

AM-90-432

ca. 1981

Crystal structures of a natural and a Cs-exchanged clinoptilolite

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For deposit: Table 6A

American Mineralogist, 75, 5-6, 522-528.

(14)

Natural Clinoptilolite Richardson Ranch Final Fs

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-12	0	0	3.907 *	19.563	-10	0	0	156.772	157.495
-8	0	0	68.658	66.692	-6	0	0	30.104	37.640
-4	0	0	178.917	215.703	-2	0	0	177.265	181.447
-13	1	0	21.554	21.673	-11	1	0	48.544	48.941
-9	1	0	39.771	39.185	-7	1	0	28.452	28.035
-5	1	0	17.692	18.261	-3	1	0	72.185	92.132
-1	1	0	19.534	15.835	-12	2	0	29.591	29.537
-10	2	0	85.591	88.018	-8	2	0	30.439	29.552
-6	2	0	103.796	107.997	-4	2	0	26.097	34.492
-2	2	0	67.028	70.544	0	2	0	225.430	237.887
-13	3	0	39.503	37.949	-11	3	0	62.519	65.958
-9	3	0	24.858	24.800	-7	3	0	106.152	104.598
-5	3	0	267.801	259.700	-3	3	0	181.708	213.049
-1	3	0	29.546	29.878	-12	4	0	14.053	14.270
-10	4	0	4.699 *	5.586	-8	4	0	29.368	28.535
-6	4	0	98.037	91.420	-4	4	0	12.345 *	23.600
-2	4	0	168.436	182.140	0	4	0	37.460	31.862
-11	5	0	60.677	55.764	-9	5	0	93.148	84.694
-7	5	0	13.082	6.953	-5	5	0	3.003 *	6.460
-3	5	0	241.704	231.641	-1	5	0	40.853	44.704
-12	6	0	70.678	64.737	-10	6	0	9.845	12.494
-8	6	0	153.814	146.734	-6	6	0	84.609	65.705
-4	6	0	89.498	87.241	-2	6	0	10.180 *	.004
0	6	0	120.741	116.485	-11	7	0	20.862	17.186
-9	7	0	96.932	94.527	-7	7	0	159.082	132.393
-5	7	0	27.939	29.926	-3	7	0	51.234	45.935
-1	7	0	75.623	77.381	-10	8	0	40.083	41.588
-8	8	0	182.054	166.034	-6	8	0	26.845	24.895
-4	8	0	16.676	12.582	-2	8	0	58.422	56.038
0	8	0	81.227	83.018	-9	9	0	84.218	76.827
-7	9	0	108.194	102.191	-5	9	0	68.111	66.572
-3	9	0	88.560	87.569	-1	9	0	84.039	75.825
-10	10	0	3.538 *	2.588	-8	10	0	29.970	31.758
-6	10	0	78.023	74.095	-4	10	0	122.437	114.441
-2	10	0	33.263	34.963	0	10	0	188.874	186.848
-9	11	0	38.096	39.348	-7	11	0	32.292	30.221
-5	11	0	6.954 *	6.956	-3	11	0	57.250	54.989
-1	11	0	13.171	13.006	-8	12	0	69.998	69.650
-6	12	0	66.883	65.090	-4	12	0	3.795 *	7.996
-2	12	0	109.679	105.080	0	12	0	139.939	135.780
-5	13	0	134.648	132.500	-3	13	0	17.201	18.914
-1	13	0	39.045	34.972	-4	14	0	11.865 *	12.418
-2	14	0	103.160	98.175	0	14	0	17.647 *	2.850
-1	15	0	69.451	69.743	-14	0	1	78.436	74.880
-12	0	1	182.601	167.751	-10	0	1	6.385 *	2.168
-8	0	1	64.852	67.320	-6	0	1	128.007	119.180
-4	0	1	112.748	138.546	-2	0	1	107.156	118.175
0	0	1	84.553	82.619	2	0	1	11.397	.935
4	0	1	108.976	104.127	6	0	1	44.269	42.587
8	0	1	82.410	83.291	10	0	1	63.155	64.272
12	0	1	135.352	135.387	-13	1	1	28.988	28.235
-11	1	1	15.192	13.052	-9	1	1	10.548	1.233
-7	1	1	87.879	83.537	-5	1	1	99.053	93.698
-3	1	1	87.466	108.518	-1	1	1	3.650 *	32.396
1	1	1	109.221	165.872	3	1	1	53.098	55.690
5	1	1	70.868	69.805	7	1	1	16.073	16.137
9	1	1	26.387	25.978	11	1	1	67.575	65.080
-14	2	1	19.400	19.178	-12	2	1	21.465	20.303
-10	2	1	69.339	66.097	-8	2	1	23.117	20.524
-6	2	1	168.883	168.218	-4	2	1	123.207	145.589
-2	2	1	15.203	23.372	0	2	1	38.632	49.215

6	2	1	135.173	137.987	8	2	1	26.923	24.908
10	2	1	136.870	132.847	12	2	1	36.902	40.021
-13	3	1	114.356	106.150	-11	3	1	33.910	28.799
-9	3	1	21.297	16.759	-7	3	1	12.111	9.936
-5	3	1	36.779	34.643	-3	3	1	22.581	23.056
-1	3	1	108.440	149.589	1	3	1	227.573	255.386
3	3	1	70.288	68.327	5	3	1	40.161	36.141
7	3	1	42.081	40.457	9	3	1	105.404	107.133
11	3	1	118.966	122.134	-12	4	1	36.734	37.652
-10	4	1	55.878	51.665	-8	4	1	122.805	116.660
-6	4	1	98.818	95.920	-4	4	1	207.537	197.916
-2	4	1	65.153	70.143	0	4	1	35.529	40.433
2	4	1	35.272	32.253	4	4	1	154.818	159.458
6	4	1	122.627	124.336	8	4	1	99.879	101.687
10	4	1	31.366	28.944	-13	5	1	144.069	138.237
-11	5	1	89.230	88.729	-9	5	1	103.417	98.473
-7	5	1	41.121	38.454	-5	5	1	99.097	93.091
-3	5	1	154.227	160.076	-1	5	1	7.836	3.576
1	5	1	254.105	261.112	3	5	1	92.936	88.225
5	5	1	84.776	83.630	7	5	1	26.331	28.694
9	5	1	107.145	106.436	11	5	1	110.750	114.607
-12	6	1	8.773 *	2.728	-10	6	1	67.620	65.568
-8	6	1	14.332	7.814	-6	6	1	78.782	76.206
-4	6	1	81.807	79.505	-2	6	1	160.332	161.189
0	6	1	126.857	127.924	2	6	1	145.833	146.500
4	6	1	126.813	120.687	6	6	1	48.734	48.119
8	6	1	106.598	103.649	10	6	1	79.240	78.435
-11	7	1	63.044	62.489	-9	7	1	78.704	76.995
-7	7	1	69.239	65.953	-5	7	1	25.014	23.380
-3	7	1	59.170	55.206	-1	7	1	34.982	36.417
1	7	1	43.030	44.412	3	7	1	76.427	74.006
5	7	1	87.645	87.272	7	7	1	25.115	25.712
9	7	1	21.342	24.306	-12	8	1	5.949 *	4.814
-10	8	1	81.695	75.964	-8	8	1	117.001	109.221
-6	8	1	37.650	33.741	-4	8	1	45.720	48.105
-2	8	1	57.909	55.737	0	8	1	47.171	43.129
2	8	1	26.923	20.116	4	8	1	138.321	133.244
6	8	1	119.535	116.216	8	8	1	24.166	25.563
10	8	1	91.630	88.762	-11	9	1	24.054	25.948
-9	9	1	41.289	40.172	-7	9	1	49.493	47.319
-5	9	1	7.367 *	6.125	-3	9	1	19.712	18.199
-1	9	1	75.456	74.001	1	9	1	14.444	12.300
3	9	1	143.366	136.863	5	9	1	21.989	19.598
7	9	1	25.003	29.311	9	9	1	42.327	45.702
-10	10	1	69.529	66.572	-8	10	1	170.691	163.815
-6	10	1	3.204 *	3.998	-4	10	1	58.902	60.940
-2	10	1	34.234	30.027	0	10	1	153.847	153.383
2	10	1	65.421	62.102	4	10	1	108.942	102.849
6	10	1	42.170	44.842	8	10	1	68.714	69.224
-9	11	1	23.731	21.306	-7	11	1	80.189	78.512
-5	11	1	56.235	56.921	-3	11	1	52.406	52.639
-1	11	1	30.807	23.109	1	11	1	35.987	29.469
3	11	1	77.532	74.507	5	11	1	87.299	88.011
7	11	1	49.415	44.493	-8	12	1	101.542	102.955
-6	12	1	17.335	9.288	-4	12	1	124.156	120.007
-2	12	1	8.941 *	3.837	0	12	1	78.704	75.922
2	12	1	9.019 *	5.657	4	12	1	14.924	8.063
6	12	1	118.497	112.750	-7	13	1	38.744	37.137
-5	13	1	113.541	110.517	-3	13	1	47.841	47.937
-1	13	1	9.086 *	6.340	1	13	1	55.878	53.349
3	13	1	32.783	29.404	5	13	1	59.304	59.020
-4	14	1	89.688	87.653	-2	14	1	22.559	22.732
0	14	1	6.932 *	7.546	2	14	1	40.117	39.015
-1	15	1	63.557	64.062	-14	0	2	108.674	108.065
-12	0	2	96.842	93.462	-10	0	2	133.532	124.481

-4	0	2	213.219	236.516	-2	0	2	114.054	133.552
0	0	2	182.690	194.745	2	0	2	60.354	61.356
4	0	2	91.072	87.971	6	0	2	49.582	49.955
8	0	2	12.368	7.427	10	0	2	15.582	1.947
-13	1	2	40.306	38.477	-11	1	2	43.543	39.118
-9	1	2	130.675	133.976	-7	1	2	108.897	101.992
-5	1	2	84.173	88.065	-3	1	2	131.757	149.065
-1	1	2	47.004	56.998	1	1	2	165.981	168.120
3	1	2	65.533	63.767	5	1	2	58.478	58.320
7	1	2	100.068	102.854	9	1	2	47.908	48.245
-14	2	2	28.832	23.255	-12	2	2	169.162	163.456
-10	2	2	42.907	38.920	-8	2	2	10.749	7.230
-6	2	2	42.561	42.881	-4	2	2	225.296	244.814
-2	2	2	194.477	226.778	0	2	2	20.549	18.529
2	2	2	107.346	112.243	4	2	2	11.575	5.415
6	2	2	12.915	5.146	8	2	2	59.639	60.038
10	2	2	84.240	88.873	-13	3	2	20.125	18.944
-11	3	2	47.249	46.610	-9	3	2	81.863	74.810
-7	3	2	28.698	25.140	-5	3	2	64.930	68.080
-3	3	2	49.671	51.899	-1	3	2	156.236	169.149
1	3	2	84.252	91.902	3	3	2	66.883	70.315
5	3	2	75.724	79.324	7	3	2	57.050	57.864
9	3	2	39.480	36.007	-14	4	2	47.919	44.119
-12	4	2	86.283	82.185	-10	4	2	24.333	17.248
-8	4	2	107.413	106.899	-6	4	2	69.194	74.134
-4	4	2	17.658	15.218	-2	4	2	35.161	32.149
0	4	2	71.784	76.618	2	4	2	71.493	72.241
4	4	2	24.534	24.156	6	4	2	38.855	41.715
8	4	2	32.325	34.625	10	4	2	86.350	85.657
-13	5	2	31.555	29.778	-11	5	2	49.448	47.646
-9	5	2	33.620	34.227	-7	5	2	120.986	117.103
-5	5	2	14.790	17.622	-3	5	2	49.738	52.521
-1	5	2	85.446	86.903	1	5	2	16.710	11.890
3	5	2	25.092	26.235	5	5	2	21.744	24.244
7	5	2	37.304	37.410	9	5	2	110.315	115.200
-12	6	2	139.593	135.440	-10	6	2	86.417	84.042
-8	6	2	38.554	37.209	-6	6	2	5.101	2.544
-4	6	2	49.928	55.410	-2	6	2	37.683	32.526
0	6	2	3.427	.645	2	6	2	7.211	3.139
4	6	2	35.663	37.376	6	6	2	9.957	12.248
8	6	2	13.182	12.695	-13	7	2	35.328	34.834
-11	7	2	10.068	8.254	-9	7	2	11.374	13.082
-7	7	2	194.343	201.331	-5	7	2	58.847	62.908
-3	7	2	82.120	87.220	-1	7	2	8.807	3.898
1	7	2	16.431	15.413	3	7	2	16.821	18.831
5	7	2	51.201	50.955	7	7	2	123.486	125.081
-12	8	2	159.819	156.909	-10	8	2	59.550	58.534
-8	8	2	21.342	18.261	-6	8	2	37.784	36.051
-4	8	2	41.188	43.139	-2	8	2	82.823	87.953
0	8	2	38.007	39.821	2	8	2	76.014	78.609
4	8	2	84.732	86.783	6	8	2	13.261	10.165
8	8	2	12.758	11.172	-11	9	2	12.345	10.198
-9	9	2	68.267	66.640	-7	9	2	51.803	50.143
-5	9	2	19.020	16.178	-3	9	2	116.845	115.422
-1	9	2	29.892	28.002	1	9	2	12.100	8.756
3	9	2	83.493	81.008	5	9	2	16.419	7.203
7	9	2	124.882	128.111	-10	10	2	79.619	80.314
-8	10	2	17.458	18.050	-6	10	2	11.296	16.636
-4	10	2	18.016	19.252	-2	10	2	15.437	17.898
0	10	2	25.695	22.846	2	10	2	60.633	58.546
4	10	2	109.790	108.620	6	10	2	23.463	23.950
-9	11	2	185.525	183.578	-7	11	2	145.286	150.563
-5	11	2	136.501	140.880	-3	11	2	38.219	33.295
-1	11	2	29.423	32.259	1	11	2	112.112	120.235
3	11	2	56.346	56.274	5	11	2	94.465	97.166

-4	12	2	37.616	38.008	-2	12	2	9.800	2.947
0	12	2	55.621	54.422	2	12	2	167.030	175.215
4	12	2	6.887 *	4.523	-7	13	2	19.980	23.763
-5	13	2	39.960	41.788	-3	13	2	25.282	22.130
-1	13	2	14.946	11.789	1	13	2	100.582	97.737
3	13	2	5.704 *	2.897	-4	14	2	92.846	98.088
-2	14	2	74.641	79.322	0	14	2	61.392	64.769
-12	0	3	87.678	87.918	-10	0	3	200.025	194.436
-8	0	3	10.749	1.807	-6	0	3	66.147	72.778
-4	0	3	34.882	35.515	-2	0	3	122.471	133.835
0	0	3	63.311	66.346	2	0	3	56.670	57.393
4	0	3	41.423	36.761	6	0	3	97.434	97.461
8	0	3	40.998	43.396	-13	1	3	26.901	32.692
-11	1	3	18.663	12.307	-9	1	3	22.882	22.170
-7	1	3	46.468	49.653	-5	1	3	66.169	61.359
-3	1	3	19.511	20.630	-1	1	3	7.847 *	12.210
1	1	3	79.630	86.625	3	1	3	52.250	50.595
5	1	3	93.125	100.759	7	1	3	87.422	85.317
-12	2	3	56.837	58.765	-10	2	3	36.935	39.486
-8	2	3	77.845	83.508	-6	2	3	81.294	84.230
-4	2	3	87.064	93.255	-2	2	3	74.898	78.409
0	2	3	35.161	34.095	2	2	3	65.767	64.852
4	2	3	12.937	12.832	6	2	3	86.718	90.047
8	2	3	1.674 *	2.690	-13	3	3	108.027	104.341
-11	3	3	46.702	44.767	-9	3	3	16.352	13.953
-7	3	3	19.143	15.511	-5	3	3	7.657	5.054
-3	3	3	2.299 *	3.098	-1	3	3	49.705	56.635
1	3	3	13.071	12.772	3	3	3	110.159	113.328
5	3	3	98.316	98.021	7	3	3	65.745	72.762
-12	4	3	56.916	55.548	-10	4	3	8.762	1.819
-8	4	3	65.176	59.978	-6	4	3	124.915	130.135
-4	4	3	42.929	44.004	-2	4	3	86.439	91.127
0	4	3	18.775	20.456	2	4	3	16.464	11.265
4	4	3	28.731	26.510	6	4	3	27.716	23.547
8	4	3	20.639	20.667	-13	5	3	53.120	52.014
-11	5	3	154.751	154.717	-9	5	3	28.463	28.951
-7	5	3	86.562	86.057	-5	5	3	14.712	6.713
-3	5	3	42.650	45.220	-1	5	3	168.403	170.361
1	5	3	12.658	5.879	3	5	3	169.753	173.541
5	5	3	39.737	40.156	7	5	3	44.526	46.777
-12	6	3	96.731	91.907	-10	6	3	18.697	16.203
-8	6	3	46.948	49.775	-6	6	3	15.995	17.361
-4	6	3	16.486	18.410	-2	6	3	23.999	22.450
0	6	3	93.103	96.249	2	6	3	188.852	194.406
4	6	3	76.137	79.803	6	6	3	74.708	76.703
-13	7	3	25.304	23.176	-11	7	3	101.519	97.603
-9	7	3	98.003	99.664	-7	7	3	55.900	55.983
-5	7	3	96.351	100.150	-3	7	3	88.538	96.754
-1	7	3	54.248	50.766	1	7	3	13.305	14.115
3	7	3	82.075	81.747	5	7	3	126.288	128.980
-12	8	3	84.910	85.864	-10	8	3	28.486	27.038
-8	8	3	74.998	72.909	-6	8	3	129.425	132.116
-4	8	3	8.751	10.810	-2	8	3	95.313	100.015
0	8	3	44.314	43.657	2	8	3	74.328	73.548
4	8	3	47.517	48.766	6	8	3	93.963	96.334
-11	9	3	62.910	58.085	-9	9	3	53.578	53.272
-7	9	3	44.470	40.653	-5	9	3	74.853	72.436
-3	9	3	1.719 *	4.398	-1	9	3	77.242	73.553
1	9	3	158.982	162.362	3	9	3	9.566	4.906
5	9	3	83.325	82.880	-10	10	3	6.943 *	10.204
-8	10	3	7.032 *	2.250	-6	10	3	85.892	85.288
-4	10	3	7.903 *	.941	-2	10	3	28.731	31.369
0	10	3	41.813	46.101	2	10	3	46.881	47.561
4	10	3	6.865 *	5.695	-9	11	3	10.213	6.228
-7	11	3	38.945	41.498	-5	11	3	1.619 *	.095

1	11	3	64.260	64.170	3	11	3	67.162	62.834
-8	12	3	21.286	18.289	-6	12	3	37.895	37.901
-4	12	3	151.849	153.685	-2	12	3	17.580	20.130
0	12	3	106.375	105.684	-5	13	3	63.635	64.690
-3	13	3	89.464	92.153	-1	13	3	17.033	20.182
-10	0	4	51.681	50.551	-8	0	4	129.916	131.542
-6	0	4	118.921	125.163	-4	0	4	130.630	130.801
-2	0	4	54.862	63.111	0	0	4	58.657	56.553
2	0	4	27.057	25.733	4	0	4	127.404	127.944
6	0	4	68.982	67.352	-11	1	4	14.299	11.546
-9	1	4	37.415	42.586	-7	1	4	51.881	51.408
-5	1	4	73.592	76.259	-3	1	4	117.704	122.970
-1	1	4	4.353 *	1.083	1	1	4	46.758	46.701
3	1	4	1.552 *	3.294	5	1	4	74.183	74.495
-10	2	4	6.887 *	8.672	-8	2	4	153.658	152.823
-6	2	4	53.288	52.720	-4	2	4	9.499	5.064
-2	2	4	50.553	51.094	0	2	4	48.031	46.580
2	2	4	21.387	21.550	4	2	4	24.590	23.631
-11	3	4	160.969	158.212	-9	3	4	54.125	57.244
-7	3	4	46.635	47.019	-5	3	4	36.913	36.385
-3	3	4	139.471	142.163	-1	3	4	78.470	81.589
1	3	4	7.791 *	3.959	3	3	4	30.606	30.855
5	3	4	18.261	19.689	-10	4	4	49.504	47.419
-8	4	4	31.332	30.146	-6	4	4	56.480	54.188
-4	4	4	12.647 *	10.784	-2	4	4	18.697	16.308
0	4	4	36.868	36.479	2	4	4	46.044	43.501
4	4	4	27.782	22.962	-11	5	4	92.020	90.524
-9	5	4	40.128	40.033	-7	5	4	52.975	51.528
-5	5	4	70.924	72.252	-3	5	4	82.321	78.884
-1	5	4	36.645	40.006	1	5	4	42.628	45.560
3	5	4	55.252	55.500	5	5	4	19.087	20.312
-10	6	4	61.793	62.110	-8	6	4	47.595	45.828
-6	6	4	15.538	14.101	-4	6	4	22.235	18.916
-2	6	4	69.562	70.521	0	6	4	93.527	98.736
2	6	4	56.447	59.608	4	6	4	6.619 *	.485
-11	7	4	16.654	16.243	-9	7	4	11.307	11.927
-7	7	4	13.439	11.024	-5	7	4	83.347	81.732
-3	7	4	54.438	59.529	-1	7	4	47.048	46.910
1	7	4	78.693	79.983	3	7	4	26.845	31.358
-10	8	4	50.151	53.153	-8	8	4	83.180	85.846
-6	8	4	26.231	28.986	-4	8	4	14.611	14.185
-2	8	4	25.997	29.429	0	8	4	10.325 *	12.616
2	8	4	29.446	28.648	-9	9	4	1.630 *	1.952
-7	9	4	34.502	35.650	-5	9	4	53.143	53.954
-3	9	4	11.307	10.804	-1	9	4	49.872	50.800
1	9	4	54.136	51.901	-8	10	4	11.921	13.733
-6	10	4	1.719 *	5.345	-4	10	4	45.954	45.610
-2	10	4	152.619	161.792	0	10	4	87.656	88.576
-7	11	4	16.866	15.235	-5	11	4	52.562	52.424
-3	11	4	46.245	43.621	-1	11	4	72.531	74.957
-8	0	5	104.790	104.558	-6	0	5	73.346	72.543
-4	0	5	31.276	31.298	-2	0	5	174.028	195.325
0	0	5	37.081	35.390	2	0	5	137.629	140.582
-9	1	5	78.358	76.044	-7	1	5	22.815	25.886
-5	1	5	40.697	36.744	-3	1	5	21.208	23.305
-1	1	5	19.723	14.010	1	1	5	53.433	50.046
-8	2	5	46.334	44.470	-6	2	5	28.140	29.200
-4	2	5	90.603	88.699	-2	2	5	50.051	53.645
0	2	5	33.408	32.966	2	2	5	79.563	81.642
-9	3	5	66.504	66.242	-7	3	5	80.646	79.732
-5	3	5	17.536	17.977	-3	3	5	85.122	84.122
-1	3	5	43.331	47.600	1	3	5	56.134	56.966
-8	4	5	30.941	29.590	-6	4	5	48.577	49.537
-4	4	5	75.612	76.197	-2	4	5	14.957	15.517
0	4	5	81.249	88.106	-9	5	5	26.443	26.458

-3	5	5	123.799	124.860	-1	5	5	106.955	113.017
1	5	5	7.557 *	3.283	-8	6	5	32.292	32.370
-6	6	5	89.821	96.960	-4	6	5	6.563 *	9.042
-2	6	5	69.283	70.978	0	6	5	69.395	66.813
-9	7	5	57.541	55.411	-7	7	5	45.117	42.875
-5	7	5	52.607	52.781	-3	7	5	57.217	55.771
-1	7	5	16.576	18.292	-8	8	5	13.439	13.777
-6	8	5	62.608	63.196	-4	8	5	4.610 *	7.383
-2	8	5	81.428	86.556	-5	9	5	93.695	96.115
-4	0	6	58.099	57.639	-5	1	6	80.635	82.558
-3	1	6	47.394	48.450	-4	2	6	22.425	19.553
-5	3	6	56.123	55.994	-16	0	0	56.703	53.615
-14	0	0	122.392	121.604	-17	1	0	27.202	26.416
-15	1	0	35.283	34.856	-16	2	0	77.655	80.230
-14	2	0	70.768	72.429	-15	3	0	33.464	31.602
-16	4	0	24.132	22.159	-14	4	0	53.444	54.851
-15	5	0	27.760	27.057	-13	5	0	48.667	47.257
-16	6	0	50.419	51.233	-14	6	0	79.742	77.394
-15	7	0	7.479 *	2.376	-13	7	0	55.230	53.219
-14	8	0	49.872	47.058	-12	8	0	18.116	20.145
-15	9	0	6.597 *	3.389	-13	9	0	61.793	61.689
-11	9	0	58.355	58.063	-14	10	0	86.852	87.501
-12	10	0	46.524	47.489	-13	11	0	32.482	34.191
-11	11	0	42.784	39.203	-12	12	0	15.627	18.122
-18	0	0	54.237	55.457	-17	1	0	26.990	26.416
-15	1	0	34.882	34.856	-18	2	0	32.750	32.071
-16	2	0	77.655	80.230	-14	2	0	71.292	72.429
-17	3	0	10.861 *	9.020	-15	3	0	32.459	31.602
-18	4	0	2.165 *	3.070	-16	4	0	23.853	22.159
-14	4	0	53.958	54.851	-17	5	0	55.777	53.764
-15	5	0	27.928	27.057	-13	5	0	48.544	47.257
-18	6	0	27.202	26.917	-16	6	0	52.094	51.233
-14	6	0	80.769	77.394	-17	7	0	10.314 *	8.007
-15	7	0	8.651 *	2.376	-13	7	0	55.152	53.219
-16	8	0	21.409	20.627	-14	8	0	51.446	47.058
-12	8	0	19.132	20.145	-17	9	0	5.838 *	9.425
-15	9	0	5.135 *	3.389	-13	9	0	62.943	61.689
-11	9	0	58.813	58.063	-16	10	0	4.632 *	4.131
-14	10	0	87.187	87.501	-12	10	0	47.227	47.489
-15	11	0	19.243	20.823	-13	11	0	32.627	34.191
-11	11	0	42.885	39.203	-14	12	0	25.584	25.545
-12	12	0	13.607 *	18.122	-10	12	0	50.609	49.204
-13	13	0	4.264 *	10.097	-11	13	0	48.153	48.587
-9	13	0	95.347	95.172	-7	13	0	71.248	69.206
-14	14	0	23.139	21.693	-12	14	0	16.419	13.218
-10	14	0	15.716	18.402	-8	14	0	25.628	21.899
-6	14	0	7.970 *	7.695	-13	15	0	11.765 *	7.518
-11	15	0	25.092	28.797	-9	15	0	93.829	90.572
-7	15	0	18.339	15.954	-5	15	0	62.418	59.499
-3	15	0	18.529	17.829	-12	16	0	44.838	46.580
-10	16	0	22.938	20.155	-8	16	0	7.992 *	4.860
-6	16	0	27.861	24.348	-4	16	0	11.274 *	7.153
-2	16	0	36.266	35.575	0	16	0	30.272	27.064
-11	17	0	25.494	25.764	-9	17	0	25.003	25.996
-7	17	0	73.915	71.885	-5	17	0	6.396 *	4.127
-3	17	0	73.525	71.453	-1	17	0	29.892	26.237
-10	18	0	15.381	16.430	-8	18	0	41.289	33.874
-6	18	0	56.424	57.632	-4	18	0	9.086 *	10.223
-2	18	0	29.535	27.121	0	18	0	13.540 *	1.613
-7	19	0	29.189	32.230	-5	19	0	6.697 *	2.625
-3	19	0	6.742 *	7.572	-1	19	0	16.073	15.741
-6	20	0	47.327	45.165	-4	20	0	20.605	19.527
-2	20	0	15.660	11.491	0	20	0	32.906	35.777
-3	21	0	6.854 *	1.142	-1	21	0	29.926	32.369
-18	0	1	42.182	42.202	-16	0	1	13.395	15.171

-19	1	1	22.190	22.083	-17	1	1	16.096	19.083
-15	1	1	31.678	35.068	13	1	1	45.050	46.777
15	1	1	35.897	37.596	17	1	1	7.546 *	.918
-18	2	1	62.564	63.598	-16	2	1	21.465	17.965
14	2	1	26.555	28.536	16	2	1	12.479	13.072
-19	3	1	34.390	34.052	-17	3	1	69.015	65.065
-15	3	1	7.467 *	10.997	13	3	1	46.836	45.879
15	3	1	59.996	60.580	17	3	1	60.365	64.695
-18	4	1	28.553	30.305	-16	4	1	21.108	16.135
-14	4	1	42.662	43.243	12	4	1	33.174	32.338
14	4	1	34.971	35.141	16	4	1	43.521	44.762
-19	5	1	30.707	32.300	-17	5	1	84.877	85.385
-15	5	1	10.749 *	8.380	13	5	1	14.165	12.766
15	5	1	60.030	60.226	17	5	1	76.963	77.211
-18	6	1	35.752	31.200	-16	6	1	65.109	63.160
-14	6	1	37.393	39.400	12	6	1	33.241	31.835
14	6	1	27.325	25.184	16	6	1	20.494	20.389
-17	7	1	13.004	8.534	-15	7	1	11.754	10.095
-13	7	1	97.590	95.390	11	7	1	40.686	44.116
13	7	1	42.818	42.462	15	7	1	53.042	54.854
-18	8	1	49.526	50.378	-16	8	1	21.096	22.949
-14	8	1	45.887	47.780	12	8	1	37.460	36.842
14	8	1	71.404	73.145	16	8	1	38.878	42.330
-17	9	1	27.939	25.373	-15	9	1	61.738	63.459
-13	9	1	1.864 *	2.106	11	9	1	30.528	30.493
13	9	1	34.033	32.611	15	9	1	26.666	28.962
-16	10	1	34.469	36.909	-14	10	1	50.509	50.689
-12	10	1	1.931 *	1.481	10	10	1	4.666 *	6.463
12	10	1	45.798	42.668	14	10	1	48.019	47.016
-17	11	1	11.006 *	12.439	-15	11	1	20.527	17.420
-13	11	1	48.231	48.894	-11	11	1	23.541	21.148
9	11	1	13.718	11.009	11	11	1	8.907 *	7.545
13	11	1	53.366	51.180	-16	12	1	32.058	36.146
-14	12	1	46.211	43.098	-12	12	1	69.998	69.929
-10	12	1	39.737	37.360	8	12	1	67.017	64.224
10	12	1	54.560	53.443	12	12	1	20.092	18.669
14	12	1	56.034	57.334	-15	13	1	13.182	8.449
-13	13	1	44.581	44.951	-11	13	1	38.666	38.375
-9	13	1	23.574	25.600	7	13	1	28.028	22.259
9	13	1	89.699	88.784	11	13	1	9.075 *	10.007
13	13	1	40.139	40.147	-14	14	1	5.548 *	6.909
-12	14	1	1.976 *	3.522	-10	14	1	28.955	30.142
-8	14	1	58.914	58.502	-6	14	1	7.847 *	8.562
4	14	1	12.970	8.925	6	14	1	11.787	7.904
8	14	1	64.629	64.021	10	14	1	11.430	5.978
12	14	1	18.395	15.137	-13	15	1	24.144	24.838
-11	15	1	16.844	16.994	-9	15	1	20.337	19.783
-7	15	1	10.682	3.767	-5	15	1	96.117	98.338
-3	15	1	60.967	61.415	1	15	1	96.898	94.536
3	15	1	52.272	53.907	5	15	1	41.679	43.115
7	15	1	35.016	36.267	9	15	1	34.904	34.253
11	15	1	34.413	33.503	-12	16	1	35.283	38.661
-10	16	1	26.220	24.283	-8	16	1	10.492 *	14.449
-6	16	1	52.071	46.667	-4	16	1	50.207	52.366
-2	16	1	58.635	57.123	0	16	1	41.110	42.300
2	16	1	40.965	38.764	4	16	1	18.685	16.080
6	16	1	9.265 *	1.685	8	16	1	34.826	34.740
10	16	1	7.356 *	1.589	-11	17	1	23.206	20.884
-9	17	1	61.559	61.190	-7	17	1	66.526	70.177
-5	17	1	18.362	15.676	-3	17	1	9.577 *	4.638
-1	17	1	31.421	31.877	1	17	1	32.325	35.859
3	17	1	1.998 *	7.581	5	17	1	17.312	13.593
7	17	1	31.031	35.185	9	17	1	7.021 *	8.584
-10	18	1	22.414	27.112	-8	18	1	50.207	52.672
-6	18	1	37.348	41.567	-4	18	1	9.354 *	16.506

2	18	1	29.658	28.363	4	18	1	60.956	58.083
6	18	1	32.459	28.759	8	18	1	22.302	26.749
-9	19	1	14.522	15.345	-7	19	1	24.345	24.570
-5	19	1	17.346	18.050	-3	19	1	18.987	19.479
-1	19	1	58.623	62.589	1	19	1	11.073 *	7.814
3	19	1	37.616	35.480	5	19	1	2.043 *	2.862
7	19	1	2.121 *	4.314	-6	20	1	5.949 *	.227
-4	20	1	33.676	31.092	-2	20	1	18.630	15.188
0	20	1	43.666	44.430	2	20	1	4.878 *	.463
4	20	1	40.061	37.786	-3	21	1	14.767	11.963
-1	21	1	69.272	69.152	1	21	1	18.719	16.930
-18	0	2	26.209	24.138	-16	0	2	62.474	60.819
12	0	2	6.720 *	7.480	14	0	2	10.548 *	4.928
16	0	2	48.577	51.235	-19	1	2	13.562	13.565
-17	1	2	41.434	38.446	-15	1	2	43.644	38.843
11	1	2	45.631	49.103	13	1	2	10.358 *	13.878
15	1	2	14.555	17.150	-18	2	2	9.019 *	2.235
-16	2	2	86.551	87.913	12	2	2	7.657 *	13.137
14	2	2	33.163	35.195	16	2	2	45.318	49.304
-19	3	2	8.985 *	5.212	-17	3	2	51.156	51.300
-15	3	2	52.998	53.581	11	3	2	90.346	92.927
13	3	2	17.781	26.822	15	3	2	8.461 *	7.276
-18	4	2	22.860	25.103	-16	4	2	75.233	74.089
12	4	2	19.924	16.682	14	4	2	9.778 *	7.017
-19	5	2	26.789	24.744	-17	5	2	59.773	56.288
-15	5	2	39.291	39.488	11	5	2	35.998	37.823
13	5	2	49.839	49.953	15	5	2	17.357	18.482
-18	6	2	5.347 *	4.498	-16	6	2	34.000	30.822
-14	6	2	40.061	35.720	10	6	2	24.278	25.191
12	6	2	57.831	56.874	14	6	2	52.897	54.860
-19	7	2	2.032 *	.796	-17	7	2	58.400	59.041
-15	7	2	1.875 *	4.187	9	7	2	56.235	54.451
11	7	2	69.395	66.856	13	7	2	41.088	46.179
15	7	2	6.664 *	4.963	-18	8	2	2.054 *	3.775
-16	8	2	1.965 *	2.276	-14	8	2	18.429	22.305
10	8	2	21.476	22.275	12	8	2	18.518	14.706
14	8	2	6.016 *	.413	17	9	2	1.976 *	.480
-15	9	2	37.237	33.183	-13	9	2	51.580	52.713
9	9	2	9.845	3.231	11	9	2	13.149	12.239
13	9	2	42.561	40.028	-18	10	2	5.525 *	.685
-16	10	2	2.020 *	.154	-14	10	2	53.533	56.722
-12	10	2	38.699	38.486	8	10	2	16.375	15.440
10	10	2	24.066	20.391	12	10	2	16.364	18.174
-17	11	2	47.506	46.409	-15	11	2	60.275	59.779
-13	11	2	29.959	30.110	-11	11	2	12.825	16.624
7	11	2	4.532 *	1.657	9	11	2	52.920	53.477
11	11	2	20.795	20.894	13	11	2	36.857	39.295
-16	12	2	37.170	38.265	-14	12	2	16.051	17.334
-12	12	2	26.398	24.057	-10	12	2	18.205	11.326
6	12	2	24.501	23.269	8	12	2	43.209	44.313
10	12	2	73.380	74.197	12	12	2	17.134	18.595
-15	13	2	28.977	28.005	-13	13	2	24.445	27.841
-11	13	2	6.630 *	.107	-9	13	2	23.351	25.489
5	13	2	68.669	66.426	7	13	2	8.572 *	1.602
9	13	2	9.566 *	3.506	11	13	2	2.054 *	6.446
-14	14	2	58.523	60.502	-12	14	2	11.363 *	11.881
-10	14	2	59.952	62.519	-8	14	2	36.065	35.433
-6	14	2	68.245	69.862	2	14	2	27.905	24.407
4	14	2	12.915	12.796	6	14	2	24.144	24.474
8	14	2	6.340 *	.584	10	14	2	2.032 *	5.246
-13	15	2	52.283	50.051	-11	15	2	26.465	26.478
-9	15	2	16.341	18.886	-7	15	2	3.795 *	.498
-5	15	2	48.611	48.073	-3	15	2	52.707	51.509
-1	15	2	35.540	33.210	1	15	2	59.349	61.783
3	15	2	6.284 *	5.608	5	15	2	34.870	34.209

-12	16	2	32.727	28.495	-10	16	2	45.017	44.092
-8	16	2	15.460	14.958	-6	16	2	20.025	19.863
-4	16	2	89.174	89.374	-2	16	2	38.599	38.642
0	16	2	90.335	91.931	2	16	2	33.497	32.694
4	16	2	1.976 *	7.003	6	16	2	37.784	36.754
8	16	2	26.811	25.345	-11	17	2	5.146 *	5.169
-9	17	2	2.032 *	2.026	-7	17	2	38.878	41.269
-5	17	2	39.257	36.628	-3	17	2	62.999	66.175
-1	17	2	56.960	59.220	1	17	2	12.970	12.328
3	17	2	10.437 *	8.699	5	17	2	64.952	63.841
7	17	2	56.837	53.348	-10	18	2	2.043 *	1.704
-8	18	2	22.469	19.811	-6	18	2	37.549	36.084
-4	18	2	31.522	31.869	-2	18	2	25.918	29.306
0	18	2	19.913	18.163	2	18	2	44.481	45.293
4	18	2	12.379 *	15.375	6	18	2	26.097	30.957
-9	19	2	9.108 *	11.001	-7	19	2	7.747 *	5.923
-5	19	2	33.107	35.623	-3	19	2	20.438	17.649
-1	19	2	6.340 *	7.968	1	19	2	27.448	25.438
3	19	2	15.515	14.274	5	19	2	11.955 *	11.089
-6	20	2	45.396	48.541	-4	20	2	10.091 *	6.937
-2	20	2	16.286	15.403	0	20	2	21.297	19.009
2	20	2	32.705	35.294	-18	0	3	17.379	18.994
-16	0	3	59.494	56.902	10	0	3	73.313	75.542
12	0	3	34.056	38.168	14	0	3	47.852	48.357
-19	1	3	29.356	25.400	-17	1	3	48.455	47.616
-15	1	3	50.698	48.509	9	1	3	77.487	80.802
11	1	3	40.105	40.895	13	1	3	1.942 *	1.106
-18	2	3	31.968	31.199	-16	2	3	1.842 *	1.509
10	2	3	81.841	82.965	12	2	3	9.510 *	7.388
14	2	3	40.697	43.189	-19	3	3	12.457	10.718
-17	3	3	23.563	21.809	-15	3	3	61.157	62.423
9	3	3	122.638	123.874	11	3	3	32.962	33.910
13	3	3	1.987 *	.298	-18	4	3	23.641	25.392
-16	4	3	1.842 *	4.167	10	4	3	19.188	22.298
12	4	3	42.617	42.747	14	4	3	11.463 *	8.136
-19	5	3	10.291 *	2.174	-17	5	3	34.245	32.145
-15	5	3	45.977	43.120	9	5	3	1.831 *	1.002
11	5	3	19.779	17.279	13	5	3	21.308	19.779
-18	6	3	44.894	46.399	-16	6	3	56.960	56.250
-14	6	3	88.002	90.600	8	6	3	38.699	37.786
10	6	3	60.153	60.117	12	6	3	63.244	64.139
-19	7	3	21.911	23.493	-17	7	3	21.710	21.799
-15	7	3	46.099	46.807	7	7	3	14.310	12.946
9	7	3	51.268	51.980	11	7	3	35.049	37.761
13	7	3	6.641 *	10.561	-18	8	3	17.446	16.434
-16	8	3	6.173 *	5.565	-14	8	3	29.557	30.824
8	8	3	1.853 *	3.478	10	8	3	50.006	48.491
12	8	3	2.032 *	2.636	-19	9	3	17.089	16.961
-17	9	3	9.465 *	6.295	-15	9	3	38.107	39.040
-13	9	3	5.224 *	4.756	7	9	3	9.890 *	11.706
9	9	3	14.109	13.926	11	9	3	10.559 *	1.230
-18	10	3	2.087 *	3.281	-16	10	3	69.283	71.642
-14	10	3	45.474	46.903	-12	10	3	10.626	10.183
6	10	3	21.699	19.908	8	10	3	34.792	35.109
10	10	3	20.728	21.714	12	10	3	37.304	37.861
-17	11	3	60.744	60.342	-15	11	3	6.028 *	3.759
-13	11	3	32.258	29.428	-11	11	3	11.318	8.769
5	11	3	58.378	55.650	7	11	3	85.401	82.633
9	11	3	52.049	48.027	11	11	3	76.684	74.703
-16	12	3	28.274	27.320	-14	12	3	1.953 *	4.086
-12	12	3	75.757	76.577	-10	12	3	93.628	98.249
2	12	3	58.121	59.559	4	12	3	9.365 *	2.170
6	12	3	22.704	24.404	8	12	3	8.439 *	8.588
10	12	3	24.144	24.549	-15	13	3	7.858 *	6.489
-13	13	3	32.258	36.977	-11	13	3	55.956	56.987

1	13	3	24.668	25.819	3	13	3	29.814	28.673
5	13	3	32.303	34.687	7	13	3	23.887	23.506
9	13	3	4.900 *	2.331	-14	14	3	26.309	29.181
-12	14	3	18.853	17.493	-10	14	3	39.302	40.869
-8	14	3	11.921	6.499	-6	14	3	10.571 *	10.771
-4	14	3	49.002	54.087	-2	14	3	6.374 *	5.311
0	14	3	32.125	32.327	2	14	3	31.377	31.988
4	14	3	25.907	28.400	6	14	3	37.181	36.954
8	14	3	30.383	32.022	-13	15	3	42.148	40.334
-11	15	3	53.154	53.878	-9	15	3	14.031	14.233
-7	15	3	11.910	8.487	-5	15	3	13.707	12.846
-3	15	3	75.579	79.352	-1	15	3	35.663	34.338
1	15	3	26.276	27.099	3	15	3	26.041	25.807
5	15	3	7.289 *	6.483	7	15	3	37.828	37.688
-12	16	3	39.625	42.557	-10	16	3	23.999	23.168
-8	16	3	45.486	47.160	-6	16	3	5.380 *	2.878
-4	16	3	20.315	22.093	-2	16	3	50.330	49.914
0	16	3	44.794	40.381	2	16	3	90.089	90.012
4	16	3	33.163	31.613	6	16	3	30.897	31.073
-11	17	3	15.705	17.218	-9	17	3	58.300	61.676
-7	17	3	81.896	83.938	-5	17	3	13.897	13.372
-3	17	3	54.136	53.298	-1	17	3	17.413	16.819
1	17	3	13.651	12.337	3	17	3	1.953 *	3.668
5	17	3	23.161	25.794	-10	18	3	27.001	25.385
-8	18	3	42.070	43.356	-6	18	3	33.006	33.167
-4	18	3	4.219 *	8.397	-2	18	3	16.442	15.020
0	18	3	13.350	15.565	2	18	3	11.832	5.154
4	18	3	44.135	42.185	-7	19	3	22.235	16.492
-5	19	3	47.807	46.319	-3	19	3	42.851	44.775
-1	19	3	12.781	12.670	1	19	3	33.263	32.219
-4	20	3	24.813	27.032	-2	20	3	4.532 *	5.217
-18	0	4	53.768	50.492	-16	0	4	139.872	136.860
8	0	4	23.563	22.361	10	0	4	86.417	87.908
12	0	4	74.697	75.110	-17	1	4	27.291	26.867
-15	1	4	12.792	11.491	7	1	4	18.931	19.624
9	1	4	15.013	10.157	11	1	4	15.538	15.750
-18	2	4	16.989	13.219	-16	2	4	49.426	49.189
6	2	4	88.928	94.468	8	2	4	26.242	26.339
10	2	4	34.770	37.916	12	2	4	21.755	20.301
-17	3	4	12.569	12.901	-15	3	4	26.019	26.508
7	3	4	27.872	25.979	9	3	4	43.354	43.282
11	3	4	22.726	21.587	-18	4	4	12.022	5.846
-16	4	4	17.893	15.523	-14	4	4	69.049	69.745
6	4	4	109.757	111.712	8	4	4	11.463	10.327
10	4	4	6.385 *	5.566	12	4	4	15.225	15.518
-17	5	4	7.434 *	3.906	-15	5	4	56.067	57.129
7	5	4	104.823	104.392	9	5	4	63.803	62.279
11	5	4	20.616	20.946	-18	6	4	16.933	10.741
-16	6	4	31.042	30.245	-14	6	4	61.615	60.240
6	6	4	22.838	24.154	8	6	4	23.853	24.530
10	6	4	24.233	19.832	-17	7	4	78.213	77.891
-15	7	4	27.995	29.215	-13	7	4	15.482	16.747
5	7	4	22.637	24.613	7	7	4	17.614	16.626
9	7	4	29.289	29.232	11	7	4	56.503	56.983
-18	8	4	18.529	17.755	-16	8	4	69.931	68.869
-14	8	4	63.925	65.703	-12	8	4	9.119 *	7.509
4	8	4	46.892	44.394	6	8	4	13.607	13.342
8	8	4	7.077 *	.914	10	8	4	36.556	36.508
-17	9	4	71.225	74.254	-15	9	4	24.456	22.733
-13	9	4	41.501	40.921	-11	9	4	122.493	123.329
3	9	4	16.040	12.428	5	9	4	6.664 *	4.794
7	9	4	45.541	44.667	9	9	4	27.325	31.842
-18	10	4	3.829 *	.324	-16	10	4	53.667	54.380
-14	10	4	46.635	45.493	-12	10	4	16.442	14.022
-10	10	4	118.575	120.191	2	10	4	14.522	14.037

8	10	4	12.133	13.725	10	10	4	24.758	25.233
-17	11	4	16.754	13.329	-15	11	4	44.347	46.544
-13	11	4	32.125	34.260	-11	11	4	67.810	73.502
-9	11	4	58.489	60.592	1	11	4	21.186	22.836
3	11	4	4.130 *	1.564	5	11	4	44.403	43.194
7	11	4	35.473	35.569	9	11	4	2.054 *	4.674
-16	12	4	37.516	37.043	-14	12	4	44.916	42.922
-12	12	4	56.715	58.312	-10	12	4	55.152	59.757
-8	12	4	7.590 *	.150	-6	12	4	75.043	79.593
-4	12	4	43.019	45.819	-2	12	4	45.564	42.539
0	12	4	34.569	32.179	2	12	4	49.616	47.927
4	12	4	5.369 *	.604	6	12	4	70.478	71.161
8	12	4	4.253 *	1.975	-15	13	4	4.275 *	5.415
-13	13	4	8.974 *	11.411	-11	13	4	72.130	72.518
-9	13	4	22.949	25.406	-7	13	4	90.335	88.867
-5	13	4	49.660	49.471	-3	13	4	28.408	25.386
-1	13	4	5.402 *	3.256	1	13	4	64.238	63.904
3	13	4	67.988	67.092	5	13	4	24.724	27.338
7	13	4	44.972	44.487	-14	14	4	11.955 *	14.280
-12	14	4	23.731	20.408	-10	14	4	55.431	53.257
-8	14	4	31.979	33.193	-6	14	4	39.525	42.747
-4	14	4	12.022	6.215	-2	14	4	15.850	14.624
0	14	4	12.312	9.983	2	14	4	40.820	39.733
4	14	4	13.127	12.848	6	14	4	31.935	29.169
-13	15	4	42.405	41.735	-11	15	4	1.998 *	2.542
-9	15	4	7.467 *	6.526	-7	15	4	48.421	51.017
-5	15	4	71.516	71.243	-3	15	4	1.953 *	4.026
-1	15	4	10.046 *	4.945	1	15	4	64.830	59.689
3	15	4	64.640	60.796	5	15	4	5.737 *	.539
-12	16	4	2.098 *	.516	-10	16	4	13.919	15.176
-8	16	4	4.320 *	.042	-6	16	4	19.656	21.330
-4	16	4	2.020 *	4.868	-2	16	4	46.111	43.744
0	16	4	30.216	27.265	2	16	4	35.842	34.882
4	16	4	33.397	34.004	-11	17	4	8.896 *	5.950
-9	17	4	38.833	42.171	-7	17	4	5.737 *	8.020
-5	17	4	23.083	22.297	-3	17	4	46.122	46.372
-1	17	4	9.108 *	6.595	1	17	4	43.209	41.925
3	17	4	4.565 *	1.432	-8	18	4	9.544 *	7.110
-6	18	4	20.695	18.820	-4	18	4	14.444	13.775
-2	18	4	102.591	102.928	0	18	4	29.993	27.594
-5	19	4	19.043	20.033	-3	19	4	31.868	26.750
-16	0	5	25.204	25.364	-14	0	5	67.386	62.782
4	0	5	23.273	20.913	6	0	5	57.630	60.764
8	0	5	53.801	52.647	10	0	5	17.357	16.569
-17	1	5	29.647	29.511	-15	1	5	14.712	14.135
3	1	5	20.360	21.792	5	1	5	20.951	16.598
7	1	5	5.213 *	5.926	9	1	5	39.614	41.901
-16	2	5	11.229	13.293	-14	2	5	92.411	93.182
4	2	5	12.044	8.285	6	2	5	14.455	15.002
8	2	5	20.069	20.431	10	2	5	35.763	33.744
-17	3	5	7.858 *	13.277	-15	3	5	46.948	45.712
-13	3	5	108.897	108.811	3	3	5	95.760	92.721
5	3	5	31.019	31.521	7	3	5	58.199	56.577
9	3	5	37.438	39.316	-16	4	5	19.188	18.755
-14	4	5	30.506	28.786	2	4	5	24.590	20.009
4	4	5	35.551	33.255	6	4	5	31.343	26.951
8	4	5	44.213	40.202	-17	5	5	21.442	23.588
-15	5	5	29.446	30.385	-13	5	5	35.819	35.180
3	5	5	64.673	63.695	5	5	5	23.306	23.730
7	5	5	107.848	106.218	9	5	5	2.110 *	3.896
-16	6	5	36.031	32.804	-14	6	5	38.007	37.346
-12	6	5	57.295	53.178	2	6	5	30.495	29.248
4	6	5	6.820 *	6.727	6	6	5	61.972	60.929
8	6	5	9.365 *	13.291	-17	7	5	3.739 *	2.332
-15	7	5	27.604	27.345	-13	7	5	10.001 *	6.650

3	7	5	4.264 *	8.016	5	7	5	39.782	40.199
7	7	5	30.305	33.096	-16	8	5	33.051	33.990
-14	8	5	4.376 *	2.546	-12	8	5	48.868	48.047
-10	8	5	101.966	106.370	0	8	5	87.544	84.721
2	8	5	82.812	80.068	4	8	5	59.851	58.579
6	8	5	17.368	16.514	8	8	5	8.617 *	11.311
-17	9	5	1.998 *	7.181	-15	9	5	8.372 *	4.593
-13	9	5	4.141 *	7.246	-11	9	5	57.105	57.389
-9	9	5	27.459	31.359	-7	9	5	31.589	31.570
-3	9	5	100.258	99.223	-1	9	5	9.276 *	8.630
1	9	5	17.737	15.215	3	9	5	23.240	19.075
5	9	5	58.757	56.522	7	9	5	5.592 *	3.184
-16	10	5	62.106	61.030	-14	10	5	37.951	39.729
-12	10	5	53.679	52.390	-10	10	5	52.484	49.597
-8	10	5	21.253	19.250	-6	10	5	7.903 *	6.281
-4	10	5	19.411	20.184	-2	10	5	94.242	92.601
0	10	5	10.928 *	6.818	2	10	5	73.703	68.884
4	10	5	40.150	39.283	6	10	5	9.052 *	2.710
-17	11	5	27.738	27.888	-15	11	5	2.043 *	3.759
-13	11	5	8.372 *	7.322	-11	11	5	43.354	43.870
-9	11	5	61.581	62.590	-7	11	5	16.687	14.359
-5	11	5	36.813	38.868	-3	11	5	33.084	31.074
-1	11	5	21.141	18.255	1	11	5	15.381	16.047
3	11	5	5.793 *	4.837	5	11	5	8.785 *	2.509
-16	12	5	41.635	44.400	-14	12	5	10.035 *	8.321
-12	12	5	8.796 *	7.364	-10	12	5	40.574	38.763
-8	12	5	44.693	46.820	-6	12	5	19.712	17.861
-4	12	5	27.593	28.744	-2	12	5	17.290	20.085
0	12	5	118.530	113.647	2	12	5	8.539 *	11.346
4	12	5	6.173 *	3.122	6	12	5	15.627	16.151
-15	13	5	74.362	75.675	-13	13	5	16.877	12.951
-11	13	5	17.893	18.561	-9	13	5	17.469	14.290
-7	13	5	34.480	37.677	-5	13	5	19.802	18.562
-3	13	5	5.648 *	4.282	-1	13	5	32.660	34.004
1	13	5	1.998 *	5.037	3	13	5	23.999	22.455
5	13	5	11.062 *	6.625	-14	14	5	9.064 *	11.992
-12	14	5	22.380	22.634	-10	14	5	17.223	19.682
-8	14	5	21.219	21.629	-6	14	5	35.127	35.233
-4	14	5	9.700 *	11.063	-2	14	5	27.604	24.706
0	14	5	59.449	59.938	2	14	5	7.579 *	1.387
4	14	5	21.699	18.601	-13	15	5	12.055	7.893
-11	15	5	58.534	57.929	-9	15	5	8.985 *	4.082
-7	15	5	50.196	47.765	-5	15	5	16.040	13.485
-3	15	5	4.755 *	4.284	-1	15	5	56.927	54.826
1	15	5	10.492 *	10.340	-10	16	5	9.309 *	8.057
-8	16	5	2.087 *	1.124	-6	16	5	41.434	40.901
-4	16	5	1.953 *	2.181	-2	16	5	30.093	32.485
0	16	5	23.050	23.128	-9	17	5	34.837	31.796
-7	17	5	2.132 *	2.219	-5	17	5	43.901	44.321
-3	17	5	36.868	37.904	-14	0	6	52.395	50.409
-12	0	6	30.149	34.070	-2	0	6	56.190	55.135
0	0	6	36.489	40.502	2	0	6	24.746	26.196
4	0	6	58.869	61.848	6	0	6	12.144 *	3.231
-15	1	6	33.777	34.107	-13	1	6	26.477	25.806
-11	1	6	17.837	19.484	-1	1	6	9.633 *	4.155
1	1	6	6.720 *	6.882	3	1	6	42.885	40.820
5	1	6	45.508	46.151	7	1	6	34.904	30.251
-14	2	6	25.349	23.574	-12	2	6	20.784	20.086
-10	2	6	56.659	57.205	-2	2	6	72.956	72.676
0	2	6	50.765	49.933	2	2	6	1.909 *	.753
4	2	6	51.703	48.088	6	2	6	6.217 *	8.150
-15	3	6	74.440	77.597	-13	3	6	11.173	9.840
-11	3	6	7.311 *	3.176	-3	3	6	63.267	62.909
-1	3	6	31.924	29.553	1	3	6	11.921	12.322
3	3	6	66.828	67.646	5	3	6	63.881	59.145

-12	4	6	18.641	22.796	-10	4	6	47.528	48.039
-4	4	6	3.728 *	8.293	-2	4	6	7.724 *	7.400
0	4	6	44.448	36.374	2	4	6	8.751 *	9.510
4	4	6	12.133	7.208	6	4	6	19.344	20.874
-15	5	6	79.709	76.038	-13	5	6	17.089	17.954
-11	5	6	1.842 *	3.175	-9	5	6	10.771	10.754
-7	5	6	75.233	76.771	-5	5	6	15.951	15.971
-3	5	6	23.161	20.480	-1	5	6	88.783	86.308
1	5	6	7.613 *	4.893	3	5	6	59.494	59.526
5	5	6	4.867 *	.776	-14	6	6	22.280	20.012
-12	6	6	5.916 *	2.776	-10	6	6	58.422	59.008
-8	6	6	48.600	48.024	-6	6	6	5.280 *	.063
-4	6	6	10.939	12.334	-2	6	6	48.031	46.991
0	6	6	103.674	96.518	2	6	6	35.953	35.877
4	6	6	32.727	31.104	6	6	6	31.120	32.779
-15	7	6	21.643	21.567	-13	7	6	19.712	21.897
-11	7	6	58.289	62.037	-9	7	6	37.672	38.731
-7	7	6	13.863	13.709	-5	7	6	11.318	9.024
-3	7	6	26.387	25.301	-1	7	6	56.893	51.903
1	7	6	15.683	15.853	3	7	6	44.771	41.441
5	7	6	16.330	10.123	-14	8	6	20.940	26.608
-12	8	6	26.666	31.474	-10	8	6	21.788	20.844
-8	8	6	25.349	25.942	-6	8	6	32.437	33.506
-4	8	6	16.319	18.878	-2	8	6	1.831 *	1.942
0	8	6	39.358	38.479	2	8	6	10.102 *	6.845
4	8	6	29.423	26.800	-15	9	6	4.052 *	1.549
-13	9	6	6.050 *	.052	-11	9	6	69.931	67.297
-9	9	6	44.079	46.166	-7	9	6	38.364	34.723
-5	9	6	27.727	24.224	-3	9	6	11.307	8.126
-1	9	6	40.496	37.781	1	9	6	52.350	50.125
3	9	6	6.943 *	8.206	-14	10	6	22.458	26.139
-12	10	6	16.632	14.937	-10	10	6	56.436	54.226
-8	10	6	12.747	12.604	-6	10	6	77.532	77.021
-4	10	6	13.071	10.877	-2	10	6	25.840	26.539
0	10	6	2.266 *	1.039	2	10	6	28.542	28.294
4	10	6	11.463 *	13.145	-15	11	6	23.240	21.336
-13	11	6	23.150	22.663	-11	11	6	15.515	15.690
-9	11	6	59.193	60.951	-7	11	6	24.746	20.818
-5	11	6	41.679	43.282	-3	11	6	22.715	18.377
-1	11	6	2.032 *	4.653	1	11	6	31.120	31.855
3	11	6	55.688	49.340	-14	12	6	82.510	84.047
-12	12	6	74.976	72.661	-10	12	6	10.113 *	8.753
-8	12	6	13.082	13.500	-6	12	6	63.155	64.570
-4	12	6	23.686	24.126	-2	12	6	21.241	18.606
0	12	6	28.787	29.071	2	12	6	9.387 *	5.773
-13	13	6	18.853	20.923	-11	13	6	36.757	38.098
-9	13	6	22.570	24.984	-7	13	6	19.958	18.386
-5	13	6	6.184 *	3.012	-3	13	6	28.776	28.735
-1	13	6	38.286	35.294	1	13	6	22.860	18.965
-12	14	6	30.004	29.401	-10	14	6	2.009 *	2.962
-8	14	6	34.178	33.107	-6	14	6	25.863	24.260
-4	14	6	15.794	18.952	-2	14	6	8.159 *	11.309
-9	15	6	37.538	38.387	-7	15	6	10.291 *	8.684
-5	15	6	16.911	14.290	-3	15	6	49.649	50.291
-12	0	7	1.831 *	.759	-10	0	7	45.910	41.211
-8	0	7	21.766	19.596	-6	0	7	5.414 *	6.028
-4	0	7	8.137 *	4.573	-2	0	7	10.816 *	8.161
0	0	7	23.496	21.863	2	0	7	70.734	67.250
4	0	7	5.469 *	5.773	-11	1	7	15.538	14.744
-9	1	7	39.916	41.958	-7	1	7	37.527	39.280
-5	1	7	67.185	65.815	-3	1	7	9.633 *	5.413
-1	1	7	8.684 *	4.263	1	1	7	10.760 *	6.178
3	1	7	25.037	21.160	-12	2	7	28.285	27.463
-10	2	7	53.801	57.045	-8	2	7	22.693	23.321
-6	2	7	10.749	12.332	-4	2	7	25.215	21.913

2	2	7	18.864	19.013	-11	3	7	19.389	19.003
-9	3	7	68.334	66.519	-7	3	7	12.803	15.791
-5	3	7	92.087	87.771	-3	3	7	15.817	14.015
-1	3	7	12.256	10.385	1	3	7	13.517	9.490
3	3	7	28.865	24.915	-12	4	7	23.150	25.649
-10	4	7	40.797	38.143	-8	4	7	20.683	20.772
-6	4	7	15.035	12.793	-4	4	7	1.920 *	.427
-2	4	7	10.336 *	9.163	0	4	7	48.823	44.104
2	4	7	14.366	10.791	-11	5	7	13.249	15.028
-9	5	7	43.834	45.893	-7	5	7	33.263	34.422
-5	5	7	65.990	63.525	-3	5	7	37.081	35.639
-1	5	7	27.515	22.966	1	5	7	12.513	10.570
3	5	7	5.324 *	2.990	-12	6	7	85.446	84.626
-10	6	7	52.585	51.702	-8	6	7	45.017	44.290
-6	6	7	31.689	38.519	-4	6	7	52.194	49.833
-2	6	7	62.296	56.484	0	6	7	30.004	27.513
2	6	7	28.508	27.748	-11	7	7	19.556	17.743
-9	7	7	51.759	47.537	-7	7	7	21.699	16.031
-5	7	7	74.485	68.528	-3	7	7	16.174	18.797
-1	7	7	19.299	18.681	1	7	7	2.076 *	5.549
-12	8	7	20.482	20.130	-10	8	7	32.381	32.522
-8	8	7	23.362	23.248	-6	8	7	67.430	61.915
-4	8	7	38.331	34.896	-2	8	7	22.324	20.463
0	8	7	37.248	32.399	-11	9	7	13.015	15.574
-9	9	7	11.140 *	11.477	-7	9	7	32.314	33.763
-5	9	7	12.624	15.116	-3	9	7	4.509 *	1.715
-1	9	7	23.865	25.086	-12	10	7	40.731	42.026
-10	10	7	25.717	19.170	-8	10	7	15.906	15.878
-6	10	7	29.267	28.290	-4	10	7	10.582 *	8.868
-2	10	7	2.098 *	3.024	-11	11	7	29.602	28.543
-9	11	7	51.937	52.458	-7	11	7	68.591	63.961
-5	11	7	52.138	48.461	-3	11	7	19.824	16.454
-10	12	7	25.740	28.822	-8	12	7	7.144 *	9.703
-6	12	7	2.032 *	2.194	-4	12	7	2.076 *	9.410
-8	0	8	28.586	27.038	-6	0	8	20.460	19.600
-4	0	8	122.069	117.005	-2	0	8	38.320	33.263
-9	1	8	1.953 *	1.754	-7	1	8	10.850 *	7.838
-5	1	8	11.709	13.574	-3	1	8	20.337	18.344
-1	1	8	26.298	24.565	-8	2	8	23.920	24.168
-6	2	8	15.939	13.700	-4	2	8	56.491	56.062
-2	2	8	16.397	16.401	-9	3	8	38.666	38.150
-7	3	8	31.823	31.185	-5	3	8	1.306 *	1.162
-3	3	8	8.584 *	10.448	-8	4	8	8.260 *	13.042
-6	4	8	13.439	14.814	-4	4	8	16.576	17.667
-2	4	8	47.763	45.890	-9	5	8	57.440	56.546
-7	5	8	46.178	43.903	-5	5	8	5.168 *	6.055
-3	5	8	4.398 *	3.444	-8	6	8	15.750	15.768
-6	6	8	5.146 *	6.440	-4	6	8	36.813	33.462
-9	7	8	19.891	17.277	-7	7	8	18.931	15.387
-5	7	8	45.229	40.792	-8	8	8	20.717	18.951
-6	8	8	15.314	13.104					

AM-90-432

card 1 of 1

Crystal structures of a natural and a Cs-exchanged clinoptilolite

J. R. Smyth, A. T. Spaid, D. L. Bish

For deposit: Table 6 B

American Mineralogist, 75, 5-6, 522-528.

(13)

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-16	0	0	65.199	56.421	-14	0	0	143.148	138.595
-12	0	0	6.679 *	23.818	-10	0	0	181.907	175.908
-8	0	0	78.125	83.863	-6	0	0	4.740 *	9.403
-4	0	0	254.842	272.771	-17	1	0	25.794 *	25.427
-15	1	0	40.071 *	42.087	-13	1	0	12.789 *	1.504
-11	1	0	14.062 *	15.824	-9	1	0	65.003	71.641
-7	1	0	9.323 *	4.258	-5	1	0	27.243	29.401
-3	1	0	4.348 *	36.693	-1	1	0	100.139	52.963
-16	2	0	46.887	50.007	-14	2	0	61.360	54.878
-12	2	0	20.623 *	28.134	-10	2	0	50.706	45.730
-8	2	0	27.909 *	17.783	-6	2	0	41.090	51.262
-4	2	0	41.834 *	31.110	-2	2	0	59.186	36.934
-15	3	0	11.536 *	16.235	-13	3	0	29.417 *	20.678
-11	3	0	87.761	90.135	-9	3	0	54.936	54.564
-7	3	0	86.135	94.130	-5	3	0	282.417	294.096
-3	3	0	221.939	281.272	-1	3	0	19.056	41.064
-16	4	0	30.063 *	34.260	-14	4	0	57.091	60.756
-12	4	0	9.930 *	3.055	-10	4	0	24.481 *	30.899
-8	4	0	25.363 *	22.983	-6	4	0	104.154	117.197
-4	4	0	85.704	94.721	-2	4	0	195.832	241.987
0	4	0	148.534	136.910	-15	5	0	12.652 *	8.003
-13	5	0	52.469	57.073	-11	5	0	14.199 *	3.760
-9	5	0	60.792	63.723	-7	5	0	49.355	14.504
-5	5	0	5.817 *	23.536	-3	5	0	155.702	154.533
-1	5	0	33.706	53.218	-16	6	0	62.731	66.995
-14	6	0	67.549	59.527	-12	6	0	74.188	74.986
-10	6	0	17.509 *	24.054	-8	6	0	155.839	143.346
-6	6	0	92.638	101.327	-4	6	0	6.933 *	21.010
-2	6	0	41.716	49.208	0	6	0	197.477	210.317
-15	7	0	14.375 *	12.982	-13	7	0	34.294	30.216
-11	7	0	10.028 *	4.058	-9	7	0	122.387	123.767
-7	7	0	158.385	145.904	-5	7	0	58.227	55.740
-3	7	0	28.888 *	26.350	-1	7	0	75.540	86.782
-14	8	0	41.481	37.517	-12	8	0	5.308 *	13.492
-10	8	0	26.342 *	16.481	-8	8	0	151.746	150.654
-6	8	0	42.539	13.710	-4	8	0	69.233	67.533
-2	8	0	19.507 *	22.097	0	8	0	145.478	148.046
-15	9	0	12.789 *	10.418	-13	9	0	26.792	35.605
-11	9	0	76.029	75.833	-9	9	0	63.828	56.659
-7	9	0	93.480	88.822	-5	9	0	95.693	101.287
-3	9	0	118.216	117.245	-1	9	0	74.502	73.852
-14	10	0	104.056	102.817	-12	10	0	34.822	37.059
-10	10	0	37.917	39.041	-8	10	0	30.709 *	20.889
-6	10	0	51.587	58.159	-4	10	0	158.522	152.987
-2	10	0	9.518 *	4.706	0	10	0	251.786	256.700
-13	11	0	33.902	41.782	-11	11	0	13.416 *	13.975
-9	11	0	63.652	68.660	-7	11	0	23.737 *	2.056
-5	11	0	46.064	52.363	-3	11	0	14.885 *	18.615
-1	11	0	4.544 *	9.288	-12	12	0	16.373 *	17.145
-10	12	0	64.690	67.480	-8	12	0	68.058	66.798
-6	12	0	82.904	80.214	-4	12	0	62.202	59.002
-2	12	0	79.751	87.691	0	12	0	189.604	187.211
-11	13	0	39.444	43.846	-9	13	0	98.376	104.399
-7	13	0	70.330	63.222	-5	13	0	141.209	146.308
-3	13	0	43.596	46.243	-1	13	0	37.682	40.374

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-10	14	0	6.463 *	3.813	-8	14	0	19.624 *	28.818
-6	14	0	12.907 *	11.378	-4	14	0	28.379	27.121
-2	14	0	122.192	120.169	0	14	0	78.478	74.340
-9	15	0	62.496	63.189	-7	15	0	12.123 *	4.753
-5	15	0	24.344 *	23.891	-3	15	0	36.193	42.494
-1	15	0	80.319	72.609	-8	16	0	13.592 *	1.967
-6	16	0	10.282 *	13.178	-4	16	0	29.750	31.995
-2	16	0	29.691	16.148	0	16	0	71.172	72.422
-7	17	0	74.541	75.317	-5	17	0	13.592 *	16.484
-3	17	0	48.512	43.426	-1	17	0	33.569	36.945
-6	18	0	70.350	65.521	-4	18	0	14.983 *	17.877
-2	18	0	52.096	54.144	0	18	0	57.267	61.711
-3	19	0	22.249 *	21.297	-1	19	0	12.162 *	9.820
-18	0	1	37.310	44.137	-16	0	1	25.010 *	20.902
-14	0	1	96.045	92.292	-12	0	1	111.714	104.982
-10	0	1	20.231 *	14.463	-8	0	1	78.086	79.699
-6	0	1	186.685	199.631	-4	0	1	134.726	167.335
-2	0	1	69.938	125.815	0	0	1	4.132 *	26.853
2	0	1	67.490	48.971	4	0	1	112.340	99.608
6	0	1	34.391	41.557	8	0	1	144.127	136.649
10	0	1	54.447	63.790	12	0	1	120.781	118.428
14	0	1	115.728	118.164	-17	1	1	21.759 *	18.244
-15	1	1	33.549	38.562	-13	1	1	33.588	42.739
-11	1	1	19.742 *	18.799	-9	1	1	40.992	40.478
-7	1	1	40.463	38.000	-5	1	1	132.983	142.037
-3	1	1	9.068 *	20.367	-1	1	1	79.124	106.379
1	1	1	153.959	172.345	3	1	1	38.113	22.066
5	1	1	59.637	69.101	7	1	1	24.129	12.982
9	1	1	32.629	37.056	11	1	1	66.080	70.794
13	1	1	20.662 *	8.706	15	1	1	39.601	41.131
-16	2	1	10.478 *	7.222	-14	2	1	34.313	33.400
-12	2	1	64.415	67.235	-10	2	1	65.395	64.337
-8	2	1	32.492	37.443	-6	2	1	106.386	111.552
-4	2	1	110.813	132.030	-2	2	1	9.440 *	17.356
0	2	1	3.408 *	5.501	2	2	1	29.515	37.755
4	2	1	79.359	79.204	6	2	1	146.555	138.813
8	2	1	16.040 *	5.767	10	2	1	132.768	125.966
12	2	1	31.297	29.305	14	2	1	23.639 *	29.111
-17	3	1	45.105	50.750	-15	3	1	18.998 *	19.049
-13	3	1	92.931	92.536	-11	3	1	34.724	31.129
-9	3	1	61.576	64.187	-7	3	1	121.839	116.798
-5	3	1	86.919	86.262	-3	3	1	126.990	130.743
-1	3	1	66.550	96.209	1	3	1	212.146	259.803
3	3	1	114.475	109.182	5	3	1	67.765	66.674
7	3	1	68.352	68.312	9	3	1	103.233	104.003
11	3	1	106.563	104.222	13	3	1	59.362	57.472
15	3	1	59.911	60.453	-16	4	1	26.146 *	27.508
-14	4	1	23.580 *	22.764	-12	4	1	70.683	73.726
-10	4	1	37.035	32.049	-8	4	1	112.791	106.593
-6	4	1	117.178	115.604	-4	4	1	189.388	205.820
-2	4	1	77.890	87.477	0	4	1	71.799	61.236
2	4	1	99.159	111.969	4	4	1	109.540	105.869
6	4	1	131.749	132.455	8	4	1	71.505	64.004
10	4	1	26.303	21.713	12	4	1	36.977	38.245
14	4	1	30.847	28.718	-17	5	1	90.816	94.895

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-4	12	1	110.362	109.378	-2	12	1	18.586 *	6.827
0	12	1	107.111	107.489	2	12	1	42.989	40.982
4	12	1	29.730	22.631	6	12	1	113.790	110.292
8	12	1	86.390	81.985	10	12	1	58.187	57.346
12	12	1	18.195 *	20.485	-13	13	1	30.063	25.197
-11	13	1	38.504	41.293	-9	13	1	16.726 *	.084
-7	13	1	17.294 *	13.331	-5	13	1	131.769	136.775
-3	13	1	8.382 *	8.325	-1	13	1	48.884	52.389
1	13	1	35.900	35.037	3	13	1	13.200 *	10.974
5	13	1	57.796	62.025	7	13	1	16.158 *	3.473
9	13	1	77.890	80.443	11	13	1	21.113 *	23.727
-12	14	1	20.564 *	21.857	-10	14	1	22.425 *	19.707
-8	14	1	44.243	48.143	-6	14	1	29.064	26.905
-4	14	1	101.862	104.555	-2	14	1	16.236 *	6.230
0	14	1	4.270 *	2.688	2	14	1	18.097 *	5.083
4	14	1	4.309 *	9.756	6	14	1	15.492 *	11.897
8	14	1	40.855	42.616	10	14	1	7.442 *	1.652
-11	15	1	12.084 *	6.344	-9	15	1	32.472	35.211
-7	15	1	49.276	52.659	-5	15	1	79.320	78.434
-3	15	1	111.381	114.721	-1	15	1	36.409	33.442
1	15	1	106.954	103.595	3	15	1	62.496	58.120
5	15	1	45.966	45.068	7	15	1	39.895	46.542
9	15	1	28.242	36.154	-10	16	1	30.925	31.878
-8	16	1	4.759 *	4.095	-6	16	1	58.227	56.813
-4	16	1	51.763	46.105	-2	16	1	70.604	68.335
0	16	1	20.466 *	16.316	2	16	1	59.108	64.759
4	16	1	21.877 *	29.366	6	16	1	16.941 *	19.595
8	16	1	51.666	49.478	-7	17	1	110.636	112.539
-5	17	1	4.642 *	.634	-3	17	1	62.829	63.808
-1	17	1	4.622 *	6.300	1	17	1	7.286 *	19.024
3	17	1	12.652 *	9.228	5	17	1	17.646 *	8.004
-6	18	1	46.906	48.660	-4	18	1	14.787 *	2.784
-2	18	1	16.589 *	.150	0	18	1	111.283	110.087
2	18	1	55.367	52.837	4	18	1	59.774	57.165
-3	19	1	4.798 *	20.297	-1	19	1	75.305	78.366
1	19	1	24.775	19.417	-18	0	2	5.190 *	26.186
-16	0	2	67.745	65.664	-14	0	2	118.999	120.629
-12	0	2	133.100	129.151	-10	0	2	198.848	187.423
-8	0	2	32.825	21.922	-6	0	2	159.913	164.307
-4	0	2	144.009	198.446	-2	0	2	112.928	115.409
0	0	2	258.857	264.266	2	0	2	57.247	49.372
4	0	2	81.885	71.529	6	0	2	15.276 *	16.293
8	0	2	17.450 *	1.756	10	0	2	22.190 *	6.848
12	0	2	13.102 *	15.922	14	0	2	4.681 *	1.826
-17	1	2	21.818 *	26.752	-15	1	2	62.829	67.209
-13	1	2	21.916 *	22.806	-11	1	2	35.821	39.100
-9	1	2	138.839	138.394	-7	1	2	127.577	134.355
-5	1	2	122.916	128.400	-3	1	2	137.781	147.902
-1	1	2	24.403	21.520	1	1	2	207.446	219.441
3	1	2	52.273	49.967	5	1	2	110.989	113.883
7	1	2	116.257	110.478	9	1	2	56.875	63.373
11	1	2	54.564	55.191	13	1	2	22.758 *	18.774
-18	2	2	5.073 *	12.313	-16	2	2	73.190	73.820
-14	2	2	35.665	34.184	-12	2	2	140.915	138.611
-10	2	2	94.910	89.832	-8	2	2	22.699	13.702

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-15	5	1	14.238 *	13.980	-13	5	1	155.114	155.355
-11	5	1	84.471	83.592	-9	5	1	62.006	62.567
-7	5	1	57.208	53.114	-5	5	1	49.413	62.627
-3	5	1	236.549	248.488	-1	5	1	53.154	39.638
1	5	1	259.052	254.103	3	5	1	134.726	121.147
5	5	1	74.188	63.087	7	5	1	41.227	38.533
9	5	1	113.300	112.036	11	5	1	151.667	150.112
13	5	1	4.465 *	.474	15	5	1	79.398	80.900
-16	6	1	67.099	70.232	-14	6	1	52.860	44.879
-12	6	1	33.412	30.880	-10	6	1	80.730	80.863
-8	6	1	21.602 *	23.129	-6	6	1	66.746	69.331
-4	6	1	86.096	80.516	-2	6	1	171.683	188.600
0	6	1	159.129	145.211	2	6	1	191.151	206.838
4	6	1	130.456	138.559	6	6	1	43.146	37.257
8	6	1	158.130	155.569	10	6	1	84.334	78.895
12	6	1	30.729	31.730	14	6	1	23.522	23.060
-15	7	1	8.794 *	1.301	-13	7	1	86.703	85.746
-11	7	1	45.673	48.864	-9	7	1	42.696	42.586
-7	7	1	163.281	159.348	-5	7	1	15.649 *	6.039
-3	7	1	45.868	35.803	-1	7	1	77.831	74.462
1	7	1	61.771	54.471	3	7	1	60.753	64.055
5	7	1	81.709	87.075	7	7	1	47.592	49.557
9	7	1	16.569 *	14.576	11	7	1	42.617	42.056
13	7	1	33.177	41.119	-16	8	1	11.614 *	5.664
-14	8	1	37.936	39.994	-12	8	1	39.327	39.708
-10	8	1	80.965	82.612	-8	8	1	121.016	118.741
-6	8	1	66.276	69.365	-4	8	1	49.707	53.447
-2	8	1	33.393	35.538	0	8	1	16.099 *	15.519
2	8	1	36.409	37.956	4	8	1	117.393	114.275
6	8	1	134.099	130.429	8	8	1	12.965 *	2.493
10	8	1	87.193	86.180	12	8	1	20.192 *	25.930
14	8	1	65.963	68.185	-15	9	1	71.172	77.543
-13	9	1	5.210 *	9.011	-11	9	1	18.195 *	.876
-9	9	1	56.797	62.402	-7	9	1	31.689	29.615
-5	9	1	23.032	23.826	-3	9	1	99.355	103.674
-1	9	1	15.786 *	14.964	1	9	1	38.328	32.798
3	9	1	170.861	173.584	5	9	1	22.033	12.639
7	9	1	42.226	41.503	9	9	1	61.125	61.816
11	9	1	28.673 *	23.720	13	9	1	63.887	66.407
-14	10	1	64.024	62.390	-12	10	1	29.123	29.597
-10	10	1	78.928	77.139	-8	10	1	128.459	137.138
-6	10	1	17.744 *	27.963	-4	10	1	59.245	67.631
-2	10	1	19.781	21.379	0	10	1	131.945	134.056
2	10	1	18.606	8.995	4	10	1	113.868	108.700
6	10	1	27.380	37.421	8	10	1	38.779	44.684
10	10	1	14.787 *	1.492	12	10	1	29.456	24.921
-13	11	1	48.552	59.762	-11	11	1	23.091 *	15.039
-9	11	1	36.722	48.226	-7	11	1	12.730 *	4.910
-5	11	1	71.858	72.356	-3	11	1	28.144	30.255
-1	11	1	69.762	71.475	1	11	1	48.826	49.630
3	11	1	48.434	48.618	5	11	1	66.687	72.710
7	11	1	38.191	35.898	9	11	1	4.740 *	10.956
11	11	1	16.843 *	18.836	-14	12	1	43.929	47.053
-12	12	1	49.805	46.094	-10	12	1	39.679	44.677
-8	12	1	101.882	98.903	-6	12	1	6.032 *	3.914

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-6	2	2	38.739	38.777	-4	2	2	276.934	286.195
-2	2	2	232.828	257.359	0	2	2	67.647	65.038
2	2	2	128.890	127.941	4	2	2	23.874	20.566
6	2	2	45.281	40.230	8	2	2	22.915	22.864
10	2	2	102.234	99.839	12	2	2	23.208	* 24.459
14	2	2	33.961	26.132	-17	3	2	68.509	67.587
-15	3	2	27.870	22.639	-13	3	2	4.465	* 11.467
-11	3	2	39.934	38.716	-9	3	2	83.805	79.747
-7	3	2	7.912	* 10.817	-5	3	2	82.297	80.792
-3	3	2	37.584	40.671	-1	3	2	213.302	220.608
1	3	2	41.736	42.478	3	3	2	37.349	37.249
5	3	2	21.446	18.542	7	3	2	57.071	51.404
9	3	2	28.085	19.259	11	3	2	113.574	114.079
13	3	2	17.490	* 10.444	-18	4	2	26.518	* 18.158
-16	4	2	72.857	74.848	-14	4	2	19.174	* 8.790
-12	4	2	113.887	106.974	-10	4	2	114.886	110.116
-8	4	2	111.909	112.310	-6	4	2	32.864	36.212
-4	4	2	51.763	47.618	-2	4	2	25.421	21.616
0	4	2	25.245	19.822	2	4	2	70.291	63.304
4	4	2	36.252	41.205	6	4	2	61.909	68.794
8	4	2	47.866	42.920	10	4	2	61.850	61.692
12	4	2	21.309	* 24.147	14	4	2	28.085	14.700
-17	5	2	30.063	34.974	-15	5	2	59.186	53.169
-13	5	2	35.136	33.432	-11	5	2	54.310	52.892
-9	5	2	43.009	39.557	-7	5	2	137.860	144.315
-5	5	2	48.356	41.812	-3	5	2	49.590	53.393
-1	5	2	46.025	53.583	1	5	2	54.349	44.297
3	5	2	59.186	49.380	5	5	2	9.264	* 9.872
7	5	2	18.195	* 12.806	9	5	2	123.308	123.721
11	5	2	16.334	* 19.388	13	5	2	38.759	40.237
-16	6	2	37.349	28.002	-14	6	2	16.765	* 18.588
-12	6	2	151.354	150.014	-10	6	2	29.652	26.890
-8	6	2	47.807	50.360	-6	6	2	68.058	75.870
-4	6	2	90.268	90.812	-2	6	2	22.425	18.800
0	6	2	58.951	66.017	2	6	2	18.743	* 4.049
4	6	2	28.496	37.179	6	6	2	32.864	39.220
8	6	2	26.342	15.980	10	6	2	44.262	39.131
12	6	2	53.154	56.374	-17	7	2	70.663	68.284
-15	7	2	28.712	25.161	-13	7	2	54.545	49.645
-11	7	2	17.999	* 12.747	-9	7	2	3.995	* 6.704
-7	7	2	166.493	160.459	-5	7	2	63.847	66.171
-3	7	2	75.383	81.363	-1	7	2	55.406	50.966
1	7	2	47.278	43.604	3	7	2	30.298	20.794
5	7	2	16.902	* 16.738	7	7	2	133.061	136.961
9	7	2	60.577	64.512	11	7	2	75.873	71.402
13	7	2	34.294	35.446	-16	8	2	5.033	* 11.652
-14	8	2	40.326	37.927	-12	8	2	120.507	116.856
-10	8	2	109.265	107.178	-8	8	2	50.588	49.363
-6	8	2	98.376	101.711	-4	8	2	99.669	96.090
-2	8	2	94.126	102.153	0	8	2	17.176	* 9.045
2	8	2	84.275	80.869	4	8	2	76.754	69.601
6	8	2	8.187	* 22.359	8	8	2	38.387	35.552
10	8	2	35.997	34.106	12	8	2	25.676	* 7.233
-15	9	2	19.898	* 9.892	-13	9	2	59.970	59.155
-11	9	2	17.274	* 9.935	-9	9	2	57.796	52.331

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-7	9	2	80.123	76.592	-5	9	2	16.158 *	1.577
-3	9	2	125.110	114.828	-1	9	2	19.193 *	22.396
1	9	2	22.934	24.603	3	9	2	72.994	69.526
5	9	2	27.478	34.176	7	9	2	146.085	142.595
9	9	2	13.612 *	4.027	11	9	2	11.888 *	3.653
-16	10	2	5.327 *	12.148	-14	10	2	65.316	60.005
-12	10	2	54.545	58.213	-10	10	2	131.318	124.401
-8	10	2	40.091	35.403	-6	10	2	40.600	40.370
-4	10	2	31.904	20.171	-2	10	2	18.880 *	26.710
0	10	2	70.213	63.725	2	10	2	53.800	49.655
4	10	2	108.756	105.145	6	10	2	30.024	28.159
8	10	2	4.446 *	2.735	10	10	2	15.590 *	18.973
-15	11	2	75.305	70.078	-13	11	2	25.950 *	22.116
-11	11	2	24.051 *	24.724	-9	11	2	191.092	188.375
-7	11	2	168.040	164.504	-5	11	2	172.760	173.369
-3	11	2	38.837	29.572	-1	11	2	73.797	76.898
1	11	2	131.690	135.038	3	11	2	38.308	36.617
5	11	2	131.416	137.426	7	11	2	10.184 *	3.013
9	11	2	65.845	69.986	11	11	2	17.431 *	17.015
-14	12	2	5.151 *	8.707	-12	12	2	4.916 *	12.391
-10	12	2	26.851 *	21.485	-8	12	2	20.525 *	9.285
-6	12	2	55.935	63.682	-4	12	2	82.904	77.749
-2	12	2	10.204 *	15.182	0	12	2	86.449	80.976
2	12	2	171.331	175.673	4	12	2	30.749	24.777
6	12	2	10.126 *	6.202	8	12	2	29.887	30.290
10	12	2	90.229	83.472	-13	13	2	22.915 *	26.076
-11	13	2	4.916 *	.858	-9	13	2	4.759 *	20.050
-7	13	2	10.635 *	9.416	-5	13	2	58.520	61.888
-3	13	2	36.174	30.952	-1	13	2	17.725 *	12.338
1	13	2	81.278	83.220	3	13	2	14.238 *	13.040
5	13	2	36.800	42.775	7	13	2	4.622 *	4.159
9	13	2	16.706 *	6.670	-12	14	2	12.946 *	2.217
-10	14	2	103.821	106.045	-8	14	2	47.709	54.804
-6	14	2	26.675	18.780	-4	14	2	116.081	119.773
-2	14	2	83.903	91.608	0	14	2	102.469	105.459
2	14	2	20.701 *	20.977	4	14	2	28.085	25.979
6	14	2	38.015	36.034	8	14	2	10.713 *	5.885
-11	15	2	29.299 *	29.682	-9	15	2	19.468 *	8.230
-7	15	2	19.526 *	14.204	-5	15	2	28.810	35.311
-3	15	2	53.213	48.553	-1	15	2	75.168	77.948
1	15	2	84.666	81.821	3	15	2	10.263 *	7.806
5	15	2	58.638	58.826	7	15	2	26.479 *	22.133
-10	16	2	12.064 *	11.371	-8	16	2	19.311 *	24.804
-6	16	2	52.821	58.878	-4	16	2	43.479	46.248
-2	16	2	37.114	34.263	0	16	2	68.019	59.563
2	16	2	29.867	31.603	4	16	2	17.196 *	1.373
6	16	2	19.820 *	22.634	-9	17	2	20.799 *	7.614
-7	17	2	23.424 *	19.408	-5	17	2	49.296	47.765
-3	17	2	58.129	56.185	-1	17	2	41.795	39.714
1	17	2	21.524 *	22.889	3	17	2	20.114 *	9.820
-6	18	2	53.683	57.905	-4	18	2	59.284	52.697
-2	18	2	32.746	21.883	0	18	2	46.338	51.589
2	18	2	46.867	44.474	-16	0	3	49.276	47.538
-14	0	3	48.003	44.472	-12	0	3	84.334	81.001
-10	0	3	171.096	167.497	-8	0	3	43.694	45.625

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-6	0	3	100.256	103.627	-4	0	3	28.496	24.165
-2	0	3	85.352	89.329	0	0	3	86.664	83.244
2	0	3	82.493	80.662	4	0	3	23.110	21.237
6	0	3	88.309	88.106	8	0	3	27.498	25.837
10	0	3	78.576	79.796	12	0	3	37.662	39.133
-17	1	3	27.184 *	25.343	-15	1	3	60.068	61.979
-13	1	3	85.372	83.282	-11	1	3	15.707 *	24.251
-9	1	3	57.678	62.794	-7	1	3	68.274	66.622
-5	1	3	24.423	24.461	-3	1	3	56.895	68.810
-1	1	3	5.445 *	2.447	1	1	3	96.790	96.751
3	1	3	13.514 *	.675	5	1	3	95.752	99.962
7	1	3	82.865	76.489	9	1	3	85.822	87.530
11	1	3	37.623	38.941	-16	2	3	9.283 *	8.391
-14	2	3	36.507	35.602	-12	2	3	42.578	40.839
-10	2	3	61.419	63.719	-8	2	3	33.549	31.583
-6	2	3	110.245	113.976	-4	2	3	94.067	93.580
-2	2	3	121.624	117.665	0	2	3	27.635	28.718
2	2	3	51.568	49.674	4	2	3	17.960 *	12.666
6	2	3	83.374	78.447	8	2	3	35.665	29.846
10	2	3	95.830	95.416	12	2	3	24.129 *	25.030
-17	3	3	57.522	55.876	-15	3	3	40.776	31.925
-13	3	3	63.828	61.959	-11	3	3	12.202 *	6.411
-9	3	3	5.190 *	8.694	-7	3	3	14.924 *	5.178
-5	3	3	26.636	20.696	-3	3	3	51.548	59.592
-1	3	3	84.490	84.125	1	3	3	11.908 *	4.438
3	3	3	81.004	75.467	5	3	3	79.770	77.945
7	3	3	95.458	96.730	9	3	3	99.218	99.283
11	3	3	32.981	37.984	-16	4	3	4.740 *	.078
-14	4	3	45.770	45.260	-12	4	3	72.974	68.168
-10	4	3	41.188	43.362	-8	4	3	100.119	105.224
-6	4	3	104.506	103.772	-4	4	3	65.630	66.086
-2	4	3	128.087	125.231	0	4	3	19.918	22.430
2	4	3	9.597 *	16.736	4	4	3	24.383	18.075
6	4	3	31.943	35.089	8	4	3	23.659 *	26.460
10	4	3	28.046	22.427	12	4	3	28.731	30.512
-17	5	3	20.760 *	17.615	-15	5	3	58.422	57.800
-13	5	3	97.867	93.524	-11	5	3	183.611	185.981
-9	5	3	44.850	41.985	-7	5	3	111.596	105.481
-5	5	3	18.234 *	14.221	-3	5	3	17.783 *	18.411
-1	5	3	160.128	159.754	1	5	3	9.636 *	.213
3	5	3	224.524	219.096	5	5	3	52.136	51.419
7	5	3	46.221	45.185	9	5	3	13.240 *	.537
11	5	3	15.825 *	14.783	-16	6	3	78.615	77.869
-14	6	3	98.631	93.055	-12	6	3	109.109	103.631
-10	6	3	45.731	44.786	-8	6	3	99.473	100.840
-6	6	3	13.788 *	17.135	-4	6	3	46.848	42.126
-2	6	3	26.714	19.295	0	6	3	94.009	92.815
2	6	3	221.214	223.177	4	6	3	97.926	93.541
6	6	3	102.920	104.303	8	6	3	21.113 *	15.338
10	6	3	53.369	44.570	-17	7	3	45.555	51.517
-15	7	3	19.605 *	22.962	-13	7	3	4.465 *	12.476
-11	7	3	70.350	65.091	-9	7	3	71.270	72.544
-7	7	3	87.761	82.361	-5	7	3	136.450	132.454
-3	7	3	123.230	129.121	-1	7	3	62.712	58.062
1	7	3	10.184 *	12.957	3	7	3	65.512	63.932

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
5	7	3	115.944	117.052	7	7	3	14.121 *	8.586
9	7	3	34.587	32.021	11	7	3	52.606	47.342
-16	8	3	4.720 *	6.580	-14	8	3	34.783	31.655
-12	8	3	76.010	75.615	-10	8	3	17.176 *	4.357
-8	8	3	47.357	37.139	-6	8	3	142.971	144.607
-4	8	3	17.705 *	16.492	-2	8	3	132.298	129.611
0	8	3	50.353	46.188	2	8	3	53.781	54.037
4	8	3	38.073	38.004	6	8	3	86.135	83.102
8	8	3	22.327 *	21.998	10	8	3	50.001	51.855
-15	9	3	45.908	46.597	-13	9	3	36.820	25.117
-11	9	3	93.206	94.424	-9	9	3	76.362	83.956
-7	9	3	76.480	69.520	-5	9	3	53.232	54.633
-3	9	3	45.516	50.901	-1	9	3	84.529	79.411
1	9	3	169.235	171.492	3	9	3	40.306	40.505
5	9	3	81.004	83.491	7	9	3	36.076	31.683
9	9	3	12.476 *	7.983	-16	10	3	54.740	59.457
-14	10	3	45.007	44.648	-12	10	3	31.160	26.314
-10	10	3	4.309 *	2.612	-8	10	3	43.812	41.895
-6	10	3	57.992	61.420	-4	10	3	14.983 *	3.250
-2	10	3	16.373 *	10.348	0	10	3	24.344	21.597
2	10	3	82.434	79.415	4	10	3	13.200 *	4.624
6	10	3	27.635	29.704	8	10	3	25.461 *	34.700
-15	11	3	25.813 *	20.943	-13	11	3	4.720 *	4.403
-11	11	3	20.858 *	19.031	-9	11	3	23.953 *	26.139
-7	11	3	24.560	28.188	-5	11	3	15.081 *	13.310
-3	11	3	58.070	48.357	-1	11	3	78.047	81.774
1	11	3	69.586	65.253	3	11	3	38.113	38.377
5	11	3	57.482	58.120	7	11	3	79.046	80.111
9	11	3	54.917	53.786	-14	12	3	4.818 *	6.901
-12	12	3	70.428	68.461	-10	12	3	70.761	72.838
-8	12	3	6.013 *	5.289	-6	12	3	55.406	54.593
-4	12	3	167.747	162.241	-2	12	3	4.211 *	.615
0	12	3	91.776	87.585	2	12	3	47.709	45.082
4	12	3	8.187 *	7.972	6	12	3	28.594	25.914
8	12	3	38.955	26.736	-13	13	3	64.533	64.848
-11	13	3	31.003	21.604	-9	13	3	38.622	32.527
-7	13	3	44.674	38.924	-5	13	3	48.708	46.327
-3	13	3	122.015	124.723	-1	13	3	21.720 *	9.390
1	13	3	26.949	36.080	3	13	3	4.367 *	2.017
5	13	3	4.603 *	18.531	7	13	3	22.033 *	25.012
-12	14	3	34.450	26.761	-10	14	3	45.888	46.066
-8	14	3	19.037 *	15.020	-6	14	3	19.546 *	.447
-4	14	3	49.766	53.308	-2	14	3	26.930	24.629
0	14	3	16.158 *	12.099	2	14	3	4.446 *	8.934
4	14	3	25.030 *	26.437	6	14	3	15.257 *	24.764
-11	15	3	76.323	78.367	-9	15	3	29.652	31.898
-7	15	3	13.631 *	12.326	-5	15	3	30.122	26.244
-3	15	3	51.979	48.137	-1	15	3	38.876	37.411
1	15	3	31.297	32.438	3	15	3	41.325	39.407
5	15	3	4.896 *	3.803	-10	16	3	44.302	45.006
-8	16	3	68.195	69.151	-6	16	3	20.819 *	10.839
-4	16	3	31.238	30.479	-2	16	3	77.596	77.743
0	16	3	39.327	36.559	2	16	3	106.504	109.644
-7	17	3	109.089	103.528	-5	17	3	16.745 *	20.447
-3	17	3	81.866	84.030	-1	17	3	7.599 *	14.802

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
1	17	3	4.896 *	7.510	-16	0	4	118.177	117.069
-14	0	4	218.472	224.545	-12	0	4	44.008	48.592
-10	0	4	86.821	79.594	-8	0	4	116.904	117.711
-6	0	4	100.805	105.270	-4	0	4	115.591	112.181
-2	0	4	59.833	58.514	0	0	4	133.571	130.491
2	0	4	30.357	24.460	4	0	4	151.413	145.469
6	0	4	68.528	65.958	8	0	4	4.524 *	9.724
10	0	4	98.885	95.889	-15	1	4	32.080	30.818
-13	1	4	33.784	34.590	-11	1	4	51.215	50.971
-9	1	4	66.041	68.751	-7	1	4	50.236	50.609
-5	1	4	143.461	145.579	-3	1	4	143.853	148.494
-1	1	4	10.615 *	8.308	1	1	4	52.018	53.138
3	1	4	11.320 *	8.488	5	1	4	77.146	72.870
7	1	4	17.548 *	3.291	9	1	4	12.339 *	.461
-16	2	4	79.457	75.303	-14	2	4	4.387 *	3.494
-12	2	4	57.384	54.721	-10	2	4	30.200	30.345
-8	2	4	158.620	164.268	-6	2	4	91.012	87.891
-4	2	4	12.339 *	16.472	-2	2	4	50.902	45.475
0	2	4	83.139	79.414	2	2	4	44.576	45.770
4	2	4	18.625 *	25.968	6	2	4	85.469	87.439
8	2	4	26.420	23.608	10	2	4	22.484 *	38.410
-15	3	4	29.339	31.569	-13	3	4	81.768	84.932
-11	3	4	125.717	120.761	-9	3	4	90.033	86.543
-7	3	4	59.715	59.990	-5	3	4	29.045	26.453
-3	3	4	145.792	139.532	-1	3	4	87.193	86.428
1	3	4	16.589 *	8.353	3	3	4	42.088	39.544
5	3	4	4.093 *	.244	7	3	4	28.457	32.435
9	3	4	51.489	56.556	-16	4	4	53.820	51.827
-14	4	4	53.840	46.926	-12	4	4	49.394	49.011
-10	4	4	73.777	75.349	-8	4	4	25.852	18.815
-6	4	4	33.902	37.087	-4	4	4	28.536	30.991
-2	4	4	19.017 *	11.900	0	4	4	76.069	73.097
2	4	4	37.643	35.504	4	4	4	12.828 *	2.163
6	4	4	128.498	128.395	8	4	4	8.657 *	3.714
10	4	4	18.488 *	12.702	-15	5	4	43.538	44.314
-13	5	4	65.453	60.686	-11	5	4	127.969	127.552
-9	5	4	8.010 *	11.433	-7	5	4	35.821	32.568
-5	5	4	18.057 *	11.460	-3	5	4	90.366	90.666
-1	5	4	45.183	47.527	1	5	4	26.988	24.210
3	5	4	69.547	70.010	5	5	4	4.113 *	.077
7	5	4	103.370	104.006	9	5	4	69.057	71.085
-16	6	4	15.374 *	8.521	-14	6	4	85.959	86.889
-12	6	4	20.466 *	34.000	-10	6	4	43.655	44.093
-8	6	4	46.769	45.603	-6	6	4	10.987 *	8.786
-4	6	4	23.228	17.464	-2	6	4	79.555	79.821
0	6	4	49.981	49.364	2	6	4	53.977	53.293
4	6	4	10.889 *	1.278	6	6	4	20.780 *	23.694
8	6	4	8.852 *	1.089	-15	7	4	39.699	40.721
-13	7	4	9.342 *	13.437	-11	7	4	16.667 *	13.317
-9	7	4	46.025	42.223	-7	7	4	19.742 *	10.172
-5	7	4	140.523	139.509	-3	7	4	47.122	48.840
-1	7	4	55.622	54.348	1	7	4	84.725	90.502
3	7	4	49.570	44.876	5	7	4	13.729 *	21.906
7	7	4	14.199 *	23.342	9	7	4	14.199 *	13.021
-16	8	4	93.969	90.042	-14	8	4	29.123	30.612

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-12	8	4	8.343 *	16.175	-10	8	4	17.666 *	13.521
-8	8	4	86.821	84.606	-6	8	4	55.426	57.883
-4	8	4	14.846 *	13.794	-2	8	4	28.065	30.583
0	8	4	21.739 *	18.490	2	8	4	36.232	28.489
4	8	4	49.511	44.648	6	8	4	4.387 *	2.193
8	8	4	4.896 *	5.754	-15	9	4	4.857 *	14.125
-13	9	4	45.731	42.054	-11	9	4	99.806	96.001
-9	9	4	29.241	22.272	-7	9	4	40.345	40.459
-5	9	4	18.155 *	13.418	-3	9	4	29.162	30.844
-1	9	4	40.541	33.999	1	9	4	45.065	37.255
3	9	4	21.622 *	27.214	5	9	4	4.426 *	7.863
7	9	4	48.219	45.362	-16	10	4	37.721	37.524
-14	10	4	64.670	72.793	-12	10	4	19.820 *	23.526
-10	10	4	154.722	152.886	-8	10	4	4.172 *	.654
-6	10	4	16.647 *	11.350	-4	10	4	48.395	47.428
-2	10	4	160.245	156.905	0	10	4	131.044	125.429
2	10	4	20.447 *	29.506	4	10	4	93.421	87.738
6	10	4	65.747	66.336	-15	11	4	60.381	56.946
-13	11	4	33.706	34.012	-11	11	4	99.982	95.662
-9	11	4	85.607	82.957	-7	11	4	19.507 *	19.764
-5	11	4	111.302	108.826	-3	11	4	41.912	39.068
-1	11	4	96.672	90.783	1	11	4	23.326 *	21.132
3	11	4	4.426 *	12.089	5	11	4	47.572	45.768
-14	12	4	72.524	74.047	-12	12	4	50.020	52.008
-10	12	4	39.523	40.131	-8	12	4	13.670 *	14.892
-6	12	4	60.087	59.692	-4	12	4	61.771	64.049
-2	12	4	51.822	46.399	0	12	4	64.318	54.660
2	12	4	65.042	69.909	4	12	4	15.668 *	14.025
6	12	4	70.879	70.747	-13	13	4	14.669 *	14.708
-11	13	4	58.618	57.206	-9	13	4	42.030	38.214
-7	13	4	105.956	102.014	-5	13	4	101.275	101.051
-3	13	4	39.190	41.307	-1	13	4	4.407 *	6.668
1	13	4	61.125	55.863	3	13	4	73.679	68.832
5	13	4	42.245	37.624	-12	14	4	16.040 *	20.355
-10	14	4	79.163	76.558	-8	14	4	34.294	27.502
-6	14	4	45.673	52.676	-4	14	4	16.119 *	9.676
-2	14	4	14.865 *	18.611	0	14	4	34.411	33.552
2	14	4	44.674	35.708	-9	15	4	29.887	31.545
-7	15	4	45.202	46.422	-5	15	4	34.568	33.419
-3	15	4	10.674 *	2.134	-1	15	4	17.764 *	13.921
1	15	4	39.934	36.953	-8	16	4	4.916 *	4.784
-6	16	4	12.534 *	8.987	-4	16	4	4.759 *	14.501
-2	16	4	46.182	45.544	0	16	4	4.994 *	3.958
-14	0	5	49.061	40.306	-12	0	5	4.407 *	1.713
-10	0	5	146.830	151.144	-8	0	5	55.054	56.432
-6	0	5	75.736	71.256	-4	0	5	45.477	44.948
-2	0	5	199.318	195.595	0	0	5	34.196	33.831
2	0	5	124.894	123.032	4	0	5	37.212	41.598
6	0	5	58.520	60.136	8	0	5	54.212	55.890
-13	1	5	74.678	76.443	-11	1	5	55.230	50.786
-9	1	5	70.585	69.408	-7	1	5	25.911	18.947
-5	1	5	33.275	29.190	-3	1	5	36.800	35.340
-1	1	5	3.897 *	12.746	1	1	5	43.851	33.218
3	1	5	42.637	35.442	5	1	5	4.289 *	1.806
7	1	5	4.485 *	1.627	-14	2	5	101.666	101.232

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-12	2	5	43.459	43.823	-10	2	5	72.857	72.587
-8	2	5	81.102	79.024	-6	2	5	41.285	44.403
-4	2	5	99.453	97.758	-2	2	5	90.307	93.328
0	2	5	35.821	32.493	2	2	5	92.128	91.569
4	2	5	22.934 *	4.063	6	2	5	11.144 *	13.781
-13	3	5	90.092	88.142	-11	3	5	65.982	69.431
-9	3	5	66.413	65.538	-7	3	5	54.251	49.409
-5	3	5	24.599	29.197	-3	3	5	54.094	52.998
-1	3	5	43.871	42.051	1	3	5	60.890	59.671
3	3	5	105.388	103.875	5	3	5	32.492	32.937
7	3	5	46.299	46.525	-14	4	5	15.805 *	20.500
-12	4	5	34.685	33.213	-10	4	5	23.267	22.813
-8	4	5	68.881	66.537	-6	4	5	68.430	70.814
-4	4	5	75.794	69.754	-2	4	5	47.083	50.050
0	4	5	106.171	106.465	2	4	5	15.551 *	11.574
4	4	5	25.617	22.961	6	4	5	15.061 *	19.274
-13	5	5	61.850	69.092	-11	5	5	55.308	59.325
-9	5	5	21.975 *	23.136	-7	5	5	212.303	209.561
-5	5	5	155.623	152.203	-3	5	5	169.274	159.734
-1	5	5	133.120	131.578	1	5	5	21.446 *	18.081
3	5	5	64.474	62.055	5	5	5	18.332 *	17.199
7	5	5	109.657	108.927	-14	6	5	28.536	35.105
-12	6	5	81.494	81.155	-10	6	5	75.266	73.525
-8	6	5	6.424 *	7.659	-6	6	5	88.583	88.562
-4	6	5	3.956 *	2.680	-2	6	5	54.721	51.242
0	6	5	67.765	65.348	2	6	5	42.402	39.004
4	6	5	8.265 *	14.111	6	6	5	71.897	75.711
-13	7	5	20.878 *	24.326	-11	7	5	59.578	56.944
-9	7	5	68.528	68.485	-7	7	5	17.548 *	3.458
-5	7	5	63.358	64.906	-3	7	5	93.049	86.807
-1	7	5	19.898 *	14.666	1	7	5	4.172 *	9.193
3	7	5	5.993 *	5.249	5	7	5	58.716	59.409
-14	8	5	11.790 *	13.681	-12	8	5	70.820	70.403
-10	8	5	115.180	115.895	-8	8	5	54.310	52.251
-6	8	5	66.805	65.883	-4	8	5	4.113 *	.401
-2	8	5	102.587	103.224	0	8	5	92.696	94.196
2	8	5	93.421	90.346	4	8	5	60.518	67.479
6	8	5	14.434 *	14.189	-13	9	5	4.387 *	4.538
-11	9	5	68.724	70.111	-9	9	5	32.668	35.183
-7	9	5	4.211 *	12.520	-5	9	5	102.430	97.946
-3	9	5	90.581	92.668	-1	9	5	4.191 *	5.589
1	9	5	26.714	29.390	3	9	5	9.597 *	11.452
5	9	5	54.329	59.507	-14	10	5	52.410	51.128
-12	10	5	23.541 *	26.367	-10	10	5	55.348	56.229
-8	10	5	59.813	56.432	-6	10	5	4.191 *	6.183
-4	10	5	9.910 *	14.897	-2	10	5	76.206	67.544
0	10	5	4.446 *	5.868	2	10	5	53.467	53.908
4	10	5	55.191	57.483	-13	11	5	4.583 *	18.123
-11	11	5	41.266	33.138	-9	11	5	43.969	46.258
-7	11	5	4.191 *	1.080	-5	11	5	43.087	49.420
-3	11	5	52.566	53.412	-1	11	5	12.750 *	14.310
1	11	5	15.413 *	10.167	3	11	5	15.257 *	1.343
-12	12	5	27.595	30.128	-10	12	5	39.209	39.631
-8	12	5	24.462 *	28.509	-6	12	5	19.801 *	17.510
-4	12	5	41.344	41.069	-2	12	5	21.113 *	1.368

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
0	12	5	104.565	103.918	2	12	5	4.544 *	11.676
-11	13	5	25.970	12.109	-9	13	5	18.057 *	8.983
-7	13	5	19.722 *	16.730	-5	13	5	24.148 *	18.182
-3	13	5	23.013 *	20.902	-1	13	5	38.896	33.771
1	13	5	4.642 *	9.787	-10	14	5	13.259 *	18.762
-8	14	5	49.531	48.932	-6	14	5	42.911	40.781
-4	14	5	4.681 *	13.157	-2	14	5	18.430 *	11.291
-5	15	5	28.751	24.847	-12	0	6	32.433	52.359
-10	0	6	149.062	151.348	-8	0	6	38.661	42.132
-6	0	6	122.897	122.320	-4	0	6	61.106	65.421
-2	0	6	50.647	52.728	0	0	6	35.214	39.917
2	0	6	5.131 *	15.612	4	0	6	77.028	83.412
-11	1	6	16.706 *	13.248	-9	1	6	81.729	87.184
-7	1	6	71.642	66.338	-5	1	6	121.741	126.673
-3	1	6	75.031	79.024	-1	1	6	13.181 *	14.536
1	1	6	22.190 *	14.880	3	1	6	39.601	42.388
-12	2	6	29.828	31.671	-10	2	6	23.913	20.032
-8	2	6	71.799	71.272	-6	2	6	53.604	54.885
-4	2	6	4.035 *	7.841	-2	2	6	79.633	78.160
0	2	6	61.869	58.510	2	2	6	14.669 *	14.837
4	2	6	45.535	48.009	-11	3	6	22.680 *	7.368
-9	3	6	23.091 *	14.469	-7	3	6	19.037 *	19.378
-5	3	6	32.198	32.227	-3	3	6	69.410	67.996
-1	3	6	61.595	59.142	1	3	6	23.287 *	12.734
3	3	6	62.300	62.578	-12	4	6	9.068 *	16.575
-10	4	6	96.868	98.674	-8	4	6	34.098	32.915
-6	4	6	71.427	63.284	-4	4	6	14.532 *	23.929
-2	4	6	4.211 *	6.233	0	4	6	44.674	39.365
2	4	6	20.936 *	10.992	4	4	6	18.684 *	14.208
-11	5	6	22.151 *	20.648	-9	5	6	23.757 *	29.938
-7	5	6	76.186	78.078	-5	5	6	12.985 *	5.400
-3	5	6	4.172 *	5.394	-1	5	6	85.489	81.148
1	5	6	14.121 *	19.117	3	5	6	61.439	63.427
-12	6	6	4.407 *	6.894	-10	6	6	29.789	24.797
-8	6	6	42.186	34.281	-6	6	6	5.131 *	1.018
-4	6	6	4.818 *	3.919	-2	6	6	48.101	48.037
0	6	6	94.694	96.661	2	6	6	37.799	44.084
-11	7	6	67.099	66.512	-9	7	6	33.491	32.042
-7	7	6	24.442	15.590	-5	7	6	4.505 *	20.092
-3	7	6	21.485 *	11.877	-1	7	6	69.880	67.109
1	7	6	29.593	28.148	3	7	6	39.542	34.530
-12	8	6	24.912	23.416	-10	8	6	12.143 *	2.103
-8	8	6	23.483 *	29.339	-6	8	6	17.587 *	12.382
-4	8	6	32.080	36.292	-2	8	6	8.755 *	12.824
0	8	6	52.684	51.052	2	8	6	16.393 *	7.605
-11	9	6	63.730	63.905	-9	9	6	56.053	59.853
-7	9	6	37.603	37.216	-5	9	6	48.101	51.725
-3	9	6	4.465 *	6.348	-1	9	6	23.463 *	24.653
1	9	6	44.928	47.019	-12	10	6	22.190 *	25.467
-10	10	6	93.499	94.141	-8	10	6	6.679 *	.973
-6	10	6	95.477	94.442	-4	10	6	17.254 *	10.402
-2	10	6	32.198	30.021	0	10	6	15.629 *	4.148
-11	11	6	4.583 *	.089	-9	11	6	74.541	77.882
-7	11	6	36.722	33.687	-5	11	6	64.611	68.576
-3	11	6	33.686	31.568	-1	11	6	24.736 *	27.353

Cs-Exchanged Clinoptilolite

h	k	l	f(obs)	f(calc)	h	k	l	f(obs)	f(calc)
-10	12	6	38.916	38.115	-8	12	6	38.230	41.491
-6	12	6	54.035	54.340	-4	12	6	27.987	35.872
-8	0	7	41.677	37.373	-6	0	7	7.168 *	20.271
-4	0	7	12.006 *	1.458	-2	0	7	20.192 *	10.155
0	0	7	27.889	29.389	-9	1	7	39.072	43.782
-7	1	7	25.030	26.316	-5	1	7	59.323	57.905
-3	1	7	4.446 *	12.683	-1	1	7	20.036 *	5.391
-8	2	7	7.051 *	12.226	-6	2	7	25.989	18.084
-4	2	7	36.624	39.752	-2	2	7	4.465 *	8.796
0	2	7	69.821	72.475	-9	3	7	68.215	71.634
-7	3	7	30.396	35.667	-5	3	7	108.619	110.733
-3	3	7	16.001 *	.027	-1	3	7	20.134 *	20.051
-8	4	7	40.620	42.121	-6	4	7	35.684	32.234
-4	4	7	9.499 *	13.751	-2	4	7	12.730 *	15.729
0	4	7	55.504	52.293	-9	5	7	55.348	51.445
-7	5	7	52.743	51.260	-5	5	7	44.713	46.540
-3	5	7	51.235	52.414	-1	5	7	34.176	29.365
-8	6	7	74.208	73.516	-6	6	7	33.569	35.380
-4	6	7	42.480	41.998	-2	6	7	63.632	57.573
-9	7	7	57.482	56.037	-7	7	7	16.471 *	5.786
-5	7	7	89.504	86.409	-3	7	7	42.500	43.767
-8	8	7	4.544 *	14.137	-6	8	7	69.743	67.117
-4	8	7	54.721	54.472	-9	9	7	17.137 *	12.164
-7	9	7	58.638	61.873					