15.37	2	-10	2	44.13	44.73	2	-6	3	8.39	7.95
1	8	0	17.66	17.87	2	-16	2	27.64	26.76	2	-10	3	25.32	25.56	2	-6	4	21.93	21.78
1	8	1	22.63	23.77	2	-16	3	10.79	10.51	2	-10	4	31.54	31.54	2	-6	5	7.64	8.11

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
2	-6	6	30.33	29.75	2	-2	5	13.04	13.43	2	1	11	11.07	9.35	2	5	7	13.41	12.93
2	-6	7	26.33	26.41	2	-2	6	18.29	18.49	2	2	1	7.74	8.19	2	5	8	14.05	13.15
2	-6	8	10.25	10.78	2	-2	8	34.80	35.31	2	2	2	125.22	117.87	2	5	10	9.61	9.80
2	-6	9	9.82	9.64	2	-2	9	10.85	9.97	2	2	3	6.62	6.01	2	6	0	18.33	18.30
2	-6	10	10.78	9.46	2	-2	10	6.66	6.21	2	2	4	28.11	27.72	2	6	1	27.81	28.39
2	-6	11	25.67	25.42	2	-2	11	13.77	12.60	2	2	5	22.03	22.51	2	6	2	18.20	18.36
2	-6	12	12.90	12.24	2	-1	1	16.47	16.46	2	2	6	24.27	23.16	2	6	4	18.60	19.44
2	-6	13	14.28	14.15	2	-1	2	31.05	30.73	2	2	7	43.22	42.86	2	6	5	29.84	29.68
2	-5	1	9.42	9.04	2	-1	3	6.63	5.62	2	2	8	13.88	12.97	2	6	6	20.37	19.78
2	-5	2	20.87	21.50	2	-1	4	25.37	25.67	2	2	9	16.62	16.58	2	6	8	9.90	10.08
2	-5	3	22.38	22.37	2	-1	5	23.64	24.57	2	2	10	22.18	23.60	2	6	9	14.21	14.69
2	-5	4	23.73	23.59	2	-1	6	13.17	12.56	2	2	11	19.30	19.61	2	6	10	23.75	23.37
2	-5	5	28.57	29.96	2	-1	7	21.42	21.95	2	2	12	9.94	8.57	2	7	1	33.30	33.38
2	-5	7	16.69	16.76	2	-1	9	13.36	13.33	2	3	0	7.70	6.83	2	7	2	11.19	9.94
2	-5	8	13.76	14.15	2	-1	10	8.43	7.49	2	3	1	9.29	9.50	2	7	3	16.86	16.78
2	-5	9	13.59	13.82	2	-1	12	10.51	11.72	2	3	2	18.31	18.69	2	7	4	11.54	12.16
2	-5	10	16.62	15.84	2	0	0	16.77	12.83	2	3	4	17.38	17.64	2	7	6	19.93	20.25
2	-5	12	10.55	10.27	2	0	2	5.95	5.60	2	3	6	11.52	13.08	2	7	8	12.48	12.24
2	-4	1	104.34	103.92	2	0	3	36.11	36.73	2	3	7	8.98	9.42	2	8	0	8.93	8.81
2	-4	2	25.53	25.23	2	0	4	19.26	19.17	2	3	9	11.36	9.95	2	8	1	14.09	13.57
2	-4	3	58.64	60.13	2	0	5	30.76	31.09	2	3	11	8.26	8.10	2	8	2	31.72	31.84
2	-4	4	6.01	6.89	2	0	7	21.07	22.10	2	4	0	59.71	58.96	2	8	3	37.50	37.67
2	-4	5	22.17	21.91	2	0	8	29.42	29.51	2	4	1	11.15	11.65	2	8	4	8.79	10.14
2	-4	6	53.30	53.12	2	0	9	22.92	23.11	2	4	2	22.59	23.02	2	8	5	12.87	13.10
2	-4	7	24.40	24.86	2	0	10	12.22	12.64	2	4	3	16.89	16.29	2	8	7	33.10	33.30
2	-4	8	44.08	44.23	2	0	11	11.29	10.77	2	4	4	56.49	56.37	2	9	0	19.68	19.73
2	-4	9	18.86	18.67	2	0	12	16.46	16.03	2	4	5	41.69	41.54	2	9	2	13.85	13.18
2	-4	12	19.44	17.46	2	0	13	11.14	11.87	2	4	6	8.76	9.18	2	9	3	11.40	10.85
2	-4	13	20.24	19.18	2	1	0	48.85	47.70	2	4	8	12.75	12.18	2	9	5	11.46	12.22
2	-3	1	22.91	22.44	2	1	1	36.56	35.44	2	4	9	15.01	14.49	2	9	7	9.52	9.75
2	-3	3	20.57	20.78	2	1	2	9.16	9.21	2	4	10	13.18	13.48	2	10	0	26.78	26.15
2	-3	5	14.90	15.36	2	1	3	25.17	25.24	2	5	0	34.02	33.38	2	10	1	40.91	40.17
2	-3	6	15.45	15.94	2	1	4	8.52	9.15	2	5	1	19.01	19.14	2	10	2	23.71	24.24
2	-3	8	13.57	14.63	2	1	5	32.55	32.91	2	5	2	20.20	20.92	2	10	3	18.92	18.34
2	-3	10	12.53	11.53	2	1	6	21.47	20.68	2	5	3	20.97	21.25	2	10	5	10.54	10.10
2	-2	2	10.14	10.95	2	1	7	10.69	10.64	2	5	4	5.76	6.01	2	10	6	25.26	24.17
2	-2	3	112.37	111.22	2	1	8	16.01	16.18	2	5	5	20.47	20.50	2	10	7	9.92	11.24
2	-2	4	21.74	21.90	2	1	10	16.40	15.50	2	5	6	7.03	6.16	2	11	0	10.52	11.39

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
2	11	1	17.10	16.53	3	-13	7	8.31	8.64	3	-8	2	52.71	54.06	3	-5	9	10.13	10.06
2	11	3	11.56	12.48	3	-13	8	8.92	9.89	3	-8	3	8.82	9.02	3	-5	12	11.00	12.17
2	11	4	9.89	8.21	3	-13	11	12.24	10.82	3	-8	4	13.27	14.93	3	-5	13	12.57	12.10
2	11	5	7.81	7.66	3	-12	1	9.28	8.87	3	-8	5	14.61	14.53	3	-4	1	57.62	59.34
2	11	6	8.77	9.49	3	-12	2	18.49	18.47	3	-8	6	6.40	4.29	3	-4	2	39.96	41.01
2	12	1	15.29	15.29	3	-12	3	11.20	12.02	3	-8	7	38.11	37.98	3	-4	4	27.29	28.18
2	12	2	8.51	8.03	3	-12	4	17.43	17.11	3	-8	8	8.35	7.07	3	-4	5	28.64	30.17
2	12	3	16.09	15.18	3	-12	5	16.04	15.93	3	-8	9	15.77	15.88	3	-4	6	39.97	39.99
2	12	6	18.87	19.99	3	-12	6	16.38	15.21	3	-8	10	10.93	11.82	3	-4	7	17.89	18.92
2	13	2	13.79	14.15	3	-12	7	23.25	23.18	3	-8	12	16.55	16.29	3	-4	8	14.58	14.40
2	14	0	10.26	10.81	3	-12	8	8.09	8.62	3	-7	1	15.66	15.79	3	-4	9	18.04	18.39
2	14	1	16.20	16.39	3	-12	9	11.61	11.56	3	-7	2	55.10	55.20	3	-4	10	17.38	18.53
2	14	2	12.52	12.54	3	-12	11	9.65	12.10	3	-7	3	13.71	13.49	3	-4	11	18.37	19.84
2	14	3	18.83	20.05	3	-12	12	18.64	18.04	3	-7	4	12.87	12.54	3	-4	13	14.95	13.56
2	15	0	7.48	5.54	3	-11	3	26.38	26.14	3	-7	5	7.58	8.76	3	-3	1	37.65	38.61
2	15	1	12.41	11.24	3	-11	5	20.35	19.77	3	-7	6	27.58	27.53	3	-3	2	55.73	56.14
2	16	0	7.97	6.86	3	-11	6	16.56	15.95	3	-7	7	30.15	29.93	3	-3	3	6.40	6.53
2	16	2	11.70	12.95	3	-11	7	6.95	5.89	3	-7	10	10.56	10.18	3	-3	5	52.70	52.49
3	-17	2	7.99	9.61	3	-11	8	11.96	11.46	3	-7	11	21.12	20.21	3	-3	6	15.14	15.45
3	-17	4	14.11	14.87	3	-11	10	12.94	12.80	3	-7	12	7.55	7.88	3	-3	7	21.70	22.53
3	-16	1	14.92	14.29	3	-11	11	15.17	14.03	3	-7	13	11.52	9.41	3	-3	10	37.68	37.09
3	-16	3	13.56	12.61	3	-10	1	30.55	31.46	3	-6	1	14.54	14.79	3	-2	1	14.56	15.00
3	-16	5	13.19	13.18	3	-10	2	13.34	14.46	3	-6	2	22.40	23.50	3	-2	2	27.54	27.65
3	-16	6	9.29	8.94	3	-10	3	13.78	14.10	3	-6	3	23.36	25.32	3	-2	3	72.96	74.57
3	-16	8	17.46	16.62	3	-10	4	27.55	27.23	3	-6	5	17.13	17.34	3	-2	5	30.23	31.64
3	-15	2	8.18	7.24	3	-10	5	17.89	17.10	3	-6	7	22.72	22.42	3	-2	6	8.49	9.51
3	-15	4	17.31	18.39	3	-10	6	22.75	22.99	3	-6	8	25.00	24.15	3	-2	7	23.20	23.34
3	-15	7	12.89	11.96	3	-10	8	12.93	13.64	3	-6	10	10.23	10.47	3	-2	8	33.37	33.22
3	-14	1	24.35	25.48	3	-10	9	24.03	24.24	3	-6	12	11.63	11.72	3	-2	10	23.72	23.27
3	-14	2	8.79	8.44	3	-10	10	13.31	12.19	3	-6	13	12.84	14.27	3	-2	13	13.55	11.26
3	-14	6	24.38	24.55	3	-10	11	12.66	11.60	3	-5	1	28.05	28.40	3	-1	1	25.58	24.70
3	-14	7	7.58	8.90	3	-9	1	14.18	14.59	3	-5	2	5.50	5.22	3	-1	2	32.11	33.66
3	-14	9	8.18	6.56	3	-9	3	11.75	12.48	3	-5	3	28.38	28.41	3	-1	3	40.19	41.37
3	-14	11	14.41	13.52	3	-9	4	20.59	20.71	3	-5	4	35.31	34.39	3	-1	4	23.49	23.62
3	-13	1	33.53	33.19	3	-9	5	32.87	32.81	3	-5	5	18.83	17.78	3	-1	5	23.32	23.54
3	-13	3	9.83	9.30	3	-9	8	15.95	16.74	3	-5	6	20.83	20.85	3	-1	7	38.71	38.57
3	-13	4	9.31	9.65	3	-9	9	23.39	23.77	3	-5	7	19.50	19.33	3	-1	8	8.62	10.46
3	-13	6	25.39	26.16	3	-9	10	11.27	13.95	3	-5	8	24.50	23.78	3	-1	12	23.67	22.73

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
3	0	1	17.38	17.57	3	4	1	31.82	31.93	3	9	3	15.62	15.22	4	-12	10	19.74	19.35
3	0	2	9.37	9.62	3	4	2	8.34	8.27	3	9	4	8.10	6.91	4	-11	1	15.87	15.18
3	0	3	21.39	21.41	3	4	3	41.86	43.16	3	9	5	30.66	31.96	4	-11	2	22.40	20.71
3	0	4	27.66	28.91	3	4	4	33.98	34.12	3	9	7	12.85	13.51	4	-11	4	19.93	19.90
3	0	6	7.74	7.79	3	4	5	20.20	19.06	3	9	8	15.42	14.86	4	-11	6	15.18	16.25
3	0	8	15.02	14.53	3	4	6	25.38	25.36	3	10	0	13.34	13.18	4	-11	7	17.44	16.55
3	0	9	19.69	19.83	3	4	8	27.55	26.98	3	10	1	22.09	21.18	4	-11	9	13.18	13.54
3	1	0	32.67	32.65	3	4	9	11.97	11.13	3	10	2	12.63	12.21	4	-11	11	10.94	10.76
3	1	1	41.86	42.80	3	4	10	12.19	12.85	3	10	3	16.98	16.59	4	-10	1	14.53	13.84
3	1	2	50.32	50.34	3	4	11	16.02	17.11	3	10	4	25.85	26.53	4	-10	2	11.90	11.89
3	1	4	36.85	36.55	3	5	0	22.64	23.47	3	10	6	12.94	14.54	4	-10	3	6.42	5.12
3	1	5	8.22	8.54	3	5	1	45.99	45.29	3	10	7	11.08	9.46	4	-10	4	11.60	11.16
3	1	6	21.45	21.32	3	5	2	13.77	14.25	3	11	0	13.52	12.90	4	-10	5	9.71	9.05
3	1	7	20.32	20.68	3	5	3	22.76	23.11	3	11	2	25.92	25.49	4	-10	7	17.56	18.20
3	1	9	24.79	25.26	3	5	4	6.66	8.11	3	11	7	13.17	12.12	4	-10	8	11.50	10.74
3	2	0	29.58	29.59	3	5	5	6.27	6.84	3	12	0	18.52	18.30	4	-10	12	14.19	13.96
3	2	1	11.92	11.67	3	5	6	23.04	22.53	3	12	1	20.17	20.85	4	-9	3	19.71	19.58
3	2	2	75.80	75.25	3	5	8	23.90	24.86	3	12	3	9.35	9.12	4	-9	4	7.74	6.54
3	2	3	13.90	13.93	3	6	0	27.89	28.61	3	12	5	12.49	12.93	4	-9	5	8.15	8.58
3	2	4	23.31	23.82	3	6	2	11.57	12.59	3	12	6	17.74	17.64	4	-9	7	9.03	8.94
3	2	5	20.85	21.37	3	6	3	7.44	7.60	3	13	4	23.60	23.04	4	-9	8	16.73	17.45
3	2	6	12.35	11.72	3	6	4	15.84	15.55	3	14	0	7.69	7.06	4	-9	10	7.47	6.56
3	2	7	35.00	36.25	3	6	5	25.60	25.68	3	14	1	10.22	10.04	4	-9	12	9.26	7.22
3	2	9	20.42	20.35	3	6	6	6.98	5.35	3	14	4	16.47	15.56	4	-8	1	21.25	21.83
3	2	10	10.81	11.85	3	6	10	16.92	16.11	3	15	0	8.28	4.37	4	-8	2	20.68	20.62
3	2	12	14.78	15.37	3	7	0	7.79	6.48	3	15	1	23.34	21.41	4	-8	4	28.35	29.23
3	3	0	36.12	36.71	3	7	2	17.82	17.23	3	16	0	14.80	14.37	4	-8	7	9.53	9.79
3	3	1	30.62	30.12	3	7	3	43.16	43.28	4	-16	6	13.87	12.53	4	-8	9	31.53	31.02
3	3	2	6.69	7.22	3	7	5	14.38	15.25	4	-15	7	14.85	13.27	4	-7	1	12.48	13.13
3	3	3	44.85	44.65	3	7	6	8.15	9.22	4	-14	4	10.80	11.76	4	-7	2	16.10	15.70
3	3	4	35.58	36.04	3	7	8	16.71	16.68	4	-14	8	18.22	18.33	4	-7	4	6.91	6.95
3	3	5	11.84	10.93	3	8	0	18.85	18.71	4	-14	9	8.12	7.38	4	-7	7	9.81	10.17
3	3	6	37.26	37.89	3	8	1	10.96	11.26	4	-12	1	18.41	18.33	4	-6	1	26.12	26.74
3	3	7	12.76	12.91	3	8	3	39.26	39.13	4	-12	2	21.39	21.46	4	-6	3	26.95	27.60
3	3	8	13.12	13.63	3	8	5	19.53	19.15	4	-12	3	18.88	18.95	4	-6	4	52.08	52.77
3	3	9	15.46	16.32	3	8	8	18.30	18.14	4	-12	5	29.16	28.39	4	-6	5	9.31	8.29
3	3	11	26.09	25.46	3	9	0	44.91	44.19	4	-12	6	10.16	11.00	4	-6	6	29.52	29.14
3	4	0	29.62	29.66	3	9	1	6.44	6.73	4	-12	7	16.32	15.61	4	-6	7	10.09	8.55

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
4	-6	8	12.37	12.79	4	-2	10	25.48	24.77	4	3	1	20.20	20.71	4	8	3	17.88	16.76
4	-6	9	20.33	20.73	4	-2	11	15.97	15.70	4	3	2	6.71	6.88	4	8	4	20.75	20.53
4	-6	11	12.44	14.03	4	-2	12	15.11	14.56	4	3	4	13.02	13.28	4	8	5	10.06	10.42
4	-6	12	10.35	11.08	4	-1	2	21.12	22.58	4	3	5	10.36	10.98	4	9	0	10.66	9.57
4	-5	1	15.12	15.01	4	-1	3	22.70	23.37	4	3	6	11.89	11.44	4	9	2	12.18	12.05
4	-5	2	30.99	31.96	4	-1	4	12.80	12.92	4	3	8	9.82	10.80	4	10	0	12.96	13.01
4	-5	3	14.06	14.62	4	-1	5	14.48	15.30	4	3	9	9.48	9.49	4	10	1	11.79	11.38
4	-5	4	14.04	14.31	4	-1	7	9.14	9.14	4	4	0	6.53	6.92	4	10	4	25.64	25.79
4	-5	5	18.24	18.44	4	-1	8	10.49	11.12	4	4	2	10.50	10.01	4	11	1	20.41	20.70
4	-5	6	9.72	9.19	4	-1	10	10.69	10.17	4	4	3	22.52	22.33	4	11	3	15.37	16.40
4	-5	7	25.48	24.95	4	0	0	98.43	98.55	4	4	4	30.03	29.79	4	11	4	8.29	8.29
4	-5	8	7.71	7.97	4	0	1	7.68	8.11	4	4	6	15.06	15.45	4	11	6	14.71	15.26
4	-5	9	13.95	13.29	4	0	2	15.17	14.41	4	4	7	18.01	17.68	4	12	0	21.74	21.55
4	-5	10	10.38	9.45	4	0	5	61.24	60.55	4	4	8	27.01	26.91	4	12	1	9.73	10.14
4	-5	12	12.81	12.76	4	0	7	12.28	12.25	4	4	9	10.81	10.95	4	12	2	14.71	13.41
4	-4	1	39.18	38.94	4	0	8	15.93	15.56	4	4	10	9.96	8.66	4	12	3	17.71	17.62
4	-4	3	10.54	9.98	4	0	9	7.26	7.40	4	5	0	25.06	25.23	4	12	4	15.60	14.39
4	-4	4	16.71	17.62	4	0	10	18.27	19.12	4	5	1	13.65	13.68	4	13	0	8.55	8.60
4	-4	6	22.34	22.99	4	1	0	16.20	16.45	4	5	2	14.47	13.82	4	14	0	13.62	12.97
4	-4	8	16.13	15.58	4	1	1	5.59	6.88	4	5	3	22.49	21.73	4	14	1	13.21	12.80
4	-4	9	16.61	16.28	4	1	2	24.13	24.06	4	5	4	9.22	9.27	5	-14	2	7.75	6.80
4	-3	1	11.65	11.58	4	1	3	27.13	27.70	4	5	5	20.17	21.54	5	-14	3	8.04	6.02
4	-3	3	11.34	12.73	4	1	5	16.08	16.65	4	5	6	11.58	11.32	5	-14	4	17.37	16.64
4	-3	4	21.55	21.87	4	1	7	10.95	11.62	4	5	10	13.98	12.87	5	-13	1	10.44	10.96
4	-3	5	14.14	13.33	4	1	8	17.09	17.37	4	6	0	15.77	15.92	5	-13	3	8.02	7.36
4	-3	6	9.06	8.11	4	1	10	11.70	12.97	4	6	1	56.07	56.39	5	-13	8	10.34	10.38
4	-3	8	13.30	12.82	4	2	0	7.80	7.87	4	6	2	28.82	28.25	5	-12	2	8.18	6.88
4	-3	9	12.68	12.21	4	2	1	5.86	6.21	4	6	3	10.85	11.41	5	-11	1	10.02	10.00
4	-3	10	7.91	7.54	4	2	2	39.49	39.49	4	6	5	19.31	19.70	5	-11	3	38.96	38.83
4	-2	1	7.63	6.86	4	2	3	19.98	20.33	4	6	6	26.53	26.07	5	-11	5	7.17	8.53
4	-2	2	7.25	6.80	4	2	4	9.90	8.76	4	6	7	14.47	14.36	5	-11	6	13.22	13.23
4	-2	3	38.59	38.68	4	2	5	13.53	13.27	4	6	9	7.55	6.08	5	-11	7	18.75	17.97
4	-2	4	10.13	9.99	4	2	6	9.53	9.56	4	7	0	6.16	5.58	5	-11	8	25.78	25.65
4	-2	5	29.54	30.02	4	2	7	19.11	18.86	4	7	1	8.52	7.29	5	-10	5	9.44	9.40
4	-2	6	20.04	19.46	4	2	8	9.33	8.09	4	7	3	12.11	12.07	5	-9	2	28.43	27.46
4	-2	7	12.34	12.69	4	2	9	10.12	9.14	4	7	4	13.25	13.44	5	-9	3	8.57	7.64
4	-2	8	15.57	16.05	4	2	10	9.04	10.20	4	8	0	9.96	8.80	5	-9	5	21.94	21.39
4	-2	9	13.44	13.62	4	3	0	16.41	17.20	4	8	1	8.11	8.34	5	-9	7	21.12	21.89

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
5	-9	8	14.44	14.16	5	-3	9	14.56	15.72	5	4	1	7.95	8.77	6	-12	6	10.27	11.41
5	-9	11	11.24	11.14	5	-2	1	8.73	8.49	5	4	3	11.60	11.03	6	-11	4	9.78	9.54
5	-8	1	13.42	12.86	5	-2	2	21.43	21.55	5	4	4	11.52	11.77	6	-11	5	8.80	8.75
5	-8	4	15.50	15.89	5	-2	3	6.71	5.95	5	4	5	9.57	9.09	6	-11	7	8.00	8.52
5	-8	5	18.64	18.25	5	-2	4	11.68	10.91	5	5	0	30.02	29.93	6	-10	5	27.98	27.46
5	-8	6	11.02	11.94	5	-2	5	15.51	15.55	5	5	1	43.97	45.13	6	-10	7	9.92	8.72
5	-8	9	9.65	8.57	5	-2	7	15.59	15.40	5	5	2	12.98	13.59	6	-9	2	7.68	7.67
5	-8	10	10.27	10.40	5	-1	1	19.45	18.91	5	5	3	12.72	12.46	6	-9	4	9.82	9.52
5	-8	11	11.26	9.21	5	-1	2	28.54	27.85	5	5	4	22.75	22.12	6	-9	9	11.50	12.03
5	-7	1	16.93	16.32	5	-1	3	5.50	3.66	5	5	5	20.43	20.75	6	-8	1	29.62	30.11
5	-7	2	14.28	15.08	5	-1	4	36.73	36.48	5	5	6	31.07	30.92	6	-8	2	23.95	24.06
5	-7	3	22.74	22.97	5	-1	5	23.96	23.04	5	5	8	13.05	13.52	6	-8	3	21.20	22.04
5	-7	4	10.58	11.05	5	-1	7	27.04	27.06	5	5	9	18.58	17.92	6	-8	4	22.80	23.06
5	-7	6	19.65	20.14	5	-1	8	9.43	9.53	5	6	2	8.28	9.23	6	-8	5	15.68	14.41
5	-7	8	10.78	12.25	5	-1	9	14.97	15.45	5	6	5	10.94	9.63	6	-8	6	24.34	24.34
5	-7	11	16.07	15.44	5	-1	10	11.01	11.43	5	7	0	11.21	10.49	6	-8	7	16.63	16.67
5	-6	1	9.67	7.91	5	0	2	7.63	7.27	5	7	2	16.72	16.78	6	-8	8	13.95	14.32
5	-6	5	7.56	6.85	5	0	6	9.72	10.12	5	7	3	19.27	18.63	6	-8	9	17.26	17.05
5	-5	1	16.48	15.93	5	0	9	7.50	7.83	5	7	4	10.15	9.09	6	-7	2	8.86	8.02
5	-5	3	32.98	33.87	5	1	0	24.26	24.02	5	7	5	22.11	23.86	6	-7	4	18.34	18.03
5	-5	4	36.76	36.44	5	1	1	39.15	39.57	5	8	0	16.83	16.15	6	-7	6	7.80	4.47
5	-5	5	16.85	17.03	5	1	2	7.08	6.63	5	8	1	16.32	16.64	6	-6	1	17.33	16.54
5	-5	6	7.99	7.69	5	1	3	15.24	15.70	5	8	4	10.53	10.86	6	-6	2	14.57	14.95
5	-5	8	38.35	38.28	5	1	4	39.54	39.42	5	8	5	7.43	6.57	6	-6	6	28.62	28.17
5	-5	9	16.24	16.15	5	1	5	9.99	9.26	5	8	6	11.27	10.69	6	-6	9	11.72	9.96
5	-4	1	17.26	16.36	5	1	6	17.82	17.47	5	9	0	25.95	26.11	6	-5	3	11.31	11.44
5	-4	2	12.20	13.65	5	1	8	7.93	7.64	5	9	3	14.47	15.27	6	-5	4	15.48	14.80
5	-4	4	6.33	5.99	5	1	9	34.56	35.64	5	9	5	12.19	13.08	6	-5	5	16.28	15.94
5	-4	6	10.36	9.61	5	2	0	19.87	19.98	5	10	0	11.58	11.28	6	-5	8	10.50	11.19
5	-4	7	10.19	10.84	5	2	1	7.83	8.58	5	11	0	15.19	15.18	6	-5	9	11.10	8.90
5	-4	8	8.43	7.39	5	2	3	21.97	20.73	5	11	2	37.14	37.13	6	-5	10	9.74	10.39
5	-3	1	38.16	38.04	5	2	5	14.77	13.65	5	12	3	8.04	8.16	6	-4	1	51.47	51.25
5	-3	3	33.77	33.30	5	2	8	14.32	13.56	5	13	1	8.19	7.62	6	-4	2	6.85	6.88
5	-3	4	13.68	12.79	5	3	2	29.51	29.66	6	-13	3	11.13	11.31	6	-4	5	11.67	12.58
5	-3	5	8.69	9.12	5	3	4	25.55	26.26	6	-12	1	15.98	16.94	6	-4	6	34.57	34.55
5	-3	6	21.49	21.80	5	3	5	10.02	10.69	6	-12	3	7.72	6.47	6	-4	8	8.24	6.34
5	-3	7	7.68	7.65	5	3	6	12.12	13.10	6	-12	4	11.74	11.22	6	-4	9	9.14	9.26
5	-3	8	13.74	14.10	5	4	0	10.75	9.78	6	-12	5	17.13	15.96	6	-4	10	15.49	16.14

TABLE 6. (continued)

Ti-Chondrodite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
6	-3	4	8.56	11.17	6	7	1	21.43	22.26	7	-1	7	12.00	13.06					
6	-2	1	16.50	16.34	6	7	3	10.12	9.31	7	1	0	22.98	24.28					
6	-2	2	21.31	21.54	6	7	6	1[illegible].72	15.71	7	1	1	20.92	21.26					
6	-2	3	47.12	47.10	6	8	1	17.12	16.49	7	1	2	8.04	7.73					
6	-2	4	13.32	14.12	6	8	2	31.18	30.20	7	1	4	26.92	26.29					
6	-2	6	25.48	25.17	6	8	3	18.30	16.78	7	1	5	12.46	11.98					
6	-2	7	12.36	11.40	6	8	4	22.68	22.67	7	1	6	18.20	18.30					
6	-2	8	27.80	26.75	6	9	4	10.15	10.88	7	2	1	10.10	9.43					
6	-2	9	10.11	10.34	6	10	0	31.14	30.82	7	2	2	12.81	12.04					
6	-1	2	8.92	7.55	6	10	1	7.68	8.92	7	2	6	8.84	10.06					
6	-1	4	7.95	8.00	6	11	0	9.30	8.80	7	3	3	8.04	7.44					
6	-1	5	13.41	13.52	6	12	0	8.04	6.01	7	3	4	16.50	15.45					
6	-1	7	9.69	9.78	6	12	1	7.33	5.38	7	3	6	11.72	13.75					
6	0	1	6.71	7.69	7	-9	3	12.14	11.97	7	4	0	8.56	9.58					
6	0	2	23.50	24.01	7	-9	5	10.32	12.18	7	4	3	9.46	8.85					
6	0	7	29.10	28.37	7	-8	2	13.46	14.11	7	5	1	29.65	29.51					
6	1	0	25.05	24.89	7	-7	2	14.26	14.31	7	5	2	13.98	14.42					
6	1	1	12.47	12.94	7	-7	3	15.10	14.82	7	7	0	17.17	18.61					
6	1	5	23.02	22.16	7	-7	4	13.67	14.16	7	7	1	8.48	7.63					
6	1	6	12.09	11.86	7	-7	5	14.22	13.46	7	7	2	21.38	20.03					
6	2	1	26.29	24.56	7	-7	6	16.45	14.53	7	7	3	12.85	12.42					
6	2	2	45.61	46.17	7	-5	2	9.54	11.15	7	9	0	17.06	16.87					
6	2	3	21.24	20.65	7	-5	3	18.69	19.18	8	-5	1	14.21	13.65					
6	2	6	28.70	29.59	7	-5	4	23.37	23.30	8	-4	1	19.06	19.17					
6	2	7	22.14	23.20	7	-5	5	8.47	10.76	8	-3	1	15.16	15.73					
6	2	8	11.05	10.37	7	-5	7	16.72	17.04	8	-3	3	12.63	12.35					
6	3	3	8.95	9.49	7	-5	8	16.55	16.02	8	-2	3	17.83	18.45					
6	3	5	7.40	6.08	7	-4	5	11.71	11.27	8	-2	5	14.01	12.81					
6	3	8	9.81	9.26	7	-3	1	12.36	13.33	8	-1	1	9.97	9.49					
6	4	2	13.23	13.62	7	-3	2	9.65	8.87	8	-1	3	10.42	11.96					
6	4	4	40.28	40.56	7	-3	4	10.60	10.55	8	-1	4	10.27	11.10					
6	4	7	18.80	18.38	7	-3	5	14.27	12.61	8	0	0	19.21	21.48					
6	5	0	15.92	15.08	7	-3	6	8.18	6.79	8	0	2	12.11	12.21					
6	5	1	11.22	11.30	7	-2	2	7.38	6.77	8	1	0	8.93	8.30					
6	5	2	8.51	9.24	7	-2	3	11.58	11.84	8	1	1	15.78	15.33					
6	5	5	8.61	8.37	7	-1	1	24.01	23.75	8	2	2	17.66	18.34					
6	6	2	7.54	6.19	7	-1	5	22.85	22.63	8	3	2	15.17	15.13					
6	6	3	23.79	23.26	7	-1	6	13.75	13.96										

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
0	-14	1	36.21	35.55	0	-10	16	21.36	20.36	0	-4	1	21.76	20.77	0	0	5	77.11	72.21
0	-14	2	12.07	12.42	0	-10	18	17.47	16.99	0	-4	3	63.87	61.08	0	0	6	31.69	30.56
0	-14	3	8.84	9.04	0	-8	1	6.52	6.14	0	-4	4	54.58	53.04	0	0	7	19.97	19.72
0	-14	4	27.47	27.92	0	-8	2	41.20	40.91	0	-4	5	73.37	71.59	0	0	8	27.21	26.73
0	-14	5	26.26	26.39	0	-8	3	16.23	16.98	0	-4	6	25.06	24.96	0	0	9	306.94	298.97
0	-14	6	28.27	27.40	0	-8	4	40.30	41.06	0	-4	7	53.07	53.41	0	0	12	9.74	10.05
0	-14	7	7.15	7.36	0	-8	5	9.71	9.47	0	-4	8	94.69	95.54	0	0	13	32.91	33.93
0	-14	8	18.12	18.78	0	-8	6	45.43	46.45	0	-4	10	27.51	25.33	0	0	14	63.46	65.70
0	-14	9	10.26	10.21	0	-8	7	31.68	32.42	0	-4	12	31.32	31.21	0	0	15	29.03	29.79
0	-14	10	29.56	29.02	0	-8	8	31.59	31.06	0	-4	13	36.87	36.30	0	0	16	19.56	20.33
0	-14	12	21.28	20.61	0	-8	9	41.15	42.87	0	-4	14	66.26	66.12	0	0	17	28.06	28.88
0	-12	1	77.61	76.01	0	-8	10	15.54	15.63	0	-4	15	18.39	17.73	0	0	18	98.32	99.36
0	-12	2	11.55	11.60	0	-8	11	20.82	19.16	0	-4	16	37.25	36.46	0	2	0	22.44	20.25
0	-12	3	77.15	77.86	0	-8	12	7.15	7.73	0	-4	17	47.91	48.15	0	2	1	24.73	22.86
0	-12	5	62.20	62.66	0	-8	13	17.30	17.69	0	-4	18	11.19	10.94	0	2	2	96.94	88.95
0	-12	6	33.48	32.84	0	-8	14	20.75	20.80	0	-4	19	10.02	9.24	0	2	3	20.34	18.61
0	-12	7	49.86	50.19	0	-8	15	49.19	49.34	0	-4	20	11.54	10.16	0	2	4	47.59	44.24
0	-12	8	9.60	8.21	0	-8	16	11.08	12.25	0	-2	1	60.15	53.01	0	2	5	12.44	11.61
0	-12	9	22.00	21.94	0	-8	17	18.13	17.21	0	-2	2	50.64	45.54	0	2	7	32.83	31.70
0	-12	10	64.34	63.49	0	-8	18	42.35	41.51	0	-2	3	75.19	68.85	0	2	8	68.22	68.24
0	-12	12	51.35	51.69	0	-8	19	22.67	22.34	0	-2	4	6.01	5.08	0	2	9	28.25	28.01
0	-12	14	40.21	39.58	0	-6	1	23.76	24.41	0	-2	5	39.58	37.33	0	2	10	45.29	46.38
0	-12	15	18.41	17.70	0	-6	2	32.73	34.10	0	-2	6	15.86	15.73	0	2	11	49.82	51.30
0	-12	16	28.04	28.23	0	-6	3	50.25	51.58	0	-2	7	26.40	26.25	0	2	12	7.28	6.16
0	-10	1	41.37	41.61	0	-6	4	115.92	114.62	0	-2	8	28.80	29.82	0	2	13	39.37	40.59
0	-10	2	69.30	69.29	0	-6	5	5.25	4.44	0	-2	9	69.97	69.57	0	2	15	14.31	13.71
0	-10	3	25.67	25.58	0	-6	6	259.50	259.85	0	-2	10	5.77	5.62	0	2	16	10.49	10.53
0	-10	4	16.06	16.37	0	-6	8	86.84	88.07	0	-2	11	16.05	15.55	0	2	17	40.64	41.57
0	-10	5	71.83	72.33	0	-6	9	32.44	32.92	0	-2	12	70.32	71.33	0	2	18	17.02	16.47
0	-10	6	12.14	12.19	0	-6	10	16.66	16.40	0	-2	13	24.93	25.64	0	2	19	27.09	26.83
0	-10	7	27.16	27.58	0	-6	11	48.83	49.39	0	-2	14	23.89	23.62	0	4	0	18.59	18.11
0	-10	8	7.28	6.97	0	-6	12	49.04	49.99	0	-2	17	18.39	18.02	0	4	1	85.42	80.29
0	-10	9	29.61	29.47	0	-6	13	54.67	55.65	0	-2	18	48.59	48.47	0	4	2	11.85	11.01
0	-10	10	39.17	40.60	0	-6	14	14.83	13.97	0	-1	1	4.98	0.00	0	4	3	29.27	28.72
0	-10	11	72.33	72.75	0	-6	15	110.90	109.90	0	0	1	2.63	0.42	0	4	4	28.50	29.31
0	-10	12	8.75	8.11	0	-6	17	43.51	44.16	0	0	2	4.43	4.54	0	4	5	33.09	33.06
0	-10	13	23.69	24.58	0	-6	18	9.89	8.89	0	0	3	14.75	12.94	0	4	6	108.84	109.18
0	-10	14	51.88	51.40	0	-6	20	37.83	37.17	0	0	4	57.22	52.86	0	4	7	19.41	19.59

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
0	4	8	32.20	30.99	0	8	13	28.23	29.06	1	-13	3	11.13	10.32	1	-9	3	9.74	10.35
0	4	9	9.30	9.18	0	8	14	23.30	21.74	1	-13	4	19.73	19.30	1	-9	4	10.24	10.47
0	4	10	35.41	35.45	0	10	0	58.69	58.90	1	-13	5	44.11	44.04	1	-9	5	43.18	44.04
0	4	11	7.69	10.13	0	10	2	21.06	22.11	1	-13	6	26.59	25.99	1	-9	6	58.29	59.82
0	4	12	47.61	48.57	0	10	3	15.93	16.66	1	-13	7	12.04	10.81	1	-9	7	94.64	93.46
0	4	13	6.16	6.32	0	10	4	53.41	53.62	1	-13	8	50.74	51.14	1	-9	8	13.75	12.89
0	4	14	6.69	6.83	0	10	6	43.05	43.77	1	-13	9	18.25	18.22	1	-9	9	38.26	37.46
0	4	15	71.00	71.87	0	10	7	38.47	38.78	1	-13	10	40.48	39.44	1	-9	12	19.24	18.78
0	4	16	24.43	24.44	0	10	8	20.59	19.77	1	-13	12	11.71	12.22	1	-9	14	34.33	34.71
0	4	17	9.75	7.99	0	10	9	64.43	65.16	1	-13	13	22.76	22.55	1	-9	15	47.90	47.08
0	6	0	42.58	43.03	0	10	10	13.43	14.46	1	-13	14	41.75	40.67	1	-9	16	43.77	42.63
0	6	1	125.23	124.12	0	10	11	14.09	13.96	1	-12	2	5.97	4.93	1	-9	18	14.97	14.69
0	6	2	15.41	14.24	0	10	13	21.15	21.49	1	-12	7	12.62	12.86	1	-8	1	11.15	10.28
0	6	3	254.00	263.42	0	12	0	14.27	14.10	1	-12	8	14.65	14.34	1	-8	2	31.82	30.73
0	6	4	13.78	14.51	0	12	1	17.00	17.93	1	-12	9	12.84	13.77	1	-8	4	13.60	14.03
0	6	5	97.78	98.65	0	12	2	41.35	41.41	1	-12	10	9.59	10.55	1	-8	5	14.59	15.68
0	6	6	32.78	32.87	0	12	3	28.73	28.61	1	-12	14	8.53	7.03	1	-8	6	36.94	37.31
0	6	7	23.27	23.80	0	12	4	70.20	69.28	1	-12	15	6.88	7.07	1	-8	7	37.03	37.57
0	6	8	15.27	15.59	0	12	6	54.54	53.58	1	-11	1	8.13	8.53	1	-8	8	13.56	13.50
0	6	9	12.09	11.97	0	12	7	11.93	10.43	1	-11	3	42.09	41.70	1	-8	9	19.76	19.96
0	6	10	88.11	88.07	0	12	8	57.31	57.02	1	-11	4	14.29	14.10	1	-8	10	9.24	9.78
0	6	11	26.12	26.45	0	12	9	10.93	10.63	1	-11	6	7.00	7.15	1	-8	11	12.05	11.27
0	6	12	114.69	114.57	0	14	0	8.26	7.41	1	-11	7	40.30	40.36	1	-8	13	14.34	13.73
0	6	14	46.42	47.03	0	14	1	22.50	23.94	1	-11	9	6.83	6.61	1	-8	14	7.53	7.48
0	6	15	22.44	22.80	0	14	3	8.70	7.54	1	-11	11	15.25	15.69	1	-8	15	13.97	13.11
0	6	16	22.28	21.94	0	14	4	18.60	17.90	1	-11	12	20.63	20.39	1	-8	16	14.76	15.36
0	6	17	24.33	24.67	0	14	5	28.09	28.23	1	-11	14	10.61	11.07	1	-8	18	11.38	11.64
0	8	0	9.11	9.40	1	-15	3	22.17	21.38	1	-11	16	30.29	29.67	1	-7	1	44.55	43.96
0	8	1	31.46	31.83	1	-15	4	51.79	52.47	1	-10	1	8.53	8.83	1	-7	2	143.30	143.58
0	8	2	52.76	52.36	1	-15	5	13.22	12.92	1	-10	2	15.93	16.20	1	-7	3	36.69	37.71
0	8	3	5.97	5.35	1	-14	1	9.49	8.96	1	-10	3	9.06	9.26	1	-7	4	9.01	8.53
0	8	4	25.34	24.50	1	-14	3	22.80	21.34	1	-10	5	18.82	17.49	1	-7	5	11.42	10.32
0	8	5	40.20	41.55	1	-14	4	27.80	28.05	1	-10	6	5.75	3.36	1	-7	6	10.47	10.49
0	8	7	38.91	38.75	1	-14	5	15.54	15.59	1	-10	7	26.51	25.07	1	-7	7	44.04	45.30
0	8	8	7.85	7.37	1	-14	8	6.66	7.25	1	-10	12	7.15	5.61	1	-7	8	50.96	52.27
0	8	10	12.38	12.64	1	-14	12	14.72	13.60	1	-10	14	23.35	24.18	1	-7	9	14.48	14.39
0	8	11	40.94	40.87	1	-13	1	43.15	42.38	1	-10	16	7.85	7.91	1	-7	10	53.87	54.26
0	8	12	12.61	10.96	1	-13	2	6.52	8.32	1	-9	2	12.63	12.46	1	-7	11	91.90	91.41

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
1	-7	12	17.70	16.80	1	-4	1	141.14	142.03	1	-2	16	18.34	18.38	1	1	7	41.19	40.57
1	-7	13	16.19	16.49	1	-4	3	4.96	5.76	1	-2	17	8.91	8.56	1	1	8	25.14	25.09
1	-7	15	8.68	8.69	1	-4	6	9.79	10.16	1	-1	1	19.00	16.17	1	1	9	8.62	8.86
1	-7	16	30.81	31.99	1	-4	8	26.97	26.35	1	-1	3	75.18	74.71	1	1	11	19.62	18.63
1	-7	17	37.75	36.51	1	-4	10	50.49	51.02	1	-1	4	84.05	81.48	1	1	13	77.69	78.29
1	-7	18	10.85	10.64	1	-4	12	15.32	16.34	1	-1	5	134.28	127.79	1	1	14	11.45	10.36
1	-7	19	36.87	37.18	1	-4	13	12.69	13.38	1	-1	6	23.63	22.91	1	1	15	5.71	4.37
1	-6	1	27.12	27.01	1	-4	14	15.81	15.06	1	-1	7	63.68	63.20	1	1	16	25.04	25.26
1	-6	2	23.21	22.51	1	-4	17	16.97	18.14	1	-1	8	4.96	4.40	1	1	17	21.89	23.13
1	-6	3	9.88	9.73	1	-4	19	14.42	10.67	1	-1	9	9.44	9.75	1	1	18	13.67	13.17
1	-6	5	6.11	5.86	1	-3	1	136.01	133.38	1	-1	10	30.72	30.18	1	1	19	8.76	8.27
1	-6	6	6.85	7.62	1	-3	2	20.89	20.22	1	-1	11	18.90	19.37	1	2	0	47.04	44.36
1	-6	8	25.14	26.07	1	-3	3	151.74	144.32	1	-1	12	56.30	55.97	1	2	1	27.00	26.31
1	-6	9	18.41	18.54	1	-3	4	6.37	5.43	1	-1	13	67.14	67.76	1	2	2	17.94	17.58
1	-6	10	24.66	24.87	1	-3	5	45.08	44.03	1	-1	14	56.47	57.51	1	2	4	121.15	124.26
1	-6	11	9.86	9.84	1	-3	6	9.81	10.47	1	-1	16	15.25	15.40	1	2	5	13.71	13.96
1	-6	12	7.82	8.80	1	-3	7	51.96	51.97	1	-1	17	11.86	12.31	1	2	6	51.18	51.59
1	-6	13	12.21	12.24	1	-3	8	101.67	103.08	1	-1	19	14.51	14.40	1	2	7	14.29	14.32
1	-6	15	5.89	6.88	1	-3	9	81.04	82.38	1	-1	20	10.74	10.55	1	2	9	22.93	24.22
1	-6	17	22.35	22.35	1	-3	10	61.32	62.20	1	0	2	49.86	45.93	1	2	10	12.05	12.91
1	-6	18	14.82	13.89	1	-3	12	79.08	79.04	1	0	3	25.46	24.26	1	2	11	8.42	7.96
1	-6	19	14.63	14.51	1	-3	13	10.92	10.76	1	0	4	15.18	14.53	1	2	13	17.10	16.63
1	-5	1	69.55	68.62	1	-3	14	14.26	14.12	1	0	5	5.41	5.46	1	2	14	7.81	8.01
1	-5	2	21.83	20.99	1	-3	16	22.17	22.04	1	0	7	21.31	20.32	1	2	15	26.55	26.94
1	-5	3	31.15	31.53	1	-3	17	56.40	56.41	1	0	8	5.54	4.46	1	2	16	11.33	10.88
1	-5	4	33.39	32.99	1	-3	18	47.46	47.96	1	0	11	46.71	48.59	1	2	17	12.63	13.46
1	-5	5	32.47	32.03	1	-3	19	13.60	14.95	1	0	12	20.29	21.27	1	2	19	6.87	6.11
1	-5	6	54.60	53.48	1	-3	20	10.62	9.34	1	0	13	11.36	10.42	1	3	0	78.55	76.80
1	-5	7	13.18	13.56	1	-2	1	30.48	28.36	1	0	14	8.30	7.97	1	3	1	99.88	96.80
1	-5	8	31.45	31.99	1	-2	3	40.91	39.26	1	0	16	13.97	14.43	1	3	2	95.49	92.23
1	-5	9	5.68	6.50	1	-2	4	11.14	11.35	1	0	20	24.20	23.56	1	3	3	48.75	47.49
1	-5	10	61.44	62.37	1	-2	5	125.92	128.44	1	1	0	9.53	12.87	1	3	4	20.71	21.26
1	-5	13	28.44	28.99	1	-2	7	40.66	40.23	1	1	1	19.93	19.71	1	3	6	119.99	120.18
1	-5	14	31.98	31.83	1	-2	8	18.37	19.08	1	1	2	76.37	77.62	1	3	7	7.17	8.28
1	-5	15	13.53	13.00	1	-2	9	12.94	14.09	1	1	3	32.28	32.02	1	3	8	90.75	93.24
1	-5	18	7.23	7.47	1	-2	10	15.47	16.33	1	1	4	155.26	149.31	1	3	9	33.75	34.45
1	-5	19	28.97	28.43	1	-2	12	13.30	14.23	1	1	5	37.32	36.85	1	3	10	49.64	50.51
1	-5	20	7.02	3.77	1	-2	14	19.78	19.30	1	1	6	32.79	32.16	1	3	11	75.08	74.33

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC
1	3	12	45.37	45.89
1	3	13	13.61	14.02
1	3	14	11.78	11.80
1	3	15	50.68	51.15
1	3	16	9.18	9.29
1	3	17	34.17	34.19
1	3	18	17.08	16.08
1	3	19	24.58	24.06
1	4	1	5.85	5.78
1	4	2	4.61	4.63
1	4	4	16.07	16.27
1	4	5	13.38	13.23
1	4	6	15.82	14.88
1	4	8	52.22	52.30
1	4	10	12.66	13.49
1	4	11	9.95	9.02
1	4	15	6.62	6.20
1	4	17	9.64	9.11
1	5	0	15.18	15.06
1	5	1	65.34	65.38
1	5	2	22.10	21.21
1	5	3	68.60	68.85
1	5	5	5.11	4.26
1	5	6	51.12	51.15
1	5	7	48.91	49.52
1	5	8	33.97	34.30
1	5	10	35.14	35.41
1	5	12	29.96	29.49
1	5	15	37.06	36.09
1	5	16	40.93	39.61
1	5	17	10.07	9.52
1	6	0	6.87	7.17
1	6	1	13.98	14.01
1	6	2	10.49	10.00
1	6	3	9.83	10.18
1	6	4	9.23	9.84
1	6	5	34.27	35.51
1	6	6	8.99	8.86

H	K	L	FO	FC
1	6	7	9.81	9.71
1	6	8	14.23	15.37
1	6	10	24.37	24.65
1	6	11	8.54	8.89
1	6	12	6.91	7.45
1	6	13	6.12	5.95
1	6	14	26.88	25.69
1	6	15	9.59	10.10
1	6	17	9.99	10.45
1	7	1	27.60	28.50
1	7	2	18.54	19.13
1	7	3	22.65	22.25
1	7	4	7.32	7.78
1	7	5	14.40	14.63
1	7	6	26.78	26.98
1	7	7	111.56	112.20
1	7	8	19.35	18.40
1	7	9	10.22	10.56
1	7	11	8.82	7.92
1	7	12	24.45	24.29
1	7	14	20.75	19.98
1	7	16	53.36	53.12
1	8	0	30.37	30.48
1	8	1	8.02	8.86
1	8	2	32.31	32.29
1	8	3	38.39	39.19
1	8	4	16.24	16.10
1	8	7	9.18	8.05
1	8	8	6.52	7.35
1	8	9	25.35	24.20
1	8	11	8.35	7.64
1	8	12	17.45	17.53
1	8	13	10.86	10.28
1	8	14	10.87	9.25
1	9	0	46.35	47.74
1	9	1	20.64	21.18
1	9	2	109.15	110.14
1	9	3	42.92	43.77

H	K	L	FO	FC
1	9	4	30.55	30.49
1	9	5	24.64	25.32
1	9	6	10.50	10.47
1	9	7	28.85	28.75
1	9	8	6.95	6.04
1	9	9	28.24	28.00
1	9	10	8.14	7.88
1	9	11	67.40	67.63
1	9	12	24.22	23.95
1	9	13	16.44	16.70
1	9	14	20.99	20.96
1	10	0	14.51	14.11
1	10	2	27.35	26.08
1	10	7	10.96	10.70
1	10	8	11.72	11.39
1	10	9	16.34	15.98
1	11	1	12.17	12.26
1	11	2	26.86	26.57
1	11	4	9.25	6.79
1	11	5	10.96	10.95
1	11	6	39.26	38.32
1	11	8	11.06	10.92
1	11	9	15.10	14.25
1	11	10	22.61	22.63
1	12	1	12.96	13.18
1	12	2	9.95	8.84
1	12	4	20.80	21.40
1	12	5	7.47	6.63
1	12	7	8.05	6.75
1	12	8	13.70	12.51
1	13	0	23.30	23.44
1	13	1	58.57	60.24
1	13	3	29.95	29.58
1	13	4	27.64	26.60
1	14	4	9.44	9.25
2	-14	1	19.18	19.11
2	-14	2	15.49	15.71
2	-14	3	36.82	36.87

H	K	L	FO	FC
2	-14	4	22.63	23.09
2	-14	6	24.47	24.97
2	-14	8	8.59	8.99
2	-13	3	32.40	32.91
2	-13	4	8.47	9.66
2	-13	6	7.50	6.14
2	-13	7	9.19	10.26
2	-13	8	22.16	20.72
2	-13	12	25.06	25.51
2	-12	1	27.81	28.69
2	-12	3	9.22	10.41
2	-12	5	17.77	18.14
2	-12	6	16.77	17.54
2	-12	7	22.15	22.45
2	-12	8	7.19	6.71
2	-12	9	11.88	12.31
2	-12	10	12.32	11.04
2	-12	11	9.34	9.31
2	-12	12	8.03	7.02
2	-12	14	11.15	11.72
2	-11	1	26.00	26.31
2	-11	2	11.19	11.56
2	-11	5	35.10	35.87
2	-11	7	18.86	19.24
2	-11	9	16.85	17.18
2	-11	10	22.79	22.81
2	-11	11	11.35	11.52
2	-11	14	26.41	26.53
2	-11	16	11.30	9.96
2	-10	1	30.70	29.76
2	-10	2	73.85	73.81
2	-10	3	52.55	53.07
2	-10	4	9.22	9.22
2	-10	5	51.18	51.40
2	-10	6	11.91	12.29
2	-10	7	32.01	32.17
2	-10	8	10.41	11.03
2	-10	9	30.61	29.85

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
2	-10	10	36.54	36.05	2	-7	10	17.79	18.66	2	-5	17	32.64	32.48	2	-2	9	19.74	19.72
2	-10	11	71.31	71.47	2	-7	11	25.17	26.14	2	-4	1	172.15	175.63	2	-2	10	18.47	18.73
2	-10	12	28.90	28.14	2	-7	13	14.75	14.42	2	-4	2	9.87	10.06	2	-2	11	18.19	18.79
2	-10	13	6.47	2.48	2	-7	15	28.62	28.98	2	-4	3	66.30	65.99	2	-2	12	12.35	12.07
2	-10	14	20.46	21.21	2	-7	17	9.27	10.84	2	-4	4	54.47	56.41	2	-2	13	15.11	15.42
2	-9	2	29.59	30.26	2	-7	18	17.72	17.92	2	-4	5	76.26	78.70	2	-2	14	73.50	74.37
2	-9	3	13.90	14.63	2	-7	19	14.16	13.83	2	-4	6	10.32	9.74	2	-2	16	20.43	19.15
2	-9	4	13.29	13.55	2	-6	1	6.03	4.81	2	-4	7	16.91	17.24	2	-2	17	6.92	6.54
2	-9	6	15.20	16.14	2	-6	2	24.14	24.91	2	-4	8	44.13	44.05	2	-2	18	7.76	7.96
2	-9	7	33.19	35.09	2	-6	3	20.72	21.53	2	-4	10	94.06	94.71	2	-2	19	13.73	14.48
2	-9	8	9.63	9.08	2	-6	4	24.72	24.34	2	-4	12	56.26	56.81	2	-1	1	5.57	5.50
2	-9	9	11.96	12.00	2	-6	5	6.49	6.98	2	-4	13	41.48	41.92	2	-1	2	42.65	42.11
2	-9	11	26.65	26.94	2	-6	6	44.81	44.73	2	-4	14	53.79	53.68	2	-1	3	55.62	54.77
2	-9	12	10.08	10.40	2	-6	8	22.30	22.93	2	-4	15	13.95	14.92	2	-1	4	18.51	17.96
2	-9	13	7.96	6.90	2	-6	9	28.04	28.52	2	-4	16	20.66	20.08	2	-1	5	13.42	14.50
2	-9	15	13.30	13.19	2	-6	10	31.07	31.59	2	-4	17	10.83	10.31	2	-1	7	48.98	49.56
2	-9	16	21.91	22.15	2	-6	11	34.60	34.47	2	-4	18	14.53	13.81	2	-1	8	7.57	7.65
2	-8	1	6.94	7.36	2	-6	12	24.16	24.62	2	-4	19	22.87	24.61	2	-1	9	41.80	43.13
2	-8	2	94.90	95.41	2	-6	14	22.51	21.56	2	-3	1	42.21	41.26	2	-1	11	29.23	29.24
2	-8	3	4.78	3.07	2	-6	15	30.07	29.62	2	-3	2	8.84	8.05	2	-1	12	36.60	37.06
2	-8	4	28.86	29.34	2	-6	16	6.91	6.93	2	-3	4	5.58	5.39	2	-1	13	16.98	16.59
2	-8	5	22.99	23.21	2	-6	17	18.12	17.77	2	-3	5	36.70	37.64	2	-1	14	12.92	12.64
2	-8	6	39.12	40.36	2	-6	18	17.91	18.53	2	-3	6	11.26	11.51	2	-1	16	25.49	24.80
2	-8	8	18.59	18.68	2	-6	19	32.57	32.43	2	-3	8	15.01	15.17	2	-1	18	15.27	14.62
2	-8	9	46.27	46.48	2	-5	1	16.85	16.25	2	-3	9	19.13	19.58	2	0	0	33.43	27.14
2	-8	11	55.08	55.61	2	-5	2	5.58	6.00	2	-3	10	29.15	30.85	2	0	3	5.16	5.15
2	-8	14	9.61	9.83	2	-5	3	41.05	42.67	2	-3	11	6.50	5.95	2	0	5	54.16	52.96
2	-8	15	25.62	26.37	2	-5	4	39.61	41.16	2	-3	12	6.34	6.80	2	0	6	26.06	25.70
2	-8	17	20.81	19.77	2	-5	5	12.09	11.53	2	-3	14	26.73	26.82	2	0	7	20.83	20.34
2	-8	18	28.39	28.73	2	-5	6	34.81	34.61	2	-3	15	6.07	6.95	2	0	8	18.81	18.94
2	-7	1	17.62	17.89	2	-5	7	10.19	10.83	2	-3	17	12.17	12.21	2	0	9	66.03	66.33
2	-7	2	33.17	34.16	2	-5	8	56.36	58.46	2	-3	18	12.16	12.17	2	0	10	5.60	5.69
2	-7	4	22.24	23.18	2	-5	11	8.76	8.04	2	-3	19	16.03	14.79	2	0	12	11.92	11.11
2	-7	5	7.60	7.59	2	-5	12	29.65	29.70	2	-2	1	4.78	5.27	2	0	13	27.57	27.31
2	-7	6	55.08	56.13	2	-5	13	24.79	25.00	2	-2	3	17.92	17.59	2	0	14	39.65	38.70
2	-7	7	11.40	11.54	2	-5	14	9.13	9.68	2	-2	5	199.23	202.67	2	0	15	22.95	23.12
2	-7	8	11.40	12.32	2	-5	15	17.84	18.43	2	-2	6	11.92	12.71	2	0	16	23.75	22.98
2	-7	9	25.51	25.88	2	-5	16	8.04	7.85	2	-2	7	32.36	33.63	2	0	17	23.82	23.08

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
2	0	18	36.72	36.34	2	3	5	6.01	5.73	2	6	1	35.80	35.20	2	9	0	6.82	6.71
2	0	19	14.19	13.26	2	3	6	7.76	7.47	2	6	2	5.94	4.45	2	9	1	8.79	8.3[illegible]
2	1	0	81.55	80.29	2	3	8	31.83	33.11	2	6	3	51.33	52.08	2	9	2	34.07	34.76
2	1	1	18.35	17.84	2	3	9	9.63	9.56	2	6	4	5.96	5.15	2	9	3	10.11	11.13
2	1	2	72.08	71.12	2	3	11	15.07	15.57	2	6	5	32.61	33.04	2	9	4	5.98	5.17
2	1	4	17.03	17.41	2	3	12	13.93	14.10	2	6	6	6.84	7.48	2	9	5	16.75	17.56
2	1	5	15.69	15.36	2	3	13	19.87	20.04	2	6	7	10.90	10.72	2	9	6	14.07	13.74
2	1	6	41.38	42.5[illegible]	2	3	17	18.33	18.65	2	6	8	24.36	24.84	2	9	7	21.59	22.01
2	1	7	24.86	24.48	2	4	0	24.36	24.47	2	6	9	13.32	13.45	2	9	11	22.50	22.21
2	1	9	51.27	52.55	2	4	1	98.26	98.69	2	6	10	42.20	42.24	2	10	0	26.17	25.45
2	1	10	13.05	14.64	2	4	2	11.25	11.48	2	6	11	16.13	17.14	2	10	1	8.54	8.60
2	1	11	43.01	43.51	2	4	3	34.81	35.26	2	6	12	41.31	41.16	2	10	2	36.86	36.06
2	1	13	19.50	19.55	2	4	4	38.07	38.99	2	6	14	12.40	11.56	2	10	3	20.96	20.74
2	1	14	12.96	13.19	2	4	5	20.54	20.30	2	6	16	18.96	19.90	2	10	4	62.53	61.69
2	1	15	24.47	24.41	2	4	6	36.30	36.56	2	7	0	23.55	24.39	2	10	6	48.15	48.09
2	1	16	9.84	10.36	2	4	8	97.69	98.30	2	7	1	5.88	5.31	2	10	7	38.95	38.55
2	1	18	23.55	23.01	2	4	9	16.51	16.76	2	7	2	13.91	14.32	2	10	8	9.09	8.93
2	1	19	9.58	8.49	2	4	10	70.83	70.85	2	7	3	57.68	59.21	2	10	9	15.61	16.04
2	2	0	5.44	5.63	2	4	11	13.47	12.80	2	7	4	9.41	10.97	2	10	11	13.62	12.84
2	2	2	15.48	15.42	2	4	12	22.41	22.69	2	7	5	22.80	23.05	2	10	12	11.71	11.80
2	2	4	207.08	209.83	2	4	15	18.11	18.88	2	7	7	30.84	31.60	2	11	0	20.64	20.63
2	2	5	7.11	6.46	2	4	16	14.04	13.32	2	7	8	13.55	13.67	2	11	2	19.01	20.01
2	2	6	19.76	20.45	2	4	17	31.20	30.82	2	7	9	15.80	15.90	2	11	4	29.82	30.12
2	2	7	28.52	28.66	2	5	1	61.79	63.26	2	7	11	10.11	9.63	2	11	7	8.38	9.11
2	2	8	29.75	29.97	2	5	2	7.43	7.67	2	7	12	34.34	34.27	2	11	8	20.68	20.10
2	2	9	24.45	25.12	2	5	3	28.77	28.77	2	7	14	13.93	13.74	2	11	9	17.26	17.32
2	2	10	16.33	15.99	2	5	4	8.42	9.23	2	8	0	42.72	42.78	2	12	0	7.85	7.82
2	2	11	30.90	31.02	2	5	5	38.79	39.49	2	8	2	19.64	19.27	2	12	4	27.30	26.90
2	2	12	21.39	21.34	2	5	6	39.47	40.99	2	8	3	20.92	21.20	2	12	6	14.88	13.23
2	2	13	81.91	82.07	2	5	7	7.99	9.45	2	8	4	14.89	14.96	2	12	8	24.17	24.37
2	2	15	25.84	24.86	2	5	8	5.68	7.23	2	8	5	55.98	56.82	2	13	1	22.17	21.78
2	2	16	16.08	15.76	2	5	10	37.97	38.60	2	8	6	12.50	12.75	2	13	2	7.07	7.78
2	2	17	15.91	16.23	2	5	12	8.67	9.06	2	8	7	67.28	67.45	2	13	4	7.42	8.18
2	2	18	27.74	28.23	2	5	13	6.98	6.61	2	8	9	13.30	14.56	2	13	5	9.91	9.68
2	3	0	16.83	16.90	2	5	14	23.59	23.54	2	8	10	8.27	9.06	2	13	6	26.68	26.45
2	3	2	8.97	9.19	2	5	15	25.33	24.77	2	8	11	18.55	18.36	2	14	1	13.73	12.53
2	3	3	15.09	15.83	2	5	16	8.75	7.56	2	8	12	6.50	4.74	2	14	3	15.45	15.83
2	3	4	35.28	35.09	2	6	0	6.97	8.01	2	8	14	48.75	50.68	3	-14	1	16.07	16.04

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
3	-14	4	11.24	11.13	3	-10	12	10.07	9.40	3	-7	9	24.59	24.88	3	-4	7	32.80	34.38
3	-14	5	6.32	6.87	3	-10	13	23.41	22.76	3	-7	10	42.94	43.00	3	-4	8	59.24	61.22
3	-14	6	11.11	11.97	3	-10	14	48.37	47.25	3	-7	11	60.49	61.22	3	-4	9	5.92	6.61
3	-13	1	12.65	11.67	3	-10	15	8.86	8.84	3	-7	12	8.21	8.27	3	-4	10	72.71	73.55
3	-13	3	13.82	12.86	3	-9	2	20.08	20.10	3	-7	13	6.18	3.43	3	-4	12	34.76	35.72
3	-13	5	15.31	15.06	3	-9	3	19.53	19.41	3	-7	15	7.93	7.90	3	-4	14	26.75	27.29
3	-13	7	20.06	19.33	3	-9	5	18.56	17.98	3	-7	16	12.34	12.54	3	-4	15	24.20	23.90
3	-13	8	46.99	48.29	3	-9	6	33.57	33.42	3	-6	1	14.80	14.45	3	-4	16	21.98	22.35
3	-13	9	11.52	12.69	3	-9	7	63.76	62.90	3	-6	2	21.61	21.44	3	-4	17	37.94	38.06
3	-13	10	17.64	18.14	3	-9	8	12.48	12.42	3	-6	3	30.31	31.61	3	-3	1	71.50	71.66
3	-12	1	33.79	33.63	3	-9	9	10.90	9.95	3	-6	4	51.09	52.07	3	-3	2	12.89	14.04
3	-12	3	23.04	23.62	3	-9	11	7.91	7.03	3	-6	6	6.19	5.68	3	-3	3	94.19	96.53
3	-12	5	33.48	33.29	3	-9	12	23.50	23.74	3	-6	8	31.94	32.87	3	-3	4	7.43	5.52
3	-12	6	18.45	17.32	3	-9	13	12.40	11.73	3	-6	9	8.49	9.36	3	-3	5	8.49	5.51
3	-12	7	21.23	20.98	3	-9	14	21.25	20.74	3	-6	11	18.39	18.57	3	-3	6	12.40	13.02
3	-12	8	9.65	8.91	3	-9	15	36.63	35.73	3	-6	12	30.91	30.72	3	-3	7	26.54	27.01
3	-12	9	22.62	22.88	3	-9	16	33.00	34.53	3	-6	13	50.43	49.87	3	-3	8	67.79	69.20
3	-12	10	43.52	42.98	3	-8	2	96.97	97.14	3	-6	17	17.50	17.38	3	-3	9	54.16	54.24
3	-12	11	8.95	9.45	3	-8	4	16.52	15.99	3	-5	1	44.55	45.36	3	-3	10	39.26	40.00
3	-12	12	18.69	18.46	3	-8	5	6.98	8.41	3	-5	4	28.31	28.12	3	-3	12	46.74	46.69
3	-11	2	14.49	13.39	3	-8	6	25.26	26.03	3	-5	5	41.55	41.66	3	-3	14	8.53	9.65
3	-11	3	47.07	46.12	3	-8	7	25.77	25.84	3	-5	6	68.34	67.76	3	-3	15	10.48	11.10
3	-11	4	14.37	14.53	3	-8	8	9.46	9.72	3	-5	7	12.42	13.21	3	-3	16	9.73	9.98
3	-11	7	28.74	29.61	3	-8	10	6.40	4.88	3	-5	8	30.88	30.51	3	-3	17	43.04	43.75
3	-11	8	10.68	10.96	3	-8	11	69.26	69.05	3	-5	10	34.58	34.18	3	-3	18	41.41	41.51
3	-11	9	21.17	21.94	3	-8	13	14.59	13.99	3	-5	11	13.10	13.93	3	-2	1	34.89	35.47
3	-11	11	17.13	16.97	3	-8	14	10.19	9.15	3	-5	12	21.10	20.56	3	-2	3	40.49	41.09
3	-11	12	25.13	25.90	3	-8	15	26.20	26.59	3	-5	13	20.34	20.24	3	-2	4	14.70	15.45
3	-10	1	21.76	22.78	3	-8	16	22.36	21.35	3	-5	14	34.18	34.82	3	-2	5	133.23	136.46
3	-10	2	13.02	12.67	3	-8	17	7.62	8.20	3	-5	15	25.98	26.83	3	-2	7	10.38	10.12
3	-10	3	11.36	10.15	3	-7	1	35.03	35.61	3	-5	17	9.21	9.99	3	-2	8	24.23	24.00
3	-10	4	23.41	24.05	3	-7	2	99.01	99.73	3	-5	18	9.17	9.86	3	-2	9	48.45	49.43
3	-10	5	54.05	53.27	3	-7	3	22.29	22.05	3	-4	1	107.16	110.67	3	-2	10	25.65	26.72
3	-10	6	6.54	7.01	3	-7	4	18.92	17.72	3	-4	2	15.72	16.46	3	-2	12	36.66	35.94
3	-10	7	32.01	30.79	3	-7	5	6.03	5.69	3	-4	3	69.85	71.08	3	-2	13	12.79	12.86
3	-10	8	6.65	5.86	3	-7	6	18.12	18.58	3	-4	4	12.99	12.75	3	-2	14	62.53	62.25
3	-10	9	43.74	43.69	3	-7	7	10.47	9.57	3	-4	5	19.12	19.56	3	-2	17	15.10	15.59
3	-10	10	9.88	9.57	3	-7	8	5.44	3.11	3	-4	6	33.76	34.63	3	-2	18	37.53	37.33

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
3	-1	1	30.47	29.60	3	1	17	31.41	30.37	3	4	6	72.24	74.06	3	7	2	9.58	9.79
3	-1	2	37.94	37.49	3	2	0	45.65	46.16	3	4	7	18.76	18.89	3	7	5	25.28	25.01
3	-1	3	41.67	42.7	3	2	1	24.67	25.11	3	4	8	65.61	65.56	3	7	6	14.30	14.12
3	-1	4	43.69	44.66	3	2	2	23.56	24.21	3	4	10	34.71	34.89	3	7	7	76.21	76.84
3	-1	5	76.13	77.51	3	2	3	4.66	3.65	3	4	11	22.87	22.63	3	7	8	15.09	15.67
3	-1	6	14.24	15.20	3	2	4	132.46	137.79	3	4	12	36.97	37.05	3	7	10	12.87	12.64
3	-1	7	36.60	36.78	3	2	5	7.44	8.49	3	4	13	7.96	7.16	3	7	11	20.08	19.75
3	-1	9	43.82	43.52	3	2	6	20.29	20.38	3	4	14	15.81	14.73	3	7	12	11.60	11.20
3	-1	11	13.27	13.18	3	2	7	10.42	10.04	3	4	15	45.72	45.97	3	7	13	7.40	5.51
3	-1	12	45.99	46.27	3	2	8	42.62	42.95	3	4	16	12.88	13.25	3	7	14	11.03	11.79
3	-1	13	42.83	43.02	3	2	9	34.69	35.53	3	5	0	13.71	13.42	3	8	0	6.06	5.88
3	-1	14	26.18	27.06	3	2	10	17.60	18.07	3	5	1	29.26	29.68	3	8	1	14.27	13.08
3	-1	17	8.09	8.73	3	2	11	23.72	24.04	3	5	2	21.52	20.88	3	8	2	29.69	30.46
3	-1	18	10.75	11.45	3	2	13	67.55	66.53	3	5	3	80.41	80.92	3	8	3	21.95	22.08
3	0	2	36.92	37.64	3	2	16	10.99	9.57	3	5	4	24.55	23.70	3	8	4	5.74	5.42
3	0	3	15.87	16.24	3	2	17	34.63	34.27	3	5	5	18.28	18.09	3	8	5	7.10	6.52
3	0	4	9.23	9.11	3	3	0	33.92	34.55	3	5	6	29.15	29.33	3	8	7	70.33	70.12
3	0	5	18.69	19.09	3	3	1	59.19	59.38	3	5	7	26.31	25.94	3	8	9	11.24	10.85
3	0	6	30.31	30.97	3	3	2	57.14	57.61	3	5	8	16.60	16.82	3	8	10	12.99	13.45
3	0	7	58.90	60.60	3	3	3	16.98	16.29	3	5	10	7.75	6.83	3	8	11	29.30	29.40
3	0	11	15.22	15.45	3	3	4	11.07	10.66	3	5	11	6.05	5.17	3	8	12	18.76	18.15
3	0	14	12.41	12.06	3	3	6	78.22	78.20	3	5	12	43.06	42.04	3	9	0	20.24	19.74
3	0	15	21.35	20.58	3	3	7	7.88	7.81	3	5	13	7.74	9.02	3	9	1	18.04	17.97
3	0	16	42.02	41.76	3	3	8	65.82	64.61	3	5	15	29.07	27.75	3	9	2	75.32	76.39
3	0	18	7.66	5.83	3	3	9	10.56	11.03	3	5	16	25.54	25.29	3	9	3	17.53	17.60
3	1	0	61.88	62.31	3	3	10	25.76	26.05	3	6	0	22.29	22.69	3	9	4	6.63	5.03
3	1	1	13.38	13.58	3	3	11	52.54	52.27	3	6	1	55.12	56.69	3	9	5	10.05	9.56
3	1	2	68.40	67.53	3	3	12	32.81	32.65	3	6	3	7.51	7.64	3	9	7	25.95	26.13
3	1	3	17.36	17.92	3	3	13	12.89	12.47	3	6	5	26.50	26.49	3	9	9	11.11	10.36
3	1	4	88.35	88.96	3	3	14	11.09	10.38	3	6	6	11.77	11.11	3	9	11	56.90	56.23
3	1	5	14.27	14.98	3	3	15	30.40	31.48	3	6	7	6.31	6.89	3	9	12	10.93	10.15
3	1	7	42.58	41.73	3	3	17	33.84	34.09	3	6	8	15.33	15.02	3	10	0	58.80	58.22
3	1	8	42.51	42.84	3	4	0	6.13	5.81	3	6	9	22.13	21.85	3	10	1	10.49	10.08
3	1	9	23.11	23.46	3	4	1	57.94	58.50	3	6	10	52.89	51.40	3	10	2	26.41	25.80
3	1	11	40.86	41.08	3	4	2	33.69	34.68	3	6	12	7.21	7.56	3	10	4	41.65	40.71
3	1	13	41.26	41.28	3	4	3	42.19	42.40	3	6	14	11.97	10.88	3	10	5	17.94	17.69
3	1	15	7.36	6.02	3	4	4	5.64	6.24	3	7	0	8.71	9.64	3	10	6	12.41	12.63
3	1	16	25.09	24.49	3	4	5	22.08	22.63	3	7	1	8.25	8.56	3	10	7	13.55	13.21

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
3	10	8	23.96	24.13	4	-10	9	10.23	10.42	4	-6	8	26.61	25.88	4	-3	9	21.85	22.68
3	10	9	50.75	48.99	4	-10	10	14.69	14.53	4	-6	9	26.16	25.33	4	-3	10	21.21	21.24
3	10	10	9.15	9.51	4	-10	11	24.40	25.11	4	-6	10	37.58	37.38	4	-3	12	12.08	12.75
3	11	0	6.38	5.53	4	-10	12	8.97	7.05	4	-6	12	14.93	14.67	4	-3	14	25.31	25.48
3	11	2	21.43	20.59	4	-10	13	18.34	17.97	4	-6	13	30.08	30.10	4	-3	15	14.14	13.99
3	11	4	10.51	9.74	4	-9	2	17.71	18.10	4	-6	14	7.14	6.46	4	-3	16	17.32	18.09
3	11	5	14.09	14.08	4	-9	3	20.21	19.92	4	-6	15	42.47	41.75	4	-2	1	8.86	9.19
3	11	6	41.90	41.40	4	-9	4	26.03	26.29	4	-5	1	35.55	36.15	4	-2	2	8.27	8.22
3	12	0	13.88	14.00	4	-9	6	12.19	11.91	4	-5	2	28.76	29.15	4	-2	3	14.67	14.08
3	12	2	22.99	22.50	4	-9	7	16.50	15.84	4	-5	3	44.89	45.70	4	-2	5	69.82	70.79
3	12	3	21.06	21.14	4	-9	11	20.49	19.25	4	-5	4	26.44	27.16	4	-2	7	23.59	23.78
3	12	4	40.65	41.17	4	-9	12	15.74	16.10	4	-5	5	11.97	11.10	4	-2	8	25.87	25.76
3	12	6	19.95	19.77	4	-9	13	26.38	26.45	4	-5	6	17.94	18.28	4	-2	9	34.79	35.58
3	13	0	15.50	16.12	4	-8	1	8.49	9.06	4	-5	7	7.54	8.27	4	-2	10	23.72	22.96
3	13	1	55.14	55.94	4	-8	2	32.25	32.74	4	-5	8	36.90	37.46	4	-2	11	16.13	15.83
3	13	2	11.43	10.84	4	-8	3	6.30	5.55	4	-5	10	22.99	23.22	4	-2	12	12.75	11.98
3	13	3	14.70	14.97	4	-8	4	18.08	18.16	4	-5	11	23.40	22.41	4	-2	13	15.79	15.39
3	13	4	12.37	9.81	4	-8	5	23.51	23.78	4	-5	12	35.38	35.57	4	-2	14	36.56	36.43
4	-12	1	34.40	34.12	4	-8	6	40.38	40.25	4	-5	13	20.41	19.37	4	-2	16	24.75	24.03
4	-12	2	8.54	8.16	4	-8	9	10.71	11.09	4	-5	15	19.01	19.37	4	-2	17	17.33	17.94
4	-12	3	31.06	29.64	4	-8	11	18.45	19.36	4	-4	1	71.62	72.47	4	-1	3	27.26	27.71
4	-12	4	8.35	6.74	4	-8	13	19.27	19.36	4	-4	3	9.98	9.91	4	-1	4	26.56	26.77
4	-12	5	14.51	15.45	4	-8	14	24.29	25.41	4	-4	4	9.14	9.24	4	-1	5	50.32	50.50
4	-12	6	20.45	19.77	4	-8	15	40.56	41.30	4	-4	5	11.27	10.84	4	-1	7	25.43	26.00
4	-12	7	45.06	44.95	4	-7	1	18.68	18.16	4	-4	6	19.18	18.96	4	-1	8	8.53	7.28
4	-12	8	26.19	26.08	4	-7	2	35.26	34.84	4	-4	7	20.35	20.16	4	-1	9	24.40	24.39
4	-11	1	28.50	28.88	4	-7	6	12.56	12.24	4	-4	8	16.34	15.73	4	-1	12	13.08	13.23
4	-11	2	18.92	20.71	4	-7	8	6.22	5.85	4	-4	9	11.15	10.29	4	-1	13	11.55	11.49
4	-11	5	38.65	38.58	4	-7	10	8.80	8.77	4	-4	10	48.26	49.72	4	-1	14	24.90	24.56
4	-11	8	10.64	10.26	4	-7	11	25.07	24.51	4	-4	13	7.95	8.02	4	-1	16	19.74	20.39
4	-11	9	28.15	27.95	4	-7	13	10.19	11.14	4	-4	14	20.12	19.65	4	0	0	166.03	173.10
4	-11	10	26.71	25.97	4	-7	15	10.18	10.72	4	-4	15	16.89	17.32	4	0	1	5.87	6.96
4	-11	11	16.06	15.60	4	-6	1	37.17	36.94	4	-4	16	18.12	18.67	4	0	2	8.21	7.93
4	-10	1	11.59	11.61	4	-6	2	17.05	16.88	4	-4	17	7.65	7.19	4	0	3	11.17	11.46
4	-10	2	17.38	17.02	4	-6	3	6.36	5.28	4	-3	1	27.25	28.33	4	0	4	18.75	18.13
4	-10	4	12.78	12.44	4	-6	4	50.19	49.41	4	-3	5	31.03	31.72	4	0	6	5.10	3.35
4	-10	5	25.06	26.06	4	-6	6	93.17	92.69	4	-3	6	26.43	26.46	4	0	8	8.04	7.91
4	-10	7	19.66	18.62	4	-6	7	6.16	6.79	4	-3	7	26.83	27.10	4	0	9	109.55	110.51

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
4	0	12	8.35	8.21	4	3	13	14.41	14.17	4	7	7	25.35	24.64	5	-9	2	47.58	46.30
4	0	13	11.65	12.60	4	3	15	21.14	21.30	4	7	8	16.83	16.73	5	-9	4	15.50	14.87
4	0	14	18.20	18.59	4	4	1	12.66	13.29	4	7	9	14.82	14.58	5	-9	5	12.53	11.86
4	0	15	10.72	12.04	4	4	3	5.89	6.00	4	7	11	8.81	7.03	5	-9	6	12.24	12.11
4	1	0	24.81	25.77	4	4	4	13.26	13.60	4	7	12	15.47	14.99	5	-9	7	38.28	39.18
4	1	1	7.70	7.94	4	4	6	35.91	35.82	4	8	0	35.17	35.95	5	-9	8	8.89	8.66
4	1	2	14.16	15.72	4	4	7	11.60	11.20	4	8	2	21.78	20.90	5	-9	9	16.82	15.96
4	1	4	49.65	50.83	4	4	8	56.08	56.84	4	8	3	18.02	17.35	5	-8	1	11.87	9.53
4	1	5	31.61	31.36	4	4	11	7.88	7.70	4	8	5	12.70	13.96	5	-8	2	11.83	11.99
4	1	6	33.45	33.45	4	4	12	20.93	20.38	4	8	7	27.93	26.94	5	-8	3	11.57	11.31
4	1	9	27.28	27.99	4	4	13	20.75	20.51	4	8	8	9.58	9.41	5	-8	4	26.25	26.42
4	1	11	7.64	7.91	4	4	14	11.65	12.23	4	8	9	32.97	32.93	5	-8	7	31.44	30.88
4	1	13	25.13	24.32	4	4	15	37.95	36.84	4	8	11	24.06	22.59	5	-8	8	11.27	12.32
4	1	14	18.09	19.05	4	5	1	48.00	49.17	4	9	0	16.45	16.57	5	-8	9	13.17	13.05
4	1	15	20.62	21.29	4	5	2	8.08	7.72	4	9	1	9.03	9.58	5	-8	10	10.12	9.43
4	2	0	10.17	10.12	4	5	3	16.34	17.12	4	9	2	17.58	17.05	5	-8	11	10.65	10.77
4	2	1	8.31	7.51	4	5	4	12.41	11.58	4	9	3	11.04	10.76	5	-7	1	18.58	18.40
4	2	2	13.92	13.67	4	5	5	21.74	21.66	4	9	5	13.95	13.17	5	-7	2	31.26	30.23
4	2	4	72.06	71.86	4	5	6	32.67	33.59	4	9	6	14.37	14.30	5	-7	4	38.55	37.82
4	2	5	7.92	8.43	4	5	7	19.36	19.47	4	9	7	10.54	10.36	5	-7	5	6.44	6.89
4	2	6	34.36	33.61	4	5	8	22.68	22.86	4	9	9	22.52	22.64	5	-7	6	12.44	11.72
4	2	8	15.82	15.96	4	5	10	42.06	40.67	4	10	0	29.02	29.31	5	-7	7	8.99	10.29
4	2	9	14.17	13.41	4	5	12	16.18	16.22	4	10	2	23.98	22.97	5	-7	9	22.64	22.31
4	2	10	12.40	11.69	4	5	14	11.92	11.58	4	10	3	6.87	4.32	5	-7	10	27.16	26.23
4	2	11	10.30	9.73	4	6	0	25.18	25.07	4	10	4	20.61	20.09	5	-7	11	14.92	15.31
4	2	12	11.77	12.33	4	6	1	36.75	36.65	4	10	6	13.47	13.98	5	-7	13	27.29	27.12
4	2	13	39.75	40.21	4	6	3	98.54	96.55	4	11	0	27.60	27.54	5	-6	1	11.42	10.82
4	2	15	18.48	17.32	4	6	4	11.42	11.38	4	11	1	10.28	9.28	5	-6	3	7.01	6.47
4	3	0	26.68	26.68	4	6	5	45.67	45.11	4	11	4	38.50	38.92	5	-6	4	7.73	7.79
4	3	1	13.10	12.69	4	6	7	20.21	20.67	4	12	0	10.18	8.45	5	-6	8	15.81	16.13
4	3	2	18.72	19.21	4	6	8	9.70	9.30	4	12	1	33.33	34.04	5	-6	9	9.73	9.41
4	3	3	28.18	28.15	4	6	9	8.99	8.06	4	12	2	35.84	36.11	5	-6	10	11.23	11.14
4	3	4	23.82	24.46	4	6	10	34.71	34.43	4	12	3	16.17	15.30	5	-5	1	29.92	29.68
4	3	6	20.52	20.79	4	6	11	11.97	11.80	5	-11	2	22.85	21.40	5	-5	2	9.68	8.60
4	3	8	27.51	27.48	4	6	12	49.65	47.88	5	-11	3	69.05	68.33	5	-5	3	18.46	18.01
4	3	9	16.54	17.48	4	7	0	13.72	13.65	5	-11	4	16.14	16.71	5	-5	4	41.88	41.38
4	3	10	11.37	11.35	4	7	3	12.88	13.78	5	-10	7	14.97	14.94	5	-5	5	42.58	41.79
4	3	12	17.61	17.89	4	7	5	7.18	6.73	5	-9	1	9.97	9.11	5	-5	6	72.45	70.19

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
5	-5	7	12.72	11.80	5	-1	1	16.73	16.24	5	2	10	11.38	11.28	5	7	0	23.99	23.78
5	-5	8	29.72	29.19	5	-1	2	35.60	35.77	5	2	11	6.83	6.21	5	7	1	20.81	21.10
5	-5	10	17.77	17.38	5	-1	3	45.66	43.98	5	3	0	14.42	14.64	5	7	5	25.11	24.37
5	-5	11	14.15	14.59	5	-1	4	23.69	23.11	5	3	1	10.54	10.51	5	7	6	7.44	7.76
5	-5	12	10.92	12.54	5	-1	7	68.28	67.51	5	3	3	16.45	16.42	5	7	7	32.57	33.09
5	-5	13	46.86	45.64	5	-1	9	39.10	39.20	5	3	4	52.35	51.64	5	7	8	8.29	9.82
5	-5	14	44.98	44.13	5	-1	11	11.32	10.33	5	3	5	10.40	11.25	5	7	9	16.93	17.61
5	-4	1	25.35	23.96	5	-1	12	32.94	33.24	5	3	6	9.04	7.88	5	8	0	16.94	15.81
5	-4	2	10.15	10.20	5	-1	13	29.44	28.70	5	3	7	10.73	7.82	5	8	1	9.23	9.13
5	-4	3	22.37	22.23	5	0	2	13.83	13.82	5	3	8	47.82	47.05	5	8	2	27.83	27.43
5	-4	4	9.90	9.88	5	0	3	10.30	10.26	5	3	10	18.38	17.74	5	8	3	28.77	27.68
5	-4	6	8.84	8.50	5	0	4	6.58	6.47	5	3	11	6.77	7.78	5	8	4	9.74	10.81
5	-4	7	7.40	6.55	5	0	5	8.45	7.65	5	3	12	22.07	20.90	5	8	7	13.90	14.29
5	-4	8	6.73	8.47	5	0	6	8.75	8.27	5	3	13	18.99	19.85	5	9	0	15.40	14.68
5	-4	10	14.56	13.63	5	0	8	7.28	7.25	5	4	1	19.48	19.59	5	9	1	12.58	12.72
5	-4	11	7.73	7.67	5	0	11	20.80	20.51	5	4	2	12.53	12.25	5	9	2	44.97	44.05
5	-4	12	18.96	18.46	5	0	12	9.69	8.63	5	4	3	9.36	9.11	5	9	4	14.82	15.12
5	-4	13	12.94	12.26	5	0	14	8.18	8.10	5	4	6	16.17	16.22	5	9	6	13.68	13.62
5	-3	1	68.10	66.86	5	1	0	42.12	41.25	5	4	7	8.41	7.45	5	10	2	17.92	17.44
5	-3	2	15.65	15.27	5	1	1	10.00	10.46	5	4	8	17.01	16.58	6	-8	1	8.39	9.41
5	-3	3	7.42	7.26	5	1	2	67.22	67.09	5	4	10	18.66	18.45	6	-8	2	39.95	40.15
5	-3	4	10.82	10.49	5	1	4	13.90	13.19	5	4	11	10.59	11.80	6	-8	4	46.65	47.37
5	-3	5	57.66	57.61	5	1	5	7.13	7.08	5	5	1	50.99	50.72	6	-8	5	26.29	25.30
5	-3	7	19.50	19.94	5	1	6	37.23	36.03	5	5	2	13.96	14.60	6	-8	6	30.19	29.12
5	-3	9	21.66	21.64	5	1	7	57.01	57.54	5	5	3	80.37	80.45	6	-7	2	14.74	13.67
5	-3	10	40.85	40.80	5	1	8	36.37	35.58	5	5	4	22.91	22.51	6	-7	6	33.55	34.14
5	-3	12	14.13	12.53	5	1	9	22.79	22.68	5	5	5	17.81	17.47	6	-7	7	8.30	5.63
5	-3	14	27.07	27.53	5	1	11	31.97	32.03	5	5	6	20.31	19.76	6	-6	1	30.38	29.79
5	-2	1	19.97	20.60	5	1	13	11.42	11.55	5	5	7	7.03	7.74	6	-6	2	28.27	27.88
5	-2	3	31.79	31.37	5	1	14	7.45	2.03	5	5	8	34.42	33.82	6	-6	3	7.24	8.31
5	-2	4	13.64	14.23	5	2	0	28.92	28.66	5	5	9	10.38	10.05	6	-6	6	9.74	9.75
5	-2	5	6.50	4.18	5	2	1	17.35	17.32	5	5	10	40.04	40.34	6	-6	8	8.44	7.67
5	-2	7	23.97	23.04	5	2	2	17.67	18.56	5	6	0	7.65	7.17	6	-6	9	17.85	18.26
5	-2	8	17.63	16.44	5	2	5	13.57	13.43	5	6	2	9.45	9.30	6	-5	1	12.18	13.34
5	-2	9	20.15	20.49	5	2	6	32.05	31.61	5	6	5	17.51	17.40	6	-5	2	8.81	7.29
5	-2	10	16.63	16.51	5	2	7	6.59	6.62	5	6	6	7.73	7.26	6	-5	3	14.72	13.88
5	-2	12	20.36	20.55	5	2	8	6.57	8.15	5	6	8	7.98	7.90	6	-5	4	19.89	19.51
5	-2	13	9.94	9.44	5	2	9	21.67	21.10	5	6	10	8.36	8.68	6	-5	6	22.99	23.05

TABLE 6. (continued)

Ti-Clinohumite

H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC	H	K	L	FO	FC
6	-5	8	30.94	30.17	6	2	1	16.05	15.73										
6	-5	10	10.24	9.69	6	2	2	46.46	46.03										
6	-4	1	90.62	91.11	6	2	4	84.77	83.14										
6	-4	3	7.98	9.00	6	2	6	35.84	36.55										
6	-4	6	12.37	11.27	6	2	7	9.64	9.28										
6	-4	8	17.74	16.96	6	2	9	9.64	9.23										
6	-4	9	12.13	11.38	6	3	2	8.16	8.35										
6	-4	10	66.61	65.89	6	3	6	18.85	18.24										
6	-3	3	6.55	5.40	6	4	4	19.70	18.47										
6	-3	7	18.66	18.51	6	4	5	12.88	12.05										
6	-3	8	9.76	8.88	6	4	6	8.08	6.58										
6	-2	1	17.79	18.21	6	4	8	71.95	73.20										
6	-2	2	21.38	21.49	6	5	1	27.64	27.31										
6	-2	3	42.18	42.85	6	5	3	18.65	18.51										
6	-2	5	85.33	84.78	6	5	5	20.40	19.52										
6	-2	7	31.17	31.32	6	5	6	19.87	19.20										
6	-2	8	16.42	15.85	6	6	0	10.04	9.17										
6	-2	9	8.62	8.88	6	6	3	7.05	5.90										
6	-2	10	27.96	27.91	6	6	6	13.56	13.33										
6	-2	11	28.65	27.67	6	7	2	10.13	9.63										
6	-1	2	16.03	16.25	6	7	3	38.92	38.39										
6	-1	3	19.68	18.39	6	8	0	55.29	55.23										
6	-1	7	15.92	15.80	6	8	1	15.80	15.03										
6	-1	9	25.42	24.90	7	-3	1	19.53	19.84										
6	-1	11	17.97	17.29	7	-3	3	10.49	10.69										
6	0	0	9.83	2.57	7	-2	3	11.12	10.61										
6	0	2	9.65	8.36	7	-1	1	26.76	27.91										
6	0	3	15.42	15.44	7	-1	2	31.84	31.48										
6	0	4	39.14	38.38	7	-1	3	15.23	15.57										
6	0	5	17.83	17.59	7	0	1	7.04	6.70										
6	1	0	42.33	41.73	7	0	2	10.52	10.42										
6	1	1	8.09	8.47	7	0	3	6.91	3.96										
6	1	2	26.57	26.57	7	1	0	49.86	49.87										
6	1	4	6.95	5.97	7	1	2	36.94	37.29										
6	1	6	12.89	12.72	7	1	4	12.04	11.86										
6	1	7	10.36	10.16	7	2	2	13.81	13.47										
6	1	9	34.35	34.34															
6	1	10	10.94	10.17															