The Spectra of Chlorine, Cl III, Cl IV and Cl V

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(Received January 25, 1934)

About 200 additional lines have been classified in Cl III. 21 of these are intercombination lines. This analysis fixes most of the doublet and quartet terms arising from the addition of a 4*s*, 5*s*, 4*p*, 3*d* or 4*d* electron to either the ^3P or ^1D state of the core. Approximately 50 new lines have been classified in Cl IV and 20 in Cl V.

THE spectrum of chlorine in the range from 200A to 600A was photographed with a grazing incidence spectrograph of two meters focus, and from 400A to 3000A with a normal incidence vacuum spectrograph of one meter focus. In both instruments the source was a vacuum spark between electrodes into which NaCl or LiCl had been fused. From 2400A to 5100A the spectrum of a condensed discharge in CCl_4 vapor was recorded with a 6.5 meter focus Rowland spectrograph. This was supplemented in the range from 2100A to 3000A with plates taken on a quartz spectrograph.

The structure of the Cl III spectrum was first investigated by the present writer[1] who classified over 80 lines, largely in the quartet system. Later Gilles[2] identified a group of lines that corresponded to transitions to the $s^2p^23d\ ^4P$ terms from the already classified quartet terms of the s^2p^24p configuration. Majumbar and Deb[3] and Murakawa[4] independently classified this same group of lines as well as another group connecting the $s^2p^24d\ ^4F$ terms with the s^2p^24p configuration. These later analyses accounted for about 30 more lines.

About 200 additional lines have been classified in the course of the present investigation. All of the lines of Cl III that have been identified by various investigators are given in Table I with the exception of the quartet lines, listed in the author's earlier paper which are omitted to save space. In a few cases in which the line was recorded on the quartz spectrograph only, the more accurate values of the wave-length determined by Jevons[5] have been substituted.

Table II lists the values of all of the terms of Cl III that have thus far been fixed. Since a large number of intercombination lines were found the relative positions of the doublet and quartet terms are accurately fixed.

Because of perturbations by the sp^4 and s^2p^24s configurations, the terms arising from the addition of a 3*d* electron to the ^3P state of the core are quite abnormal. Consequently the exact classifications of the doublet levels of this configuration are somewhat uncertain although the large number of transitions involving them leaves little doubt as to the presence of terms at the energy levels listed. One or two other terms such as the $s^2p^2(^1D)4d\ ^2D$ terms were also identified on somewhat meager evidence.

The writer's first paper also contained the classification of about 20 lines each in Cl IV and Cl V. It has now been possible to classify about 50 additional lines in Cl IV and 20 in Cl V. These are given in Tables III and V, respectively. Lines correctly identified in the earlier paper have been omitted except in a very few cases in which more accurate measurements of wave-length are now available. Tables IV and VI give all term values in Cl IV and Cl V, respectively, that have thus far been located. In Table VI the quartet and doublet term values were fixed independently as no intercombination lines were identified.

[1] I. S. Bowen, Phys. Rev. **31**, 34 (1928).
[2] M. J. Gilles, Comptes Rendus **188**, 1158 (1929).
[3] K. Majumbar and S. C. Deb, Ind. J. Sci. **3**, 445 (1929).
[4] K. Murakawa, Sci. Pap. Tokyo Inst. Phys. and Chem. **15**, 105 (1931).
[5] W. Jevons, Proc. Roy. Soc. **A103**, 193 (1923).

TABLE I. *Classified lines of Cl III.*

Int.	λ Vac.	ν	Classification	
1	406.274	246139	$s^2p^3\ ^4S$	$-s^2p^2(^3P)5s\ ^4P_{2\frac{1}{2}}$
0	407.513	245391	$s^2p^3\ ^4S$	$-s^2p^2(^3P)5s\ ^4P_{1\frac{1}{2}}$
3	411.163	243213	$s^2p^3\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$
4	411.373	243088	$s^2p^3\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
4	411.812	242829	$s^2p^3\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$
1	415.196	240850	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{1\frac{1}{2}}$
1	415.333	240771	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
3	421.771	237095	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{2\frac{1}{2}}$
3	421.990	236972	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{3\frac{1}{2}}$
1	422.713	236567	$s^2p^3\ ^2D_{1\frac{1}{2},\ 2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{1\frac{1}{2},\ 2\frac{1}{2}}$
0	433.664	230593	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
0	433.774	230535	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
3	441.398	226553	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
2	442.947	225761	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2F_{2\frac{1}{2}}$
3	457.169	218737	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
2	457.245	218701	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
0	457.444	218606	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
2B	552.908	180862	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}$
6	556.232	179781	$s^2p^3\ ^4S$	$-s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}$
7	556.605	179661	$s^2p^3\ ^4S$	$-s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}$
7	557.118	179495	$s^2p^3\ ^4S$	$-s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}$
1	558.385	179088	$s^2p^3\ ^4S$	$-s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$
1	560.636	178369	$s^2p^3\ ^4S$	$-s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$
7	561.530	178085	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2F_{2\frac{1}{2}}$
7	561.680	178037	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2F_{3\frac{1}{2}}$
7	561.738	178019	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2F_{2\frac{1}{2}}$
4	564.287	177215	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}$
2	564.514	177144	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}$
3	565.272	176906	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}$
4	565.480	176841	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}$
4	586.874	170394	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$
3	587.078	170335	$s^2p^3\ ^2D_{1\frac{1}{2},\ 2\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2},\ 1\frac{1}{2}}$
4	587.295	170272	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$
3	591.118	169171	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}$
4	591.428	169082	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}$
4	591.646	169020	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2P_{\frac{1}{2}}$
2	591.962	168930	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2P_{\frac{1}{2}}$
4	594.636	168170	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{\frac{1}{2}}$
3	595.990	167788	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}$
4	596.240	167718	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}$
1	605.855	165056	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}$
2	606.100	164989	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}$
5	606.345	164923	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}$
4	609.673	164022	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}$
0	609.901	163961	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}$
1	619.025	161544	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}$
3	621.027	161024	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$
4	621.280	160958	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$
3	623.768	160316	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$
1	630.380	158634	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$
1	630.746	158542	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$
1	631.006	158477	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$
1	639.757	156309	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{\frac{1}{2}}$
1	640.928	156024	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}$
1	641.304	155932	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}$
2	653.013	153136	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}$
2	656.772	152260	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}$
2	657.320	152133	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}$
2	669.949	149265	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$
3	670.383	149169	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$
3	673.127	148560	$s^2p^3\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$
1	673.598	148457	$s^2p^3\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$
1	746.864	133893	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$
1	747.415	133795	$s^2p^3\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$
1	747.553	133770	$s^2p^3\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$
0	1683.18	59411.4	$s^2p^2(^3P)3d\ ^4F_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4S$
1	1689.50	59189.1	$s^2p^2(^3P)3d\ ^4F_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4S$
2	1797.98	55618.0	$s^2p^2(^3P)3d\ ^4F_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
4	1808.51	55294.1	$s^2p^2(^3P)3d\ ^4F_{3\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
1	1810.26	55240.7	$s^2p^2(^3P)3d\ ^4F_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
4	1817.73	55013.7	$s^2p^2(^3P)3d\ ^4F_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
6	1822.50	54869.7	$s^2p^2(^3P)3d\ ^4F_{4\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
3	1824.59	54806.8	$s^2p^2(^3P)3d\ ^4F_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
5	1828.40	54692.6	$s^2p^2(^3P)3d\ ^4F_{3\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
4	1832.08	54582.8	$s^2p^2(^3P)3d\ ^4F_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
4	1833.31	54546.1	$s^2p^2(^3P)3d\ ^4F_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$
0	1848.74	54090.9	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4S$
0	1849.64	54064.6	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4S$
2	1852.11	53992.5	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4S$
3	1880.10	53188.7	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
0	1889.06	52936.4	$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
3	1897.85	52691.2	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$
5	1901.61	52587.0	$s^2p^2(^3P)3d\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$
4	1912.90	52276.6	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
3	1914.09	52244.1	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
4	1916.53	52177.6	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
4	1917.87	52141.2	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$
4	1920.32	52074.7	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$
3	1979.46	50518.8	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
5	1983.61	50413.1	$s^2p^2(^3P)3d\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
3	2003.37	49915.9	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
0	2004.62	49884.8	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
4	2007.49	49813.4	$s^2p^2(^3P)3d\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
1	2011.99	49702.0	$s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
3	2020.84	49484.4	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
3	2022.11	49453.3	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
3	2024.87	49385.9	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
3	2032.80	49193.2	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$
3	2035.54	49127.0	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$
	λ Air			
2	2266.08	44115.4	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
1	2272.8	43986.0	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
3	2286.0	43731.0	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
4B	2291.83	43619.8	$s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
5B	2298.51	43493.0	$s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
			$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
6	2323.50	43025.3	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
5	2336.45	42786.8	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
6	2340.64	42710.3	$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
2	2347.7	42581.4	$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
6	2359.67	42367.6	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{1\frac{1}{2}}$
6	2370.37	42174.6	$s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
0	2372.7	42133.7	$s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$
3	2387.3	41875.3	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$
5	2394.73	41745.6	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
5	2419.5	41317.7	$s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
2	2435.1	41054.0	$s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$
5	2436.1	41036.9	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
5	2439.69	40976.4	$s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{1\frac{1}{2}}$
5	2469.20	40486.7	$s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4D_{\frac{1}{2}}$
5	2471.07	40456.1	$s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$
3	2485.1	40227.1	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4D_{\frac{1}{2}}$
5	2490.3	40143.8	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
5	2528.08	39543.9	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$
5	2531.76	39486.4	$s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
5	2532.48	39475.2	$s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
3	2540.84	39345.2	$s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
3	2557.9	39082.5	$s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$
3	2559.50	39058.4	$s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
1	2566.23	38956.0	$s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
0	2574.13	38836.4	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$
5	2577.13	38791.3	$s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2F_{2\frac{1}{2}}$
5	2578.26	38774.3	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$
6	2580.67	38738.1	$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
3	2588.80	38616.4	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{2\frac{1}{2}}$
2	2592.45	38562.0	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{3\frac{1}{2}}$
2	2593.97	38539.5	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
4	2601.16	38432.9	$s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{1\frac{1}{2}}$
5	2603.59	38397.0	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{2\frac{1}{2}}$
2	2605.04	38375.7	$s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{3\frac{1}{2}}$
4	2609.50	38310.1	$s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{3\frac{1}{2}}$
2	2611.45	38281.5	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$
4	2616.97	38200.8	$s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{4\frac{1}{2}}$
4	2618.78	38174.4	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{1\frac{1}{2}}$
4	2620.05	38155.8	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{2\frac{1}{2}}$
3	2624.71	38088.2	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{1\frac{1}{2}}$
5	2632.67	37973.0	$s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{2\frac{1}{2}}$
5	2633.18	37965.6	$s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{2\frac{1}{2}}$
3	2651.19	37707.7	$s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{3\frac{1}{2}}$
3	2663.20	37537.6	$s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4D_{\frac{1}{2}}$
2	2675.4	37366.2	$s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4F_{2\frac{1}{2}}$
2	2680.88	37290.1	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{2\frac{1}{2}}$
3	2682.40	37269.0	$s^2p^2(^3P)4p\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$
5	2684.76	37236.2	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{3\frac{1}{2}}$
4	2685.40	37227.3	$s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2F_{2\frac{1}{2}}$
5B	2691.52	37142.8	$s^2p^2(^3P)4p\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
1B	2699.8	37029.0	$s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{1\frac{1}{2}}$
7	2710.37	36884.5	$s^2p^2(^3P)4p\ ^4S$	$-s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$
2	2714.37	36830.1	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{2\frac{1}{2}}$
2	2717.62	36786.0	$s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$
5B	2724.03	36699.5	$s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4d\ ^2D_{1\frac{1}{2}}$
2	2727.7	36650.7	$s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4D_{2\frac{1}{2}}$
3	2769.3	36100.0	$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4D_{3\frac{1}{2}}$
1	2949.1	33898.4	$s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$
6	2965.56	33710.6	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
4	2970.67	33652.6	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
5	2991.82	33414.8	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
1	3123.74	32003.7	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
4	3190.58	31333.3	$s^2p^2(^3P)4s\ ^4P_{2\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$
0	3193.84	31301.3	$s^2p^2(^3P)4s\ ^4P_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
1	3230.78	30943.4	$s^2p^2(^3P)4s\ ^4P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
5	3244.44	30813.1	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
2	3245.05	30807.3	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
6	3259.32	30672.5	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
0	3265.45	30614.8	$s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$
7	3320.57	30106.7	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
5	3336.16	29966.0	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	$-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
5	3386.22	29523.0	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$
8	3392.89	29465.0	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)\ 4p\,^2D_{1\frac{1}{2}}$
8	3393.45	29460.1	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$
2	3400.15	29402.1	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$	$-s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$

TABLE I. (*Continued.*)

Int.	λ Vac.	ν	Classification
9	3530.03	28320.3	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$
1	3553.35	28134.5	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$
8	3560.68	28076.6	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$
2	3573.69	27974.4	$s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
1	3661.48	27303.6	$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
5	3683.39	27141.2	$s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
2	3688.10	27106.5	$s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
6	3707.34	26965.9	$s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
8	3720.45	26870.8	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$
1	3725.46	26834.7	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}-s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$
3	3725.74	26832.7	$s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
8	3748.81	26667.6	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
3	3759.10	26594.6	$s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
2	3764.42	26557.0	$s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$
5	3779.35	26452.1	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$
3	3803.57	26283.7	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$
3	3804.83	26275.0	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4S$
4	3822.02	26156.8	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4S$
4	3824.47	26140.1	$s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
4	3850.81	25961.2	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
3	3881.73	25754.5	$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
5	3925.87	25464.9	$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$
0	3958.39	25255.7	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
7	3991.50	25046.2	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$
6	4018.50	24877.9	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$
6	4059.07	24629.3	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
4	4087.00	24461.0	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
5	4104.23	24358.3	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$
5	4106.83	24342.8	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$
1	4124.00	24241.5	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$
4	4282.46	23344.5	$s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
0	4297.04	23265.3	$s^2p^2(^1D)3d\ ^2P_{\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
1	4308.42	23203.9	$s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
2	4324.66	23116.7	$s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$
2	4341.47	23027.2	$s^2p^2(^1D)3d\ ^2P_{\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
2	4353.73	22962.4	$s^2p^2(^3P)3d\ ^2P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
2	4354.03	22960.8	$s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$
3	4364.79	22904.2	$s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$
2	4369.60	22879.0	$s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$
4	4370.91	22872.1	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$
2	4380.57	22821.7	$s^2p^2(^3P)3d\ ^2P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
2B	4414.90	22644.2	$s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$
1	4489.17	22269.6	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
4	4523.33	22101.4	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$
4	4591.10	21775.2	$s^2p^2(^1D)3d\ ^2F_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$
4	4596.22	21750.9	$s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$
0	4604.43	21712.2	$s^2p^2(^1D)3d\ ^2F_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$
5	4608.21	21694.4	$s^2p^2(^1D)3d\ ^2F_{3\frac{1}{2}}-s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$
2	4613.78	21668.2	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
0	4635.83	21565.1	$s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$
2	4638.96	21550.5	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$
0	4669.50	21409.6	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$
1	4695.07	21293.0	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}-s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$
3	4703.14	21256.5	$s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$
1	4808.00	20792.9	$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$
0	4854.37	20594.3	$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$
1	4863.75	20554.6	$s^2p^2(^1D)3d\ ^2F_{3\frac{1}{2}}-s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$
0	4971.64	20108.5	$s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}-s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$

B, blend

TABLE II. *Term values of Cl III.*

$\Sigma l=2$		3		4			
		$s^2p^3\ ^4S$	321936.	$sp^4\ ^4P_{2\frac{1}{2}}$	223416.	$s^2p^2(^3P)4d\ ^4F_{1\frac{1}{2}}$	82429.7
		$s^2p^3\ ^2D_{1\frac{1}{2}}$	303883.	$sp^4\ ^4P_{1\frac{1}{2}}$	222806.	$s^2p^2(^3P)4d\ ^4F_{2\frac{1}{2}}$	82206.1
		$s^2p^3\ ^2D_{2\frac{1}{2}}$	303816.	$sp^4\ ^4P_{\frac{1}{2}}$	222461.	$s^2p^2(^3P)4d\ ^4F_{3\frac{1}{2}}$	81860.8
		$s^2p^3\ ^2P_{\frac{1}{2}}$	292124.	$s^2p^2(^3P)3d\ ^4F_{1\frac{1}{2}}$	175410.4	$s^2p^2(^3P)4d\ ^4F_{4\frac{1}{2}}$	81367.6
		$s^2p^3\ ^2P_{1\frac{1}{2}}$	292029.	$s^2p^2(^3P)3d\ ^4F_{2\frac{1}{2}}$	175186.1	$s^2p^2(^3P)4d\ ^4D_{\frac{1}{2}}$	80376.6
				$s^2p^2(^3P)3d\ ^4F_{3\frac{1}{2}}$	174863.0	$s^2p^2(^3P)4d\ ^4D_{1\frac{1}{2}}$	80363.6
$s^2p^2(^3P)4s\ ^4P_{\frac{1}{2}}$	148200.0	$s^2p^2(^3P)4p\ ^4D_{\frac{1}{2}}$	120862.6	$s^2p^2(^3P)3d\ ^4F_{4\frac{1}{2}}$	174438.1	$s^2p^2(^3P)4d\ ^4D_{2\frac{1}{2}}$	80250.9
$s^2p^2(^3P)4s\ ^4P_{1\frac{1}{2}}$	147842.2	$s^2p^2(^3P)4p\ ^4D_{1\frac{1}{2}}$	120604.0	$s^2p^2(^3P)3d\ ^4D_{2\frac{1}{2}}$	170087.4	$s^2p^2(^3P)4d\ ^4D_{3\frac{1}{2}}$	79889.8
$s^2p^2(^3P)4s\ ^4P_{2\frac{1}{2}}$	147322.1	$s^2p^2(^3P)4p\ ^4D_{2\frac{1}{2}}$	120170.9	$s^2p^2(^3P)3d\ ^4D_{1\frac{1}{2}}$	170056.1	$s^2p^2(^3P)4d\ ^4P_{2\frac{1}{2}}$	79113.2
$s^2p^2(^3P)4s\ ^2P_{\frac{1}{2}}$	143566.3	$s^2p^2(^3P)4p\ ^4D_{3\frac{1}{2}}$	119568.4	$s^2p^2(^3P)3d\ ^4D_{\frac{1}{2}}$	169989.6	$s^2p^2(^3P)4d\ ^4P_{1\frac{1}{2}}$	78855.3
$s^2p^2(^3P)4s\ ^2P_{1\frac{1}{2}}$	142859.9	$s^2p^2(^3P)4p\ ^4P_{\frac{1}{2}}$	117914.4	$s^2p^2(^3P)3d\ ^4D_{3\frac{1}{2}}$	169982.5	$s^2p^2(^3P)4d\ ^4P_{\frac{1}{2}}$	78728.8
$s^2p^2(^1D)4s\ ^2D_{2\frac{1}{2}}$	133545.9	$s^2p^2(^3P)4p\ ^4P_{1\frac{1}{2}}$	117812.0	$s^2p^2(^3P)3d\ ^4P_{2\frac{1}{2}}$	142440.8	$s^2p^2(^3P)4d\ ^2F_{2\frac{1}{2}}$	78107.6
$s^2p^2(^1D)4s\ ^2D_{1\frac{1}{2}}$	133487.9	$s^2p^2(^3P)4p\ ^4P_{2\frac{1}{2}}$	117394.8	$s^2p^2(^3P)3d\ ^4P_{1\frac{1}{2}}$	142272.5	$s^2p^2(^3P)4d\ ^2F_{3\frac{1}{2}}$	77251.1
		$s^2p^2(^3P)4p\ ^2D_{1\frac{1}{2}}$	116898.7	$s^2p^2(^3P)3d\ ^4P_{\frac{1}{2}}$	142155.0	$s^2p^2(^3P)4d\ ^2D_{1\frac{1}{2}}$	73407.8
		$s^2p^2(^3P)4p\ ^4S$	115997.5	$s^2p^2(^3P)3d\ ^2D_{1\frac{1}{2}}$	139859.7	$s^2p^2(^3P)4d\ ^2D_{2\frac{1}{2}}$	73278.3
		$s^2p^2(^3P)4p\ ^2D_{2\frac{1}{2}}$	115989.1	$s^2p^2(^3P)3d\ ^2D_{2\frac{1}{2}}$	138893.3	$s^2p^2(^1D)4d\ ^2D_{1\frac{1}{2}}$	67323.3?
		$s^2p^2(^3P)4p\ ^2P_{\frac{1}{2}}$	112893.9	$s^2p^2(^3P)3d\ ^2P_{1\frac{1}{2}}$	136097.7	$s^2p^2(^1D)4d\ ^2D_{2\frac{1}{2}}$	67252.6?
		$s^2p^2(^3P)4p\ ^2P_{1\frac{1}{2}}$	112753.2	$s^2p^2(^3P)3d\ ^2P_{\frac{1}{2}}$	135715.6	$s^2p^2(^1D)4d\ ^2F_{3\frac{1}{2}}$	66849.7
		$s^2p^2(^1D)4p\ ^2F_{2\frac{1}{2}}$	105411.4	$s^2p^2(^1D)3d\ ^2D_{2\frac{1}{2}}$	126976.5	$s^2p^2(^1D)4d\ ^2F_{2\frac{1}{2}}$	66795.6
$s^2p^2(^3P)5s\ ^4P_{\frac{1}{2}}$	76984.5	$s^2p^2(^1D)4p\ ^2F_{3\frac{1}{2}}$	105225.6	$s^2p^2(^1D)3d\ ^2D_{1\frac{1}{2}}$	126667.8		
$s^2p^2(^3P)5s\ ^4P_{1\frac{1}{2}}$	76543.6	$s^2p^2(^1D)4p\ ^2D_{2\frac{1}{2}}$	104085.8	$s^2p^2(^1D)3d\ ^2F_{2\frac{1}{2}}$	125798.1		
$s^2p^2(^3P)5s\ ^4P_{2\frac{1}{2}}$	75798.8	$s^2p^2(^1D)4p\ ^2D_{1\frac{1}{2}}$	104022.9	$s^2p^2(^1D)3d\ ^2F_{3\frac{1}{2}}$	125780.2		
$s^2p^2(^1D)5s\ ^2D_{2\frac{1}{2}}$	63050.2	$s^2p^2(^1D)4p\ ^2P_{\frac{1}{2}}$	100073.1	$s^2p^2(^1D)3d\ ^2P_{\frac{1}{2}}$	123100.5		
$s^2p^2(^1D)5s\ ^2D_{1\frac{1}{2}}$	63045.2	$s^2p^2(^1D)4p\ ^2P_{1\frac{1}{2}}$	99835.3	$s^2p^2(^1D)3d\ ^2P_{1\frac{1}{2}}$	122952.1		

TABLE III. *Classified lines of Cl IV.*

Int.	λ Vac.	ν	Classification
1	318.750	313725.	$s^2p^2\ ^3P_1-s^2p5s\ ^3P_2$
1	319.513	312976.	$s^2p^2\ ^3P_0-s^2p5s\ ^3P_1$
3	319.616	312875.	$s^2p^2\ ^3P_2-s^2p5s\ ^3P_2$
0	319.993	312507.	$s^2p^2\ ^3P_1-s^2p5s\ ^3P_1$
1	320.250	312256.	$s^2p^2\ ^3P_1-s^2p5s\ ^3P_0$
1	320.881	311642.	$s^2p^2\ ^3P_2-s^2p5s\ ^3P_1$
4	437.825	228402.	$sp^3\ ^5S\ -sp^24s\ ^5P_3$
3	439.255	227658.	$sp^3\ ^5S\ -sp^24s\ ^5P_2$
2	440.245	227146.	$sp^3\ ^5S\ -sp^24s\ ^5P_1$
8	534.727	187011.	$s^2p^2\ ^3P_0-s^2p3d\ ^3D_1$
7	535.666	186683.	$s^2p^2\ ^3P_1-s^2p3d\ ^3D_2$
6	536.150	186515.	$s^2p^2\ ^3P_1-s^2p3d\ ^3D_1$
9	537.606	186010.	$s^2p^2\ ^3P_2-s^2p3d\ ^3D_3$
6	538.119	185833.	$s^2p^2\ ^3P_2-s^2p3d\ ^3D_2$
4	538.595	185668.	$s^2p^2\ ^3P_2-s^2p3d\ ^3D_1$
5	549.219	182077.	$s^2p^2\ ^3P_0-s^2p3d\ ^3P_1$
4	550.020	181812.	$s^2p^2\ ^3P_1-s^2p3d\ ^3P_0$
3	550.706	181585.	$s^2p^2\ ^3P_1-s^2p3d\ ^3P_1$
7	552.017	181154.	$s^2p^2\ ^3P_1-s^2p3d\ ^3P_2$
6	553.297	180735.	$s^2p^2\ ^3P_2-s^2p3d\ ^3P_1$
7	554.619	180304.	$s^2p^2\ ^3P_2-s^2p3d\ ^3P_2$
2	668.770	149528.	$sp^3\ ^3D_3-s^2p4p\ ^3P_2$
0	672.428	148715.	$sp^3\ ^3D_1-s^2p4p\ ^3P_0$
0	684.490	146094.	$sp^3\ ^3D_3-s^2p4p\ ^3D_3$
0	776.91	128715.	$sp^3\ ^3P_2-s^2p4p\ ^3D_3$
1	1413.39	70751.9	$s^2p3d\ ^3P_2-s^2p4p\ ^3P_2$
1	1421.97	70325.0	$s^2p3d\ ^3P_1-s^2p4p\ ^3P_2$
1	1426.89	70082.5	$s^2p3d\ ^3P_2-s^2p4p\ ^3P_1$
0	1440.95	69398.7	$s^2p3d\ ^3P_1-s^2p4p\ ^3P_0$
0	1529.28	65390.2	$s^2p3d\ ^3D_1-s^2p4p\ ^3P_2$
1	1532.19	65266.1	$s^2p4p\ ^3D_3-s^2p5s\ ^3P_2$
1	1533.25	65220.9	$s^2p3d\ ^3D_2-s^2p4p\ ^3P_2$
3	1537.21	65052.9	$s^2p3d\ ^3D_3-s^2p4p\ ^3P_2$
2	1539.30	64964.6	$s^2p4p\ ^3D_2-s^2p5s\ ^3P_1$
2	1545.19	64717.0	$s^2p3d\ ^3D_1-s^2p4p\ ^3P_1$
2	1549.15	64551.5	$s^2p3d\ ^3D_2-s^2p4p\ ^3P_1$
1	1551.27	64463.3	$s^2p3d\ ^3D_1-s^2p4p\ ^3P_0$
1	1617.43	61826.5	$s^2p4p\ ^3P_2-s^2p5s\ ^3P_2$
2	1622.86	61619.6	$s^2p3d\ ^3D_3-s^2p4p\ ^3D_3$
0	1638.95	61014.7	$s^2p3d\ ^3D_1-s^2p4p\ ^3D_2$
1	1643.40	60849.5	$s^2p3d\ ^3D_2-s^2p4p\ ^3D_2$
0	1648.04	60678.1	$s^2p3d\ ^3D_3-s^2p4p\ ^3D_2$
1	1651.21	60561.6	$s^2p3d\ ^3D_1-s^2p4p\ ^3D_1$
	λ Air		
4	2701.36	37007.4	$s^2p4s\ ^3P_1-s^2p4p\ ^3P_2$
5B	2724.03	36699.5	$s^2p4s\ ^3P_0-s^2p4p\ ^3P_1$
5	2751.23	36336.7	$s^2p4s\ ^3P_1-s^2p4p\ ^3P_1$
4	2770.64	36082.1	$s^2p4s\ ^3P_1-s^2p4p\ ^3P_0$
7	2782.47	35928.7	$s^2p4s\ ^3P_2-s^2p4p\ ^3P_2$
4	2835.4	35258.0	$s^2p4s\ ^3P_2-s^2p4p\ ^3P_1$
5	3063.13	32636.9	$s^2p4s\ ^3P_1-s^2p4p\ ^3D_2$
3	3071.36	32549.4	$s^2p4s\ ^3P_0-s^2p4p\ ^3D_1$
6	3076.68	32493.1	$s^2p4s\ ^3P_2-s^2p4p\ ^3D_3$
1	3106.09	32185.5	$s^2p4s\ ^3P_1-s^2p4p\ ^3D_1$
2	3167.87	31557.9	$s^2p4s\ ^3P_2-s^2p4p\ ^3D_2$

TABLE IV. *Term values of Cl IV.*

$\Sigma l=1$		2		3	
		$s^2p^2\ ^3P_0$	431226.	$sp^3\ ^3D_1$	328474.
		$s^2p^2\ ^3P_1$	430735.	$sp^3\ ^3D_2$	328439.
		$s^2p^2\ ^3P_2$	429885.	$sp^3\ ^3D_3$	328357.
				$sp^3\ ^3P_2$	310970.
				$sp^3\ ^3P_1$	310952.
				$sp^3\ ^3P_0$	310926.
$s^2p4s\ ^3P_0$	216200.0	$s^2p4p\ ^3D_1$	183650.9?	$sp^3\ ^3S$	266505.
$s^2p4s\ ^3P_1$	215836.7	$s^2p4p\ ^3D_2$	183199.9	$s^2p3d\ ^3P_2$	249583.
$s^2p4s\ ^3P_2$	214757.9	$s^2p4p\ ^3D_3$	182264.8	$s^2p3d\ ^3P_1$	249153.
		$s^2p4p\ ^3P_0$	179754.6	$s^2p3d\ ^3P_0$	248926.
$s^2p5s\ ^3P_0$	118479.	$s^2p4p\ ^3P_1$	179500.2	$s^2p3d\ ^3D_1$	244218.
$s^2p5s\ ^3P_1$	118235.	$s^2p4p\ ^3P_2$	178829.3	$s^2p3d\ ^3D_2$	244052.
$s^2p5s\ ^3P_2$	117001.			$s^2p3d\ ^3D_3$	243880.

TABLE V. *Classified lines of Cl V.*

Int.	λ Vac.	ν	Classification
2	286.127	349495.	$s^23p\ ^2P_{\frac{1}{2}} - s^24d\ ^2D$
3	287.327	348036.	$s^23p\ ^2P_{1\frac{1}{2}} - s^24d\ ^2D$
2	372.589	268392.	$sp^2\ ^4P_{1\frac{1}{2}} - sp4s\ ^4P_{2\frac{1}{2}}$
2	373.165	267978.	$sp^2\ ^4P_{\frac{1}{2}} - sp4s\ ^4P_{1\frac{1}{2}}$
3	373.776	267540.	$sp^2\ ^4P_{2\frac{1}{2}} - sp4s\ ^4P_{2\frac{1}{2}}$
0	373.911	267443.	$sp^2\ ^4P_{\frac{1}{2},\ 1\frac{1}{2}} - sp4s\ ^4P_{\frac{1}{2},\ 1\frac{1}{2}}$
1	374.662	266907.	$sp^2\ ^4P_{1\frac{1}{2}} - sp4s\ ^4P_{\frac{1}{2}}$
2	375.103	266593.	$sp^2\ ^4P_{2\frac{1}{2}} - sp4s\ ^4P_{1\frac{1}{2}}$
4	390.148	256313.	$s^23p\ ^2P_{\frac{1}{2}} - s^24s\ ^2S$
5	392.433	254821.	$s^23p\ ^2P_{1\frac{1}{2}} - s^24s\ ^2S$
2	535.455	186757.	$sp^2\ ^4P_{\frac{1}{2}} - sp3d\ ^4D_{1\frac{1}{2}}$
2	.535.916	186596.	$sp^2\ ^4P_{\frac{1}{2}} - sp3d\ ^4D_{\frac{1}{2}}$
3	536.532	186382.	$sp^2\ ^4P_{1\frac{1}{2}} - sp3d\ ^4D_{2\frac{1}{2}}$
4	537.006	186218.	$sp^2\ ^4P_{1\frac{1}{2}} - sp3d\ ^4D_{1\frac{1}{2}}$
4	538.681	185639.	$sp^2\ ^4P_{2\frac{1}{2}} - sp3d\ ^4D_{3\frac{1}{2}}$
3	538.977	185537.	$sp^2\ ^4P_{2\frac{1}{2}} - sp3d\ ^4D_{2\frac{1}{2}}$
0	539.441	185377.	$sp^2\ ^4P_{2\frac{1}{2}} - sp3d\ ^4D_{1\frac{1}{2}}$
2	551.117	181450.	$sp^2\ ^4P_{1\frac{1}{2}} - sp3d\ ^4P_{\frac{1}{2}}$
1	551.643	181277.	$sp^2\ ^4P_{1\frac{1}{2}} - sp3d\ ^4P_{1\frac{1}{2}}$
2B	552.908	180862.	$sp^2\ ^4P_{1\frac{1}{2}} - sp3d\ ^4P_{2\frac{1}{2}}$
1	554.210	180437.	$sp^2\ ^4P_{2\frac{1}{2}} - sp3d\ ^4P_{1\frac{1}{2}}$
1	555.484	180023.	$sp^2\ ^4P_{2\frac{1}{2}} - sp3d\ ^4P_{2\frac{1}{2}}$

B, blend.

TABLE VI. *Term values of Cl V.*

$\Sigma l=0$		1		2		3	
		$s^23p\ ^2P_{\frac{1}{2}}$	547000.	$sp^2\ ^4P_{\frac{1}{2}}$	461000.	$p^3\ ^4S$	313243.
		$s^23p\ ^2P_{1\frac{1}{2}}$	545508.	$sp^2\ ^4P_{1\frac{1}{2}}$	460462.	$sp3d\ ^4P_{2\frac{1}{2}}$	279598.
				$sp^2\ ^4P_{2\frac{1}{2}}$	459619.	$sp3d\ ^4P_{1\frac{1}{2}}$	279184.
				$sp^2\ ^2D_{1\frac{1}{2}}$	433766.	$sp3d\ ^4P_{\frac{1}{2}}$	279012.
				$sp^2\ ^2D_{2\frac{1}{2}}$	433694.	$sp3d\ ^4D_{\frac{1}{2}}$	274404.
				$sp^2\ ^2S$	400356.	$sp3d\ ^4D_{1\frac{1}{2}}$	274243.
				$sp^2\ ^2P_{\frac{1}{2}}$	389069.	$sp3d\ ^4D_{2\frac{1}{2}}$	274081.
				$sp^2\ ^2P_{1\frac{1}{2}}$	388108.	$sp3d\ ^4D_{3\frac{1}{2}}$	273980.
				$s^23d\ ^2D_{1\frac{1}{2}}$	361139.		
		$sp4s\ ^4P_{\frac{1}{2}}$	193555.	$s^23d\ ^2D_{2\frac{1}{2}}$	361107.		
$s^24s\ ^2S$	290687.	$sp4s\ ^4P_{1\frac{1}{2}}$	193022.				
		$sp4s\ ^4P_{2\frac{1}{2}}$	192075.	$s^24d\ ^2D$	197489.		