Selected Tables of Atomic Spectra

A Atomic Energy Levels-Second Edition

B Multiplet Tables

C I, C II, C III, C IV, C V, C VI

Data Derived From the Analyses of Optical Spectra

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Abstract

The present publication is the third Section of a series being prepared in response to the persistent need for a current revision of two sets of tables containing data on atomic spectra as derived from analyses of optical spectra. As in the first two Sections, Part A contains the atomic energy levels and Part B the multiplet tables. All six spectra of carbon, C I through C VI are included. The form of presentation is described in detail in the text to Section 1, and need not be repeated here.

Key words: Atomic energy levels, carbon spectra; Atomic spectra of carbon; Carbon spectra; Multiplet tables, carbon spectra; Spectra, carbon; Wavelengths, carbon spectra.

Foreword

The National Standard Reference Data System provides effective access to the quantitative data of physical science, critically evaluated and compiled for convenience, and readily accessible through a variety of distribution channels. The System was established in 1963 by action of the President's Office of Science and Technology and the Federal Council for Science and Technology, with responsibility to administer it assigned to the National Bureau of Standards.

The System now comprises a complex of data centers and other activities, carried on in academic institutions and other laboratories both in and out of government. The independent operational status of existing critical data projects is maintained and encouraged. Data centers that are components of the NSRDS produce compilations of critically evaluated data, critical reviews of the state of quantitative knowledge in specialized areas, and computations of useful functions derived from standard reference data. In addition, the centers and projects establish criteria for evaluation and compilation of data and make recommendations on needed improvements in experimental techniques. They are normally closely associated with active research in the relevant field.

The technical scope of the NSRDS is indicated by the principal categories of data compilation projects now active or being planned: nuclear properties, atomic and molecular properties, solid state properties, thermodynamic and transport properties, chemical kinetics, and colloid and surface properties and mechanical properties.

The NSRDS receives advice and planning assistance from the National Research Council of the National Academy of Sciences-National Academy of Engineering. An overall Review Committee considers the program as a whole and makes recommendations on policy, long-term planning, and international collaboration. Advisory Panels, each concerned with a single technical area, meet regularly to examine major portions of the program, assign relative priorities, and identify specific key problems in need of further attention. For selected specific topics, the Advisory Panels sponsor subpanels which make detailed studies of users' needs, the present state of knowledge, and existing data resources, as a basis for recommending one or more data compilation activities. This assembly of advisory services contributes greatly to the guidance of NSRDS activities.

The NSRDS-NBS series of publications is intended primarily to include evaluated reference data and critical reviews of long-term interest to the scientific and technical community.

LEWIS M BRANSCOMB, *Director*

Preface

The present publication is the third Section of a series that is being prepared in response to the increasing demand for a current revision of two sets of tables containing data on atomic spectra as derived from analyses of optical spectra.

The first set, *Atomic Energy Levels*, NBS Circular 467, consists of three Volumes published, respectively, in 1949, 1952, and 1958, and a fourth on rare-earth spectra, still in course of preparation.

The second set consists of two Multiplet Tables; one published in 1945 by the Princeton University Observatory, containing spectral lines in the region of wavelengths longer than 3000 Å; the other *An Ultra-Violet Multiplet Table*, NBS Circular 488, appearing in five Sections, the first in 1950, the second in 1952, and the others in 1962.

Both the atomic energy levels and the multiplet table are being included in the same publication, as parts A and B, respectively. The Sections are being prepared at irregular intervals for those spectra whose analyses are essentially complete. A flexible paging system permits the arrangement of the various Sections by atomic number regardless of the order in which the spectra are published in this series. Section 1 includes three spectra of silicon, $Z = 14$: Si II, Si III, Si IV. Section 2 contains similar data for Si I. All six spectra of carbon are included in the present Section. Details regarding the form of presentation are described fully in the text of Section 1. All Sections are arranged identically and the same conversion factor from cm^{-1} to eV, 0.000123981 is used throughout.

The manuscript has been prepared by Charlotte E. Moore of the Office of Standard Reference Data, who has also prepared the earlier tables. She appreciates the cordial cooperation of the many atomic spectroscopists whose work is quoted here. She has benefitted greatly from the helpful advice of B. Edlén in Lund, and is most grateful to him and B. Löfstrand for extending the analysis of C V especially for inclusion here. The users are also indebted to Barbara N. Somerville for her careful work in typing the press copy of these difficult tables.

Washington, D.C., June 4, 1970.

Contents

Part A—Atomic Energy Levels

Element:	Z	Spectrum
Carbon:	6	

Part B—Multiplet Tables

Element:	Z	Spectrum
Carbon:	6	

CARBON, $Z = 6$

A   C I   Atomic Energy Levels

B   C I   Multiplet Table

Part A

CARBON

C I

6 electrons $\hspace{8cm}$ $Z = 6$

Ground state $1s^2\, 2s^2\, 2p^2\, {}^3P_0$

$2p^2\, {}^3P_0$ **90820.42 ± 0.1** cm^{-1} 1101.074 Å (Vac) $\hspace{4cm}$ I P 11.260 eV

The terms are from the Monograph by L. Johansson. He has revised and greatly extended the analysis from observations of some 450 lines in the range from 2478 Å to 25843 Å. He and Litzén have classified 75 lines in the lead sulphide region, which they have used to extend the identifications of C I in the solar spectrum.

Short of 2000 Å Johansson lists calculated wavelengths to 945 Å. Herzberg has measured a group of 6 lines near 1300 Å that provide auxiliary standards in the near vacuum ultraviolet region. Kaufman and Ward have extended the list of auxiliary standards by observing 18 lines between 1459 Å and 1930 Å. By combining these two sets of observations they derive term values that differ from those of Johansson as follows:

$$2p^2\, {}^3P_{2,1} \hspace{3cm} +0.02 \text{ cm}^{-1}$$

$$3s\, {}^3P^{\circ},\, 2p^3\, {}^3D^{\circ},\, 2p^3\, {}^3P^{\circ} \hspace{1cm} +0.01 \text{ cm}^{-1}$$

They give the following values for the lowest levels:

$2p^2\, {}^3P_0$	0.00
${}^3P_1$	16.42
${}^3P_2$	43.42
$2p^2\, {}^1D_2$	10192.66
$2p^2\, {}^1S_0$	21648.02

These observations thus confirm Johannson's level values "to well within his stated uncertainties." The differences are so small that there is no reason to recalculate the wavelengths for C I.

The limit is well determined from the long $np\, {}^3D_3$ series.

Pair-coupling notation is given in the table for the levels of the nf-configuration ($n = 4$ to 8).

Extrapolated level values are entered in brackets. The entries for $2p^3\, {}^1D^{\circ}$ and $2p^3\, {}^1P^{\circ}$ are Edlén's 1934 paper.

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C I   **C I**

Config.	Desig.	J	Level	Interval
$2s^2\,2p^2$	$2p^2\ {}^3P$	0	0.00	16.40
		1	16.40	27.00
		2	43.40	
$2s^2\,2p^2$	$2p^2\ {}^1D$	2	10192.63	
$2s^2\,2p^2$	$2p^2\ {}^1S$	0	21648.01	
$2s\,2p^3$	$2p^3\ {}^5S^\circ$	2	33735.20	
$2s^2\,2p(^2P^\circ)3s$	$3s\ {}^3P^\circ$	0	60333.43	19.20
		1	60352.63	40.51
		2	60393.14	
$2s^2\,2p(^2P^\circ)3s$	$3s\ {}^1P^\circ$	1	61981.82	
$2s\,2p^3$	$2p^3\ {}^3D^\circ$	3	64086.92	−4.03
		2	64090.95	1.10
		1	64089.85	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^1P$	1	68856.33	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^3D$	1	69689.48	21.18
		2	69710.66	33.37
		3	69744.03	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^3S$	1	70743.95	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^3P$	0	71352.51	12.39
		1	71364.90	20.48
		2	71385.38	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^1D$	2	72610.72	
$2s^2\,2p(^2P^\circ)3p$	$3p\ {}^1S$	0	73975.91	
$2s\,2p^3$	$2p^3\ {}^3P^\circ$	2	75255.27	1.30
		1	75253.97	−2.15
		0	75256.12	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^1D^\circ$	2	77679.82	
$2s^2\,2p(^2P^\circ)4s$	$4s\ {}^3P^\circ$	0	78104.98	11.76
		1	78116.74	31.35
		2	78148.09	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^3F^\circ$	2	78199.07	16.44
		3	78215.51	34.43
		4	78249.94	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^3D^\circ$	1	78293.49	14.14
		2	78307.63	10.62
		3	78318.25	
$2s^2\,2p(^2P^\circ)4s$	$4s\ {}^1P^\circ$	1	78340.28	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^1F^\circ$	3	78529.62	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^1P^\circ$	1	78731.27	
$2s^2\,2p(^2P^\circ)3d$	$3d\ {}^3P^\circ$	2	79310.85	−7.93
		1	79318.78	−4.38
		0	79323.16	
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^1P$	1	80562.85	

Config.	Desig.	J	Level	Interval
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^3D$	1	80782.51	18.76
		2	80801.27	33.34
		3	80834.61	
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^3S$	1	81105.03	
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^3P$	0	81311.01	14.75
		1	81325.76	18.23
		2	81343.99	
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^1D$	2	81769.79	
$2s^2\,2p(^2P^\circ)4p$	$4p\ {}^1S$	0	82251.71	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^1D^\circ$	2	83497.62	
$2s^2\,2p(^2P^\circ)5s$	$5s\ {}^3P^\circ$	0	83740.06	12.35
		1	83752.41	38.63
		2	83791.04	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^3F^\circ$	2	83747.39	13.87
		3	83761.26	37.31
		4	83798.57	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^3D^\circ$	1	83820.13	17.95
		2	83838.08	10.75
		3	83848.83	
$2s^2\,2p(^2P^\circ)5s$	$5s\ {}^1P^\circ$	1	83877.31	
$2s^2\,2p(^2P^\circ_{0\frac12})4f$	$4f\ [2\tfrac12]$	3	83919.65	
		2	83919.76	
"	$4f\ [3\tfrac12]$	3	83926.20	
		4	83926.37	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^1F^\circ$	3	83947.43	
$2s^2\,2p(^2P^\circ_{1\frac12})4f$	$4f'\ [3\tfrac12]$	3	83986.22	
		4	83986.45	
"	$4f'\ [4\tfrac12]$	5	84015.86	
		4	84016.25	
"	$4f'\ [2\tfrac12]$	3	84013.25	
		2	84013.40	
"	$4f'\ [1\tfrac12]$	1	84036.29	
		2	84036.40	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^1P^\circ$	1	84032.15	
$2s^2\,2p(^2P^\circ)4d$	$4d\ {}^3P^\circ$	2	84103.10	−12.99
		1	84116.09	−5.13
		0	84121.22	
$2s^2\,2p(^2P^\circ)5p$	$5p\ {}^1P$	1	84851.53	
$2s^2\,2p(^2P^\circ)5p$	$5p\ {}^3D$	1	84935.34	15.02
		2	84950.36	34.61
		3	84984.97	
$2s^2\,2p(^2P^\circ)5p$	$5p\ {}^3P$	0	85169.61	19.34
		1	85188.95	14.69
		2	85203.64	
$2s^2\,2p(^2P^\circ)5p$	$5p\ {}^1D$	2	85399.81	
$2s^2\,2p(^2P^\circ)5p$	$5p\ {}^1S$	0	85625.18	

C I — Continued

Config.	Desig.	J	Level	Interval
$2s^2\,2p(^2P^\circ)5d$	$5d\ ^1D^\circ$	2	86185.20	
$2s^2\,2p(^2P^\circ)5d$	$5d\ ^3F^\circ$	2	86317.64	
		3	86327.16	9.52
		4	86369.47	42.31
$2s^2\,2p(^2P^\circ)6s$	$6s\ ^3P^\circ$	0	86321.94	
		1	86331.63	9.69
		2	86369.60	37.97
$2s^2\,2p(^2P^\circ)5d$	$5d\ ^3D^\circ$	1	86362.52	
		2	86389.38	26.86
		3	86397.80	8.42
$2s^2\,2p(^2P^\circ_{01/2})5f$	$5f\ [2\tfrac{1}{2}]$	3	86411.98	
		2	86412.05	
"	$5f\ [3\tfrac{1}{2}]$	3	86414.49	
		4	86414.69	
$2s^2\,2p\ (^2P^\circ)6s$	$6s\ ^1P^\circ$	1	86416.55	
$2s^2\,2p\ (^2P^\circ)5d$	$5d\ ^1F^\circ$	3	86449.19	
$2s^2\,2p\ (^2P^\circ_{11/2})5f$	$5f'\ [3\tfrac{1}{2}]$	3	86469.51	
		4	86469.66	
"	$5f'\ [2\tfrac{1}{2}]$	3	86482.66	
		2	86482.78	
"	$5f'\ [1\tfrac{1}{2}]$	1	86498.55	
		2	86498.64	
$2s^2\,2p\ (^2P^\circ)5d$	$5d\ ^1P^\circ$	1	86491.41	
$2s^2\,2p\ (^2P^\circ)5d$	$5d\ ^3P^\circ$	2	86506.70	−12.77
		1	86519.47	−3.69
		0	86523.16	
$2s^2\,2p\ (^2P^\circ)6p$	$6p\ ^1P$	1	86912.86	
$2s^2\,2p\ (^2P^\circ)6p$	$6p\ ^3D$	1	86956.16	
		2	86965.45	9.29
		3	87002.26	36.81
$2s^2\,2p\ (^2P^\circ)6p$	$6p\ ^3P$	0	87077.36	
		1	87103.12	25.76
		2	87113.21	10.09
$2s^2\,2p\ (^2P^\circ)6p$	$6p\ ^1D$	2	87218.26	
$2s^2\,2p\ (^2P^\circ)6p$	$6p\ ^1S$	0	87341.04	
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^1D^\circ$	2	87633.75	
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^3F^\circ$	2	87708.21	
		3	87713.38	5.17
		4	87760.61	47.23
$2s^2\,2p\ (^2P^\circ)7s$	$7s\ ^3P^\circ$	0	87711.37	
		1	87718.56	7.19
		2	87753.73	35.17
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^3D^\circ$	1	[87735.3]	
		2	87773.09	
		3	87777.17	4.08
$2s^2\,2p\ (^2P^\circ_{01/2})6f$	$6f\ [2\tfrac{1}{2}]$	3	87762.12	
		2	87762.22	
	$6f\ [3\tfrac{1}{2}]$	4	87763.10	
		3	87763.24	

C I — Continued

Config.	Desig.	J	Level	Interval
$2s^2\,2p\ (^2P^\circ)7s$	$7s\ ^1P^\circ$	1	87789.63	
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^1F^\circ$	3	87806.93	
$2s^2\,2p\ (^2P^\circ_{11/2})6f$	$6f'\ [3\tfrac{1}{2}]$	3	87819.90	
		4	87820.00	
"	$6f'\ [2\tfrac{1}{2}]$	3	87826.94	
		2	87827.02	
"	$6f'\ [1\tfrac{1}{2}]$	1,2	87837.74	
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^1P^\circ$	1	87830.17	
$2s^2\,2p\ (^2P^\circ)6d$	$6d\ ^3P^\circ$	2	87832.54	
		1	87843.91	−11.37
		0	[87846.9]	
$2s^2\,2p\ (^2P^\circ)7p$	$7p\ ^1P$	1	88061.28	
$2s^2\,2p\ (^2P^\circ)7p$	$7p\ ^3D$	1	88092.01	
		2	88096.03	4.02
		3	88135.81	39.78
$2s^2\,2p(^2P^\circ)7p$	$7p\ ^3P$	0	88159.87	
		1	88192.30	32.43
		2	88198.22	5.92
$2s^2\,2p(^2P^\circ)7p$	$7p\ ^1D$	2	88260.37	
$2s^2\,2p(^2P^\circ)7p$	$7p\ ^1S$	0	88333.98	
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^1D^\circ$	2	88498.62	
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^3F^\circ$	2	[88541.4]	
		3	[88544.9]	[3.5]
		4	[88596.5]	[51.6]
$2s^2\,2p(^2P^\circ)8s$	$8s\ ^3P^\circ$	0	88543.76	
		1	88549.06	5.30
		2	88584.26	35.20
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^3D^\circ$	1	[88558.6]	
		2	88604.75	
		3	[88606.8]	
$2s^2\,2p(^2P^\circ_{01/2})7f$	$7f\ [2\tfrac{1}{2}]$	2	88574.85	
		3	88574.87	
"	$7f\ [3\tfrac{1}{2}]$	3		
		4	88575.31	
$2s^2\,2p(^2P^\circ)8s$	$8s\ ^1P^\circ$	1	88615.01	
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^1F^\circ$	3	88625.00	
$2s^2\,2p(^2P^\circ_{11/2})7f$	$7f'\ [3\tfrac{1}{2}]$	3	88633.98	
		4	88634.07	
"	$7f'\ [2\tfrac{1}{2}]$	3	88638.30	
		2		
"	$7f'\ [1\tfrac{1}{2}]$	2	88645.33	
		1		
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^3P^\circ$	2	[88636.8]	
		1	[88646.6]	[−9.8]
		0	[88649.1]	[−2.5]
$2s^2\,2p(^2P^\circ)7d$	$7d\ ^1P^\circ$	1	88639.02	
$2s^2\,2p(^2P^\circ)8p$	$8p\ ^1P$	1	88766.98	

C I — Continued

Config.	Desig.	J	Level	Interval
$2s^2\,2p(^2P^\circ)8p$	$8p\ ^3D$	1	88790.85	
		2	[88794.3]	
		3	88836.12	
$2s^2\,2p(^2P^\circ)8p$	$8p\ ^3P$	0		
		1		
		2	88873.95	
$2s^2\,2p(^2P^\circ)8p$	$8p\ ^1D$	2	88913.56	
$2s^2\,2p(^2P^\circ)8p$	$8p\ ^1S$	0	88960.64	
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^1D^\circ$	2	89054.16	
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^3F^\circ$	2	[89079.9]	
		3	[89082.1]	[2.2]
		4	[89136.9]	[54.8]
$2s^2\,2p(^2P^\circ)9s$	$9s\ ^3P^\circ$	0	89081.62	
		1	89085.41	3.79
		2		
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^3D^\circ$	1	[89091.1]	
		2	89142.66	
		3	[89143.9]	
$2s^2\,2p(^2P^\circ_{01/2})8f$	$8f\ [2\tfrac{1}{2}]$	2	89101.76	
		3	89101.79	
"	$8f\ [3\tfrac{1}{2}]$	3		
		4	89101.82	
$2s^2\,2p(^2P^\circ)9s$	$9s\ ^1P^\circ$	1	89149.35	
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^1F^\circ$	3	89155.70	
$2s^2\,2p(^2P^\circ)8f$	$8f'\ [3\tfrac{1}{2}]$	3		
		4	89162.10	
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^3P^\circ$	2	[89162.2]	
		1	[89170.0]	[-7.8]
		0	[89171.5]	[-1.5]
$2s^2\,2p(^2P^\circ)8d$	$8d\ ^1P^\circ$	1	89164.74	
$2s^2\,2p(^2P^\circ)9p$	$9p\ ^1P$	1	89232.41	
$2s^2\,2p(^2P^\circ)9p$	$9p\ ^3D$	1		
		2		
		3	89299.10	
$2s^2\,2p(^2P^\circ)9p$	$9p\ ^1D$	2	89350.10	
$2s^2\,2p(^2P^\circ)9p$	$9p\ ^1S$	0	89381.61	
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^1D^\circ$	2	89431.48	
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^3F^\circ$	2	[89447.4]	
		3	[89448.4]	[1.0]
		4		

C I — Continued

Config.	Desig.	J	Level	Interval
$2s^2\,2p(^2P^\circ)10s$	$10s\ ^3P^\circ$	0		
		1	89451.82	
		2		
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^3D^\circ$	1		
		2	89510.43	
		3	[89510.9]	
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^1F^\circ$	3	89519.13	
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^3P^\circ$	2	[89522.4]	
		1		
		0		
$2s^2\,2p(^2P^\circ)9d$	$9d\ ^1P^\circ$	1	89525.54	
$2s^2\,2p(^2P^\circ)10p$	$10p\ ^1P$	1	89555.53	
$2s^2\,2p(^2P^\circ)10p$	$10p\ ^3D$	1		
		2		
		3	89621.06	
$2s^2\,2p(^2P^\circ)10p$	$10p\ ^1S$	0	89678.11	
$2s^2\,2p(^2P^\circ)10d$	$10d\ ^3F^\circ$	2		
		3	[89710.5]	
		4		
$2s^2\,2p(^2P^\circ)10d$	$10d\ ^3D^\circ$	1		
		2	89772.87	
		3	[89773.2]	
$2s^2\,2p(^2P^\circ)10d$	$10d\ ^1F^\circ$	3	[89778.9]	
$2s^2\,2p(^2P^\circ)11p$	$11p\ ^1P$	1	89789.21	
$2s^2\,2p(^2P^\circ)11d$	$11d\ ^3D^\circ$	1		
		2	89966.66	
		3	[89966.8]	
$2s^2\,2p(^2P^\circ)11d$	$11d\ ^1F^\circ$	3	[89971.3]	
$C\ \text{II}(^2P^\circ_{01/2})$	**Limit**	....	**90820.42 ±0.1**	
$C\ \text{II}(^2P^\circ_{11/2})$	**Limit**	....	**90883.84**	
$2s\,2p^3$	$2p^3\ ^1D^\circ$	2	[97878]	
$2s\,2p^2(^4P)3s$	$3s'\ ^5P$	1	103541.8	
		2	103562.5	20.7
		3	103587.3	24.8
$2s\,2p^3$	$2p^3\ ^3S^\circ$	1	105798.7	
$2s\,2p^3$	$2p^3\ ^1P^\circ$	1	[119878]	

January 1970.

C I Observed Terms

Configuration $1s^2+$	Observed Terms		
$2s^2\,2p^2$	$\begin{cases} & 2p^2\,{}^3\mathrm{P} & \\ 2p^2\,{}^1\mathrm{S} & & 2p^2\,{}^1\mathrm{D} \end{cases}$		
$2s\;\;2p^3$	$\begin{cases} 2p^3\,{}^5\mathrm{S}^\circ & & \\ 2p^3\,{}^3\mathrm{S}^\circ & 2p^3\,{}^3\mathrm{P}^\circ & 2p^3\,{}^3\mathrm{D}^\circ \\ & [2p^3\,{}^1\mathrm{P}^\circ] & [2p^3\,{}^1\mathrm{D}^\circ] \end{cases}$		
	$ns\,(n \geqslant 3)$		$np\,(n \geqslant 3)$
$2s^2\,2p\,({}^2\mathrm{P}^\circ)nl$	$\left\{ \begin{array}{l} 3-10s\;\;{}^3\mathrm{P}^\circ \\ 3-9s\;\;{}^1\mathrm{P}^\circ \end{array}\right.$		$\begin{array}{lll} 3-4p\,{}^3\mathrm{S} & 3-8p\,{}^3\mathrm{P} & 3-10p\,{}^3\mathrm{D} \\ 3-10p\,{}^1\mathrm{S} & 3-11p\,{}^1\mathrm{P} & 3-9p\,{}^1\mathrm{D} \end{array}$
$2s\;\;2p^2\,({}^4\mathrm{P})nl'$	$3s'\;\;{}^5\mathrm{P}$		
	$nd\,(n \geqslant 3)$		
$2s^2\,2p\,({}^2\mathrm{P}^\circ)nl$	$\left\{\begin{array}{lll} 3-6d\;\;{}^3\mathrm{P}^\circ\dagger & 3-11d\;\;{}^3\mathrm{D}^\circ & 3-6d\;\;{}^3\mathrm{F}^\circ\dagger \\ 3-9d\;\;{}^1\mathrm{P}^\circ & 3-9d\;\;{}^1\mathrm{D}^\circ & 3-9d\;\;{}^1\mathrm{F}^\circ\dagger \end{array}\right.$		
	Observed Pairs		
	$nf\,(n \geqslant 4)$		
$2s^2\,2p\,({}^2\mathrm{P}^\circ_{0\,1/2})nl$	$\left\{\begin{array}{l} 4-8f\;\;[2\tfrac{1}{2}] \\ 4-8f\;\;[3\tfrac{1}{2}] \end{array}\right.$		
$2s^2\,2p\,({}^2\mathrm{P}^\circ_{1\,1/2})nl'$	$\begin{array}{l} 4-8f'\;\;[3\tfrac{1}{2}] \\ 4f'\;\;[4\tfrac{1}{2}] \\ 4-7f'\;\;[2\tfrac{1}{2}] \\ 4-7f'\;\;[1\tfrac{1}{2}] \end{array}$		

† Calculated values entered in the Table for: $7-9d\,{}^3\mathrm{P}^\circ$, $7-10d\,{}^3\mathrm{F}^\circ$, 10, $11d\,{}^1\mathrm{F}^\circ$.

Multiplet Table

Part B

CARBON

C I ($Z=6$)

I P 11.260 eV   Limit 90820.42 ± 0.1 cm^{-1} 1101.074 Å (Vac)

Anal A   List A   January 1970

REFERENCES

I. S. Bowen, Astroph. J. **132**, 1 to 17 (1960). [C I] W L

A   L. Johansson, Ark. Fys. (Stockholm) **31**, No. 15, 201 to 235 (1966). I P, T, C L, G D, I; W L 945 Å to 1993 Å; 2478 Å to 11330 Å. See A, also, for quoted Wavelengths.

B   L. Johansson and U. Litzén, Ark. Fys. (Stockholm) **29**, No. 13, 175 to 179 (1965). C L, I; W L 11619 Å to 25842 Å

C   G. Herzberg, Proc. Roy. Soc. (London) [A] **248**, 309 to 332 (1958). C L; W L 1328 Å to 1329 Å

D   V. Kaufman and J. F. Ward, J. Opt. Soc. Am. **56**, No. 11, 1591 to 1597 (1966). T, C L, (I); W L 1459 Å to 1930 Å

P   Predicted Wavelength; See B. Edlén, Reports on Progress in Physics **26**, 181 to 212 (1963). (I), W L; and Ref. A (I) W L

New Multiplet Numbers, not inserted between older ones, start with 33 and UV 66

*Blend

‡*Raie Ultime.*

C I

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
9850.264	P		0.01	1.26	2−2	$2p^2\,^3P - 2p^2\,^1D$
9824.129	P		0.00	1.26	1−2	1F
9808.321	P		0.00	1.26	0−2	
4627.346	P		0.01	2.68	2−0	$2p^2\,^3P - 2p^2\,^1S$
4621.570	P		0.00	2.68	1−0	2F
2967.214	A	1	0.01	4.18	2−2	$2p^2\,^3P - 2p^3\,^5S°$
2964.840	A	0	0.00	4.18	1−2	UV 1
Vac						
1657.0078‡	D	(30)	0.01	7.49	2−2	$2p^2\,^3P - 3s\,^3P°$
1657.3797	D	(12)	0.00	7.48	1−1	UV 2
1658.1222	D	(15)	0.01	7.48	2−1	
1657.9070	D	(12)	0.00	7.48	1−0	
1656.2665	D	(15)	0.00	7.49	1−2	
1656.9282	D	(12)	0.00	7.48	0−1	
1614.5068	P		0.01	7.68	2−1	$2p^2\,^3P - 3s\,^1P°$
1613.8033	P		0.00	7.68	1−1	UV 2.01
1613.3763	P		0.00	7.68	0−1	
1561.4382	D	(40)	0.01	7.95	2−3	$2p^2\,^3P - 2p^3\,^3D°$
1560.6832	D	(40)*	0.00	7.95	1−2	UV 3
1560.3095	D	(15)	0.00	7.95	0−1	
1561.3407	D	(10)	0.01	7.95	2−2	
1560.7079	D	(40)*	0.00	7.95	1−1	
1561.3668	P	(3)	0.01	7.95	2−1	

C I

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1434.707	P		0.01	8.65	2−3	$2p^2\,^3P - 3p\,^3D$
1434.838	P		0.00	8.64	1−2	UV 3.01F
1434.937	P		0.00	8.64	0−1	
1401.699	P		0.01	8.85	2−2	$2p^2\,^3P - 3p\,^3P$
1401.571	P		0.00	8.85	1−1	UV 3.02F
1329.5777	C	(12)*	0.01	9.33	2−2	$2p^2\,^3P - 2p^3\,^3P°$
1329.1233	C	(9)*	0.00	9.33	1−1	UV 4
1329.6001	C	(12)*	0.01	9.33	2−1	
1329.0861	C	(9)*	0.00	9.33	1−0	
1329.0999	C	(9)*	0.00	9.33	1−2	
1328.8332	C	(3)	0.00	9.33	0−1	
1288.0553	P		0.01	9.63	2−2	$2p^2\,^3P - 3d\,^1D°$
1287.6075	P		0.00	9.63	1−2	UV 4.01
1280.3328	P	(20)	0.01	9.69	2−2	$2p^2\,^3P - 4s\,^3P°$
1280.4042	P	(2)	0.00	9.68	1−1	UV 5
1280.8470	P	(8)	0.01	9.68	2−1	
1280.5970	P	(6)	0.00	9.68	1−0	
1279.8904	P	(8)	0.00	9.69	1−2	
1280.1353	P	(6)	0.00	9.68	0−1	

C I — Continued

I A	Ref	Int	E P		J	Multiplet No.
			Low	High		
Vac						
1279.2286	P	(4)	0.01	9.70	2-3	$2p^2\,^3P - 3d\,^3F°$
1279.0558	P	(3)	0.00	9.70	1-2	UV 6
1279.4977	P	(2)	0.01	9.70	2-2	
1277.5496	P	(30)*	0.01	9.71	2-3	$2p^2\,^3P - 3d\,^3D°$
1277.2823	P	(25)*	0.00	9.71	1-2	UV 7
1277.2454	P	(25)*	0.00	9.71	0-1	
1277.7229	P	(8)	0.01	9.71	2-2	
1277.5130	P	(30)*	0.00	9.71	1-1	
1277.9538	P	(2)	0.01	9.71	2-1	
1277.1901	P	(2)	0.01	9.71	2-1	$2p^2\,^3P - 4s\,^1P°$
1276.7498	P	(4)	0.00	9.71	1-1	UV 7.01
1276.4825	P	(2)	0.00	9.71	0-1	
1274.1090	P	(1)	0.01	9.74	2-3	$2p^2\,^3P - 3d\,^1F°$
						UV 8
1270.8439	P		0.01	9.76	2-1	$2p^2\,^3P - 3d\,^1P°$
1270.4080	P		0.00	9.76	1-1	UV 8.01
1270.1434	P		0.00	9.76	0-1	
1261.5519	P	(10)	0.01	9.83	2-2	$2p^2\,^3P - 3d\,^3P°$
1260.9962	P	(3)	0.00	9.83	1-1	UV 9
1261.4257	P	(5)	0.01	9.83	2-1	
1260.9266	P	(4)	0.00	9.83	1-0	
1261.1223	P	(5)	0.00	9.83	1-2	
1260.7355	P	(5)	0.00	9.83	0-1	
1198.2618	P		0.01	10.35	2-2	$2p^2\,^3P - 4d\,^1D°$
1197.8742	P	(0.5)	0.00	10.35	1-2	UV 9.01
1194.0635	P	(10)	0.01	10.39	2-2	$2p^2\,^3P - 5s\,^3P°$
1194.2293	P	(4)	0.00	10.38	1-1	UV 9.02
1194.6145	P	(8)	0.01	10.38	2-1	
1194.4055	P	(6)	0.00	10.38	1-0	
1193.6787	P	(15)*	0.00	10.39	1-2	
1193.9955	P	(4)	0.00	10.38	0-1	
1194.4882	P	(10)	0.01	10.38	2-3	$2p^2\,^3P - 4d\,^3F°$
1194.3009	P	(4)	0.00	10.38	1-2	UV 10
1194.6862	P		0.01	10.38	2-2	
1193.2401	P	(30)*	0.01	10.40	2-3	$2p^2\,^3P - 4d\,^3D°$
1193.0088	P	(30)*	0.00	10.39	1-2	UV 11
1193.0308	P	(30)*	0.00	10.39	0-1	
1193.3932	P	(10)	0.01	10.39	2-2	
1193.2643	P	(30)*	0.00	10.39	1-1	
1193.6489	P	(15)*	0.01	10.39	2-1	
1192.8347	P	(2)	0.01	10.40	2-1	$2p^2\,^3P - 5s\,^1P°$
1192.4507	P	(4)	0.00	10.40	1-1	UV 12
1192.2175	P	(2)	0.00	10.40	0-1	
1191.838	P	(4)	0.01	10.41	2-3	$2p^2\,^3P - 4d\,^1F°$
						UV 13
1190.6357	P		0.01	10.42	2-1	$2p^2\,^3P - 4d\,^1P°$
1190.2530	P	(1)	0.00	10.42	1-1	UV 13.01
1190.0207	P	(1)	0.00	10.42	0-1	

C I — Continued

I A	Ref	Int	E P		J	Multiplet No.
			Low	High		
Vac						
1189.6307	P	(20)	0.01	10.43	2-2	$2p^2\,^3P - 4d\,^3P°$
1190.0650	P	(6)	0.00	10.43	1-1	UV 14
1189.4469	P	(15)	0.01	10.43	2-1	
1188.9925	P	(15)	0.00	10.43	1-0	
1189.2487	P	(8)	0.00	10.43	1-2	
1188.8332	P	(6)	0.00	10.43	0-1	
1160.8766	P		0.01	10.69	2-2	$2p^2\,^3P - 5d\,^1D°$
1160.5129	P		0.00	10.69	1-2	UV 14.01
1158.9666	P	(4)	0.01	10.70	2-3	$2p^2\,^3P - 5d\,^3F°$
1158.7319	P	(2)	0.00	10.70	1-2	UV 15
1159.0945	P		0.01	10.70	2-2	
1158.3969	P	(2)	0.01	10.71	2-2	$2p^2\,^3P - 6s\,^3P°$
1158.5441	P	(0)*	0.00	10.70	1-1	UV 15.01
1158.9066	P	(1)	0.01	10.70	2-1	
1158.6742	P	(2)	0.00	10.70	1-0	
1158.0347	P	(15)*	0.00	10.71	1-2	
1158.3240	P	(2)	0.00	10.70	0-1	
1158.0186	P	(15)*	0.01	10.71	2-3	$2p^2\,^3P - 5d\,^3D°$
1157.7695	P	(7)*	0.00	10.71	1-2	UV 16
1157.9097	P	(15)*	0.00	10.71	0-1	
1158.1315	P	(8)*	0.01	10.71	2-2	
1158.1296	P	(8)*	0.00	10.71	1-1	
1158.4919	P	(0)*	0.01	10.71	2-1	
1157.7672	P	(7)*	0.01	10.71	2-1	$2p^2\,^3P - 6s\,^1P°$
1157.4054	P	(3)	0.00	10.71	1-1	UV 17
1157.1857	P	(0)	0.00	10.71	0-1	
1157.3299	P	(1)	0.01	10.72	2-3	$2p^2\,^3P - 5d\,^1F°$
						UV 18
1156.7646	P	(0)	0.01	10.72	2-1	$2p^2\,^3P - 5d\,^1P°$
1156.4035	P	(2)*	0.00	10.72	1-1	UV 18.01
1156.1842	P	(0)*	0.00	10.72	0-1	
1156.5601	P	(4)	0.01	10.73	2-2	$2p^2\,^3P - 5d\,^3P°$
1156.0283	P	(3)*	0.00	10.73	1-1	UV 19
1156.3893	P	(2)*	0.01	10.73	2-1	
1155.9790	P	(3)*	0.00	10.73	1-0	
1156.1990	P	(0)*	0.00	10.73	1-2	
1155.8092	P	(1)	0.00	10.73	0-1	
1141.6783	P	(0)	0.01	10.86	2-2	$2p^2\,^3P - 6d\,^1D°$
1141.3265	P	(0)?	0.00	10.86	1-2	UV 20
1140.6413	P	(3)	0.01	10.87	2-3	$2p^2\,^3P - 6d\,^3F°$
1140.3573	P	(2)*	0.00	10.87	1-2	UV 21
1140.7086	P		0.01	10.87	2-2	
1140.1166	P	(1)*	0.01	10.88	2-2	$2p^2\,^3P - 7s\,^3P°$
1140.2228	P	(0)	0.00	10.88	1-1	UV 21.01
1140.5739	P	(0)	0.01	10.88	2-1	
1140.3163	P	(2)*	0.00	10.87	1-0	
1139.7657	P	(3)	0.00	10.88	1-2	
1140.0096	P	(1)*	0.00	10.88	0-1	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1139.8120	P	(4)*	0.01	10.88	2–3	$2p^2\,^3P - 6d\,^3D^\circ$
1139.5143	P	(0)	0.00	10.88	1–2	UV 22
1139.8650	P	(4)*	0.01	10.88	2–2	
1139.6501	P	(0)	0.01	10.88	2–1	$2p^2\,^3P - 7s\,^1P^\circ$
1139.2995	P	(0)	0.00	10.88	1–1	UV 22.01
1139.0867	P	(2)*	0.00	10.88	0–1	
1139.4255	P	(1)	0.01	10.89	2–3	$2p^2\,^3P - 6d\,^1F^\circ$
						UV 22.02
1139.1238	P	(2)*	0.01	10.89	2–1	$2p^2\,^3P - 6d\,^1P^\circ$
1138.7736	P		0.00	10.89	1–1	UV 22.03
1138.5609	P	(1)*	0.00	10.89	0–1	
1139.0931	P	(2)*	0.01	10.89	2–2	$2p^2\,^3P - 6d\,^3P^\circ$
1138.5954	P	(1)*	0.00	10.89	1–1	UV 23
1138.9455	P	(1)	0.01	10.89	2–1	
1138.7428	P		0.00	10.89	1–2	
1138.3828	P	(0)	0.00	10.89	0–1	
1130.5155	P		0.01	10.97	2–2	$2p^2\,^3P - 7d\,^1D^\circ$
1130.1706	P		0.00	10.97	1–2	UV 23.01
1129.924	P	(1)*	0.01	10.98	2–3	$2p^2\,^3P - 7d\,^3F^\circ$?
1129.624	P	(1)*	0.00	10.98	1–2	UV 24
1129.4221	P	(0)	0.01	10.98	2–2	$2p^2\,^3P - 8s\,^3P^\circ$
1129.5267	P		0.00	10.98	1–1	UV 24.01
1129.8712	P	(1)	0.01	10.98	2–1	
1129.5943	P	(1)	0.00	10.98	1–0	
1129.0777	P	(2)*	0.00	10.98	1–2	
1129.3175	P		0.00	10.98	0–1	
1128.8166	P		0.00	10.99	1–2	$2p^2\,^3P - 7d\,^3D^\circ$
1129.1607	P	(4)	0.01	10.99	2–2	UV 25
1129.0299	P	(2)*	0.01	10.99	2–1	$2p^2\,^3P - 8s\,^1P^\circ$
1128.6859	P	(0)	0.00	10.99	1–1	UV 25.01
1128.4770	P		0.00	10.99	0–1	
1128.9026	P	(0)	0.01	10.99	2–3	$2p^2\,^3P - 7d\,^1F^\circ$
						UV 25.02
1128.752	P	(2)*	0.01	10.99	2–2	$2p^2\,^3P - 7d\,^3P^\circ$?
1128.284	P	(1)*	0.00	10.99	1–1	UV 26
1128.627	P		0.01	10.99	2–1	
1128.252	P	(1)*	0.00	10.99	1–0	
1128.408	P		0.00	10.99	1–2	
1128.075	P		0.00	10.99	0–1	
1128.7240	P	(2)	0.01	10.99	2–1	$2p^2\,^3P - 7d\,^1P^\circ$
1128.3801	P		0.00	10.99	1–1	UV 26.01
1128.1713	P		0.00	10.99	0–1	
1123.4597	P		0.01	11.04	2–2	$2p^2\,^3P - 8d\,^1D^\circ$
1123.1190	P	(0)*	0.00	11.04	1–2	UV 26.02
1122.7250	P	(1)*	0.00	11.04	1–1	$2p^2\,^3P - 9s\,^3P^\circ$
1123.0654	P	(0)*	0.01	11.04	2–1	UV 26.03
1122.7727	P	(1)*	0.00	11.04	1–0	
1122.5183	P		0.00	11.04	0–1	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1122.0038	P		0.00	11.05	1–2	$2p^2\,^3P - 8d\,^3D^\circ$
1122.3438	P	(2)	0.01	11.05	2–2	UV 27
1122.2595	P	(1)	0.01	11.05	2–1	$2p^2\,^3P - 9s\,^1P^\circ$
1121.9196	P		0.00	11.05	1–1	UV 27.01
1121.7132	P		0.00	11.05	0–1	
1122.1795	P	(1)	0.01	11.05	2–3	$2p^2\,^3P - 8d\,^1F^\circ$
						UV 27.02
1122.0657	P		0.01	11.05	2–1	$2p^2\,^3P - 8d\,^1P^\circ$
1127.7259	P		0.00	11.05	1–1	UV 27.03
1121.5196	P		0.00	11.05	0–1	
1118.1252	P		0.00	11.09	1–1	$2p^2\,^3P - 10s\,^3P^\circ$
1118.4629	P		0.01	11.09	2–1	27.04
1117.9202	P		0.00	11.09	1–2	
1117.3930	P		0.00	11.10	1–2	$2p^2\,^3P - 9d\,^3D^\circ$
1117.7302	P	(1)	0.01	11.10	2–2	UV 29
1114.1258	P		0.00	11.13	1–2	$2p^2\,^3P - 10d\,^3D^\circ$
1114.4611	P	(2)*	0.01	11.13	2–2	UV 30
1111.7255	P		0.00	11.15	1–2	$2p^2\,^3P - 11d\,^3D^\circ$
1112.0593	P	(0.5)	0.01	11.15	2–2	UV 30.01
945.579	P		0.01	13.12	2–1	$2p^2\,^3P - 2p^3\,^3S^v$
945.338	P		0.00	13.12	1–1	UV 31
945.191	P		0.00	13.12	0–1	
			....	....	....	
Air						
8727.126	P		1.26	2.68	2–0	$2p^2\,^1D - 2p^2\,^1S$
						3F
4246.429	P		1.26	4.18	2–2	$2p^2\,^1D - 2p^3\,^5S^\circ$
						0.01
Vac						
1992.012	P		1.26	7.49	2–2	$2p^2\,^1D - 3s\,^3P^\circ$
1993.620	P	(2)	1.26	7.48	2–1	UV 32
1930.9054	D	(100)	1.26	7.68	2–1	$2p^2\,^1D - 3s\,^1P^\circ$
						UV 33
1855.484	P		1.26	7.95	2–3	$2p^2\,^1D - 2p^3\,^3D^\circ$
1855.345	P		1.26	7.95	2–2	UV 33.01
1855.383	P		1.26	7.95	2–1	
1704.632	P		1.26	8.54	2–1	$2p^2\,^1D - 3p\,^1P$
						UV 33.02F
1602.100	P		1.26	9.00	2–2	$2p^2\,^1D - 3p\,^1D$
						UV 33.03F
1536.980	P		1.26	9.33	2–2	$2p^2\,^1D - 2p^3\,^3P^\circ$
1537.011	P		1.26	9.33	2–1	UV 33.04
1481.7635	D	(15)	1.26	9.63	2–2	$2p^2\,^1D - 3d\,^1D^\circ$
						UV 34

Multiplet Table

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1471.5521	P		1.26	9.69	2–2	$2p^2\,{}^1D - 4s\ {}^3P^\circ$
1472.2313	P	(2)	1.26	9.68	2–1	UV 34.01
1470.0936	P	(3)	1.26	9.70	2–3	$2p^2\,{}^1D - 3d\ {}^3F^\circ$
1470.4490	P		1.26	9.70	2–2	UV 35
1467.8765	P	(1)	1.26	9.71	2–3	$2p^2\,{}^1D - 3d\ {}^3D^\circ$
1468.1054	P		1.26	9.71	2–2	UV 35.01
1468.4102	P	(3)	1.26	9.71	2–1	
1467.4020	P	(12)	1.26	9.71	2–1	$2p^2\,{}^1D - 4s\ {}^1P^\circ$ UV 36
1463.3360	D	(20)	1.26	9.74	2–3	$2p^2\,{}^1D - 3d\ {}^1F^\circ$ UV 37
1459.0317	D	(10)	1.26	9.76	2–1	$2p^2\,{}^1D - 3d\,{}^1P^\circ$ UV 38
1446.7965	P		1.26	9.83	2–2	$2p^2\,{}^1D - 3d\ {}^3P^\circ$
1446.6305	P		1.26	9.83	2–1	UV 38.01
1364.1636	P	(12)	1.26	10.35	2–2	$2p^2\,{}^1D - 4d\ {}^1D^\circ$ UV 39
1358.7250	P		1.26	10.39	2–2	$2p^2\,{}^1D - 5s\ {}^3P^\circ$
1359.4385	P	(1)	1.26	10.38	2–1	UV 39.01
1359.2750	P	(4)	1.26	10.38	2–3	$2p^2\,{}^1D - 4d\ {}^3F^\circ$
1359.5313	P		1.26	10.38	2–2	UV 40
1357.6590	P	(2)	1.26	10.40	2–3	$2p^2\,{}^1D - 4d\ {}^3D^\circ$
1357.8571	P		1.26	10.39	2–2	UV 40.01
1358.1882	P		1.26	10.39	2–1	
1357.1342	P	(6)	1.26	10.40	2–1	$2p^2\,{}^1D - 5s\ {}^1P^\circ$ UV 41
1355.844	A	(15)	1.26	10.41	2–3	$2p^2\,{}^1D - 4d\ {}^1F^\circ$ UV 42
1354.2883	P	(10)	1.26	10.42	2–1	$2p^2\,{}^1D - 4d\ {}^1P^\circ$ UV 43
1352.9883	P		1.26	10.43	2–2	$2p^2\,{}^1D - 4d\ {}^3P^\circ$
1352.7505	P		1.26	10.43	2–1	UV 43.01
1315.9181	P	(2)	1.26	10.69	2–2	$2p^2\,{}^1D - 5d\ {}^1D^\circ$ UV 44
1313.4645	P	(3)	1.26	10.70	2–3	$2p^2\,{}^1D - 5d\ {}^3F^\circ$
1313.6287	P		1.26	10.70	2–2	UV 45
1312.7327	P		1.26	10.71	2–2	$2p^2\,{}^1D - 6s\ {}^3P^\circ$
1313.3874	P	(1)	1.26	10.70	2–1	UV 45.01
1312.2469	P	(1)	1.26	10.71	2–3	$2p^2\,{}^1D - 5d\ {}^3D^\circ$
1312.3919	P		1.26	10.71	2–2	UV 46
1312.8547	P		1.26	10.71	2–1	
1311.9241	P	(2)	1.26	10.71	2–1	$2p^2\,{}^1D - 6s\ {}^1P^\circ$ UV 47

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1311.3626	P	(10)	1.26	10.72	2–3	$2p^2\,{}^1D - 5d\ {}^1F^\circ$ UV 48
1310.6369	P	(2)	1.26	10.72	2–1	$2p^2\,{}^1D - 5d\ {}^1P^\circ$ UV 49
1310.3744	P		1.26	10.73	2–2	$2p^2\,{}^1D - 5d\ {}^3P^\circ$
1310.1551	P		1.26	10.73	2–1	UV 49.01
1291.3036	P	(1)	1.26	10.86	2–2	$2p^2\,{}^1D - 6d\ {}^1D^\circ$ UV 50
1289.9772	P	(3)	1.26	10.87	2–3	$2p^2\,{}^1D - 6d\ {}^3F^\circ$
1290.0632	P		1.26	10.87	2–2	UV 51
1289.3061	P		1.26	10.88	2–2	$2p^2\,{}^1D - 7s\ {}^3P^\circ$
1289.8910	P	(0)	1.26	10.88	2–1	UV 51.01
1288.9166	P	(1)	1.26	10.88	2–3	$2p^2\,{}^1D - 6d\ {}^3D^\circ$
1288.9844	P		1.26	10.88	2–2	UV 51.02
1288.7096	P	(1)	1.26	10.88	2–1	$2p^2\,{}^1D - 7s\ {}^1P^\circ$ UV 52
1288.4224	P	(5)	1.26	10.89	2–3	$2p^2\,{}^1D - 6d\ {}^1F^\circ$ UV 53
1288.0367	P	(2)	1.26	10.89	2–1	$2p^2\,{}^1D - 6d\ {}^1P^\circ$ UV 54
1287.9974	P		1.26	10.89	2–2	$2p^2\,{}^1D - 6d\ {}^3P^\circ$
1287.8088	P		1.26	10.89	2–1	UV 54.01
1277.0415	P		1.26	10.97	2–2	$2p^2\,{}^1D - 7d\ {}^1D^\circ$ UV 54.02
1275.6464	P		1.26	10.98	2–2	$2p^2\,{}^1D - 8s\ {}^3P^\circ$
1276.2195	P		1.26	10.98	2–1	UV 54.03
1275.3130	P		1.26	10.99	2–2	$2p^2\,{}^1D - 7d\ {}^3D^\circ$ UV 54.04
1275.1462	P		1.26	10.99	2–1	$2p^2\,{}^1D - 8s\ {}^1P^\circ$ UV 54.05
1274.9838	P	(3)	1.26	10.99	2–3	$2p^2\,{}^1D - 7d\ {}^1F^\circ$ UV 55
1274.7559	P	(0)	1.26	10.99	2–1	$2p^2\,{}^1D - 7d\ {}^1P^\circ$ UV 56
1268.0454	P		1.26	11.04	2–2	$2p^2\,{}^1D - 8d\ {}^1D^\circ$ UV 56.01
1267.596	P	(1)	1.26	11.04	2–3	$2p^2\,{}^1D - 8d\ {}^3F^\circ?$ UV 57
1267.5431	P		1.26	11.04	2–1	$2p^2\,{}^1D - 9s\ {}^3P^\circ$ UV 57.01

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 1266.6240	P		1.26	11.05	2—2	$2p^2\,{}^1D - 8d\,{}^3P°$ UV 57.02
1266.5166	P		1.26	11.05	2—1	$2p^2\,{}^1D - 9s\,{}^1P°$ UV 57.03
1266.4188	P	(2)	1.26	11.05	2—3	$2p^2\,{}^1D - 8d\,{}^1F°$ UV 58
1266.2698	P	(0)	1.26	11.05	2—1	$2p^2\,{}^1D - 8d\,{}^1P°$ UV 58.01
1262.0072	P		1.26	11.09	2—2	$2p^2\,{}^1D - 9d\,{}^1D°$ UV 58.02
1261.6833	P		1.26	11.09	2—1	$2p^2\,{}^1D - 10s\,{}^3P°$ UV 58.03
1260.7510	P		1.26	11.10	2—2	$2p^2\,{}^1D\quad 9d\,{}^3D°$ UV 58.04
1260.6128	P	(2)	1.26	11.10	2—3	$2p^2\,{}^1D - 9d\,{}^1F°$ UV 59
1260.5109	P		1.26	11.10	2—1	$2p^2\,{}^1D - 9d\,{}^1P°$ UV 59.01
1256.5933	P		1.26	11.13	2—2	$2p^2\,{}^1D - 10d\,{}^3D°$ UV 59.02
1045.958	P		1.26	13.12	2—1	$2p^2\,{}^1D - 2p^3\,{}^3S°$ UV 59.03
Air 2582.901	A		2.68	7.48	0—1	$2p^2\,{}^1S - 3s\,{}^3P°$ UV 60
2478.561	A	16	2.68	7.68	0—1	$2p^2\,{}^1S - 3s\,{}^1P°$ UV 61
2355.445	P		2.68	7.95	0—1	$2p^2\,{}^1S - 2p^3\,{}^3D°$ UV 61.01
2117.601	P		2.68	8.54	0—1	$2p^2\,{}^1S - 3p\,{}^1P$ UV 61.02F
Vac 1865.464	P		2.68	9.33	0—1	$2p^2\,{}^1S - 2p^3\,{}^3P°$ UV 61.03
1770.892	P		2.68	9.68	0—1	$2p^2\,{}^1S - 4s\,{}^3P°$ UV 61.04
1765.366	P	(3)	2.68	9.71	0—1	$2p^2\,{}^1S - 3d\,{}^3D°$ UV 61.05
1763.909	P	(8)	2.68	9.71	0—1	$2p^2\,{}^1S - 4s\,{}^1P°$ UV 61.06
1751.8277	D	(50)	2.68	9.76	0—1	$2p^2\,{}^1S - 3d\,{}^1P°$ UV 62

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 1733.981	P		2.68	9.83	0—1	$2p^2\,{}^1S - 3d\,{}^3P°$ UV 62.01
1610.1919	P		2.68	10.38	0—1	$2p^2\,{}^1S - 5s\,{}^3P°$ UV 62.02
1608.4380	P	(3)	2.68	10.39	0—1	$2p^2\,{}^1S - 4d\,{}^3D°$ UV 62.03
1606.9601	P	(2)	2.68	10.40	0—1	$2p^2\,{}^1S - 5s\,{}^1P°$ UV 62.04
1602.9715	D	(6)	2.68	10.42	0—1	$2p^2\,{}^1S - 4d\,{}^1P°$ UV 63
1600.8176	P		2.68	10.43	0—1	$2p^2\,{}^1S - 4d\,{}^3P°$ UV 63.01
1545.9864	P		2.68	10.70	0—1	$2p^2\,{}^1S - 6s\,{}^3P°$ UV 63.02
1545.2485	P	(2)	2.68	10.71	0—1	$2p^2\,{}^1S - 5d\,{}^3D°$ UV 63.03
1543.9595	P	(3)	2.68	10.71	0—1	$2p^2\,{}^1S - 6s\,{}^1P°$ UV 63.04
1542.1766	D	(8)	2.68	10.72	0—1	$2p^2\,{}^1S - 5d\,{}^1P°$ UV 64
1541.5099	P	(2)	2.68	10.73	0—1	$2p^2\,{}^1S - 5d\,{}^3P°$ UV 64.01
1513.5336	P		2.68	10.88	0—1	$2p^2\,{}^1S - 7s\,{}^3P°$ UV 64.02
1511.9073	P	(1)	2.68	10.88	0—1	$2p^2\,{}^1S - 7s\,{}^1P°$ UV 64.03
1510.9812	P	(4)	2.68	10.89	0—1	$2p^2\,{}^1S - 6d\,{}^1P°$ UV 64.04
1510.6676	P	(1)	2.68	10.89	0—1	$2p^2\,{}^1S - 6d\,{}^3P°$ UV 64.05
1494.7448	P		2.68	10.98	0—1	$2p^2\,{}^1S - 8s\,{}^3P°$ UV 64.06
1493.2728	P	(0)	2.68	10.99	0—1	$2p^2\,{}^1S - 8s\,{}^1P°$ UV 64.07
1492.7376	P	(2)	2.68	10.99	0—1	$2p^2\,{}^1S - 7d\,{}^1P°$ UV 64.08
1482.8567	P		2.68	11.04	0—1	$2p^2\,{}^1S - 9s\,{}^3P°$ UV 64.09
1481.4521	P		2.68	11.05	0—1	$2p^2\,{}^1S - 9s\,{}^1P°$ UV 64.10
1481.1144	P		2.68	11.05	0—1	$2p^2\,{}^1S - 8d\,{}^1P°$ UV 64.11
1474.8434	P		2.68	11.09	0—1	$2p^2\,{}^1S - 10s\,{}^3P°$ UV 64.12

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1473.2416	P		2.68	11.10	0–1	2p² ¹S — 9d ¹P° UV 64.13
1188.3414	P		2.68	13.12	0–1	2p² ¹S — 2p³ ³S° UV 64.14
....						
Air						
2776.277	P		4.18	8.65	2–3	2p³ ⁵S° — 3p ³D UV 64.15
2778.853	P		4.18	8.64	2–2	
2780.490	P		4.18	8.64	2–1	
2701.263	P		4.18	8.77	2–1	2p³ ⁵S° — 3p ³S UV 64.16
2655.240	P		4.18	8.85	2–1	2p³ ⁵S° — 3p ³P UV 64.17
2656.685	P		4.18	8.85	2–1	
Vac						
1431.597	A	(2)	4.18	12.84	2–3	2p³ ⁵S° — 3s′ ⁵P UV 65
1432.105	A		4.18	12.84	2–2	
1432.530	A		4.18	12.84	2–1	
....						
Air						
10691.250	A	10	7.49	8.65	2–3	3s ³P° — 3p ³D 1
10683.082	A	8	7.48	8.64	1–2	
10685.345	A	6	7.48	8.64	0–1	
10729.533	A	6	7.49	8.64	2–2	
10707.333	A	6	7.48	8.64	1–1	
10753.985	A	2	7.49	8.64	2–1	
9658.435	A	10	7.49	8.77	2–1	3s ³P° — 3p ³S 2
9620.795	A	9	7.48	8.77	1–1	
9603.032	A	7	7.48	8.77	0–1	
9094.829	A	12	7.49	8.85	2–2	3s ³P° — 3p ³P 3
9078.278	A	8	7.48	8.85	1–1	
9111.797	A	10	7.49	8.85	2–1	
9088.508	A	9	7.48	8.85	1–0	
9061.432	A	9	7.48	8.85	1–2	
9062.466	A	8	7.48	8.85	0–1	
4890.645	A	2	7.49	10.02	2–3	3s ³P° — 4p ³D 3.01
*4888.912	A	1	7.48	10.02	1–2	
*4888.912	A	1	7.48	10.02	0–1	
4898.629	A	1	7.49	10.02	2–2	
4893.429	A	0	7.48	10.02	1–1	
4903.148	P		7.49	10.02	2–1	
4826.804	A	3	7.49	10.06	2–1	3s ³P° — 4p ³S 5
4817.371	A	4	7.48	10.06	1–1	
4812.916	A	2	7.48	10.06	0–1	
4771.747	A	8	7.49	10.09	2–2	3s ³P° — 4p ³P 6
4766.676	A	4	7.48	10.08	1–1	
4775.907	A	6	7.49	10.08	2–1	
4770.032	A	5	7.48	10.08	1–0	
4762.541	A	5	7.48	10.09	1–2	
4762.314	A	5	7.48	10.08	0–1	
4676.692	P		7.49	10.14	2–2	3s ³P° — 4p ¹D 6.01
4667.846	P		7.48	10.14	1–2	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
4065.246	A	4	7.49	10.54	2–3	3s ³P° — 5p ³D .7
4064.271	A	3	7.48	10.53	1–2	
4063.577	A	2	7.48	10.53	0–1	
4070.970	A	2	7.49	10.53	2–2	
4066.752	A	2	7.48	10.53	1–1	
4073.464	P		7.49	10.53	2–1	
4029.413	A	4	7.49	10.56	2–2	3s ³P° — 5p ³P 7.01
4025.221	A	1	7.48	10.56	1–1	
4031.795	A	3	7.49	10.56	2–1	
4028.355	A	2	7.48	10.56	1–0	
4022.841	A	3	7.48	10.56	1–2	
4022.115	A	2	7.48	10.56	0–1	
3997.803	P		7.49	10.59	2–2	3s ³P° — 5p ¹D 7.02
3991.337	P		7.48	10.59	1–2	
3769.708	P		7.49	10.78	2–1	3s ³P° — 6p ¹P 7.03
3763.956	A	0	7.48	10.78	1–1	
3757.048	A	3	7.49	10.79	2–3	3s ³P° — 6p ³D 7.04
3756.522	A	2	7.48	10.78	1–2	
3755.121	A	1	7.48	10.78	0–1	
3762.251	A	2	7.49	10.78	2–2	
3757.836	A	1	7.48	10.78	1–1	
3763.563	P		7.49	10.78	2–1	
3741.443	A	2	7.49	10.80	2–2	3s ³P° — 6p ³P 7.05
3737.186	A	0	7.48	10.80	1–1	
3742.851	A	1	7.49	10.80	2–1	
3740.789	A	0	7.48	10.80	1–0	
3735.776	A	1	7.48	10.80	1–2	
3734.509	A	0	7.48	10.80	0–1	
3613.235	P		7.49	10.92	2–1	3s ³P° — 7p ¹P 7.06
3607.940	A	0	7.48	10.92	1–1	
3603.528	A	2	7.49	10.93	2–3	3s ³P° — 7p ³D 7.07
3603.440	A	1	7.48	10.92	1–2	
3601.465	A	0	7.48	10.92	0–1	
3608.696	A	1	7.49	10.92	2–2	
3603.952	A	0 ·	7.48	10.92	1–1	
3609.226	P		7.49	10.92	2–1	
3595.456	A	0	7.49	10.93	2–2	3s ³P° 7p ³P 7.08
3590.972	P		7.48	10.93	1–1	
3523.366	P		7.49	11.01	2–1	3s ³P° — 8p ¹P 7.09
3518.314	A	0	7.48	11.01	1–1	
3514.801	A	2	7.49	11.01	2–3	3s ³P° — 8p ³D 7.10
3510.132	P		7.49	11.02	2–2	3s ³P° — 8p ³P 7.11
3458.503	A	1	7.49	11.07	2–3	3s ³P° — 9p ³D 7.12
3420.405	A	0	7.49	11.11	2–3	3s ³P° — 10p ³D 7.13
....						

Multiplet Table

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
14542.50	B	179	7.68	8.54	1—1	$3s\ ^1P^\circ - 3p\ ^1P$ 7.14
10631.36	P		7.68	8.85	1—2	$3s\ ^1P^\circ - 3p\ ^3P$ 8
10654.56	P		7.68	8.85	1—1	
10668.65	P		7.68	8.85	1—0	
9405.729	A	16	7.68	9.00	1—2	$3s\ ^1P^\circ - 3p\ ^1D$ 9
8335.149	A	13	7.68	9.17	1—0	$3s\ ^1P^\circ - 3p\ ^1S$ 10
5380.336	A	10	7.68	9.99	1—1	$3s\ ^1P^\circ - 4p\ ^1P$ 11
5312.174	P		7.68	10.02	1—2	$3s\ ^1P^\circ - 4p\ ^3D$ 11.01
5317.465	A	1	7.68	10.02	1—1	
5052.167	A	8	7.68	10.14	1—2	$3s\ ^1P^\circ - 4p\ ^1D$ 12
4932.050	A	8	7.68	10.20	1—0	$3s\ ^1P^\circ - 4p\ ^1S$ 13
4371.368	A	6	7.68	10.52	1—1	$3s\ ^1P^\circ - 5p\ ^1P$ 14
4352.558	P		7.68	10.53	1—2	$3s\ ^1P^\circ - 5p\ ^3D$ 15
4355.408	A	1	7.68	10.53	1—1	
4269.020	A	6	7.68	10.59	1—2	$3s\ ^1P^\circ - 5p\ ^1D$ 16
4228.326	A	5	7.68	10.62	1—0	$3s\ ^1P^\circ - 5p\ ^1S$ 17
4009.930	A	4	7.68	10.78	1—1	$3s\ ^1P^\circ - 6p\ ^1P$ 17.01
4001.490	P		7.68	10.78	1—2	$3s\ ^1P^\circ - 6p\ ^3D$ 17.02
4002.976	A	2	7.68	10.78	1—1	
3961.403	A	3	7.68	10.81	1—2	$3s\ ^1P^\circ - 6p\ ^1D$ 17.03
3942.223	A	3	7.68	10.83	1—0	$3s\ ^1P^\circ - 6p\ ^1S$ 17.04
3833.347	A	3	7.68	10.92	1—1	$3s\ ^1P^\circ - 7p\ ^1P$ 17.05
3828.247	P		7.68	10.92	1—2	$3s\ ^1P^\circ - 7p\ ^3D$ 17.06
3828.849	A	2	7.68	10.92	1—1	
3804.305	A	2	7.68	10.94	1—2	$3s\ ^1P^\circ - 7p\ ^1D$ 17.07
3793.678	A	2	7.68	10.95	1—0	$3s\ ^1P^\circ - 7p\ ^1S$ 17.08

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
3732.349	A	2	7.68	11.01	1—1	$3s\ ^1P^\circ - 8p\ ^1P$ 17.09
3729.026	A	1	7.68	11.01	1—1	$3s\ ^1P^\circ - 8p\ ^3D$ 17.10
3712.035	A	1	7.68	11.02	1—2	$3s\ ^1P^\circ - 8p\ ^1D$ 17.11
3705.557	A	1	7.68	11.03	1—0	$3s\ ^1P^\circ - 8p\ ^1S$ 17.12
3668.600	A	1	7.68	11.06	1—1	$3s\ ^1P^\circ - 9p\ ^1P$ 17.13
3652.824	A	0	7.68	11.08	1—2	$3s\ ^1P^\circ - 9p\ ^1D$ 17.14
3648.623	A	0	7.68	11.08	1—0	$3s\ ^1P^\circ - 9p\ ^1S$ 17.15
3625.609	A	0	7.68	11.10	1—1	$3s\ ^1P^\circ - 10p\ ^1P$ 17.16
3609.562	A	0	7.68	11.12	1—0	$3s\ ^1P^\circ - 10p\ ^1S$ 17.17
3595.140	A	0	7.68	11.13	1—1	$3s\ ^1P^\circ - 11p\ ^1P$ 17.18
....			....	....		
13697.81	B	6	7.95	8.85	3—2	$2p^3\ ^3D^\circ - 3p\ ^3P$ 17.19
13743.93	B	3	7.95	8.85	2—1	
13765.29	B	1	7.95	8.85	1—0	
13705.41	B	1	7.95	8.85	2—2	
13741.86	B	1	7.95	8.85	1—1	
13703.28	P		7.95	8.85	1—2	
5969.326	A	4	7.95	10.02	3—3	$2p^3\ ^3D^\circ - 4p\ ^3D$ 17.20
5982.671	A	2	7.95	10.02	2—2	
5989.014	A	2	7.95	10.02	1—1	
5981.221	A	1	7.95	10.02	3—2	
5989.401	A	1	7.95	10.02	2—1	
5970.726	A	0	7.95	10.02	2—3	
5982.275	A	0	7.95	10.02	1—2	
5793.116	A	7	7.95	10.09	3—2	$2p^3\ ^3D^\circ - 4p\ ^3P$ 18
5800.594	A	6	7.95	10.08	2—1	
5805.192	A	4	7.95	10.08	1—0	
5794.459	A	3	7.95	10.09	2—2	
5800.232	A	3	7.95	10.08	1—1	
5794.104	P		7.95	10.09	1—2	
5040.752	P		7.95	10.40	3—	$2p^3\ ^3D^\circ - 4f\ [2\tfrac{1}{2}]$ 18.01
5041.796	A	6	7.95	10.40	2—	
5041.481	A	6	7.95	10.40	1—2	
5039.069	A	7	7.95	10.41	3—	$[3\tfrac{1}{2}]$
5040.134	A	4	7.95	10.41	2—3	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
5023.849	A	7	7.95	10.41	3—	2p³ ³D°— 4f'[3½]
5024.916	A	3	7.95	10.41	2—3	18.02
5017.090	A	3	7.95	10.42	3—	2p³ ³D°— 4f'[2½]
5018.068	A	2	7.95	10.42	2—	18.03
5017.761	A	1	7.95	10.42	1—2	
5011.264	P		7.95	10.42	3—2	[1½]
5012.279	A	2	7.95	10.42	2—	
5012.003	A	2	7.95	10.42	1—	
4783.795	A	1	7.95	10.54	3—3	2p³ ³D°— 5p ³D
4792.649	A	0	7.95	10.53	2—2	18.04
4795.878	A	0	7.95	10.53	1—1	
4791.710	A	0	7.95	10.53	3—2	
4796.082	A	0	7.95	10.53	2—1	
4784.721	P		7.95	10.54	2—3	
4792.407	P		7.95	10.53	1—2	
4734.262	A	5	7.95	10.56	3—2	2p³ ³D°— 5p ³P
4738.466	A	3	7.95	10.56	2—1	18.05
4742.570	A	2	7.95	10.56	1—0	
4735.165	A	2	7.95	10.56	2—2	
4738.213	A	1	7.95	10.56	1—1	
4734.917	P		7.95	10.56	1—2	
4478.009	P		7.95	10.71	3—	2p³ ³D°— 5f [2½]
4478.825	A	4	7.95	10.71	2—	18.06
4478.588	A	4	7.95	10.71	1—2	
4477.472	A	4	7.95	10.71	3—	[3½]
4478.319	A	2	7.95	10.71	2—3	
4466.476	A	5	7.95	10.72	3—	2p³ ³D°— 5f'[3½]
4467.309	A	2	7.95	10.72	2—3	18.07
4463.886	A	2	7.95	10.72	3—	2p³ ³D°— 5f'[2½]
4464.677	A	2	7.95	10.72	2—	18.08
4464.448	A	1	7.95	10.72	1—2	
4460.699	P		7.95	10.72	3—2	[1½]
4461.500	A	1	7.95	10.72	2—	
4461.300	A	1	7.95	10.72	1—	
4362.663	P		7.95	10.79	3—3	2p³ ³D°— 6p ³D
4370.452	P		7.95	10.78	2—2	18.09
4372.018	P		7.95	10.78	1—1	
4341.640	A	2	7.95	10.80	3—2	2p³ ³D°— 6p ³P
4344.309	A	1	7.95	10.80	2—1	18.10
4348.966	A	1	7.95	10.80	1—0	
4342.396	A	0	7.95	10.80	2—2	
4344.111	A	0	7.95	10.80	1—1	
4342.194	P		7.95	10.80	1—2	
4222.631	P		7.95	10.88	3—	2p³ ³D°— 6f [2½]
4223.360	A	3	7.95	10.88	2—	18.11
*4223.159	A	4	7.95	10.88	1—2	
4222.466	A	3	7.95	10.88	3—	[3½]
*4223.159	A	4	7.95	10.88	2—3	
4212.342	A	4	7.95	10.89	3—	2p³ ³D°— 6f'[3½]
4213.074	A	2	7.95	10.89	2—3	18.12

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
4211.115	A	2	7.95	10.89	3—	2p³ ³D°— 6f'[2½]
4211.817	A	2	7.95	10.89	2—	18.13
4211.613	A	1	7.95	10.89	1—2	
4209.195	P		7.95	10.89	3—2	[1½]
4209.905	A	0	7.95	10.89	2—	
4209.710	A	0	7.95	10.89	1—	
4157.024	P		7.95	10.93	3—3	2p³ ³D°— 7p ³D
4164.611	P		7.95	10.92	2—2	18.14
4165.118	P		7.95	10.92	1—1	
4146.264	A	2	7.95	10.93	3—2	2p³ ³D°— 7p ³P
4147.976	A	1	7.95	10.93	2—1	18.15
4153.374	A	0	7.95	10.93	1—0	
4146.971	A	0	7.95	10.93	2—2	
4147.786	P		7.95	10.93	1—1	
4083.161	A	1	7.95	10.98	2—	2p³ ³D°— 7f [2½]
4082.981	A	1	7.95	10.98	1—2	18.16
4082.415	A	1	7.95	10.98	3—4	[3½]
4072.643	A	3	7.95	10.99	3—	2p³ ³D°— 7f'[3½]
4073.327	A	1	7.95	10.99	2—3	18.17
4033.228	A	0	7.95	11.02	3—2	2p³ ³D°— 8p ³P
						18.18
*3996.488	A	0	7.95	11.05	3—	2p³ ³D°— 8f [2½]
3997.136	A	0	7.95	11.05	2—	18.19
3996.966	A	0	7.95	11.05	1—2	
*3996.488	A	0	7.95	11.05	3—4	[3½]
3986.879	A	1	7.95	11.05	3—4	2p³ ³D°— 8f'[3½]
						18.20
		....	....	....	....	
11330.285	A	6	8.54	9.63	1—2	3p ¹P — 3d ¹D°
						19
10759.28	P		8.54	9.69	1—2	3p ¹P — 4s ³P°
10795.70	P		8.54	9.68	1—1	19.01
10809.43	P		8.54	9.68	1—0	
10577.66	P		8.54	9.71	1—2	3p ¹P — 3d ³D°
10593.51	P		8.54	9.71	1—1	19.02
10541.226	A	4	8.54	9.71	1—1	3p ¹P — 4s ¹P°
						20
10123.871	A	6	8.54	9.76	1—1	3p ¹P — 3d ¹Pᵛ
						20.01
9562.618	P		8.54	9.83	1—2	3p ¹P — 3d ³P°
9555.370	P		8.54	9.83	1—1	20.02
9551.372	P		8.54	9.83	1—0	
6828.117	A	6	8.54	10.35	1—2	3p ¹P — 4d ¹D°
						21
6693.963	P		8.54	10.39	1—2	3p ¹P — 5s ³Pᶜ
6711.291	A	1	8.54	10.38	1—1	21.01
6716.892	P		8.54	10.38	1—0	

Multiplet Table

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
6672.945	P		8.54	10.39	1–2	$3p\,^1P - 4d\,^3D^\circ$
6680.950	P		8.54	10.39	1–1	21.02
6655.509	A	6	8.54	10.40	1–1	$3p\,^1P - 5s\,^1P^\circ$ 21.03
6587.608	A	8	8.54	10.42	1–1	$3p\,^1P - 4d\,^1P^\circ$ 22
6556.955	P		8.54	10.43	1–2	$3p\,^1P - 4d\,^3P^\circ$
6551.374	P		8.54	10.43	1–1	22.01
6549.172	P		8.54	10.43	1–0	
5769.117	P		8.54	10.69	1–2	$3p\,^1P - 5d\,^1D^\circ$ 22.02
5708.372	P		8.54	10.71	1–2	$3p\,^1P - 6s\,^3P^\circ$
5720.779	A	2	8.54	10.70	1–1	22.03
5723.949	P		8.54	10.70	1–0	
5701.932	P		8.54	10.71	1–2	$3p\,^1P - 5d\,^3D^\circ$
5710.681	P		8.54	10.71	1–1	22.04
5693.110	A	3	8.54	10.71	1–1	$3p\,^1P - 6s\,^1P^\circ$ 22.05
5668.951	A	7	8.54	10.72	1–1	$3p\,^1P - 5d\,^1P^\circ$ 22.06
5324.064	P		8.54	10.86	1–2	$3p\,^1P - 6d\,^1D^\circ$ 22.07
5290.261	P		8.54	10.88	1–2	$3p\,^1P - 7s\,^3P^\circ$
5300.118	A	1	8.54	10.88	1–1	22.08
5302.147	P		8.54	10.87	1–0	
5280.238	A	2	8.54	10.88	1–1	$3p\,^1P - 7s\,^1P^\circ$ 22.09
5268.956	A	4	8.54	10.89	1–1	$3p\,^1P - 6d\,^1P^\circ$ 22.10
5089.632	A	0	8.54	10.97	1–2	$3p\,^1P - 7d\,^1D^\circ$ 22.11
5067.543	P		8.54	10.98	1–2	$3p\,^1P - 8s\,^3P^\circ$
5076.592	A	1	8.54	10.98	1–1	22.12
5077.968	P		8.54	10.98	1–0	
5059.656	A	0	8.54	10.99	1–1	$3p\,^1P - 8s\,^1P^\circ$ 22.13
5053.515	A	2	8.54	10.99	1–1	$3p\,^1P - 7d\,^1P^\circ$ 22.14
4949.646	P		8.54	11.04	1–2	$3p\,^1P - 8d\,^1D^\circ$ 22.15
4942.021	A	0	8.54	11.04	1–1	$3p\,^1P - 9s\,^3P^\circ$
4942.926	P		8.54	11.04	1–0	22.16
4926.416	A	0	8.54	11.05	1–1	$3p\,^1P - 9s\,^1P^\circ$ 22.17

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
4922.688	A	1	8.54	11.05	1–1	$3p\,^1P - 8d\,^1P^\circ$ 22.18
4858.875	P		8.54	11.09	1–2	$3p\,^1P - 9d\,^1D^\circ$ 22.19
4836.764	A	0	8.54	11.10	1–1	$3p\,^1P - 9d\,^1P^\circ$ 22.20
18139.80	B	13	8.65	9.33	3–2	$3p\,^3D - 2p^3\,^3P^\circ$
18034.86	B	5	8.64	9.33	2–1	22.21
17959.24	B	3	8.64	9.33	1–0	
18030.47	B	2	8.64	9.33	2–2	
17966.12	B	2	8.64	9.33	1–1	
17962.00	P		8.64	9.33	1–2	
11895.75	B	30	8.65	9.69	3–2	$3p\,^3D - 4s\,^3P^\circ$
11892.91	B	17	8.64	9.68	2–1	23
11879.59	B	8	8.64	9.68	1–0	
11848.73	B	6	8.64	9.69	2–2	
11862.99	B	5	8.64	9.68	1–1	
11819.04	P		8.64	9.69	1–2	
11753.32	B	142	8.65	9.79	3–4	$3p\,^3D - 3d\,^3F^\circ$
11754.76	B	114	8.64	9.70	2–3	24
11748.22	B	82	8.64	9.70	1–2	
11801.08	B	7	8.65	9.70	3–3	
11777.54	B	11	8.64	9.70	2–2	
11824.03	P		8.65	9.70	3–2	
11659.68	B	47	8.65	9.71	3–3	$3p\,^3D - 3d\,^3D^\circ$
11628.83	B	23	8.64	9.71	2–2	25
11619.29	B	12	8.64	9.71	1–1	
11674.14	B	7	8.65	9.71	3–2	
11647.99	B	5	8.64	9.71	2–1	
11614.47	P		8.64	9.71	2–3	
11600.24	P		8.64	9.71	1–2	
10449.93	P		8.65	9.83	3–2	$3p\,^3D - 3d\,^3P^\circ$
10405.01	P		8.64	9.83	2–1	25.01
10377.41	P		8.64	9.83	1–0	
7116.990	A	8	8.65	10.39	3–2	$3p\,^3D - 5s\,^3P^\circ$
7119.671	A	7	8.64	10.38	2–1	25.02
*7115.186	A	9	8.64	10.38	1–0	
7100.124	A	5	8.64	10.39	2–2	
7108.935	A	3	8.64	10.38	1–1	
7089.46	P		8.64	10.39	1–2	
7113.180	A	9	8.65	10.39	3–4	$3p\,^3D - 4d\,^3F^\circ$
*7115.186	A	9	8.64	10.38	2–3	26
7111.475	A	7	8.64	10.38	1–2	
7132.112	A	1	8.65	10.38	3–3	
7122.196	A	1	8.64	10.38	2–2	
7139.175	P		8.65	10.38	3–2	
7087.827	A	4	8.65	10.40	3–3	$3p\,^3D - 4d\,^3D^\circ$
7076.479	A	2	8.64	10.39	2–2	26.01
7074.864	A	1	8.64	10.39	1–1	
7093.249	A	3	8.65	10.39	3–2	
7085.511	A	0	8.64	10.39	2–1	
7071.102	P		8.64	10.40	2–3	
7065.889	P		8.64	10.39	1–2	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.	I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air							Air						
7056.871	A	0	8.64	10.40	2 − 1	3p ³D − 5s ¹P°	5543.817	A	0	8.65	10.88	3 − 3	3p ³D − 6d ³D°
7046.351	P		8.64	10.40	1 − 1	26.02	5534.807	A	1	8.64	10.88	2 − 2	26.15
							*5545.071	A	6	8.65	10.88	3 − 2	
7038.627	P		8.65	10.41	3 −	3p ³D − 4d ¹F°							
7022.129	P		8.64	10.41	2 − 3	26.03	5529.781	A	1	8.64	10.88	2 1	3p ³D − 7s ¹P°
							5523.282	P		8.64	10.88	1 − 1	26.16
6962.31	A	0	8.65	10.43	3 − 2	3p ³D − 4d ³P°							
6939.91	P		8.64	10.43	2 − 1	26.04	5526.833	A	2	8.65	10.89	3 − 2	3p ³D − 6d ³P°
6927.26	P		8.64	10.43	1 − 0		5513.200	P		8.64	10.89	2 − 1	26.17
							5516.643	A	0	8.64	10.89	2 − 2	
6080.609	P		8.65	10.69	3 − 2	3p ³D − 5d ¹D°	5506.768	P		8.64	10.89	1 − 1	
6068.267	A	0	8.64	10.69	2 − 2	26.05							
6060.501	P		8.64	10.69	1 − 2		5306.315	A	0	8.65	10.98	3 − 2	3p ³D − 8s ³P°
							5306.837	A	2	8.64	10.98	2 − 1	26.18
*6013.215	A	10	8.65	10.71	3 − 4	3p ³D − 5d ³F°	5302.352	A	1	8.64	10.98	1 − 0	
6016.449	A	6	8.64	10.70	2 − 3	26.06	5296.930	A	0	8.64	10.98	2 − 2	
6012.236	A	5	8.64	10.70	1 − 2		5300.845	A	1	8.64	10.98	1 − 1	
6028.555	P		8.65	10.70	3 − 3		5290.995	P		8.64	10.98	1 − 2	
6019.866	A	0	8.64	10.70	2 − 2								
6032.018	P		8.65	10.70	3 − 2		5291.224	A	1	8.64	10.99	2 − 2	3p ³D − 7d ³D°
							5300.550	A	3	8.65	10.99	3 − 2	26.19
*6013.215	A	10	8.65	10.71	3 − 2	3p ³D − 6s ³P°							
6014.845	A	9	8.64	10.70	2 − 1	26.07	5288.315	A	0	8.64	10.99	2 − 1	3p ³D − 8s ¹P°
6010.679	A	7	8.64	10.70	1 − 0		5282.398	P		8.64	10.99	1 − 1	26.20
6001.126	A	8	8.64	10.71	2 − 2								
6007.178	A	6	8.64	10.70	1 − 1		5159.920	A	1	8.64	11.04	2 − 1	3p ³D − 9s ³P°
5993.501	P		8.64	10.71	1 − 2		5155.292	A	1	8.64	11.04	1 − 0	26.21
6002.982	A	4	8.65	10.71	3 − 3	3p ³D − 5d ³D°	5144.717	P		8.64	11.05	2 − 2	3p ³D − 8d ³D°
5994.004	P		8.64	10.71	2 − 2	26.08	5153.571	A	2	8.65	11.05	3 − 2	26.22
5996.057	A	2	8.64	10.71	1 − 1								
6006.028	A	9	8.65	10.71	3 − 2		5064.147	A	0	8.64	11.09	2 − 1	3p ³D − 10s ³P°
6003.666	A	1	8.64	10.71	2 − 1								26.23
5990.979	P		8.64	10.71	2 − 3								
5986.402	P		8.64	10.71	1 − 2		5049.156	P		8.64	11.10	2 − 2	3p ³D − 9d ³D°
							5057.682	A	0	8.65	11.10	3 − 2	26.24
5984.260	A	3	8.64	10.71	2 − 1	3p ³D − 6s ¹P°							
5976.678	P		8.64	10.71	1 − 1	26.09	4983.106	P		8.64	11.13	2 − 2	3p ³D − 10d ³D°
							4991.408	A	0	8.65	11.13	3 − 2	26.25
5984.517	P		8.65	10.72	3 − 3	3p ³D − 5d ¹F°							
5972.588	A	0	8.64	10.72	2 − 3	26.10	4935.431	P		8.64	11.15	2 − 2	3p ³D − 11d ³D°
							4949.576	A	0	8.65	11.15	3 − 2	26.26
5957.559	P		8.64	10.72	2 − 1	3p ³D − 5d ¹P°							
5950.040	A	1	8.64	10.72	1 − 1	26.11	13502.27	B	20	8.77	9.69	1 − 2	3p ³S − 4s ³P°
							13559.66	B	12	8.77	9.68	1 − 1	26.27
5963.989	A	4	8.65	10.73	3 − 2	3p ³D − 5d ³P°	13581.35	B	5	8.77	9.68	1 − 0	
5947.607	A	1	8.64	10.73	2 − 1	26.12							
5938.826	P		8.64	10.73	1 − 0		13160.65	P		8.77	9.71	1 − 1	3p ³S − 4s ¹P°
5952.133	A	2	8.64	10.73	2 − 2								27
5940.100	A	0	8.64	10.73	1 − 1								
5944.639	P		8.64	10.73	1 − 2		12516.42	P		8.77	9.76	1 − 1	3p ³S − 3d ¹P°
													28
5548.902	A	1	8.65	10.88	3 − 4	3p ³D − 6d ³F°							
5553.174	A	1	8.64	10.87	2 − 3	26.13	11669.63	B	24	8.77	9.83	1 − 2	3p ³S − 3d ³P°
5548.239	A	0	8.64	10.87	1 − 2		11658.85	B	13	8.77	9.83	1 − 1	29
							11652.91	B	5	8.77	9.83	1 − 0	
5551.032	A	2	8.65	10.88	3 − 2	3p ³D − 7s ³P°							
5551.589	A	5	8.64	10.88	2 − 1	26.14	7662.430	A	5	8.77	10.39	1 − 2	3p ³S − 5s ³P°
5547.271	A	3	8.64	10.87	1 − 0		7685.197	A	4	8.77	10.38	1 − 1	29.01
5540.756	A	2	8.64	10.88	2 − 2		7692.495	A	2	8.77	10.38	1 − 0	
*5545.071	A	6	8.64	10.88	1 − 1								
5534.259	P		8.64	10.88	1 − 2		7612.102	P		8.77	10.40	1 − 1	3p ³S − 5s ¹P°
													29.02

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
7483.436	A	3	8.77	10.43	1–2	$3p$ ³S — $4d$ ³P°
7476.178	A	2	8.77	10.43	1–1	29.03
7473.303	A	1	8.77	10.43	1–0	
6397.979	A	5	8.77	10.71	1–2	$3p$ ³S — $6s$ ³P°
6413.553	A	3	8.77	10.70	1–1	29.04
6417.544	A	2	8.77	10.70	1–0	
6389.871	A	2	8.77	10.71	1–2	$3p$ ³S — $5d$ ³D°
6400.866	P		8.77	10.71	1–1	29.05
6378.791	A	0	8.77	10.71	1–1	$3p$ ³S — $6s$ ¹P° 29.06
6342.315	A	2	8.77	10.73	1–2	$3p$ ³S — $5d$ ³P°
6337.196	A	1	8.77	10.73	1–1	29.07
6335.704	A	0	8.77	10.73	1–0	
5877.313	A	2	8.77	10.88	1–2	$3p$ ³S — $7s$ ³P°
5889.515	A	2	8.77	10.88	1–1	29.08
5892.000	A	1	8.77	10.87	1–0	
5870.655	A	3	8.77	10.88	1–2	$3p$ ³S — $6d$ ³D° 29.09
5864.948	A	0	8.77	10.88	1–1	$3p$ ³S — $7s$ ¹P° 29.10
5850.254	A	0	8.77	10.89	1–2	$3p$ ³S — $6d$ ³P°
5846.346	A	0	8.77	10.89	1–1	29.11
5603.733	A	0	8.77	10.98	1–2	$3p$ ³S — $8s$ ³P°
5614.809	A	0	8.77	10.98	1–1	29.12
5616.490	A	0	8.77	10.98	1–0	
5597.300	A	1	8.77	10.99	1–2	$3p$ ³S — $7d$ ³D° 29.13
25833.66	B	1	8.85	9.33	2–2	$3p$ ³P — $2p$³ ³P°
25706.03	B	1	8.85	9.33	1–1	29.14
25842.20	B	1	8.85	9.33	2–1	
25697.56	B	1	8.85	9.33	1–2	
14782.98	B	4	8.85	9.69	2–2	$3p$ ³P — $4s$ ³P°
14806.73	P		8.85	9.68	1–1	29.15
14637.03	B	2	8.85	9.70	2–3	$3p$ ³P — $3d$ ³F°
14628.36	P		8.85	9.70	1–2	29.16
14420.12	B	61	8.85	9.71	2–3	$3p$ ³P — $3d$ ³D°
14399.65	B	38	8.85	9.71	1–2	29.17
14403.25	B	16	8.85	9.71	0–1	
14442.24	B	13	8.85	9.71	2–2	
14429.03	B	12	8.85	9.71	1–1	
14471.78	P		8.85	9.71	2–1	
12614.10	B	26	8,85	9.83	2–2	$3p$ ³P — $3d$ ³P°
12569.04	B	5	8.85	9.83	1–1	30
12601.48	B	8	8.85	9.83	2–1	
12562.12	B	6	8.85	9.83	1–0	
12581.59	B	6	8.85	9.83	1–2	
12549.48	B	5	8.85	9.83	0–1	

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
8058.622	A	8	8.85	10.39	2–2	$3p$ ³P — $5s$ ³P°
8070.416	A	3	8.85	10.38	1–1	30.01
8083.797	A	5	8.85	10.38	2–1	
8078.480	A	4	8.85	10.38	1–0	
8045.333	A	4	8.85	10.39	1–2	
8062.356	A	3	8.85	10.38	0–1	
8021.262	A	3	8.85	10.40	2–3	$3p$ ³P — $4d$ ³D°
8014.998	P		8.85	10.39	1–2	31
8018.564	A	1	8.85	10.39	0–1	
7860.889	A	8	8.85	10.43	2–2	$3p$ ³P — $4d$ ³P°
7840.270	A	2	8.85	10.43	1–1	32
7852.862	A	4	8.85	10.43	2–1	
7837.105	A	3	8.85	10.43	1–0	
7848.246	A	4	8.85	10.43	1–2	
7832.629	A	3	8.85	10.43	0–1	
6671.840	A	5	8.85	10.71	2–2	$3p$ ³P — $6s$ ³P°
6679.642	P		8.85	10.70	1–1	33
6688.787	A	4	8.85	10.70	2–1	
6683.954	A	4	8.85	10.70	1–0	
6662.733	A	3	8.85	10.71	1–2	
6674.110	A	4	8.85	10.70	0–1	
6659.312	P		8.85	10.71	2–3	$3p$ ³P — $5d$ ³D°
6653.946	A	1	8.85	10.71	1–2	34
6660.382	P		8.85	10.71	0–1	
6663.044	A	4	8.85	10.71	2–2	
6665.884	P		8.85	10.71	1–1	
6611.354	A	4	8.85	10.73	2–2	$3p$ ³P — $5d$ ³P°
6596.849	A	1	8.85	10.73	1–1	35
6605.785	A	1	8.85	10.73	2–1	
6595.240	A	1	8.85	10.73	1–0	
6602.416	A	2	8.85	10.73	1–2	
6591.446	A	1	8.85	10.73	0–1	
6107.653	A	1	8.85	10.88	2–2	$3p$ ³P — $7s$ ³P°
6113.150	A	1	8.85	10.88	1–1	36
6120.818	A	2	8.85	10.88	2–1	
6115.850	A	2	8.85	10.87	1–0	
6100.028	A	2	8.85	10.88	1–2	
6108.526	A	2	8.85	10.88	0–1	
6098.923	A	1	8.85	10.88	2–3	$3p$ ³P — $6d$ ³D°
6092.837	A	1	8.85	10.88	1–2	37
6100.459	A	4	8.85	10.88	2–2	
6094.298	A	0	8.85	10.88	2–1	$3p$ ³P — $7s$ ¹P°
6086.686	A	0	8.85	10.88	1–1	38
6082.107	P		8.85	10.88	0–1	
6078.395	A	2	8.85	10.89	2–2	$3p$ ³P — $6d$ ³P°
6066.646	P		8.85	10.89	1–1	39
6074.195	P		8.85	10.89	2–1	
6070.833	A	1	8.85	10.89	1–2	
6062.089	A	0	8.85	10.89	0–1	
5812.721	P		8.85	10.98	2–2	$3p$ ³P — $8s$ ³P°
5817.701	A	0	8.85	10.98	1–1	40
5824.643	A	1	8.85	10.98	2–1	
5819.499	A	1	8.85	10.98	1–0	
*5805.801	A	3	8.85	10.98	1–2	
5813.510	A	1	8.85	10.98	0–1	

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
5798.895	A	0	8.85	10.99	1–2	$3p$ ³P — $7d$ ³D° 41
*5005.001	A	3	8.85	10.99	2–2	
5623.445	P		8.85	11.05	1–2	$3p$ ³P — $8d$ ³D° 42
5629.930	A	1	8.85	11.05	2–2	
5509.469	P		8.85	11.10	1–2	$3p$ ³P — $9d$ ³D° 43
5515.691	A	0	8.85	11.10	2–2	
2904.95	A	—	8.85	13.12	2–1	$3p$ ³P — $2p$³ ³S° UV 66
2903.26	A	—	8.85	13.12	1–1	
2902.30	A	—	8.85	13.12	0–1	
19721.99	B	23	9.00	9.63	2–2	$3p$ ¹D — $3d$ ¹D° 44
17448.60	B	11	9.00	9.71	2–1	$3p$ ¹D — $4s$ ¹P° 45
16890.38	B	50	9.00	9.74	2–3	$3p$ ¹D — $3d$ ¹F° 46
16333.94	P		9.00	9.76	2–1	$3p$ ¹D — $3d$ ¹P° 47
9182.831	A	4	9.00	10.35	2–2	$3p$ ¹D — $4d$ ¹D° 48
8873.390	A	3	9.00	10.40	2–1	$3p$ ¹D — $5s$ ¹P° 49
8818.480	P		9.00	10.41	2–3	$3p$ ¹D — $4d$ ¹F° 50
8753.079	A	3	9.00	10.42	2–1	$3p$ ¹D — $4d$ ¹P° 51
7364.734	A	3	9.00	10.69	2–2	$3p$ ¹D — $5d$ ¹D° 52
7266.032	P		9.00	10.71	2–2	$3p$ ¹D — $6s$ ³P° 53
7286.110	A	0	9.00	10.70	2–1	
7241.319	A	2	9.00	10.71	2–1	$3p$ ¹D — $6s$ ¹P° 54
7224.241	A	1	9.00	10.72	2–3	$3p$ ¹D — $5d$ ¹F° 55
7202.264	A	2	9.00	10.72	2–1	$3p$ ¹D — $5d$ ¹P° 56
6654.609	A	3	9.00	10.86	2–2	$3p$ ¹D — $6d$ ¹D° 57
6601.884	P		9.00	10.88	2–2	$3p$ ¹D — $7s$ ³P° 58
6617.241	A	0	9.00	10.88	2–1	
6586.273	A	2	9.00	10.88	2–1	$3p$ ¹D — $7s$ ¹P° 59

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
6578.772	A	2	9.00	10.89	2–3	$3p$ ¹D — $6d$ ¹F° 60
6568.708	A	2	9.00	10.89	2–1	$3p$ ¹D — $6d$ ¹P° 61
6292.366	A	2	9.00	10.97	2–2	$3p$ ¹D — $7d$ ¹D° 62
6246.597	P		9.00	10.99		$3p$ ¹D — $8s$ ¹P° 63
6242.699	A	1	9.00	10.99	2–3	$3p$ ¹D — $7d$ ¹F° 64
6237.265	A	1	9.00	10.99	2–1	$3p$ ¹D — $7d$ ¹P° 65
6079.771	A	1	9.00	11.04	2–2	$3p$ ¹D — $8d$ ¹D° 66
6044.793	A	0	9.00	11.05	2–1	$3p$ ¹D — $9s$ ¹P° 67
6042.457	A	1	9.00	11.05	2–3	$3p$ ¹D — $8d$ ¹F° 68
6039.171	A	0	9.00	11.05	2–1	$3p$ ¹D — $8d$ ¹P° 69
5943.389	A	0	9.00	11.09	2–2	$3p$ ¹D — $9d$ ¹D° 70
5912.577	A	0	9.00	11.10	2–3	$3p$ ¹D — $9d$ ¹F° 71
5910.338	P		9.00	11.10	2–1	$3p$ ¹D — $9d$ ¹P° 72
22906.56	B	7	9.17	9.71	0–1	$3p$ ¹S — $4s$ ¹P° 73
21023.13	B	8	9.17	9.76	0–1	$3p$ ¹S — $3d$ ¹P° 74
10096.81	P		9.17	10.40	0–1	$3p$ ¹S — $5s$ ¹P° 75
9941.349	P		9.17	10.42	0–1	$3p$ ¹S — $4d$ ¹P° 76
8035.962	P		9.17	10.71	0–1	$3p$ ¹S — $6s$ ¹P° 77
7987.889	A	2	9.17	10.72	0–1	$3p$ ¹S — $5d$ ¹P° 78
7237.185	P		9.17	10.88	0–1	$3p$ ¹S — $7s$ ¹P° 79
7216.029	A	0	9.17	10.89	0–1	$3p$ ¹S — $6d$ ¹P° 80

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
6829.136	P		9.17	10.99	0-1	3p ¹S — 8s ¹P° 81
6817.954	P		9.17	10.99	0-1	3p ¹S — 7d ¹P° 82
17918.38	B	4	9.33	10.02	2-3	2p³ ³P° — 4p ³D 83
18021.87	P		9.33	10.02	1-2	
18090.06	P		9.33	10.02	0-1	
8960.75	A	2	9.33	10.71	2-	2p³ ³P° — 5f [2½] 84
8959.66	P		9.33	10.71	1-2	
8904.34	A	2	9.33	10.72	2-	2p³ ³P° — 5f' [2½] 85
8903.20	A	1	9.33	10.72	1-2	
8891.73	P		9.33	10.72	2-	[1½]
8890.67	A	2	9.33	10.72	1-	
8892.43	P		9.33	10.72	0-1	
8510.445	A	1	9.33	10.79	2-3	2p³ ³P° — 6p ³D 86
8536.261	A	1	9.33	10.78	1-2	
8544.632	P		9.33	10.78	0-1	
8430.875	A	1	9.33	10.80	2-2	2p³ ³P° — 6p ³P 87
8437.106	P		9.33	10.80	1-1	
7993.420	A	3	9.33	10.88	2-	2p³ ³P° — 6f [2½] 88
7992.526	A	0	9.33	10.88	1-2	
7952.188	A	3	9.33	10.89	2-	2p³ ³P° — 6f' [2½] 89
7951.346	A	1	9.33	10.89	1-2	
7945.380	P		9.33	10.89	2-	[1½]
7944.602	A	3	9.33	10.89	1-	
7505.673	A	1	9.33	10.98	2-	2p³ ³P° — 7f [2½] 90
7504.945	P		9.33	10.98	1-2	
7470.094	A	1	9.33	10.99	2-3	2p³ ³P° — 7f' [2½] 91 [1½]
7465.445	A	1	9.33	10.99	1-2	

C I — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
24443.38	P		9.63	10.14	2-2	3d ¹D° — 4p ¹D 92
16021.64	B	3	9.63	10.40	2-	3d ¹D° — 4f [2½] 93 [3½]
16004.81	B	2	9.63	10.41	2-3	
12949.84	P		9.63	10.59	2-2	3d ¹D° — 5p ¹D 94
11448.76	P		9.63	10.71	2-	3d ¹D° — 5f [2½] 95
17505.64	B	3	9.70	10.41	3-4	3d ³F° — 4f [3½] 96
17455.97	B	2	9.70	10.41	2-3	
17323.51	B	2	9.70	10.41	3-4	3d ³F° — 4f' [3½] 97 [4½]
17274.99	B	3	9.70	10.41	2-3	
17338.56	B	10	9.70	10.42	4-5	
17234.48	B	3	9.70	10.42	3-4	
17814.03	B	3	9.71	10.40	2-	3d ³D° — 4f [2½] 98 [3½]
17768.94	B	3	9.71	10.40	1-2	
17826.33	B	4	9.71	10.41	3-4	
17793.26	P		9.71	10.41	2-3	
17637.38	B	3	9.71	10.41	3-4	3d ³D° — 4f' [3½] 99
18320.67	B	8	9.74	10.41	3-4	3d ¹F° — 4f' [3½] 100 [4½]
18221.12	B	8	9.74	10.42	3-4	
18926.54	B	3	9.76	10.42	1-2	3d ¹P° — 4f' [2½] 101 [1½]
18844.42	B	2	9.76	10.42	1-2	
21259.89	B	8	9.83	10.42	2-3	3d ³P° — 4f' [2½] 102 [1½]
21295.27	B	1	9.83	10.42	1-2	
21191.41	B	4	9.83	10.42	1-	
21211.55	B	2	9.83	10.42	0-1	

CARBON, $Z=6$

A   C II   Atomic Energy Levels

B   C II   Multiplet Table

Part A

CARBON

C II

(B I sequence; 5 electrons) $\qquad$ $Z = 6$

Ground state $1s^2\,2s^2\,2p\,{}^2P^\circ_{01/2}$

$2p\,{}^2P^\circ_{01/2}$ **196664.7** cm^{-1}, 508.480 Å $\qquad\qquad$ 24.383 eV

The analysis is by Glad, who has reobserved the spectrum from 1987 Å to 8800 Å. Five lines have been added between 9200 Å and 9900 Å from spectrograms taken by Bockasten.

Herzberg has remeasured two groups of C II lines, one at 1760 Å and one at 1335 Å. These five wavelengths provide auxiliary standards in the near vacuum ultraviolet and have been combined with other measurements to give additional calculated standards to shorter wavelengths. They serve, also, to improve the earlier values of the energy levels.

In his 1963 paper Edlén extends the list of calculated wavelengths in the vacuum ultraviolet on the basis of these corrected level-values, which he has generously furnished for inclusion here. The values for the terms $2p\,{}^2P^\circ$ and $2p^2\,{}^2D$ have been improved and, in turn, lead to a correction of -0.43 cm^{-1} to be applied to all other values by Glad.

From 438 Å to 1760 Å the earlier measurements by Edlén have been superseded by calculated wavelengths based on the present list of energy levels.

The levels in the $4f'$ and $5f'$ configurations designated by Glad ${}^4D_{21/2}$ and ${}^2D_{21/2}$ have been interchanged in accordance with a suggestion by Bockasten.

The limit has been determined by Bromander but is derived from Glad's data.

REFERENCES

S. Glad, Ark. Fys. (Stockholm) **7**, No. 2, 7 to 32 (1952). I P, T, C L

G. Herzberg, Proc. Roy. Soc. [A] **248**, 309 to 332 (1958). W L, C L G D

B. Edlén, Reports on Progress in Physics **26**, 181 to 212 (1963). W L, and private communication (1969). T

J. Bromander, private communication (1969). I P

K. Bockasten, private communication (1969). T

C II

Config.	Desig.	J	Level	Interval	Config.	Desig.	J	Level	Interval
$s^2({}^1S)2p$	$2p\ {}^2P^\circ$	$0\frac12$	*0.00*	63.42	$2p^3$	$2p^3\ {}^4S^\circ$	$1\frac12$	*142027.1*	
		$1\frac12$	*63.42*		$2s^2({}^1S)3d$	$3d\ {}^2D$	$1\frac12$	145549.27	1.43
$s\,2p^2$	$2p^2\ {}^4P$	$0\frac12$	43003.3	22.0			$2\frac12$	145550.70	
		$1\frac12$	43025.3	28.3	$2p^3$	$2p^3\ {}^2D^\circ$	$2\frac12$	*150461.58*	−5.11
		$2\frac12$	43053.6				$1\frac12$	*150466.69*	
$s\,2p^2$	$2p^2\ {}^2D$	$2\frac12$	74930.10	−2.52	$2s^2({}^1S)4s$	$4s\ {}^2S$	$0\frac12$	157234.07	
		$1\frac12$	74932.62		$2s^2({}^1S)4p$	$4p\ {}^2P^\circ$	$0\frac12$	*162517.89*	6.68
$s\,2p^2$	$2p^2\ {}^2S$	$0\frac12$	96493.74				$1\frac12$	*162524.57*	
$s\,2p^2$	$2p^2\ {}^2P$	$0\frac12$	110624.17	41.39	$2s\,2p({}^3P^\circ)3s$	$3s'\ {}^4P^\circ$	$0\frac12$	166967.13	23.60
		$1\frac12$	110665.56				$1\frac12$	166990.73	44.98
$s^2({}^1S)3s$	$3s\ {}^2S$	$0\frac12$	116537.65				$2\frac12$	167035.71	
$s^2({}^1S)3p$	$3p\ {}^2P^\circ$	$0\frac12$	*131724.37*	11.15	$2s^2({}^1S)4d$	$4d\ {}^2D$	$1\frac12$	168123.74	0.71
		$1\frac12$	*131735.52*				$2\frac12$	168124.45	

Atomic Energy Levels

CII—Continued

Config.	Desig.	J	Level	Interval
2p³	2p³ ²P°	0½ 1½	168729.53 168748.30	18.77
2s²(¹S)4f	4f ²F°	2½, 3½	168978.34	
2s²(¹S)5s	5s ²S	0½	173347.84	
2s²(¹S)5p	5p ²P°	0½ 1½	175287.39 175294.75	7.36
2s2p(³P°)3s	3s' ²P°	0½ 1½	177774.59 177793.54	18.95
2s²(¹S)5d	5d ²D	1½ 2½	178495.11 178495.71	0.60
2s²(¹S)5f	5f ²F°	2½, 3½	178955.94	
2s²(¹S)5g	5g ²G	3½, 4½	179073.05	
2s²(¹S)6s	6s ²S	0½	181264.24	
2s2p(³P°)3p	3p' ⁴D	0½ 1½ 2½ 3½	181696.66 181711.03 181736.05 181772.41	14.37 25.02 36.36
2s2p(³P°)3p	3p' ²P	0½ 1½	182023.86 182043.41	19.55
2s²(¹S)6p	6p ²P°	0½, 1½	182993.23	
2s²(¹S)6d	6d ²D	1½ 2½	184074.59 184075.28	0.69
2s²(¹S)6f	6f ²F°	2½, 3½	184376.06	
2s²(¹S)6g	6g ²G	3½, 4½	184449.27	
2s²(¹S)6h	6h ²H°	4½, 5½	184466.5	
2s2p(³P°)3p	3p' ⁴S	1½	184690.98	
2s²(¹S)7s	7s ²S	0½	185732.93	
2s2p(³P°)3p	3p' ⁴P	0½ 1½ 2½	186427.35 186443.69 186466.02	16.34 22.33
2s²(¹S)7p	7p ²P°	0½, 1½	186745.9	
2s²(¹S)7f	7f ²F°	2½, 3½	187641.6	
2s²(¹S)7g	7g ²G	3½, 4½	187691.4	
2s²(¹S)7h	7h ²H°	4½, 5½	187701	
2s2p(³P°)3p	3p' ²D	1½ 2½	188581.25 188615.07	33.82
2s²(¹S)8g	8g ²G	3½, 4½	189794.2	
2s2p(³P°)3d	3d' ⁴F°	1½ 2½ 3½ 4½	195752.58 195765.85 195785.74 195813.66	13.27 19.89 27.92
2s2p(³P°)3d	3d' ⁴D°	0½ 1½ 2½ 3½	196557.87 196563.41 196571.82 196581.96	5.54 8.41 10.14

Config.	Desig.	J	Level	Interval
C III(¹S₀)	Limit	....	196664.7	
2s2p(³P°)3d	3d' ²D°	1½ 2½	198425.43 198436.31	10.88
2s2p(³P°)3d	3d' ⁴P°	2½ 1½ 0½	198844.00 198865.25 198879.01	−21.25 −13.76
2s2p(³P°)3d	3d' ²F°	2½ 3½	199941.41 199983.24	41.83
2s2p(³P°)3d	3d' ²P°	1½ 0½	202179.85 202204.52	−24.67
2s2p(³P°)4s	4s' ⁴P°	0½ 1½ 2½	209552.36 209576.46 209622.32	24.10 45.86
2s2p(³P°)4p	4p' ²P	0½ 1½	214404.33 214429.95	25.62
2s2p(³P°)4p	4p' ⁴D	0½ 1½ 2½ 3½	214759.91 214772.84 214795.27 214829.77	12.93 22.43 34.50
2s2p(³P°)4p	4p' ⁴S	1½	215767.77	
2s2p(³P°)4p	4p' ⁴P	0½ 1½ 2½	216362.84 216379.59 216400.57	16.75 20.98
2s2p(³P°)4p	4p' ²D	1½ 2½	 216927	
2s2p(³P°)4d	4d' ⁴F°	1½ 2½ 3½ 4½	219556.54 219570.15 219590.76 219619.88	13.61 20.61 29.12
2s2p(³P°)4d	4d' ⁴D°	0½ 1½ 2½ 3½	220125.51 220130.86 220139.41 220150.49	5.35 8.55 11.08
2s2p(³P°)4d	4d' ²D°	1½ 2½	220601.53 220614.51	12.98
2s2p(³P°)4d	4d' ⁴P°	2½ 1½ 0½	220811.69 220832.15 220845.07	−20.46 −12.92
2s2p(³P°)4f	4f' ²F	2½ 3½	221088.88 221097.92	9.04
2s2p(³P°)4f	4f' ⁴F	1½ 2½ 3½ 4½	221093.95 221099.11 221105.73 221109.78	5.16 6.62 4.05
2s2p(³P°)4d	4d' ²F°	2½ 3½	221460.88 221503.33	42.45
2s2p(³P°)4f	4f' ⁴G	2½ 3½ 4½ 5½	221544.81 221553.99 221575.61 221604.90	9.18 21.62 29.29
2s2p(³P°)4f	4f' ²G	3½ 4½	221587.12 221625.72	38.60

C II — Continued

Config.	Desig.	J	Level	Interval
s 2p(³P°)4f	4f' ⁴D	3½	221698.48	
		2½	221707.71	−9.23
		1½	221729.69	−21.98
		0½	221742.79	−13.10
s 2p(³P°)4f	4f' ²D	2½	221729.92	−22.34
		1½	221752.26	
s 2p(³P°)4d	4d' ²P°	1½	222258.8	−26.9
		0½	222285.7	
s 2p(³P°)5s	5s' ⁴P°	0½	225748.0	23.8
		1½	225771.8	46.0
		2½	225817.8	
2p(³P°)5p	5p' ²P	0½	227881.21	26.50
		1½	227907.71	
2p(³P°)5p	5p' ⁴D	0½	228178.6	13.3
		1½	228191.9	19.9
		2½	228211.8	35.2
		3½	228246.97	
2p(³P°)5p	5p' ⁴S	1½	228656.84	
2p(³P°)5p	5p' ⁴P	0½		
		1½	228947.0	20.5
		2½	228967.49	
2p(³P°)5d	5d' ⁴F°	1½	230419	14
		2½	230433	25
		3½	230458	28
		4½	230485.5	
2p(³P°)5d	5d' ⁴D°	0½		
		1½	230755.1	7.5
		2½	230762.6	12.3
		3½	230774.9	
2p(³P°)5d	5d' ⁴P°	2½	231052.9	−18.8
		1½	231071.7	−14.9
		0½	231086.6	
2p(³P°)5f	5f' ²F	2½	231209.25	7.95
		3½	231217.20	
2p(³P°)5f	5f' ⁴F	1½	231213.1	3.5
		2½	231216.62	8.51
		3½	231225.13	3.54
		4½	231228.67	
2p(³P°)5f	5f' ⁴G	2½	231437.7	13.6
		3½	231451.3	22.2
		4½	231473.5	28.8
		5½	231502.3	
2p(³P°)5f	5f' ²G	3½	231480.7	38.5
		4½	231519.2	

C II — Continued

Config.	Desig.	J	Level	Interval
2s 2p(³P°)5f	5f' ⁴D	3½	231523.87	−4.52
		2½	231528.39	−22.8
		1½	231551.2	−16
		0½	231567	
2s 2p(³P°)5f	5f' ²D	2½	231551.2	−19.2
		1½	231570.4	
2s 2p(³P°)6s	6s' ⁴P°	0½	233670.9	22.4
		1½	233693.3	47.4
		2½	233740.7	
2s 2p(³P°)6p	6p' ⁴D	0½	234998	13
		1½	235011	20
		2½	235031	36
		3½	235066.8	
2s 2p(³P°)6p	6p' ⁴P	0½		
		1½		
		2½	235454.2	
2s 2p(³P°)6p	6d' ⁴D°	0½		
		1½		
		2½		
		3½	236446	
2s 2p(³P°)6d	6d' ⁴P°	0½		
		1½		
		2½	236607	
2s 2p(³P°)6f	6f' ⁴F	1½	236693	5
		2½	236698	9
		3½	236707	1
		4½	236708.1	
2s 2p(³P°)6f	6f' ²F	2½	236693	10
		3½	236703	
2s 2p(³P°)6f	6f' ⁴G	2½	236813	10
		3½	236023.3	19.9
		4½	236843.2	38.0
		5½	236881.2	
2s 2p(³P°)6f	6f' ²G	3½	236856.6	33.1
		4½	236889.7	
2s 2p(³P°)6f	6f' ⁴D	0½		
		1½		
		2½		
		3½	236877.8	
....	....	....	....	....
C III (³P°₀)	Limit	....	249031.7	
(³P°₁)			249055.4	
(³P°₂)			249111.8	

C II Observed Terms

Config. $1s^2+$	Observed Terms		
$2s\,2p^2$	$\begin{cases} & 2p^2\,{}^4P & \\ & 2p^2\,{}^2S \quad 2p^2\,{}^2P \quad 2p^2\,{}^2D \end{cases}$		
$2p^3$	$\begin{cases} 2p^3\,{}^4S^\circ & \\ & 2p^3\,{}^2P^\circ \quad 2p^3\,{}^2D^\circ \end{cases}$		
	$ns\,(n \geqslant 3)$	$np\,(n \geqslant 2)$	$nd\,(n \geqslant 3)$
$2s^2({}^1S)nl$	$3-7s\,{}^2S$	$2-7p\,{}^2P^\circ$	$3-6d\,{}^2D$
$2s2p\,({}^3P^\circ)nl'$	$\begin{cases} 3-6s'\,{}^4P^\circ \\ 3s'\,{}^2P^\circ \end{cases}$	$\begin{matrix} 3-5p'\,{}^4S & 3-6p'\,{}^4P & 3-6p'\,{}^4D \\ & 3-5p'\,{}^2P & 3-4p'\,{}^2D \end{matrix}$	$\begin{matrix} 3-6d'\,{}^4P^\circ & 3-6d'\,{}^4D^\circ & 3-5d'\,{}^4F^\circ \\ 3,4d'\,{}^2P^\circ & 3,4d'\,{}^2D^\circ & 3,4d'\,{}^2F^\circ \end{matrix}$
	$nf\,(n \geqslant 4)$	$ng\,(n \geqslant 5)$	$nh\,(n \geqslant 6)$
$2s^2({}^1S)nl$	$4-7f\,{}^2F^\circ$	$5-8g\,{}^2G$	$6,7h\,{}^2H^\circ$
$2s\,2p\,({}^3P^\circ)nl'$	$\begin{cases} 4-6f'\,{}^4D & 4-6f'\,{}^4F & 4-6f'\,{}^4G \\ 4,5f'\,{}^2D & 4-6f'\,{}^2F & 4-6f'\,{}^2G \end{cases}$		

Multiplet Table

Part B

CARBON

C II ($Z=6$)

I P 24.383 eV   Limit 196664.7 cm^{-1} 508.480 Å

Anal A   List A   December 1969

REFERENCES

A   S. Glad, Ark. Fys. (Stockholm) **7**, No. 2, 7 to 32 (1952). I P, T, C L, I; W L 438 Å to 9900 Å

B   G. Herzberg, Proc. Roy. Soc. [A] **248**, 309 to 332 (1958). W L 1334 Å to 1760 Å

C   B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 74 to 84 (1934). I P, T, C L, G D, (I); W L 425 Å to 7236 Å

New Multiplet Numbers, not inserted between older ones, start with 52 and UV 16.

*Blend

*and § Blend C II and C III

*and §§ Blend C II and C I

C II

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
25.398	P		0.01	5.34	1½–2½	2p ²P°–2p² ⁴P
23.500	P		0.00	5.33	0½–1½	UV 0.01
26.930	P		0.01	5.33	1½–1½	
24.689	P		0.00	5.33	0½–0½	
28.122	P		0.01	5.33	1½–0½	
Vac						
35.7077‡	B	(300)	0.01	9.29	1½–2½	2p ²P°–2p² ²D
34.5323	B	(150)	0.00	9.29	0½–1½	UV 1
35.6625	B	(30)	0.01	9.29	1½–1½	
37.0182	P	(150)	0.01	11.96	1½–0½	2p ²P°–2p² ²S
36.3367	P	(80)	0.00	11.96	0½–0½	UV 2
04.1416	P	(150)	0.01	13.72	1½–1½	2p ²P°–2p² ²P
03.9616	P	(60)	0.00	13.72	0½–0½	UV 3
04.4801	P	(30)	0.01	13.72	1½–0½	
03.6235	P	(30)	0.00	13.72	0½–1½	
58.5590	P	(20)	0.01	14.45	1½–0½	2p ²P°–3s ²S
58.0918	P	(10)	0.00	14.45	0½–0½	UV 4
87.3453	P	(50)	0.01	18.05	1½–2½	2p ²P°–3d ²D
87.0526	P	(30)	0.00	18.05	0½–1½	UV 5
87.3521	P	(6)	0.01	18.05	1½–1½	
36.2511	P	(2)	0.01	19.49	1½–0½	2p ²P°–4s ²S
35.9945	P	(1)	0.00	19.49	0½–0½	UV 5.01
95.0219	P	(9)	0.01	20.84	1½–2½	2p ²P°–4d ²D
94.8000	P	(5)	0.00	20.84	0½–1½	UV 6
95.0245	P	(1)	0.01	20.84	1½–1½	

C II

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
577.086	P	(2)	0.01	21.49	1½–0½	2p ²P°–5s ²S
576.875	P	(1)	0.00	21.49	0½–0½	UV 6.01
560.4367	P	(4)	0.01	22.13	1½–2½	2p ²P°–5d ²D
560.2394	P	(2)	0.00	22.13	0½–1½	UV 6.02
560.439	P		0.01	22.13	1½–1½	
551.874	P	(0)	0.01	22.47	1½–0½	2p ²P°–6s² S
551.681	P		0.00	22.47	0½–0½	UV 6.03
549.5110	P	(5)	0.01	22.57	1½–1½	2p ²P°–3p' ²P
549.3785	P	(2)	0.00	22.57	0½ 0½	UV 6.04
549.5700	P	(1)	0.01	22.57	1½–0½	
549.3195	P	(1)	0.00	22.57	0½–1½	
543.443	P	(3d)	0.01	22.82	1½–2½	2p ²P°–6d ²D
543.258	P	(2d)	0.00	22.82	0½–1½	UV 6.05
543.445	P		0.01	22.82	1½–1½	
530.359	P	(4d)	0.01	23.38	1½–2½	2p ²P°–3p' ²D
530.275	P	(3d)	0.00	23.38	0½–1½	UV 6.06
530.454	P		0.01	23.38	1½–1½	
466.491	P	(2)	0.01	26.59	1½–1½	2p ²P°–4p' ²P
466.408	P	(1)	0.00	26.58	0½–0½	UV 6.07
466.546	P	(0)	0.01	26.58	1½–0½	
466.353	P	(0)	0.00	26.59	0½–1½	
461.12	C	(1d)	0.01	26.89	1½–2½	2p ²P°–4p' ²D
						UV 6.08

Left table:

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
438.896	P	(1d)	0.01	28.26	1½–1½	2p ²P° –5p′ ²P
438.825	P		0.00	28.25	0½–0½	UV 6.09
			....			
1010.371	P	(10+)	5.34	17.61	2½–1½	2p² ⁴P –2p³ ⁴S°
1010.083	P	(10)	5.33	17.61	1½–1½	UV 7
1009.858	P	(9)	5.33	17.61	0½–1½	
806.568	P	(7)*	5.34	20.71	2½–2½	2p² ⁴P –3s′ ⁴P°
806.676	P}	(4)	5.33	20.70	1½–1½	UV 8
806.686	P}		5.33	20.70	0½–0½	
806.860	P}	(6)	5.34	20.70	2½–1½	
806.830	P}		5.33	20.70	1½–0½	
806.384	C	(5)	5.33	20.71	1½–2½	
806.533	P	(7)*	5.33	20.70	0½–1½	
651.345	P	(8)	5.34	24.37	2½–3½	2p² ⁴P –3d′ ⁴D°
651.269	P	(7)*	5.33	24.37	1½–2½	UV 9
651.211	P	(7–)*	5.33	24.37	0½–1½	
651.389	P		5.34	24.37	2½–2½	
651.304	P	(7)*	5.33	24.37	1½–1½	
651.234	P	(7–)*	5.33	24.37	0½–0½	
651.424	P		5.34	24.37	2½–1½	
651.327	P		5.33	24.37	1½–0½	
641.888	P	(6+)	5.34	24.65	2½–2½	2p² ⁴P –3d′ ⁴P°
641.684	P		5.33	24.66	1½–1½	UV 9.01
641.537	P		5.33	24.66	0½–0½	
641.800	P	(6)*	5.34	24.66	2½–1½	
641.627	P	(6)*	5.33	24.66	1½–0½	
641.771	P	(6)*	5.33	24.65	1½–2½	
641.593	P	(6)*	5.33	24.66	0½–1½	
600.353	P	(3)	5.34	25.99	2½–2½	2p² ⁴P –4s′ ⁴P°
600.416	P		5.33	25.98	1½–1½	UV 9.02
600.424	P		5.33	25.98	0½–0½	
600.518	P}	(2)*	5.34	25.98	2½–1½	
600.503	P}		5.33	25.98	1½–0½	
600.251	P	(1)	5.33	25.99	1½–2½	
600.337	P		5.33	25.98	0½–1½	
564.663	P}		5.34	27.29	2½–3½	2p² ⁴P –4d′ ⁴D°
564.608	P}		5.33	27.29	1½–2½	UV 9.03
564.565	P}	(5w)	5.33	27.29	0½–1½	
564.698	P}		5.34	27.29	2½–2½	
564.635	P}		5.33	27.29	1½–1½	
564.582	P}		5.33	27.29	0½–0½	
562.562	P	(3+)	5.34	27.38	2½–2½	2p² ⁴P –4d′ ⁴P°
562.408	P		5.33	27.38	1½–1½	UV 9.04
562.298	P		5.33	27.38	0½–0½	
562.497	P	(3)*	5.34	27.38	2½–1½	
562.367	P	(3)*	5.33	27.38	1½–0½	
562.473	P	(3)*	5.33	27.38	1½–2½	
562.338	P	(3)*	5.33	27.38	0½–1½	
547.153	P	(0+)	5.34	28.00	2½–2½	2p² ⁴P –5s′ ⁴P°
547.206	P		5.33	27.99	1½–1½	UV 9.05
547.211	P	(0)	5.33	27.99	0½–0½	
547.291	P}		5.34	27.99	2½–1½	
547.277	P}		5.33	27.99	1½–0½	
547.068	P		5.33	28.00	1½–2½	
547.140	P		5.33	27.99	0½–1½	

Right table:

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
532.705	P}	(3d)	5.34	28.61	2½–3½	2p² ⁴P –5d′ ⁴D°
532.659	P}		5.33	28.61	1½–2½	UV 9.06
532.618	P		5.33	28.61	0½–1½	
531.917	C	(1d)	5.34	28.65	2½–2½	2p² ⁴P –5d′ ⁴P°
531.784	P}		5.33	28.65	1½–1½	UV 9.07
531.679	P}		5.33	28.65	0½–0½	
531.864	P}	(0d)	5.34	28.65	2½–1½	
531.742	P}		5.33	28.65	1½–0½	
531.837	P}		5.33	28.65	1½–2½	
531.721	P}		5.33	28.65	0½–1½	
517.069	C	(1d)	5.34	29.31	2½–3½	2p² ⁴P –6d′ ⁴D°
						UV 9.08
516.652	C	(0d)	5.34	29.33	2½–2½	2p² ⁴P –6d′ ⁴P°
						UV 9.09
			....			
1760.3954	B	(6)	9.29	16.33	2½–1½	2p² ²D –3p ²P°
1760.8191	B	(3)	9.29	16.33	1½–0½	UV 10
1760.473	P	(1)	9.29	16.33	1½–1½	
1323.9513	P	(9)	9.29	18.65	2½–2½	2p² ²D –2p³ ²D°
1323.9059	P	(6)	9.29	18.66	1½–1½	UV 11
1323.8617	P	(1)	9.29	18.66	2½–1½	
1323.9955	P	(1)	9.29	18.65	1½–2½	
1141.625	P	(3)	9.29	20.15	2½–1½	2p² ²D –4p ²P°
1141.744	P	(2)	9.29	20.15	1½–0½	UV 11.01
1141.657	P		9.29	20.15	1½–1½	
1065.8913	P	(7)	9.29	20.92	2½–1½	2p² ²D –2p³ ²P°
1066.1332	P	(5)	9.29	20.92	1½–0½	UV 12
1065.9199	P	(1)	9.29	20.92	1½–1½	
1063.284	P}	(0d)	9.29	20.95	2½–	2p² ²D –4f ²F°
1063.313	P}		9.29	20.95	1½–2½	UV 12.01
996.367	P		9.29	21.73	2½–1½	2p² ²D –5p ²P°
996.465	P		9.29	21.73	1½–0½	UV 12.02
972.163	P		9.29	22.04	2½–1½	2p² ²D –3s′ ²P°
972.366	P		9.29	22.04	1½–0½	UV 12.03
961.300	P		9.29	22.19	2½–	2p² ²D –5f ²F°
961.323	P		9.29	22.19	1½–2½	UV 12.04
809.676	P	(4)	9.29	24.60	2½–2½	2p² ²D –3d′ ²D°
809.764	P}	(3+)*	9.29	24.60	1½–1½	UV 12.05
809.747	P}		9.29	24.60	2½–1½	
809.692	P		9.29	24.60	1½–2½	
799.660	P	(5–)	9.29	24.79	2½–3½	2p² ²D –3d′ ²F°
799.944	P	(4)	9.29	24.79	1½–2½	UV 12.06
799.928	P		9.29	24.79	2½–2½	
785.856	P		9.29	25.07	2½–1½	2p² ²D –3d′ ²P°
785.719	P		9.29	25.07	1½–0½	UV 12.07
686.415	P}	(2d)*	9.29	27.35	2½–2½	2p² ²D –4d′ ²D°
686.488	P}		9.29	27.35	1½–1½	UV 12.08

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
682.253	P		9.29	27.46	2½–3½	$2p^2\ ^2D - 4d'\ ^2F^\circ$
682.462	P		9.29	27.46	1½–2½	UV 12.09
....						
Air						
2836.710	A	20	11.96	16.33	0½–1½	$2p^2\ ^2S - 3p\ ^2P^\circ$
2837.603	A	18	11.96	16.33	0½–0½	UV 13
Vac						
1514.444	P		11.96	20.15	0½–1½	$2p^2\ ^2S - 4p\ ^2P^\circ$
1514.597	P		11.96	20.15	0½–0½	UV 13.01
1383.996	P		11.96	20.92	0½–1½	$2p^2\ ^2S - 2p^3\ ^2P^\circ$
1384.355	P		11.96	20.92	0½–0½	UV 13.02
1230.015	P		11.96	22.04	0½–1½	$2p^2\ ^2S - 3s'\ ^2P^\circ$
1230.302	P		11.96	22.04	0½–0½	UV 13.03
946.198	P	(2)	11.96	25.07	0½–1½	$2p^2\ ^2S - 3d'\ ^2P^\circ$
945.977	P	(1)	11.96	25.07	0½–0½	UV 13.04
795.134	C	(1)	11.96	27.56	0½–1½	$2p^2\ ^2S - 4d'\ ^2P^\circ$
794.664	C	(0)	11.96	27.56	0½–0½	UV 13.05
....						
Air						
4744.77	A	5	13.72	16.33	1½–1½	$2p^2\ ^2P - 3p\ ^2P^\circ$
4737.97	A	3	13.72	16.33	0½–0½	1
4747.28	A	2	13.72	16.33	1½–0½	
4735.46	A	2	13.72	16.33	0½–1½	
2512.065	A	12	13.72	18.65	1½–2½	$2p^2\ ^2P - 2p^3\ ^2D^\circ$
2509.121	A	10	13.72	18.66	0½–1½	UV 14
2511.734	A	5	13.72	18.66	1½–1½	
Vac						
1928.305	P		13.72	20.15	1½–1½	$2p^2\ ^2P - 4p\ ^2P^\circ$
1927.015	P		13.72	20.15	0½–0½	UV 14.01
1721.682	P	(2)	13.72	20.92	1½–1½	$2p^2\ ^2P - 2p^3\ ^2P^\circ$
1721.012	P	(1)	13.72	20.92	0½–0½	UV 14.02
1722.238	P	(0)	13.72	20.92	1½–0½	
1720.456	P	(0)	13.72	20.92	0½–1½	
1489.692	P		13.72	22.04	1½–1½	$2p^2\ ^2P - 3s'\ ^2P^\circ$
1489.194	P		13.72	22.04	0½–0½	UV 14.03
1139.332	P	(3)	13.72	24.60	1½–2½	$2p^2\ ^2P - 3d'\ ^2D^\circ$
1138.936	C	(2)	13.72	24.60	0½–1½	UV 14.04
1139.473	P	(0)	13.72	24.60	1½–1½	
1092.726	P	(2)	13.72	25.07	1½–1½	$2p^2\ ^2P - 3d'\ ^2P^\circ$
1091.937	P	(1)	13.72	25.07	0½–0½	UV 14.05
1092.431	P	(0)	13.72	25.07	1½–0½	
1092.232	P	(0)	13.72	25.07	0½–1½	
....						
Air						
6578.05	A	18	14.45	16.33	0½–1½	$3s\ ^2S - 3p\ ^2P^\circ$
6582.88	A	15	14.45	16.33	0½–0½	2
2173.848	A	5	14.45	20.15	0½–1½	$3s\ ^2S - 4p\ ^2P^\circ$
2174.168	A	3	14.45	20.15	0½–0½	UV 14.06

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
1915.318	P		14.45	20.92	0½–1½	$3s\ ^2S - 2p^3\ ^2P^\circ$
1916.007	P		14.45	20.92	0½–0½	UV 14.07
1632.496	P		14.45	22.04	0½–1½	$3s\ ^2S - 3s'\ ^2P^\circ$
1633.001	P		14.45	22.04	0½–0½	UV 14.08
....						
Air						
7236.42	A	20	16.33	18.05	1½–2½	$3p\ ^2P^\circ - 3d\ ^2D$
7231.32	A	18	16.33	18.05	0½–1½	3
7237.17	A	7	16.33	18.05	1½–1½	
3920.693	A	18	16.33	19.49	1½–0½	$3p\ ^2P^\circ - 4s\ ^2S$
3918.978	A	15	16.33	19.49	0½–0½	4
2747.282	A	12l	16.33	20.84	1½–	$3p\ ^2P^\circ - 4d\ ^2D$
2746.488	A	10	16.33	20.84	0½–1½	UV 15
2402.402	A	7l	16.33	21.49	1½–0½	$3p\ ^2P^\circ - 5s\ ^2S$
2401.761	A	5l	16.33	21.49	0½–0½	UV 16
2137.897	A	5h	16.33	22.13	1½–	$3p\ ^2P^\circ - 5d\ ^2D$
2137.417	A	3h	16.33	22.13	0½–1½	UV 17
2018.38	A	2l	16.33	22.47	1½–0½	$3p\ ^2P^\circ - 6s\ ^2S$
2017.94	A	1l	16.33	22.47	0½–0½	UV 18
Vac						
1987.76	A	3	16.33	22.57	1½–1½	$3p\ ^2P^\circ - 3p'\ ^2P$
1988.09	A	2	16.33	22.57	0½–0½	UV 19
1988.51	A	1	16.33	22.57	1½–0½	
1987.33	A	1	16.33	22.57	0½–1½	
1758.101	P		16.33	23.38	1½–2½	$3p\ ^2P^\circ - 3p'\ ^2D$
1758.802	P		16.33	23.38	0½–1½	UV 20
....						
Air						
2343.184	P		17.61	22.90	1½–1½	$2p^3\ ^4S^\circ - 3p'\ ^4S$
						UV 21
2249.578	P		17.61	23.12	1½–2½	$2p^3\ ^4S^\circ - 3p'\ ^4P$
2250.713	P		17.61	23.12	1½–1½	UV 22
2251.539	P		17.61	23.11	1½–0½	
....						
5889.77	A	15	18.05	20.15	2½–1½	$3d\ ^2D - 4p\ ^2P^\circ$
5891.59	A	12	18.05	20.15	1½–0½	5
5889.27	A	6	18.05	20.15	1½–1½	
4267.258	A	20	18.05	20.95	2½–3½	$3d\ ^2D - 4f\ ^2F^\circ$
4267.003	A	18	18.05	20.95	1½–2½	6
3361.051	A	8	18.05	21.73	2½–1½	$3d\ ^2D - 5p\ ^2P^\circ$
3361.721	A	6	18.05	21.73	1½–0½	7
3360.891	A	3	18.05	21.73	1½–1½	
3100.570	A	2	18.05	22.04	2½–1½	$3d\ ^2D - 3s'\ ^2P^\circ$
3102.250	P		18.05	22.04	1½–0½	7.01
2992.618	A	18h	18.05	22.19		$3d\ ^2D - 5f\ ^2F^\circ$

C II—Continued   C II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2669.960	A	3l	18.05	22.69	2½−1½	3d ²D −6p ²P° UV 23
2574.826	A	10hl	18.05	22.86		3d ²D −6f ²F° UV 24
2426.70	A	2l	18.05	23.15		3d ²D −7p ²P° UV 25
2375.08	A	4hl	18.05	23.26		3d ²D −7f ²F° UV 26
3165.467	A	9	18.65	22.57	2½−1½	2p³ ²D°−3p' ²P 9
3167.931	A	8	18.66	22.57	1½−0½	
3165.974	A	4	18.66	22.57	1½−1½	
2620.20	A	3hl	18.65	23.38	2½−2½	2p³ ²D°−3p' ²D UV 27
2622.90	A	2hl	18.66	23.38	1½−1½	
8682.56	A	8	19.49	20.92	0½−1½	4s ²S −2p³ ²P° 9.01
8696.71	A	5	19.49	20.92	0½−0½	
5535.35	A	5	19.49	21.73	0½−1½	4s ²S −5p ²P° 10
5537.61	A	3	19.49	21.73	0½−0½	
4862.57	A	4	19.49	22.04	0½−1½	4s ²S −3s' ²P° 10.01
4867.07	A	2	19.49	22.04	0½−0½	
9236.818	P		20.15	21.49	1½−0½	4p ²P°−5s ²S 10.02
9231.120	P		20.15	21.49	0½−0½	
6259.59	A	4h	20.15	22.13	1½−2½	4p ²P°−5d ²D 10.03
6257.18	A	2h	20.15	22.13	0½−1½	
5334.79	A	6l	20.15	22.47	1½−0½	4p ²P°−6s ²S 11
5332.89	A	4l	20.15	22.47	0½−0½	
5121.82	A	5	20.15	22.57	1½−1½	4p ²P°−3p' ²P 12
5125.20	A	4	20.15	22.57	0½−0½	
5126.93	A	2	20.15	22.57	1½−0½	
*5120.10	A	3l	20.15	22.57	0½−1½	
4638.91	A	2hl	20.15	22.82	1½−2½	4p ²P°−6d ²D 12.01
4637.63	A	1hl	20.15	22.82	0½−1½	
4307.59	A	2hl	20.15	23.03	1½−0½	4p ²P°−7s ²S 12.02
4306.33	A	1hl	20.15	23.03	0½−0½	
3831.743	A	8hl	20.15	23.38	1½−2½	4p ²P°−3p' ²D 13
3835.730	A	6hl	20.15	23.38	0½−1½	
3836.603	A	2hl	20.15	23.38	1½−1½	
6783.90	A	10	20.71	22.54	2½−3½	3s' ⁴P°−3p' ⁴D 14
6779.93	A	8	20.70	22.53	1½−2½	
6780.61	A	5	20.70	22.53	0½−1½	
6800.68	A	7	20.71	22.53	2½−2½	
6791.47	A	7	20.70	22.53	1½−1½	
6787.22	A	6	20.70	22.53	0½−0½	
6812.29	A	3	20.71	22.53	2½−1½	
6798.11	A	3	20.70	22.53	1½−0½	

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
5662.47	A	12	20.71	22.90	2½−1½	3s' ⁴P°−3p' ⁴S 15
5648.07	A	10	20.70	22.90	1½−1½	
5640.55	A	8	20.70	22.90	0½−1½	
5145.16	A	15	20.71	23.12	2½−2½	3s' ⁴P°−3p' ⁴P 16
5139.17	A	9	20.70	23.12	1½−1½	
5137.26	A	7	20.70	23.11	0½−0½	
5151.09	A	13	20.71	23.12	2½−1½	
5143.49	A	12	20.70	23.11	1½−0½	
5133.28	A	12	20.70	23.12	1½−2½	
5132.94	A	12	20.70	23.12	0½−1½	
2091.63	A	2	20.71	26.63	2½−3½	3s' ⁴P°−4p' ⁴D UV 28
*2091.17	A	2	20.70	26.63	1½−2½	
*2091.17	A	2	20.70	26.63	0½−1½	
2093.13	A	1	20.71	26.63	2½−2½	
13942.61	P		20.84	21.73	2½−1½	4d ²D −5p ²P° 16.01
13955.55	P		20.84	21.73	1½−0½	
9229.81	P		20.84	22.19	2½−	4d ²D −5f ²F° 16.02
9229.20	P		20.84	22.19	1½−2½	
6723.65	A	1h	20.84	22.69	2½−1½	4d ²D −6p ²P° 16.03
6151.43	A	4hl	20.84	22.86		4d ²D −6f ²F° 16.04
5368.58	A	1wh	20.84	23.15		4d ²D −7p ²P° 16.05
5122.15	A	2Hl	20.84	23.26		4d ²D −7f ²F° 16.06
3137.92	A	1h	20.84	24.79	2½−3½	4d ²D −3d'' ²F° 16.07
3142.04	A	0h	20.84	24.79	1½−2½	
7519.50	A	7	20.92	22.57	1½−1½	2p³ ²P°−3p' ²P 16.08
*7519.86	A	4l	20.92	22.57	0½−0½	
7530.60	A	2	20.92	22.57	1½−0½	
7508.90	A	3	20.92	22.57	0½−1½	
5032.07	A	7hl	20.92	23.38	1½−2½	2p³ ²P°−3p' ²D 17
5035.91	A	5hl	20.92	23.38	0½−1½	
5040.74	A	2hl	20.92	23.38	1½−1½	
2188.39	A	2	20.92	26.59	1½−1½	2p³ ²P°−4p' ²P UV 29
2188.72	A	1	20.92	26.58	0½−0½	
2189.62	A	1	20.92	26.58	1½−0½	
2187.48	A	1	20.92	26.59	0½−1½	
10504.23	P		20.95	22.13	−3½	4f ²F°−5d ²D 17.01
10504.89	P		20.95	22.13	2½−1½	
9903.46	P		20.95	22.20		4f ²F°−5g ²G 17.02
6622.05	A	1H	20.95	22.82		4f ²F°−6d ²D 17.03

Multiplet Table

C II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
6461.95	A	5Hl	20.95	22.87		4f ²F°—6g ²G 17.04
6454.77	A	1Hs	20.95	22.87		4f ²F°—6h ²H° 17.05F
5342.40	A	2Hl	20.95	23.27		4f ²F°—7g ²G 17.06
5339.85	A	1Hs	20.95	23.27		4f ²F°—7h ²H° 17.07F
4802.70	A	1H	20.95	23.53		4f ²F°—8g ²G 17.08
....						
0364.81	P		21.49	22.69	0½—1½	5s ²S —6p ²P° 17.09
7461.75	P		21.49	23.15	0½—	5s ²S —7p ²P° 17.10
....						
1385.59	P		21.73	22.82	1½—2½	5p ²P°—6d ²D 17.11
1377.07	P		21.73	22.82	0½—1½	
9577.59	P		21.73	23.03	1½—0½	5p ²P°—7s ²S 17.12
9570.84	P		21.73	23.03	0½—0½	
7505.31	A	2hl	21.73	23.38	1½—2½	5p ²P°—3p' ²D 17.13
7519.86	A	4l	21.73	23.38	0½—1½	
2554.478	A	3	21.73	26.59	1½—1½	5p ²P°—4p' ²P UV 30
2555.66	A	1	21.73	26.58	0½—0½	
2556.12	A	0	21.73	26.58	1½—0½	
....						
9238.30	P		22.04	23.38	1½—2½	3s' ²P°—3p' ²D 17.14
9251.01	P		22.04	23.38	0½—1½	
2728.707	A	4	22.04	26.59	1½—1½	3s' ²P°—4p' ²P UV 31
2729.213	A	2	22.04	26.58	0½—0½	
2730.61	A	1	22.04	26.58	1½—0½	
2727.36	A	2w	22.04	26.59	0½—1½	
....						
0930.87	P		22.13	23.26	2½—	5d ²D —7f ²F° 17.15
0930.15	P		22.13	23.26	1½—2½	
....						
1444.54	P		22.19	23.27		5f ²F°—7g ²G 17.16
....						
1587.00	P		22.20	23.27		5g ²G —7h ²H° 17.17

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
*7119.90	A	12	22.54	24.28	3½—4½	3p' ⁴D —3d' ⁴F° 20
7115.63	A	10	22.53	24.27	2½—3½	
7113.04	A	7	22.53	24.27	1½—2½	
7112.48	A	6	22.53	24.27	0½—1½	
7134.11	A	6	22.54	24.27	3½—3½	
7125.73	A	7	22.53	24.27	2½—2½	
*7119.90	A	12	22.53	24.27	1½—1½	
7144.19	A	1	22.54	24.27	3½—2½	
7132.45	A	1	22.53	24.27	2½—1½	
6750.55	A	8	22.54	24.37	3½—3½	3p' ⁴D —3d' ⁴D° 21
6738.62	A	6	22.53	24.37	2½—2½	
6731.07	A	5	22.53	24.37	1½—1½	
*6727.19	A	4	22.53	24.37	0½—0½	
6755.16	A	3	22.54	24.37	3½—2½	
6742.43	A	3	22.53	24.37	2½—1½	
6733.58	A	2	22.53	24.37	1½—0½	
6734.00	A	2	22.53	24.37	2½—3½	
*6727.19	A	4	22.53	24.37	1½—2½	
6724.56	A	2	22.53	24.37	0½—1½	
5856.04	A	5	22.54	24.65	3½—2½	3p' ⁴D —3d' ⁴P° 22
5836.35	A	4	22.53	24.66	2½—1½	
*5823.14	A	2	22.53	24.66	1½—0½	
5843.61	A	2	22.53	24.65	2½—2½	
5827.85	A	2	22.53	24.66	1½—1½	
5818.30	A	2	22.53	24.66	0½—0½	
5835.08	P		22.53	24.65	1½—2½	
*5823.14	A	2	22.53	24.66	0½—1½	
3589.657	A	9	22.54	25.99	3½—2½	3p' ⁴D —4s' ⁴P° 23
*3590.862	A	8w	22.53	25.98	2½—1½	
*3590.862	A	8w	22.53	25.98	1½—0½	
3584.977	A	7	22.53	25.99	2½—2½	
3587.657	A	6	22.53	25.98	1½—1½	
3588.915	A	5	22.53	25.98	0½—0½	
3581.763	A	3	22.53	25.99	1½—2½	
3585.809	A	3	22.53	25.98	0½—1½	
*2641.425	A	8w	22.54	27.23	3½—4½	3p' ⁴D —4d' ⁴F° UV 32
2640.894	A	5	22.53	27.23	2½—3½	
*2640.560	A	6	22.53	27.22	1½—2½	
*2640.560	A	6	22.53	27.22	0½—1½	
2643.427	A	3	22.54	27.23	3½—3½	
2642.331	A	3	22.53	27.22	2½—2½	
*2641.425	A	8w	22.53	27.22	1½—1½	
2644.873	P		22.54	27.22	3½—2½	
2643.282	P		22.53	27.22	2½—1½	
2604.863	A	4	22.54	27.29	3½—3½	3p' ⁴D —4d' ⁴D° UV 33
2603.161	A	3	22.53	27.29	2½—2½	
2602.02	A	2	22.53	27.29	1½—1½	
*2601.42	A	2	22.53	27.29	0½—0½	
2605.62	A	1	22.54	27.29	3½—2½	
2603.72	A	1	22.53	27.29	2½—1½	
*2602.39	A	2	22.53	27.29	1½—0½	
*2602.39	A	2	22.53	27.29	2½—3½	
*2601.42	A	2	22.53	27.29	1½—2½	
2601.05	A	1	22.53	27.29	0½—1½	

C II — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2269.70	A	2.	22.54	28.00	$3\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4D\ -5s'\ ^4P°$ UV 34
*2270.20	A	2	22.53	27.99	$2\frac{1}{2}-1\frac{1}{2}$	
*2270.20	A	2	22.53	27.99	$1\frac{1}{2}-0\frac{1}{2}$	
2267.77	A	0	22.53	28.00	$2\frac{1}{2}-2\frac{1}{2}$	
2268.91	A	1	22.53	27.99	$1\frac{1}{2}-1\frac{1}{2}$	
2269.36	A	0	22.53	27.99	$0\frac{1}{2}-0\frac{1}{2}$	
2266.53	P		22.53	28.00	$1\frac{1}{2}-2\frac{1}{2}$	
2268.15	P		22.53	27.99	$0\frac{1}{2}-1\frac{1}{2}$	
2052.16	A	2h	22.54	28.58	$3\frac{1}{2}-4\frac{1}{2}$	$3p'\ ^4D\ -5d'\ ^4F°$ UV 35
*2051.79	A	2h	22.53	28.57	$2\frac{1}{2}-3\frac{1}{2}$	
*2051.79	A	2h	22.53	28.57	$1\frac{1}{2}-2\frac{1}{2}$	
*2051.79	A	2h	22.53	28.27	$0\frac{1}{2}-1\frac{1}{2}$	
6098.51	A	9	22.57	24.60	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^2P\ -3d'\ ^2D°$ 24
6095.29	A	7	22.57	24.60	$0\frac{1}{2}-1\frac{1}{2}$	
6102.56	A	4	22.57	24.60	$1\frac{1}{2}-1\frac{1}{2}$	
4964.73	A	4	22.57	25.07	$1\frac{1}{2}-1\frac{1}{2}$	$3p'\ ^2P\ -3d'\ ^2P°$ 25
4953.85	A	3	22.57	25.07	$0\frac{1}{2}-0\frac{1}{2}$	
4958.67	A	1	22.57	25.07	$1\frac{1}{2}-0\frac{1}{2}$	
4959.92	A	1	22.57	25.07	$0\frac{1}{2}-1\frac{1}{2}$	
2591.845	A	4	22.57	27.35	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^2P\ -4d'\ ^2D°$ UV 36
2591.410	A	2	22.57	27.35	$0\frac{1}{2}-1\frac{1}{2}$	
2592.71	A	1	22.57	27.35	$1\frac{1}{2}-1\frac{1}{2}$	
7063.70	A	8	22.90	24.65	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4S\ -3d'\ ^4P°$ 26
7053.09	A	6	22.90	24.66	$1\frac{1}{2}-1\frac{1}{2}$	
7046.26	A	4	22.90	24.66	$1\frac{1}{2}-0\frac{1}{2}$	
4009.884	A	7	22.90	25.99	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4S\ -4s'\ ^4P°$ 27
4017.278	A	5	22.90	25.98	$1\frac{1}{2}-1\frac{1}{2}$	
4021.167	A	3	22.90	25.98	$1\frac{1}{2}-0\frac{1}{2}$	
2767.673	A	3	22.90	27.38	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4S\ -4d'\ ^4P°$ UV 37
2766.118	A	2	22.90	27.38	$1\frac{1}{2}-1\frac{1}{2}$	
2765.120	A	1	22.90	27.38	$1\frac{1}{2}-0\frac{1}{2}$	
2430.78	A	1	22.90	28.00	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4S\ -5s'\ ^4P°$ UV 38
2433.49	A	0	22.90	27.99	$1\frac{1}{2}-1\frac{1}{2}$	
2434.90	P		22.90	27.99	$1\frac{1}{2}-0\frac{1}{2}$	
2156.28	A	1h	22.90	28.65	$1\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4S\ -5d'\ ^4P°$ UV 39
2155.39	A	0h	22.90	28.65	$1\frac{1}{2}-1\frac{1}{2}$	
2154.70	A	0h	22.90	28.65	$1\frac{1}{2}-0\frac{1}{2}$	
9882.68	P		23.12	24.37	$2\frac{1}{2}-3\frac{1}{2}$	$3p'\ ^4P\ -3d'\ ^4D°$ 27.01
9870.78	P		23.12	24.37	$1\frac{1}{2}-2\frac{1}{2}$	
9863.06	P		23.11	24.37	$0\frac{1}{2}-1\frac{1}{2}$	
8076.64	A	8	23.12	24.65	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -3d'\ ^4P°$ 27.02
8048.32	A	3	23.12	24.66	$1\frac{1}{2}-1\frac{1}{2}$	
8028.86	A	2	23.11	24.66	$0\frac{1}{2}-0\frac{1}{2}$	
8062.78	A	6	23.12	24.66	$2\frac{1}{2}-1\frac{1}{2}$	
8039.39	A	6	23.12	24.66	$1\frac{1}{2}-0\frac{1}{2}$	
8062.12	A	5	23.12	24.65	$1\frac{1}{2}-2\frac{1}{2}$	
8037.76	A	5	23.11	24.66	$0\frac{1}{2}-1\frac{1}{2}$	

C II — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
4317.260	A	8	23.12	25.99	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -4s'\ ^4P°$ 28
4321.647	A	3	23.12	25.98	$1\frac{1}{2}-1\frac{1}{2}$	
4323.102	A	3	22.11	25.98	$0\frac{1}{2}-0\frac{1}{2}$	
4325.827	A	4	23.12	25.98	$2\frac{1}{2}-1\frac{1}{2}$	
4326.156	A	5	23.12	25.98	$1\frac{1}{2}-0\frac{1}{2}$	
4313.100	A	6	23.12	25.99	$1\frac{1}{2}-2\frac{1}{2}$	
4318.600	A	5	23.11	25.98	$0\frac{1}{2}-1\frac{1}{2}$	
2967.868	A	7	23.12	27.29	$2\frac{1}{2}-3\frac{1}{2}$	$3p'\ ^4P\ -4d'\ ^4D°$ UV 40
2966.871	A	5	23.12	27.29	$1\frac{1}{2}-2\frac{1}{2}$	
2966.187	A	3	23.11	27.29	$0\frac{1}{2}-1\frac{1}{2}$	
2968.836	A	2	23.12	27.29	$2\frac{1}{2}-2\frac{1}{2}$	
2967.629	A	3	23.12	27.29	$1\frac{1}{2}-1\frac{1}{2}$	
2966.655	A	3	23.11	27.29	$0\frac{1}{2}-0\frac{1}{2}$	
2969.59	A	0	23.12	27.29	$2\frac{1}{2}-1\frac{1}{2}$	
2968.094	P		23.12	27.29	$1\frac{1}{2}-0\frac{1}{2}$	
2910.729	A	3	23.12	27.38	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -4d'\ ^4P°$ UV 41
2907.09	A	1	23.12	27.38	$1\frac{1}{2}-1\frac{1}{2}$	
2904.629	P		23.11	27.38	$0\frac{1}{2}-0\frac{1}{2}$	
*2908.957	A	2w	23.12	27.38	$2\frac{1}{2}-1\frac{1}{2}$	
2906.011	A	2	23.12	27.38	$1\frac{1}{2}-0\frac{1}{2}$	
*2908.957	A	2w	23.12	27.38	$1\frac{1}{2}-2\frac{1}{2}$	
2905.715	A	2	23.11	27.38	$0\frac{1}{2}-1\frac{1}{2}$	
2540.39	A	3	23.12	28.00	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -5s'\ ^4P°$ UV 42
2541.95	P		23.12	27.99	$1\frac{1}{2}-1\frac{1}{2}$	
2542.43	P		23.11	27.99	$0\frac{1}{2}-0\frac{1}{2}$	
*2543.45	A	2	23.12	27.99	$2\frac{1}{2}-1\frac{1}{2}$	
*2543.45	A	2	23.12	27.99	$1\frac{1}{2}-0\frac{1}{2}$	
2538.98	A	2	23.12	28.00	$1\frac{1}{2}-2\frac{1}{2}$	
2540.88	A	1	23.11	27.99	$0\frac{1}{2}-1\frac{1}{2}$	
*2256.19	A	2h	23.12	28.61	$2\frac{1}{2}-3\frac{1}{2}$	$3p'\ ^4P\ -5d'\ ^4D°$ UV 43
2255.68	A	1h	23.12	28.61	$1\frac{1}{2}-2\frac{1}{2}$	
2255.23	A	0h	23.11	28.61	$0\frac{1}{2}-1\frac{1}{2}$	
2256.79	A	0h	23.12	28.61	$2\frac{1}{2}-2\frac{1}{2}$	
*2256.19	A	2h	23.12	28.61	$1\frac{1}{2}-1\frac{1}{2}$	
2242.10	A	1h	23.12	28.65	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -5d'\ ^4P°$ UV 44
*2241.05	A	1h	23.12	28.65	$2\frac{1}{2}-1\frac{1}{2}$	
*2241.05	A	1h	23.12	28.65	$1\frac{1}{2}-2\frac{1}{2}$	
2114.72	A	0h	23.12	28.98	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^4P\ -6s'\ ^4P°$ UV 45
8793.8	A	1H	23.38	24.79	$2\frac{1}{2}-3\frac{1}{2}$	$3p'\ ^2D\ -3d'\ ^2F°$ 28.01
8799.9	A	0H	23.38	24.79	$1\frac{1}{2}-2\frac{1}{2}$	
3124.133	A	2hs	23.38	27.35	$2\frac{1}{2}-2\frac{1}{2}$	$3p'\ ^2D\ -4d'\ ^2D°$ 28.02
3122.086	A	1hs	23.38	27.35	$1\frac{1}{2}-1\frac{1}{2}$	
3039.714	A	3h	23.38	27.46	$2\frac{1}{2}-3\frac{1}{2}$	$3p'\ ^2D\ -4d'\ ^2F°$ 29
3040.512	A	2h	23.38	27.46	$1\frac{1}{2}-2\frac{1}{2}$	

C ii — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
5257.24	A	7	24.28	26.63	4½–3½	3d' ⁴F° –4p' ⁴D
5259.06	A	5	24.27	26.63	3½–2½	30
5259.71	A	5	24.27	26.63	2½–1½	
5259.71	A	5	24.27	26.63	1½–0½	
5249.51	A	2	24.27	26.63	3½–3½	
5253.57§	A	4	24.27	26.63	2½–2½	
5256.09	A	2	24.27	26.63	1½–1½	
5244.05	P		24.27	26.63	2½–3½	
5249.90	P		24.27	26.63	1½–2½	
3953.95	A	0	24.28	27.41	4½–3½	3d' ⁴F° –4f' ²F
3949.530	A	4	24.27	27.41	3½–3½	31
3947.715	A	6l	24.27	27.41	2½–2½	
3946.429	A	1	24.27	27.41	2½–3½	
3952.058	A	9	24.28	27.41	4½–4½	3d' ⁴F° –4f' ⁴F
3948.333	A	6	24.27	27.41	3½–3½	32
3946.278	A	5	24.27	27.41	2½–2½	
3945.003	A	5	24.27	27.41	1½–1½	
3952.679	A	1	24.28	27.41	4½–3½	
3949.373	A	1	24.27	27.41	3½–2½	
3947.079	A	2	24.27	27.41	2½–1½	
3947.715	A	6l	24.27	27.41	3½–4½	
3945.197	A	4	24.27	27.41	2½–3½	
3944.193	A	3	24.27	27.41	1½–2½	
3876.187	A	12	24.28	27.47	4½–5½	3d' ⁴F° –4f' ⁴G
3876.408	A	12	24.27	27.47	3½–4½	33
3876.664	A	12	24.27	27.47	2½–3½	
3876.055	A	9	24.27	27.47	1½–2½	
3880.588	A	7	24.28	27.47	4½–4½	
3879.640	A	7	24.27	27.47	3½–3½	
3878.028	A	7	24.27	27.47	2½–2½	
3883.824	A	1	24.28	27.47	4½–3½	
3881.028	P		24.27	27.47	3½–2½	
3873.067	A	0h	24.28	27.48	4½–4½	3d' ⁴F° –4f' ²G
3874.666	A	2h	24.27	27.47	3½–3½	33.01
3878.861	P		24.28	27.47	4½–3½	
3868.874	A	6h	24.27	27.48	3½–4½	
3871.669	A	7h	24.27	27.47	2½–3½	
3862.181	A	2	24.28	27.49	4½–3½	3d' ⁴F° –4f' ⁴D
3856.62	A	0h	24.27	27.49	3½–2½	33.02
3850.419	P		24.27	27.49	2½–1½	
3846.512	P		24.27	27.49	1½–0½	
3853.34	P		24.27	27.49	3½–2½	3d' ⁴F° –4f' ²D
3847.07	P		24.27	27.49	2½–1½	33.03
3082.381	A	2h	24.28	28.30	4½–3½	3d' ⁴P° –5p' ⁴D
3083.052	A	2wh	24.27	28.29	3½–2½	33.04
3083.052	A	2wh	24.27	28.29	2½–1½	
3083.052	A	2wh	24.27	28.29	1½–0½	
2821.54	A	1w	24.27	28.67	3½–3½	3d' ⁴F° –5f' ²F
2820.70	A	1w	24.27	28.67	2½–2½	UV 46

C ii — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2822.812	A	2	24.28	28.67	4½–4½	3d' ⁴F° –5f' ⁴F
*2820.70	A	1w	24.27	28.67	3½–3½	UV 47
2820.00	A	1	24.27	28.67	2½–2½	
*2819.13	A	1w	24.27	28.67	1½–1½	
2823.11	P		24.28	28.67	4½–3½	
*2821.54	A	1w	24.27	28.67	3½–2½	
2820.27	P		24.27	28.67	2½–1½	
2820.60	P		24.27	28.67	3½–4½	
*2819.13	A	1w	24.27	28.67	2½–3½	
*2819.13	A	1w	25.27	28.67	1½–2½	
*2801.21	A	5w	24.28	28.70	4½–5½	3d' ⁴F° –5f' ⁴G
*2801.21	A	5w	24.27	28.70	3½–4½	UV 48
*2801.43	A	3w	24.27	28.70	2½–3½	
*2801.43	A	3w	24.27	28.69	1½–2½	
2803.45	A	0h	24.28	28.70	4½–4½	
2802.95	A	0h	24.27	28.70	3½–3½	
2802.39	A	0h	24.27	28.69	2½–2½	
2805.20	P		24.28	28.70	4½–3½	
2804.07	P		24.27	28.69	3½–2½	
2797.70	A	1h	24.27	28.70	3½–4½	3d' ⁴F° –5f' ²G
2799.15	A	1h	24.27	28.70	2½–3½	UV 49
2546.81	A	2h	24.28	29.14	4½–3½	3d' ⁴F° –6p' ⁴D
*2547.35	A	1h	24.27	29.14	3½–2½	UV 50
*2547.35	A	1h	24.27	29.14	2½–1½	
*2547.35	A	1h	24.27	29.14	1½–0½	
2434.24	A	2wh	24.28	29.37	4½–5½	3d' ⁴F° –6f' ⁴G
*2434.81	A	1wh	24.27	29.36	3½–4½	UV 51
*2434.81	A	1wh	24.27	29.36	2½–3½	
*2434.81	A	1wh	24.27	29.36	1½–2½	
2434.12	A	0wh	24.27	29.37	3½–4½	3d' ⁴F° –6f' ²G
2432.90	A	0wh	24.27	29.37	2½–3½	UV 52
....			....	....		....
5478.59	A	4	24.37	26.63	3½–3½	3d' ⁴D° –4p' ⁴D
5485.90	A	2	24.37	26.63	2½–2½	34
5490.16	A	1	24.37	26.63	1½–1½	
5492.36	P		24.37	26.63	0½–0½	
5488.95	A	1	24.37	26.63	3½–2½	
5492.67	P		24.37	26.63	2½–1½	
5494.04	P		24.37	26.63	1½–0½	
5475.54	P		24.37	26.63	2½–3½	
5483.35	A	1	24.37	26.63	1½–2½	
5488.47	P		24.37	26.63	0½–1½	
5044.35	A	5	24.37	26.83	3½–2½	3d' ⁴D° –4p' ⁴P
5047.11	A	3	24.37	26.83	2½–1½	35
5049.24	A	2	24.37	26.82	1½–0½	
*5041.76§§	A	2	24.37	26.83	2½–2½	
5044.98	A	1	24.37	26.83	1½–1½	
4077.778	A	4	24.37	27.41	3½–3½	3d' ⁴D° –4f' ²F
*4077.625	A	2	24.37	27.41	2½–2½	35.01
4076.142	A	5	24.37	27.41	2½–3½	
4076.251	A	3	24.37	27.41	1½–2½	

C II — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
*4075.851	A	12l	24.37	27.41	$3\frac{1}{2}-4\frac{1}{2}$	$3d'\ ^4D° - 4f'\ ^4F$
4074.845	A	8	24.37	27.41	$2\frac{1}{2}-3\frac{1}{2}$	36
*4074.518	A	10	24.37	27.41	$1\frac{1}{2}-2\frac{1}{2}$	
*4074.518	A	10	24.37	27.41	$0\frac{1}{2}-1\frac{1}{2}$	
4076.526	A	4	24.37	27.41	$3\frac{1}{2}-3\frac{1}{2}$	
*4075.851	A	12l	24.37	27.41	$2\frac{1}{2}-2\frac{1}{2}$	
4075.395	A	4	24.37	27.41	$1\frac{1}{2}-1\frac{1}{2}$	
*4077.625	A	2	24.37	27.41	$3\frac{1}{2}-2\frac{1}{2}$	
4076.83	A	0	24.37	27.41	$2\frac{1}{2}-1\frac{1}{2}$	
3980.323	A	8	24.37	27.49	$3\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4D° - 4f'\ ^4D$
3977.269	A	5h	24.37	27.49	$2\frac{1}{2}-2\frac{1}{2}$	37
*3972.439	A	6h	24.37	27.49	$1\frac{1}{2}-1\frac{1}{2}$	
3969.520	A	3	24.37	27.49	$0\frac{1}{2}-0\frac{1}{2}$	
*3978.759	A	4h	24.37	27.49	$3\frac{1}{2}-2\frac{1}{2}$	
*3973.760	A	7h	24.37	27.49	$2\frac{1}{2}-1\frac{1}{2}$	
*3970.386	A	4s	24.37	27.49	$1\frac{1}{2}-0\frac{1}{2}$	
*3978.759	A	4h	24.37	27.49	$2\frac{1}{2}-3\frac{1}{2}$	
3975.953	A	1h	24.37	27.49	$1\frac{1}{2}-2\frac{1}{2}$	
3971.574	A	2	24.37	27.49	$0\frac{1}{2}-1\frac{1}{2}$	
3975.341	A	2h	24.37	27.49	$3\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4D°$
*3970.386	A	4s	24.37	27.49	$2\frac{1}{2}-1\frac{1}{2}$	
*3973.760	A	7h	24.37	27.49	$2\frac{1}{2}-2\frac{1}{2}$	
3968.92	A	0h	24.37	27.49	$1\frac{1}{2}-1\frac{1}{2}$	
*3972.439	A	6h	24.37	27.49	$1\frac{1}{2}-2\frac{1}{2}$	
3157.13	A	0h	24.37	28.30	$3\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4D° - 5p'\ ^4D$
3159.64	P		24.37	28.29	$2\frac{1}{2}-2\frac{1}{2}$	38.01
3160.79	P		24.37	28.29	$1\frac{1}{2}-1\frac{1}{2}$	
3161.57	P		24.37	28.29	$0\frac{1}{2}-0\frac{1}{2}$	
3086.903	A	1h	24.37	28.39	$3\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4D° - 5p'\ ^4P$
3087.90	A	0h	24.37	28.39	$2\frac{1}{2}-1\frac{1}{2}$	38.02
*2885.469	A	6w	24.37	28.67	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4D° - 5f'\ ^2F$
*2885.469	A	6w	24.37	28.67	$1\frac{1}{2}-2\frac{1}{2}$	UV 53
*2885.469	A	6w	24.37	28.67	$3\frac{1}{2}$	$3d'\ ^4D° - 5f'\ ^4F$
*2884.808	A	4w	24.37	28.67	$2\frac{1}{2}$	UV 54
*2884.808	A	4w	24.37	28.67	$1\ -2$	
*2884.808	A	4w	24.37	28.67	$0\frac{1}{2}-1\frac{1}{2}$	
2861.060	A	2h	24.37	28.70	$3\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4D° - 5f'\ ^4D$
2859.85	P		24.37	28.71	$2\frac{1}{2}\ 2\frac{1}{2}$	UV 55
2857.30	P		24.37	28.71	$1\frac{1}{2}-1\frac{1}{2}$	
2855.57	P		24.37	28.71	$0\frac{1}{2}-0\frac{1}{2}$	
2858.00	A	1h	24.37	28.71	$2\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4D° - 5f'\ ^2D$ UV 56
2571.76	A	1h	24.37	29.19	$3\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4D° - 6p'\ ^4P$ UV 57
2491.37	A	2wh	24.37	29.35	$3\frac{1}{2}-4\frac{1}{2}$	$3d'\ ^4D° - 6f'\ ^4F$
*2490.87	A	2wh	24.37	29.35	$2\frac{1}{2}-3\frac{1}{2}$	UV 58
*2490.87	A	2wh	24.37	29.35	$1\frac{1}{2}-2\frac{1}{2}$	
*2490.87	A	2wh	24.37	29.35	$0\frac{1}{2}-1\frac{1}{2}$	
6250.74	A	4	24.60	26.59	$2\frac{1}{2}-1\frac{1}{2}$	$3d'\ ^2D° - 4p'\ ^2P$
6256.54	A	2	24.60	26.58	$1\frac{1}{2}-0\frac{1}{2}$	38.03
6246.57	A	1*	24.60	26.59	$1\frac{1}{2}-1\frac{1}{2}$	

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
4411.506	A	7	24.60	27.41	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^2D° - 4f'\ ^2F$
4411.163	A	6	24.60	27.41	$1\frac{1}{2}-2\frac{1}{2}$	39
4413.255	A	1	24.60	27.41	$2\frac{1}{2}-2\frac{1}{2}$	
4409.979	A	5	24.60	27.41	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^2D° - 4f'\ ^4F$
4409.161	A	2	24.60	27.41	$1\frac{1}{2}-2\frac{1}{2}$	40
4297.616	P		24.60	27.49	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^2D° - 4f'\ ^4D$
4293.904	P		24.60	27.49	$1\frac{1}{2}-2\frac{1}{2}$	41
4295.920	A	4h	24.60	27.49	$2\frac{1}{2}-2\frac{1}{2}$	
*4289.876	A	2h	24.60	27.49	$1\frac{1}{2}-1\frac{1}{2}$	
*4291.819	A	3h	24.60	27.49	$2\frac{1}{2}-1\frac{1}{2}$	
*4291.819	A	3h	24.60	27.49	$2\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^2D° - 4f'\ ^2D$
4285.704	A	3h	24.60	27.49	$1\frac{1}{2}-1\frac{1}{2}$	42
*4289.876	A	2h	24.60	27.49	$1\frac{1}{2}-2\frac{1}{2}$	
3392.146	A	2h	24.60	28.26	$2\frac{1}{2}-1\frac{1}{2}$	$3d'\ ^2D° - 5p'\ ^2P$
3393.946	A	1h	24.60	28.25	$1\frac{1}{2}\ 0\frac{1}{2}$	42.01
	A	3			$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^2D° - 5f'\ ^2F$ 43
	A	8				$3d'\ ^2D° - 5f'\ ^4F$ 43.01
*2612.45	A	2Wh	24.60	29.35	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^2D° - 6f'\ ^2F$
*2612.45	A	2Wh	24.60	29.35	$1\frac{1}{2}-2\frac{1}{2}$	43.02
6253.84	A	2	24.65	26.63	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4P° - 4p'\ ^4D$
6275.79	A	1	24.66	26.63	$1\frac{1}{2}-2\frac{1}{2}$	43.03
6290.01	A	1	24.66	26.63	$0\frac{1}{2}-1\frac{1}{2}$	
6267.36	P		24.65	26.63	$2\frac{1}{2}-2\frac{1}{2}$	
6284.56	A	0	24.66	26.63	$1\frac{1}{2}-1\frac{1}{2}$	
6295.20	A	0	24.66	26.63	$0\frac{1}{2}-0\frac{1}{2}$	
5907.21	A	6	24.65	26.75	$2\frac{1}{2}-1\frac{1}{2}$	$3d'\ ^4P° - 4p'\ ^4S$
5914.64	A	4	24.66	26.75	$1\frac{1}{2}-1\frac{1}{2}$	44
5919.45	A	3	24.66	26.75	$0\frac{1}{2}-1\frac{1}{2}$	
5694.30	A	2	24.65	26.83	$2\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4P° - 4p'\ ^4P$
5708.03	A	0	24.66	26.83	$1\frac{1}{2}-1\frac{1}{2}$	44.01
*5701.16	A	2w	24.65	26.83	$2\frac{1}{2}-1\frac{1}{2}$	
5713.56	A	0	24.66	26.82	$1\frac{1}{2}-0\frac{1}{2}$	
*5701.16	A	2w	24.66	26.83	$1\frac{1}{2}-2\frac{1}{2}$	
5712.51	A	1	24.66	26.83	$0\frac{1}{2}-1\frac{1}{2}$	
4374.272	A	9	24.65	27.49	$2\frac{1}{2}-3\frac{1}{2}$	$3d'\ ^4P° - 4f'\ ^4D$
4376.562	A	5h	24.66	27.49	$1\frac{1}{2}-2\frac{1}{2}$	45
4375.009	A	4	24.66	27.49	$0\frac{1}{2}-1\frac{1}{2}$	
*4372.487	A	7	24.65	27.49	$2\frac{1}{2}-2\frac{1}{2}$	
*4372.350	A	6	24.66	27.49	$1\frac{1}{2}-1\frac{1}{2}$	
*4372.487	A	7	24.65	27.49	$0\frac{1}{2}-0\frac{1}{2}$	
*4368.263	A	4	24.65	27.49	$2\frac{1}{2}-1\frac{1}{2}$	
4369.857	A	2	24.66	27.49	$1\frac{1}{2}-0\frac{1}{2}$	
*4368.263	A	4	24.65	27.49	$2\frac{1}{2}-2\frac{1}{2}$	$3d'\ ^4P° - 4f'\ ^2D$
4368.047	A	1h	24.66	27.49	$1\frac{1}{2}-1\frac{1}{2}$	46
*4372.350	A	6	24.65	27.49	$1\frac{1}{2}-2\frac{1}{2}$	
4370.661	A	1h	24.66	27.49	$0\frac{1}{2}-1\frac{1}{2}$	

Multiplet Table

C II — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
3400.041	P		24.65	28.30	2½–3½	$3d'\ ^4P^\circ-5p'\ ^4D$
3406.58	P		24.66	28.29	1½–2½	46.01
3410.49	P		24.66	28.29	0½–1½	
3353.302	A	2h	24.65	28.35	2½–1½	$3d'\ ^4P^\circ-5p'\ ^4S$
3355.690	A	1h	24.66	28.35	1½–1½	46.02
3357.19	A	0h	24.66	28.35	0½–1½	
3059.091	A	3h	24.65	28.70	2½–3½	$3d'\ ^4P^\circ-5f'\ ^4D$
3060.64	A	1h	24.66	28.71	1½–2½	47
3059.83	A	0h	24.66	28.71	0½–1½	
3058.68	P		24.65	28.71	2½–2½	
3058.45	A	2wh	24.66	28.71	1½–1½	
3058.45	A	2wh	24.66	28.71	0½–0½	
3056.85	A	1WH	24.65	28.71	2½–1½	
3056.85	A	1WH	24.65	28.71	2½–2½	$3d'\ ^4P^\circ-5f'\ ^2D$
3058.45	A	2wh	24.66	28.71	1½–2½	47.01
3056.85	A	1WH	24.66	28.71	0½–1½	
2628.46	A	1H	24.65	29.37	2½–3½	$3d'\ ^4P^\circ-6f'\ ^4D$ UV 59
2734.60	A	2hp	24.79	27.41	3½–3½	$3d'\ ^2F^\circ-4f'\ ^2F$
2727.41	A	2h	24.79	27.41	2½–2½	48
2629.98	A	2h	24.79	27.47	3½–4½	$3d'\ ^2F^\circ-4f'\ ^4G$
2625.56	A	3h	24.79	27.47	2½–3½	49
2619.23	A	8h	24.79	27.48	3½–4½	$3d'\ ^2F^\circ-4f'\ ^2G$
2618.40	A	6h	24.79	27.47	2½–3½	50
2627.44	A	1h	24.79	27.47	3½–3½	
2174.58	A	0H	24.79	28.70	3½–4½	$3d'\ ^2F^\circ-5f'\ ^4G$
2172.62	A	1H	24.79	28.70	2½–3½	50.01
2170.03	A	2H	24.79	28.70	3½–4½	$3d'\ ^2F^\circ-5f'\ ^2G$
2169.66	A	1H	24.79	28.70	2½–3½	50.02
2712.32	A	0H	24.79	29.36	3½–4½	$3d'\ ^2F^\circ-6f'\ ^4G$
2710.59	A	1H	24.79	29.36	2½–3½	UV 60
2708.4	A	1H	24.79	29.37	3½–4½	$3d'\ ^2F^\circ-6f'\ ^2G$
2708.4	A	1H	24.79	29.37	2½–3½	UV 61
2119.45	A	4h	25.07	27.49	1½–2½	$3d'\ ^2P^\circ-4f'\ ^4D$
2120.10	A	3l	25.07	27.49	0½–1½	50.03
2113.69	A	4h	25.07	27.49	1½–1½	
2116.75	A	2h	25.07	27.49	0½–0½	

C II — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
*5113.69	A	4h	25.07	27.49	1½–2½	$3d'\ ^2P^\circ-4f'\ ^2D$
5114.26	A	4h	25.07	27.49	0½–1½	51
5107.91	A	1hp	25.07	27.49	1½–1½	
3406.361	A	2H	25.07	28.71	1½–2½	$3d'\ ^2P^\circ-5f'\ ^4D$
						52
3403.66	A	1H	25.07	28.71	1½–2½	$3d'\ ^2P^\circ-5f'\ ^2D$
3404.33	A	1H	25.07	28.71	0½–1½	53
3401.53	A	0H	25.07	28.71	1½–1½	
5367.67	A	1h	25.99	28.30	2½–3½	$4s'\ ^4P^\circ-5p'\ ^4D$
5364.67	P		25.98	28.29	1½–2½	54
6385.72	A	1h	26.63	28.58	3½–4½	$4p'\ ^4D-5d'\ ^4F^\circ$
6383.12	P		26.63	28.57	2½–3½	55
5286.47	A	1h	26.63	28.98	3½–2½	$4p'\ ^4D-6s'\ ^4P^\circ$
*5290.09	A	0h	26.63	28.97	2½–1½	56
*5290.09	A	0h	26.63	28.97	1½–0½	
*8413.42	A	2h	27.23	28.70	4½–5½	$4d'\ ^4F^\circ-5f'\ ^4G$
*8413.42	A	2h	27.23	28.70	3½–4½	57
*8414.49	A	1h	27.22	28.70	2½–3½	
*8414.49	A	1h	27.22	28.69	1½–2½	
5791.77	A	1H	27.23	29.37	4½–5½	$4d'\ ^4F^\circ-6f'\ ^4G$
						58
6037.96	A	0h	27.29	29.35	3½–4½	$4d'\ ^4D^\circ-6f'\ ^4F$
6034.42	P		27.29	29.35	2½–3½	59

Unclassified Lines of C II

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2570.57	A	2wh				
Vac						
533.935	C	(1d)				
437.102	C	(1d)				
425.326	C	(0w)				

B6 II-9

CARBON, $Z=6$

Part A   CARBON

C III

Be I sequence; 4 electrons $Z = 6$

Ground state $1s^2\,2s^2\,{}^1S_0$

$2s^2\,{}^1S_0$ **386241.0 ± 2**, 258.906Å (Vac.)   I P 47.887 eV

The analysis is from Bockasten, who has remeasured the spectrum in the region from 1900 Å to 9950 Å. He has added 121 new lines and 21 new levels to the earlier results by Edlén. All terms have been recalculated on the basis of the new observations. The ionization limit has been well determined by fitting a Ritz formula to the terms of the $ng\;{}^3G$ series ($n = 5, 6, 7$). These authors have furnished the revised value of the limit quoted here; it is from unpublished work by A. Olme.

Two classifications are transitions between levels that are not connected with the rest of the term system. For this reason the uncertainty "x" is indicated in the Table for the terms $4d'\;{}^3F°$ and $5f'\;{}^3G$, and "y" for $4f'\;{}^3G$ and $5g'\;{}^3H°$. In both cases the uncertainty is probably less than 50 cm^{-1}.

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C III

Config.	Desig.	J	Level	Interval	Config.	Desig.	J	Level	Interval
$2s^2$	$2s^2\;{}^1S$	0	0.0		$2p({}^2P°)3s$	$3s'\;{}^1P°$	1	310006.32	
$2s({}^2S)2p$	$2p\;{}^3P°$	0	52367.06	23.69	$2s({}^2S)4s$	$4s\;{}^1S$	0	311721.51	
		1	52390.75	56.36					
		2	52447.11		$2s({}^2S)4p$	$4p\;{}^3P°$	0	317794.26	2.25
$2s({}^2S)2p$	$2p\;{}^1P°$	1	102352.04				1	317796.51	4.79
							2	317801.30	
$2p^2$	$2p^2\;{}^3P$	0	137425.70	28.70	$2p({}^2P°)3p$	$3p'\;{}^1P$	1	319720.35	
		1	137454.40	47.61					
		2	137502.01		$2s({}^2S)4d$	$4d\;{}^3D$	1	321411.31	15.43
$2p^2$	$2p^2\;{}^1D$	2	145876.13				2	321426.74	23.31
							3	321450.05	
$2p^2$	$2p^2\;{}^1S$	0	182519.88		$2s({}^2S)4f$	$4f\;{}^3F°$	2	322003.68	5.90
							3	322009.58	8.39
$2s({}^2S)3s$	$3s\;{}^3S$	1	238213.00				4	322017.97	
$2s({}^2S)3s$	$3s\;{}^1S$	0	247170.26		$2s({}^2S)4p$	$4p\;{}^1P°$	1	322404.20	
$2s({}^2S)3p$	$3p\;{}^1P°$	1	258931.29		$2s({}^2S)4f$	$4f\;{}^1F°$	3	322702.02	
$2s({}^2S)3p$	$3p\;{}^3P°$	0	259705.55	5.67	$2p({}^2P°)3p$	$3p'\;{}^3D$	1	323076.88	24.48
		1	259711.22	13.08			2	323101.36	38.97
		2	259724.30				3	323140.33	
$2s({}^2S)3d$	$3d\;{}^3D$	1	270010.83	1.10	$2s({}^2S)4d$	$4d\;{}^1D$	2	324212.49	
		2	270011.93	2.81	$2p({}^2P°)3p$	$3p'\;{}^3S$	1	327278.27	
		3	270014.74						
$2s({}^2S)3d$	$3d\;{}^1D$	2	276482.86		$2p({}^2P°)3p$	$3p'\;{}^3P$	0	329685.38	21.09
$2p({}^2P°)3s$	$3s'\;{}^3P°$	0	308216.58	32.33			1	329706.47	37.10
		1	308248.91	68.38			2	329743.57	
		2	308317.29		$2p({}^2P°)3d$	$3d'\;{}^1D°$	2	332691.28	
$2s({}^2S)3s$	$4s\;{}^3S$	1	309457.17		$2p({}^2P°)3p$	$3p'\;{}^1D$	2	333118.21	

Config.	Desig.	J	Level	Interval
2p(²P°)3d	3d' ³F°	2	333387.01	
		3	333411.55	24.54
		4	333447.24	35.69
2p(²P°)3d	3d' ³D°	1	337655.98	
		2	337668.89	12.91
		3	337688.04	19.15
2s(²S)5s	5s ¹S	0	338514.33	
2s(²S)5s	5s ³S	1	339934.72	
2p(²P°)3d	3d' ³P°	2	340101.84	
		1	340127.53	−25.69
		0	340141.83	−14.30
2p(²P°)3d	3d' ¹F°	3	341370.94	
2s(²S)5p	5p ¹P°	1	343258.03	
2s(²S)5p	5p ³P°	2	344232.98	
		1	344236.29	−3.31
		0	344238.68	−2.39
2p(²P°)3p	3p' ¹S	0	345095.43	
2s(²S)5d	5d ³D	1	345496.57	
		2	345496.72	0.15
		3	345497.15	0.43
2s(²S)5g	5g ³G	3,4	346579.21	
		5	346579.49	0.28
2s(²S)5g	5g ¹G	4	346579.31	
2s(²S)5d	5d ¹D	2	346658.34	
2p(²P°)3d	3d' ¹P°	1	346712.73	
2s(²S)5f	5f ³F°	2	347151.89	
		3	347153.26	1.37
		4	347155.41	2.15
2s(²S)5f	5f ¹F°	3	348859.99	
2s(²S)6s	6s ³S	1	354858.03	
2s(²S)6p	6p ³P°	0	357049.38	
		1	357050.17	0.79
		2	357051.23	1.06
2s(²S)6p	6p ¹P°	1	357109.68	
2s(²S)6d	6d ³D	1		
		2		
		3	358097.78	
2s(²S)6g	6g ¹G	4	358692.18	
2s(²S)6g	6g ³G	3,4	358692.2	
		5	358692.4	0.2
2s(²S)6d	6d ¹D	2	358732.93	
2s(²S)6h	6h ³H°	4,5,6	358776.3	
2s(²S)6h	6h ¹H°	5	358776.3	
2s(²S)6f	6f ³F°	2	358850.02	
		3	358850.32	0.30
		4	358850.74	0.42
2s(²S)6f	6f ¹F°	3	359121.95	

Config.	Desig.	J	Level	Interval
2s(²S)7s	7s ³S	1	363613	
2s(²S)7p	7p ¹P°	1	364896	
2s(²S)7d	7d ³D	1,2,3	365638	
2s(²S)7g	7g ³G	3,4,5	365998.4	
2s(²S)7d	7d ¹D	2	366028	
2s(²S)7f	7f ³F°	2		
		3		
		4	366069.0?	
2s(²S)8p	8p ¹P°	1	369926	
2s(²S)8d	8d ³D	1,2,3	370499	
2s(²S)9d	9d ³D	1,2,3	373828	
2p(²P°)4s	4s' ³P°	0		
		1		
		2	376403.6	
2p(²P°)4p	4p' ¹P	1	381105.4	
2p(²P°)4p	4p' ³D	1		
		2	381971	
		3	382010	39
2p(²P°)4p	4p' ³P	0		
		1	384365	
		2	384405.4	40
2p(²P°)4p	4p' ¹D	2	385638.1	
2p(²P°)4d	4d' ¹D°	2	385817.2	
2p(²P°)4d	4d' ³F°	2		
		3		
		4	385826 + x	
C IV(²S₀₁/₂)	Limit	……	**386241.0 ± 2**	
2p(²P°)4d	4d' ³D°	1		
		2		
		3	387697	
2p(²P°)4f	4f' ³G	3		
		4		
		5	388125 + y	
2p(²P°)4f	4f' ³F	2		
		3		
		4	388214.4	
2p(²P°)4d	4d' ³P°	0		
		1		
		2	388493	
2p(²P°)4d	4d' ¹F°	3	388773	
2p(²P°)4f	4f' ³D	1		
		2		
		3	389668.3	
2p(²P°)5p	5p' ¹P	1	407431	
2p(²P°)5p	5p' ³D	1		
		2		
		3	407826	

C III — Continued

C III — Continued

Config.	Desig.	J	Level	Interval		Config.	Desig.	J	Level	
$2p\,(^2P°)5p$	$5p'\ ^3P$	0 1 2	 408925			$2p\,(^2P°)5g$	$5g'\ ^3F°$	2 3 4	 *411433.1*	
$2p\,(^2P°)5p$	$5p'\ ^1D$	2	409506			$2p\,(^2P°)6p$	$6p'\ ^3D$	1 2 3	 421432	
$2p\,(^2P°)5d$	$5d'\ ^1D°$	2	*409683*							
$2p\,(^2P°)5d$	$5d'\ ^3D°$	1 2 3	 410585			$2p\,(^2P°)6p$	$6p'\ ^3P$	0 1 2	 422019	
$2p\,(^2P°)5f$	$5f'\ ^3G$	3 4 5	 $410819 + x$			$2p\,(^2P°)6d$	$6d'\ ^3D°$	1 2 3	 422932	
$2p\,(^2P°)5f$	$5f'\ ^3F$	2 3 4	 410863			$2p\,(^2P°)6d$	$6d'\ ^3P°$	0 1 2	 *423109*	
$2p\,(^2P°)5d$	$5d'\ ^3P°$	0 1 2	 410892			$2p\,(^2P°)6g$	$6g'\ ^3G°$	3 4 5	 *423253.3*	
$2p\,(^2P°)5g$	$5g'\ ^3H°$	4 5 6	 $411060 + y$			$2p\,(^2P°)7p$	$7p'\ ^3D$	1 2 3	 429397	
$2p\,(^2P°)5g$	$5g'\ ^3G°$	3 4 5	 *411104.4*			$2p\,(^2P°)7p$	$7p'\ ^3P$	0 1 2	 429764	

Configuration $1s^2 +$	Observed Terms		
$2s^2$	$2s$ ^{1}S		
$2p^2$	$\{$ $2p^2$ ^{1}S	$2p^2$ ^{3}P	$2p^2$ ^{1}D
	$ns(n \geqslant 3)$	$np(n \geqslant 2)$	$nd(n \geqslant 3)$
$2s(^2$S$)nl$	$\{$ 3–7s ^{3}S 3–5s ^{1}S	2–6p ^{3}P° 2–8p ^{1}P°	3–9d ^{3}D 3–7d ^{1}D
$2p(^2$P°$)nl'$	$\{$ 3–4s' ^{3}P° 3s' ^{1}P°	3p' ^{3}S 3–7p' ^{3}P 3–7p' ^{3}D 3p' ^{1}S 3–5p' ^{1}P 3–5p' ^{1}D	3–6d' ^{3}P° 3–6d' ^{3}D° 3, 4d' ^{3}F° 3d' ^{1}P° 3–5d' ^{1}D° 3, 4d' ^{1}F°
	$nf(n > 4)$	$ng(n > 5)$	$nh(n > 6)$
$2s(^2$S$)nl$	$\{$ 4–7f ^{3}F° 4–6f ^{1}F°	5–7g ^{3}G 5, 6g ^{1}G	6h ^{3}H° 6h ^{1}H°
$2p(^2$P°$)nl'$	4f' ^{3}D 4, 5f' ^{3}F 4, 5f' ^{3}G	5g' ^{3}F° 5, 6g' ^{3}G° 5g' ^{3}H°	

Part B

CARBON

C III ($Z=6$)

I P 47.887 eV   Limit 386241.0 ± 2 cm⁻¹   258.906 Å (Vac)

Anal A   List A   January 1970

REFERENCES

B. Edlén, Private communication (1970). I P

A K. Bockasten, Ark. Fys. (Stockholm) **9**, No. 30, 457 to 481 (1955). I P, T, C L, I; W L 291 Å to 574 Å; 1174 Å to 1247 Å; 1920 Å to 9950 Å

B B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 49 to 62 (1934). I P, T, C L, G D, (I); W L 265 Å to 5827 Å

P Predicted Wavelength; See B. Edlén, Reports on Progress in Physics **26**, 181 to 212 (1963). (I); W L 291 Å to 538 Å

New Multiplet Numbers, not inserted between older ones, start with UV 14 and 25.

*Blend

*and § Blend of C III and C II

*and §§ Blend of C III and C IV

C III

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 908.734	P		0.00	6.50	0−1	$2s^2\ ^1S$ —$2p\ ^3P°$ UV 0.01
977.026‡	B	(18)	0.00	12.69	0−1	$2s^2\ ^1S$ —$2p\ ^1P°$ UV 1
386.2028	P	(14)	0.00	32.10	0−1	$2s^2\ ^1S$ —$3p\ ^1P°$ UV 2
385.043	P		0.00	32.20	0−1	$2s^2\ ^1S$ —$3p\ ^3P°$ UV 2.01
324.413	P		0.00	38.22	0−1	$2s^2\ ^1S$ —$3s'\ ^3P°$ UV 2.02
322.5741	P	(8)	0.00	38.43	0−1	$2s^2\ ^1S$ —$3s'\ ^1P°$ UV 2.03
314.667	P		0.00	39.40	0−1	$2s^2\ ^1S$ —$4p\ ^3P°$ UV 2.04
310.1697	P	(5)	0.00	39.97	0−1	$2s^2\ ^1S$ —$4p\ ^1P°$ UV 3
296.159	P		0.00	41.86	0−1	$2s^2\ ^1S$ —$3d'\ ^3D°$ UV 3.01
294.007	P		0.00	42.17	0−1	$2s^2\ ^1S$ —$3d'\ ^3P°$ UV 3.02
291.3261	P	(2)	0.00	42.56	0−1	$2s^2\ ^1S$ —$5p\ ^1P°$ UV 3.03

C III

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 290.498	P		0.00	42.68	0−1	$2s^2\ ^1S$ —$5p\ ^3P°$ UV 3.04
288.423	P		0.00	42.99	0−1	$2s^2\ ^1S$ —$3d'\ ^1P°$ UV 3.05
280.073	P		0.00	44.27	0−1	$2s^2\ ^1S$ —$6p\ ^3P°$ UV 3.06
280.043	B	(3)	0.00	44.27	0−1	$2s^2\ ^1S$ —$6p\ ^1P°$ UV 3.07
274.051	B	(2d)	0.00	45.24	0−1	$2s^2\ ^1S$ —$7p\ ^1P°$ UV 3.08
270.324	B	(0+d)	0.00	45.86	0−1	$2s^2\ ^1S$ —$8p\ ^1P°$ UV 3.09
1175.711	A	5	6.50	17.05	2−2	$2p\ ^3P°$—$2p^2\ ^3P$ UV 4
1175.590	A	2	6.50	17.04	1−1	
1176.370	A	3	6.50	17.04	2−1	
1175.987	A	3	6.50	17.04	1−0	
1174.933	A	3	6.50	17.05	1−2	
1175.263	A	3	6.49	17.04	0−1	
1070.331	P		6.50	18.09	2−2	$2p\ ^3P°$—$2p^2\ ^1D$ UV 4.01
1069.686	P		6.50	18.09	1−2	
768.467	P		6.50	22.63	1−0	$2p\ ^3P°$—$2p^2\ ^1S$ UV 4.02

C III — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
538.3120	P	(100)	6.50	29.53	2−1	2p ³P°—3s ³S
538.1487	P	(60)	6.50	29.53	1−1	UV 5
538.0801	P	(20)	6.49	29.53	0−1	
513.401	P		6.50	30.64	1−0	2p ³P°—3s ¹S
						UV 5.01
459.633	B	(15)	6.50	33.48	2−	2p ³P°—3d ³D
459.521	B	(14)	6.50	33.48	1−	UV 6
459.462	B	(13−)	6.49	33.48	0−1	
446.357	P		6.50	34.28	2−2	2p ³P°—3d ¹D
446.245	P		6.50	34.28	1−2	UV 6.01
389.0898	P	(5)	6.50	38.37	2−1	2p ³P°—4s ³S
389.0045	P	(3)	6.50	38.37	1−1	UV 6.02
388.9687	P	(1)	6.49	38.37	0−1	
385.608	P		6.50	38.65	1−0	2p ³P°—4s ¹S
						UV 6.03
374.149	P		6.50	39.64	2−1	2p ³P°—3p' ¹P
374.070	P		6.50	39.64	1−1	UV 6.04
374.037	P		6.49	39.64	0 1	
371.747	B	(10+)	6.50	39.85	2−3	2p ³P°—4d ³D
*371.694	B	(10)	6.50	39.85	1−2	UV 7
*371.694	B	(10)	6.50	39.85	0−1	
371.784	B	(8)	6.50	39.85	2−2	
370.951	B	(0d)	6.50	39.92		2p ³P°—4f ³F°?
						UV 7.01F
*369.415	B	(5)	6.50	40.06	2−3	2p ³P°—3p' ³D
*369.415	B	(5)	6.50	40.06	1−2	UV 7.02
*369.415	B	(5)	6.49	40.06	0−1	
369.472	B	(2)	6.50	40.06	2−2	
367.964	P		6.50	40.20	2−2	2p ³P°—4d ¹D
367.888	P		6.50	40.20	1−2	UV 7.03
363.8598	P	(6)	6.50	40.58	2−1	2p ³P°—3p' ³S
363.7852	P	(5)	6.50	40.58	1−1	UV 7.04
363.7538	P	(4)	6.49	40.58	0−1	
*360.623	B	(7)	6.50	40.88	2−2	2p ³P°—3p' ³P
*360.623	B	(7)	6.50	40.88	1−1	UV 7.05
360.675	B	(5)	6.50	40.88	2−1	
*360.623	B	(7)	6.50	40.88	1−0	
*360.557	B	(6)	6.50	40.88	1−2	
*360.557	B	(6)	6.49	40.87	0−1	
356.289	P		6.50	41.30	2−2	2p ³P°—3p' ¹D
356.217	P		6.50	41.30	1−2	UV 7.06
349.499	P		6.50	41.97	1−0	2p ³P°—5s ¹S·
						UV 7.07
347.854	B	(3)	6.50	42.15	2−1	2p ³P°—5s ³S
*347.777	B	(3−)	6.50	42.15	1−1	UV 7.08
*347.777	B	(3−)	6.50	42.15	0−1	

C III — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
341.641	P		6.50	42.79	1−0	2p ³P°—3p' ¹S
						UV 7.09
341.242	B	(7)	6.50	42.84	2−	2p ³P°—5d ³D
341.179	B	(6)	6.50	42.84	1−	UV 7.10
341.143	B	(5−)	6.49	42.84	0−	
339.892	P		6.50	42.98	2−2	2p ³P°—5d ¹D
339.827	P		6.50	42.98	1−2	UV 7.11
330.687	B	(1+)	6.50	44.00	2−1	2p ³P°—6s ³S
*330.637	B	(1)	6.50	44.00	1−1	UV 7.12
*330.637	B	(1)	6.50	44.00	0−1	
327.176	B	(4+d)	6.50	44.40	2−3	2p ³P°—6d ³D
327.112	B	(4d)	6.50	44.40		UV 7.13
326.492	P		6.50	44.48	2−2	2p ³P°—6d ¹D
326.432	P		6.50	44.48	1−2	UV 7.14
321.372	B	(0d)	6.50	45.08	−1	2p ³P°—7s ³S
						UV 7.15
319.266	B	(3d)	6.50	45.33		2p ³P°—7d ³D
						UV 7.16
318.897	P		6.50	45.38	2−2	2p ³P°—7d ¹D
						UV 7.17
314.395	B	(1d)	6.50	45.93		2p ³P°—8d ³D
						UV 7.18
311.157	B	(0d)	6.50	46.35		2p ³P°—9d ³D
						UV 7.19
*303.432	B	(4d)	6.50	47.36	2−3	2p ³P°—4p' ³D
*303.432	B	(4d)	6.50	47.36	1−2	UV 7.20
303.468	B	(1)	6.50	47.36	2−2	
*301.243	B	(3)	6.50	47.66	2−2	2p ³P°—4p' ³P
*301.243	B	(3)	6.50	47.65	1−1	UV 7.21
301.279	B	(1)	6.50	47.65	2−1	
301.206	B	(2)	6.50	47.66	1−2	
281.390	B	(2)	6.50	50.56	2−3	2p ³P°—5p' ³D
						UV 7.22
280.522	B	(2d)	6.50	50.70	2−2	2p ³P°—5p' ³P
						UV 7.23
271.014	B	(1d)	6.50	52.25	2−3	2p ³P°—6p' ³D
						UV 7.24
270.583	B	(1d)	6.50	52.32	2−2	2p ³P°—6p' ³P
						UV 7.25
265.287	B	(0d)	6.50	53.24	2−3	2p ³P°—7p' ³D
						UV 7.26
265.029	B	(0d)	6.50	53.28	2−2	2p ³P°—7p' ³P
						UV 7.27

C III — Continued | C III — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.	I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air							Vac						
44.117	A	2	12.69	17.05	1—2	2p ¹P°—2p² ³P UV 7.28	*585.417	B	(8)	17.05	38.23	2—2	2p² ³P —3s' ³P° UV 11.15
							585.496	B	(5+)	17.04	38.22	1—1	
96.870	A	16	12.69	18.09	1—2	2p ¹P°—2p² ¹D UV 8	585.666	B	(6)	17.05	38.22	2—1	
							585.608	B	(6—)	17.04	38.21	1—0	
Vac							585.261	B	(6)	17.04	38.23	1—2	
47.383	A	3	12.69	22.63	1—0	2p ¹P°—2p² ¹S UV 9	*585.417	B	(8b)	17.04	38.22	0—1	
90.526	B	(7)	12.69	30.64	1—0	2p ¹P°—3s ¹S UV 10	554.655	B	(2)	17.05	39.40	2—2	2p² ³P —4p ³P° UV 11.16
74.2809	P	(60)	12.69	34.28	1—2	2p ¹P°—3d ¹D UV 11	554.502	P		17.04	39.40	1—1	
77.6246	P	(3)	12.69	38.65	1—0	2p ¹P°—4s ¹S UV 11.01	499.530	B	(9)	17.05	41.87	2—3	2p² ³P —3d' ³D° UV 11.17
							499.462	B	(8)	17.04	41.86	1—2	
60.0487	P	(8)	12.69	39.64	1—1	2p ¹P°—3p' ¹P UV 11.02	499.425	B	(7)	17.04	41.86	0—1	
							499.583	B	(7—)	17.05	41.86	2—2	
60.7338	P	(12)	12.69	40.20	1—2	2p ¹P°—4d ¹D UV 11.03	493.587	B	(7)	17.05	42.17	2—3	2p² ³P —3d' ³P° UV 11.18
33.3391	P	(8)	12.69	41.30	1—2	2p ¹P°—3p' ¹D UV 11.04	493.396	B	(5—)	17.04	42.17	1—1	
							493.519	B	(5+)	17.05	42.17	2—1	
33.438	P		12.69	41.97	1—0	2p ¹P°—5s ¹S UV 11.05	493.364	B	(5)	17.04	42.17	1—0	
11.9577	P	(3)	12.69	42.79	1—0	2p ¹P°—3p' ¹S UV 11.06	493.464	B	(5+)	17.04	42.17	1—2	
							493.341	B	(5)	17.04	42.17	0—1	
09.325	B	(6)	12.69	42.98	1—2	2p ¹P°—5d ¹D UV 11.07	483.733	B	(5)	17.05	42.68	2—	2p² ³P —5p ³P° UV 11.19
							483.618	B	(4)	17.04	42.68	1—	
90.055	B	(3)	12.69	44.48	1—2	2p ¹P°—6d ¹D UV 11.08	483.567	B	(3—)	17.04	42.68	0—1	
79.254	B	(0d)	12.69	45.38	1—2	2p ¹P°—7d ¹D UV 11.09	455.479	P		17.05	44.27	2—2	2p² ³P —6p ³P° UV 11.20
							455.382	P		17.04	44.27	1—1	
58.740	B	(4s)	12.69	47.25	1—1	2p ¹P°—4p' ¹P UV 11.10	418.609	B	(2d)	17.05	46.67	2—2	2p² ³P —4s' ³P° UV 11.21
53.000	B	(3d)	12.69	47.81	1—2	2p ¹P°—4p' ¹D UV 11.11	399.688	B	(6+d)	17.05	48.07	2—3	2p² ³P —4d' ³D° UV 11.22
							399.637	B	(6d)	17.04	48.07		
27.784	B	(1s)	12.69	50.51	1—1	2p ¹P°—5p' ¹P UV 11.12	398.42	B	(2w)	17.05	48.17	2—2	2p² ³P —4d' ³D° UV 11.23
25.570	B	(1d)	12.69	50.77	1—2	2p ¹P°—5p' ¹P UV 11.13	366.169	B	(4d)	17.05	50.90	2—3	2p² ³P —5d' ³D° UV 11.24
							365.778	B	(1d)	17.05	50.94	2—2	2p² ³P —5d' ³P° UV 11.25
							350.330	B	(2w)	17.05	52.44	2—3	2p² ³P —6d' ³D° UV 11.26
....							350.132	B	(0d)	17.05	52.46	2—2	2p² ³P —6d' ³P° UV 11.27
8.181	P		17.05	32.20	2—2	2p² ³P —3p ³P° UV 11.14	884.516	B	(8)	18.09	32.10	2—1	2p² ¹D —3p ¹P° UV 11.28
7.950	P		17.04	32.20	1—1		609.275	B	(6)	18.09	38.43	2—1	2p² ¹D —3s' ¹P° UV 11.29
							566.490	B	(4)	18.09	39.97	2—1	2p² ¹D —4p ¹P° UV 11.30
							565.5280	P	(5)	18.09	40.01	2 3	2p² ¹D —4f ¹F° UV 11.31

C III —Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
535.2885	P	(20)	18.09	41.25	2–2	$2p^2\,^1D$ —$3d'\,^1D°$ UV 11.32
511.5225	P	(20)	18.09	42.32	2–3	$2p^2\,^1D$ —$3d'\,^1D°$ UV 11.33
506.658	B	(0)	18.09	42.56	2–1	$2p^2\,^1D$ —$5p\,^1P°$ UV 11.34
497.910	B	(1s)	18.09	42.99	2–1	$2p^2\,^1D$ —$3d'\,^1P°$ UV 11.35
492.6500	P	(5)	18.09	43.25	2–3	$2p^2\,^1D$ —$5f\,^1F°$ UV 11.36
473.410	P		18.09	44.27	2–1	$2p^2\,^1D$ —$6p\,^1P°$ UV 11.37
468.931	B	(0)	18.09	44.52	2–3	$2p^2\,^1D$ —$6f\,^1F°$ UV 11.38
456.58	P		18.09	45.24	2–1	$2p^2\,^1D$ —$7p\,^1P°$ UV 11.39
446.329	P		18.09	45.86	2–1	$2p^2\,^1D$ —$8p\,^1P°$ UV 11.40
416.769	B	(5)	18.09	47.83	2–2	$2p^2\,^1D$ —$4d'\,^1D°$ UV 11.41
411.697	B	(0)	18.09	48.20	2–3	$2p^2\,^1D$ —$4d'\,^1F°$ UV 11.42
379.065	B	(1)	18.09	50.79	2–2	$2p^2\,^1D$ —$5d'\,^1D°$ UV 11.43
....						
1308.73	B	(2)	22.63	32.10	0–1	$2p^2\,^1S$ —$3p\,^1P°$ UV 11.44
784.393	B	(3)	22.63	38.43	0–1	$2p^2\,^1S$ —$3s'\,^1P°$ UV 11.45
714.879	B	(1)	22.63	39.97	0–1	$2p^2\,^1S$ —$4p\,^1P°$ UV 11.46
622.144	B	(2)	22.63	42.56	0–1	$2p^2\,^1S$ —$5p\,^1P°$ UV 11.47
609.025	B	(4)	22.63	42.99	0–1	$2p^2\,^1S$ —$3d'\,^1P°$ UV 11.48
572.771	P		22.63	44.27	0–1	$2p^2\,^1S$ —$6p\,^1P°$ UV 11.49
548.318	P		22.63	45.24	0–1	$2p^2\,^1S$ —$7p\,^1P°$ UV 11.50
533.601	P		22.63	45.86	0–1	$2p^2\,^1S$ —$8p\,^1P°$ UV 11.51
....						

C III —Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Air						
4647.42	A	14	29.53	32.20	1–2	$3s\,^3S$ —$3p\,^3P°$ 1
4650.25	A	13	29.53	32.20	1–1	
4651.47	A	11	29.53	32.20	1–0	
Vac						
1426.45	B	(4)	29.53	38.23	1–2	$3s\,^3S$ —$3s'\,^3P°$ UV 11.52
1427.85	B	(3)	29.53	38.22	1–1	
1428.53	B	(2)	29.53	38.21	1–0	
1256.52	B	(1d)	29.53	39.40	1–	$3s\,^3S$ —$4p\,^3P°$ UV 11.53
1005.471	P		29.53	41.86	1–2	$3s\,^3S$ —$3d'\,^3D°$ UV 11.54
1005.601	P		29.53	41.86	1–1	
981.462	P		29.53	42.17	1–2	$3s\,^3S$ —$3d'\,^3P°$ UV 11.55
981.214	P		29.53	42.17	1–1	
981.077	P		29.53	42.17	1–0	
943.218	P		29.53	42.68	1–2	$3s\,^3S$ —$5p\,^3P°$ UV 11.56
943.189	P		29.53	42.68	1–1	
943.168	P		29.53	42.68	1–0	
841.480	P		29.53	44.27	1–2	$3s\,^3S$ —$6p\,^3P°$ UV 11.57
841.488	P		29.53	44.27	1–1	
841.493	P		29.53	44.27	1–0	
....						
Air						
8500.32	A	10	30.64	32.10	0–1	$3s\,^1S$ —$3p\,^1P°$ 1.01
Vac						
1591.48	B	(2)	30.64	38.43	0–1	$3s\,^1S$ —$3s'\,^1P°$ UV 11.58
1329.187	P		30.64	39.97	0–1	$3s\,^1S$ —$4p\,^1P°$ UV 11.59
1040.715	P		30.64	42.56	0–1	$3s\,^1S$ —$5p\,^1P°$ UV 11.60
1004.596	P		30.64	42.99	0–1	$3s\,^1S$ —$3d'\,^1P°$ UV 11.61
909.592	P		30.64	44.27	0–1	$3s\,^1S$ —$6p\,^1P°$ UV 11.62
....						
Air						
5695.92	A	12	32.10	34.28	1–2	$3p\,^1P°$—$3d\,^1D$ 2
Vac						
1894.49	B	(0)	32.10	38.65	1–0	$3p\,^1P°$—$4s\,^1S$ UV 11.63
1645.06	B	(1)	32.10	39.64	1–1	$3p\,^1P°$—$3p'\,^1P$ UV 11.64
1531.85	B	(2)	32.10	40.20	1–2	$3p\,^1P°$—$4d\,^1D$ UV 11.65

C III — Continued | C III — Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
47.947	P		32.10	41.30	1—2	3p ¹P°—3p' ¹D UV 11.66
56.549	P		32.10	41.97	1—0	3p ¹P°—5s ¹S UV 11.67
60.576	P		32.10	42.79	1—0	3p ¹P°—3p' ¹S UV 11.68
39.899	P		32.10	42.98	1—2	3p ¹P°—5d ¹D UV 11.69
01.988	P		32.10	44.48	1—2	3p ¹P°—6d ¹D UV 11.70
Air						
15.11	A	5	32.20	33.48	2—3	3p ³P°—3d ³D 2.01
05.39	A	3	32.20	33.48	1—2	
01.12	A	2	32.20	33.48	0—1	
17.73	A	2	32.20	33.48	2—2	
06.44	A	2	32.20	33.48	1—1	
18.79	P		32.20	33.48	2—1	
10.094	A	5	32.20	38.37	2—1	3p ³P°—4s ³S UV 11.71
09.570	A	4	32.20	38.37	1—1	
09.327	A	2	32.20	38.37	0—1	
Vac						
20.05	B	(3)	32.20	39.85	2—3	3p ³P°—4d ³D UV 11.72
20.33	B	(2)	32.20	39.85	1—2	
20.59	B	(0)	32.20	39.85	0—1	
20.68	B	(1)	32.20	39.85	2—2	
20.68	B	(1)	32.20	39.85	1—1	
76.888	P		32.20	40.06	2—3	3p ³P°—3p' ³D UV 11.73
77.532	P		32.20	40.06	1—2	
78.001	P		32.20	40.06	0—1	
80.298	P		32.20	40.58	2—1	3p ³P°—3p' ³S UV 11.74
80.011	P		32.20	40.58	1—1	
79.887	P		32.20	40.58	0—1	
28.17	B	(2+)	32.20	40.88	2—2	3p ³P°—3p' ³P UV 11.75
28.66	B	(0)	32.20	40.88	1—1	
28.95	B	(1)	32.20	40.88	2—1	
29.08	B	(0)	32.20	40.87	1—0	
65.87	B	(1d)	32.20	42.84	2—3	3p ³P°—5d ³D UV 11.76
65.71	B	(0d)	32.20	42.84	1—2	
16.534	P		32.20	44.40	2—3	3p ³P°—6d ³D UV 11.77 .
Air						
10.020	A	6				
14.478	A					
16.627	A					
09.83	A	1				
14.414	P					
09.746	P		33.48	38.25		

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2091.974	P		33.48	39.40	3—2	3d ³D —4p ³P° UV 12.01
2092.060	P		33.48	39.40	2—1	
2092.111	P	6	33.48	39.40	1—0	
2091.851	P		33.48	39.40	2—2	
2092.012	P		33.48	39.40	1—1	
2091.802	P		33.48	39.40	1—2	
Vac						
1922.93	A	5	33.48	39.92	3—4	3d ³D —4f ³F° UV 12.02
1923.14	A	4	33.48	39.92	2—3	
1923.31	A	2	33.48	39.92	1—2	
1923.268	P		33.48	39.92	3—3	
1923.382	P		33.48	39.92	2—2	
1923.486	P		33.48	39.92	3—2	
1576.49	B	(3)	33.48	41.34	3—4	3d ³D —3d' ³F° UV 12.03
1577.32	B	(2+)	33.48	41.34	2—3	
1577.89	B	(3)	33.48	41.33	1—2	
1477.68	B	(3)	33.48	41.87	3—3	3d ³D —3d' ³D° UV 12.04
1478.05	B	(2)	33.48	41.86	2—2	
1478.30	B	(1)	33.48	41.86	1—1	
1426.78	B	(1)	33.48	42.17	3—2	3d ³D —3d' ³P° UV 12.05
1426.16	B	(0)	33.48	42.17	2—1	
1425.903	P		33.48	42.17	1—0	
1347.378	P		33.48	42.68	3—2	3d ³D —5p ³P° UV 12.06
1347.267	P		33.48	42.68	2—1	
1347.203	P		33.48	42.68	1—0	
1296.30	B	(2d)	33.48	43.04		3d ³D —5f ³F° UV 12.07
Air						
2982.106	A	8	34.28	38.43	2—1	3d ¹D —3s' ¹P° UV 13
2176.963	A	4	34.28	39.97	2—1	3d ¹D —4p ¹P° UV 14
2162.944	A	9	34.28	40.01	2—3	3d ¹D —4f ¹F° UV 15
Vac						
1779.12	B	(0)	34.28	41.25	2—2	3d ¹D —3d' ¹D° UV 16
1541.115	P		34.28	42.32	2—3	3d ¹D —3d' ¹F° UV 17
1497.563	P		34.28	42.56	2—1	3d ¹D —5p ¹P° UV 18
						3d' ¹P°

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
*7612.65	A	7	38.23	39.85	2–3	3s' ³P°—4d ³D 2.02
7586.40	A	4	38.22	39.85	1–2	
7576.68	A	2	38.21	39.85	0–1	
7625.94	A	2	28.23	39.85	2–2	
7595.29	A	2	38.22	39.85	1–1	
7634.972	P		38.23	39.85	2–1	
6744.38	A	7	38.23	40.06	2–3	3s' ³P°—3p' ³D 3
6731.04	A	6	38.22	40.06	1–2	
*6727.39§	A	6	38.21	40.06	0–1	
6762.17	A	4	38.23	40.06	2–2	
*6742.24§	A	5	38.22	40.06	1–1	
6773.37	A	1	38.23	40.06	2–1	
5272.53	A	6	38.23	40.58	2–1	3s' ³P°—3p' ³S 4
5253.58	A	5	38.22	40.58	1–1	
5244.67	A	3	38.21	40.58	0–1	
4665.86	A	8	38.23	40.88	2–2	3s' ³P°—3p' ³P 5
4659.06	A	5	38.22	40.88	1–1	
4673.95	A	6	38.23	40.88	2–1	
4663.64	A	6	38.22	40.87	1–0	
4651.01	A	5	38.22	40.88	1–2	
4652.06	A	5	38.21	40.88	0–1	
3161.92	A	2	38.23	42.15	2–1	3s' ³P°—5s ³S 5.01
3155.09	A	1	38.22	42.15	1–1	
3151.85	A	0	38.21	42.15	0–1	
2688.830	P		38.23	42.84	2–3	3s' ³P°—5d ³D UV 21
....			....	....	....	
11981.20	P		38.37	39.40	1–2	4s ³S—4p ³P° 5.02
11988.08	P		38.37	39.40	1–1	
11991.31	P		38.37	39.40	1–0	
3543.614	P		38.37	41.86	1–2	4s ³S—3d' ³D° 5.03
3545.236	P		38.37	41.86	1–1	
3262.272	A	3	38.37	42.17	1–2	4s ³S—3d' ³P° 6
3259.541	A	2	38.37	42.17	1–1	
3258.00	A	1	38.37	42.17	1–0	
2874.722	A	3	38.37	42.68	1–2	4s ³S—5p ³P° UV 22
2874.43	A	2	38.37	42.68	1–1	
2874.24	A	0	38.37	42.68	1–0	
2100.46	A	0	38.37	44.27	1–2	4s ³S—6p ³P° UV 23
....			....	....	....	
7037.25	A	7h	38.43	40.20	1–2	3s' ¹P°—4d ¹D 6.01
4325.560	A	8	38.43	41.30	1–2	3s' ¹P°—3p' ¹D 7
3506.783	P		38.43	41.97	1–0	3s' ¹P°—5s ¹S 7.01
2849.050	A	5	38.43	42.79	1–0	3s' ¹P°—3p' ¹S UV 24

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2727.555	P		38.43	42.98	1–2	3s' ¹P°—5d ¹D UV 25
....			....	....	....	
9358.37	A	1	38.65	39.97	0–1	4s ¹S—4p ¹P° 7.02
3170.016§	A	4h	38.65	42.56	0–1	4s ¹S—5p ¹P° 8
2857.013	A	1	38.65	42.99	0–1	4s ¹S—3d' ¹P° UV 26
2202.54	A	1	38.65	44.27	0–1	4s ¹S—6p ¹P° UV 27
....			....	....	....	
4516.77	A	6l	39.40	42.15	2–1	4p ³P°—5s ³S 9
4515.78	A	5l	39.40	42.15	1–1	
4515.33	A	3l	39.40	42.15	0–1	
*3609.625	A	6	39.40	42.84	2–3	4p ³P°—5d ³D 10
*3609.063	A	5	39.40	42.84	1–2	
3608.81	A	3	39.40	42.84	0–1	
*3609.625	A	6	39.40	42.84	2–2	
*3609.063	A	5	39.40	42.84	1–1	
*2697.75§§	A	7	39.40	44.00	2–1	4p ³P°—6s ³S UV 28
2697.42	A	3	39.40	44.00	1–1	
2480.861	A	4h	39.40	44.40	2–3	4p ³P°—6d ³D UV 29
2480.502	A	4h	39.40	44.40		
....			....	....	....	
7707.43	A	6	39.64	41.25	1–2	3p' ¹P—3d' ¹D° 10.01
4247.308	A	4	39.64	42.56	1–1	3p' ¹P—5p ¹P° 11
3703.71	A	4hs	39.64	42.99	1–1	3p' ¹P—3d' ¹P° 12
2673.765	P		39.64	44.27	1–1	3p' ¹P—6p ¹P° UV 30
....			....	....	....	
8332.99	A	7	39.85	41.34	3–4	4d ³D—3d' ³F° 12.01
8341.59	A	6	39.85	41.34	2–3	
8347.94	A	5	39.85	41.33	1–2	
8357.86	A	2	39.85	41.34	3–3	
8358.72	A	2	39.85	41.33	2–2	
8375.040	P		39.85	41.33	3–2	
6156.68	A	3	39.85	41.87	3–3	4d ³D—3d' ³D° 13
6155.09	A	2	39.85	41.86	2–2	
6154.13	A	1	39.85	41.86	1–1	
6163.96	A	0	39.85	41.86	3–2	
6159.97	A	0	39.85	41.86	2–1	
6147.81	A	0	39.85	41.87	2–3	
6149.23	A	0	39.85	41.86	1–2	

C III — Continued   C III — Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Air						
359.95	A	2	39.85	42.17	3-2	$4d\ ^3D$ —$3d'\ ^3P^\circ$
345.84	A	1p	39.85	42.17	2-1	13.01
337.42	A	0	39.85	42.17	1-0	
353.12	A	0p	39.85	42.17	2-2	
341.46	A	0	39.85	42.17	1-1	
348.816	P		39.85	42.17	1-2	
388.016	A	4	39.85	42.68	3-2	$4d\ ^3D$ —$5p\ ^3P^\circ$
382.898	A	3	39.85	42.68	2-1	14
379.481	A	2	39.85	42.68	1-0	
383.544	A	2	39.85	42.68	2-2	
379.952	A	2	39.85	42.68	1-1	
380.570	P		39.85	42.68	1-2	
389.144	A	6	39.85	43.04	3-4	$4d\ ^3D$—$5f\ ^3F^\circ$
385.941	A	5	39.85	43.04	2-3	15
383.816	A	4	39.85	43.04	1-2	
389.475	A	1	39.85	43.04	3-3	
386.145	P		39.85	43.04	2-2	
389.670	P		39.85	43.04	3-2	
308.07	A	1	39.85	44.27	3-2	$4d\ ^3D$ —$6p\ ^3P^\circ$
306.31	A	1	39.85	44.27	2-1	UV 31
305.13	A	0	39.85	44.27	1-0	
306.231	P		39.85	44.27	2-2	
305.13	A	0	39.85	44.27	1-1	
72.959	A	5hs	39.85	44.49	3-4	$4d\ ^3D$ —$6f\ ^3F^\circ$
71.318	A	4hs	39.85	44.49	2-3	UV 32
70.240	A	3hs	39.85	44.49	1-2	
57.894	A	2	39.92	42.84	4-3	$4f\ ^3F^\circ$—$5d\ ^3D$
56.455	A	1	39.92	42.84	3-2	15.01
55.42	A	1	39.92	42.84	2-1	
70.261	A	9	39.92	42.97	4-5	$4f\ ^3F^\circ$—$5g\ ^3G$
68.912	A	9	39.92	42.97	3-4	16
67.940	A	8	39.92	42.97	2-3	
25.90	A	7l	39.92	44.47	4-5	$4f\ ^3F^\circ$—$6g\ ^3G$
25.30	A	7l	39.92	44.47	3-4	UV 33
24.85	A	6l	39.92	44.47	2-3	
31.014	P		39.97	41.30	1-2	$4p\ ^1P^\circ$—$3p'\ ^1D$
						16.01
05.56	A	5	39.97	41.97	1-0	$4p\ ^1P^\circ$—$5s\ ^1S$
						16.02
21.843	A	5l	39.97	42.98	1-2	$4p\ ^1P^\circ$—$5d\ ^1D$
						17
51.828	A	3hl	39.97	44.48	1-2	$4p\ ^1P^\circ$—$6d\ ^1D$
						UV 34
97.807	P		40.01	41.30	3-2	$4f\ ^1F^\circ$—$3p'\ ^1D$
						17.01

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Air						
4186.900	A	9h	40.01	42.97	3-4	$4f\ ^1F^\circ$—$5g\ ^1G$
						18
4173.089	A	2	40.01	42.98	3-2	$4f\ ^1F^\circ$—$5d\ ^1D$
						18.01
2777.714	A	5hl	40.01	44.47	3-4	$4f\ ^1F^\circ$—$6g\ ^1G$
						UV 35
9699.570	P		40.06	41.34	3-4	$3p'\ ^3D$ —$3d'\ ^3F^\circ$
9696.483	P		40.06	41.34	2-3	18.02
9696.540	P		40.06	41.33	1-2	
6872.05	A	4	40.06	41.87	3-3	$3p'\ ^3D$ —$3d'\ ^3D^\circ$
6862.71	A	3	40.06	41.86	2-2	19
6857.27	A	2	40.06	41.86	1-1	
6881.09	A	1	40.06	41.86	3-2	
6868.80	A	1	40.06	41.86	2-1	
6853.70	A	1	40.06	41.87	2-3	
6851.20	A	1	40.06	41.86	1-2	
5894.07	A	3	40.06	42.17	3-2	$3p'\ ^3D$ —$3d'\ ^3P^\circ$
5871.69	A	2	40.06	42.17	2-1	20
5858.35	A	1	40.06	42.17	1-0	
5880.54	A	1	40.06	42.17	2-2	
5863.24	A	1	40.06	42.17	1-1	
5872.101	P		40.06	42.17	1-2	
4739.66	A	2	40.06	42.68	3-2	$3p'\ ^3D$ —$5p\ ^3P^\circ$
4730.16	A	1	40.06	42.68	2-1	20.01
4724.33	A	1p	40.06	42.68	1-0	
4162.86	A	7	40.06	43.04	3-4	$3p'\ ^3D$ —$5f\ ^3F^\circ$
4156.49	A	6	40.06	43.04	2-3	21
4152.512	A	5	40.06	43.04	1-2	
4163.26	A	2	40.06	43.04	3-3	
4156.76	A	2	40.06	43.04	2-2	
4163.487	P		40.06	43.04	3-2	
2799.47	A	4wh	40.06	44.49	3-4	$3p'\ ^3D$ —$6f\ ^3F^\circ$
2796.46	A	3wh	40.06	44.49	2-3	UV 36
2794.56	A	2wh	40.06	44.49	1-2	
11790.91	P		40.20	41.25	2-2	$4d\ ^1D$ —$3d'\ ^1D^\circ$
						21.01
5826.42	A	7	40.20	42.32	2-3	$4d\ ^1D$ —$3d'\ ^1F^\circ$
						22
5249.11	A	4l	40.20	42.56	2-1	$4d\ ^1D$ —$5p\ ^1P^\circ$
						23
4443.08	A	2?	40.20	42.99	2-1	$4d\ ^1D$ —$3d'\ ^1P^\circ$
						23.01
4056.062	A	7	40.20	43.25	2-3	$4d\ ^1D$ —$5f\ ^1F^\circ$
						24
3038.91	A	1	40.20	44.27	2-1	$4d\ ^1D$ —$6p\ ^1P^\circ$
						25

C III —Continued | C III —Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.	I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Air 2863.712	A	4s	40.20	44.52	2–3	$4d$ ¹D —$6f$ ¹F° UV 37	Air 6774.93	A	0	42.17	44.00	2–1	$3d'$ ³P° —$6s$ ³S 36
7796.00	A	4	40.58	42.17	1–2	$3p'$ ³S —$3d'$ ³P° 26	2016.84	A	1WH	42.17	48.31	2–3	$3d'$ ³P° —$4f'$ ³D UV 42
7780.42	A	3	40.58	42.17	1–1		2015.7	A	0WH	42.17	48.31		
7771.760	P		40.58	42.17	1–0		5771.66	A	2hl	42.32	44.47	3–4	$3d'$ ¹F° —$6g$ ¹G 37
12583.93	P		40.88	41.87	2–3	$3p'$ ³P —$3d'$ ³D° 27							
12555.56	P		40.88	41.86	1–2								
12542.68	P		40.87	41.86	0–1		6460.33	A	0w	42.56	44.48	1–2	$5p$ ¹P° —$6d$ ¹D 38
9651.475	P		40.88	42.17	2–2	$3p'$ ³P —$3d'$ ³P° 28							
9593.322	P		40.88	42.17	1–1								
6899.64	A	1	40.88	42.68	2–2	$3p'$ ³P —$5p$ ³P° 29	7210.52	A	2WH	42.68	44.40	2–3	$5p$ ³P° —$6d$ ³D 39
6880.500	P		40.88	42.68	1–1		7212.29	A	1WH	42.68	44.40	1–	
2142.49	A	1	40.88	46.67	2–2	$3p'$ ³P —$4s'$ ³P° UV 38							
2145.58	A	0w	40.88	46.67			8652.6	A	1WH	42.84	44.27	3–2	$5d$ ³D —$6p$ ³P° 40
9859.405	P		41.30	42.56	2–1	$3p'$ ¹D —$5p$ ¹P° 30	7486.52	A	3hs	42.84	44.49		$5d$ ³D —$6f$ ³F° 41
7353.96	A	0	41.30	42.99	2–1	$3p'$ ¹D —$3d'$ ¹P° 31	4859.6	A	0w	42.84	45.39	3–4	$5d$ ³D —$7f$ ³F°? 42
6350.76	A	2h	41.30	43.25	2–3	$3p'$ ¹D —$5f$ ¹F° 32							
4166.95	A	1	41.30	44.27	2–1	$3p'$ ¹D —$6p$ ¹P° 33	8196.48	A	10hs	42.97	44.48		$5g$ ³,¹G —$6h$ ³,¹H° 43
							8021.14	A	1Hs	42.98			
8296.51	A	1+h	41.34	42.84	4–3	$3d'$ ³F° —$5d$ ³D 34							
8272.26	A	1h	41.34	42.84	3–2								
8255.62	A	1–h	41.33	42.84	2–1		8665.22	A	3WH	43.04	44.47	4–5	$5f$ ³F° —$6g$ ³G 45
*7612.65	A	7	41.34	42.97	4–5	$3d'$ ³F° —$5g$ ³G 35	8663.65	A	2WH	43.04	44.47	3–4	
7592.28	A	5l	41.34	42.97	3–4		5305.10	A	2Hl	43.04	45.38		$5f$ ³F° —$7g$ ³G 46
7578.16	A	4l	41.33	42.97	2–3								
2255.51	P		41.87	47.36	3–3	$3d'$ ³D° —$4p'$ ³D UV 39							
2256.54	P		41.86	47.36	2–2		3999.92	B	(0+d)	47+	50+	4–5	$4d'$ ³F° —$5f'$ ³G 47
2139.86	A	1	41.87	47.66	3–2	$3d'$ ³D° —$4p'$ ³P UV 40	4001.56	B	(0d)	47+	50+		
2140.92	A	1w	41.86	47.65	2–1								
Vac 1979.16	A	2	41.87	48.13	3–4	$3d'$ ³D° —$4f'$ ³F UV 41	4315.44	A	3wh	48.07	50.94	3–4	$4d'$ ³D° —$5f'$ ³F 48
1979.62	A	1	41.87	48.13									

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 358.90	A	2WH	48+	50+	5—6	4f' ^{3}G —5g' ^{3}H° 49	Air 2853.13 2854.13	A A	0+wh 0wh	48.13 48.13	52.48 52.48	4—5	4f' ^{3}F —6g' ^{3}G° UV 43
367.50§ 361.87	A A	3h 4wh	48.13 48.13	50.97 50.97	4—5	4f' ^{3}F —5g' ^{3}G° 50	4593.3 4587.6	A A	1WH 0WH	48.31 48.31	51.01 51.01	3—4	4f' ^{3}D —5g' ^{3}F° 51

CARBON, Z = 6

C IV

Config.	Desig.	J	Level	Interval
$1s^2\,2s$	$2s\ ^2S$	$0\frac{1}{2}$	0.0	
$1s^2\,2p$	$2p\ ^2P^\circ$	$0\frac{1}{2}$	*64484.0*	107.7
		$1\frac{1}{2}$	*64591.7*	
$1s^2\,3s$	$3s\ ^2S$	$0\frac{1}{2}$	302849.0	
$1s^2\,3p$	$3p\ ^2P^\circ$	$0\frac{1}{2}$	*320050.1*	31.6
		$1\frac{1}{2}$	*320081.7*	
$1s^2\,3d$	$3d\ ^2D$	$1\frac{1}{2}$	324879.8	10.5
		$2\frac{1}{2}$	324890.3	
$1s^2\,4s$	$4s\ ^2S$	$0\frac{1}{2}$	401348.1	
$1s^2\,4p$	$4p\ ^2P^\circ$	$0\frac{1}{2}$	*408311.1*	13.1
		$1\frac{1}{2}$	*408324.2*	
$1s^2\,4d$	$4d\ ^2D$	$1\frac{1}{2}$	410336.1	4.0
		$2\frac{1}{2}$	410340.1	
$1s^2\,4f$	$4f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	410434.2	
$1s^2\,5s$	$5s\ ^2S$	$0\frac{1}{2}$	445368.5	
$1s^2\,5p$	$5p\ ^2P^\circ$	$0\frac{1}{2}$	448855.8	7.1
		$1\frac{1}{2}$	448862.9	
$1s^2\,5d$	$5d\ ^2D$	$1\frac{1}{2}$	449888.2	1.7
		$2\frac{1}{2}$	449889.9	
$1s^2\,5f$	$5f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	449939.8	
$1s^2\,5g$	$5g\ ^2G$	$3\frac{1}{2}$, $4\frac{1}{2}$	449948.4	
$1s^2\,6s$	$6s\ ^2S$	$0\frac{1}{2}$	468784.0	
$1s^2\,6p$	$6p\ ^2P^\circ$	$0\frac{1}{2}$	*470775.0*	3.9
		$1\frac{1}{2}$	*470778.9*	
$1s^2\,6d$	$6d\ ^2D$	$1\frac{1}{2}$	471370.3	1.2
		$2\frac{1}{2}$	471371.5	
$1s^2\,6f$	$6f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	[471403.2]	
$6g$	$6g\ ^2G$	$3\frac{1}{2}$, $4\frac{1}{2}$	[471406.16]	
$6h$	$6h\ ^2H^\circ$	$4\frac{1}{2}$, $5\frac{1}{2}$	[471406.80]	
$1s^2\,7s$	$7s\ ^2S$	$0\frac{1}{2}$	482706.0	
$1s^2\,7p$	$7p\ ^2P^\circ$	$0\frac{1}{2}$	[483948.4]	[2.4]
		$1\frac{1}{2}$	[483950.8]	
$1s^2\,7d$	$7d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	484320.6	

C IV

Config.	Desig.	J	Level	Interval
$1s^2\,7f$	$7f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	[484343.5]	
$7g$	$7g\ ^2G$	$3\frac{1}{2}$, $4\frac{1}{2}$	[484345.42]	
$7h$	$7h\ ^2H^\circ$	$4\frac{1}{2}$, $5\frac{1}{2}$	[484345.84]	
$7i$	$7i\ ^2I$	$5\frac{1}{2}$, $6\frac{1}{2}$	[484345.96]	
$1s^2\,8s$	$8s\ ^2S$	$0\frac{1}{2}$	[491650.8]	
$1s^2\,8p$	$8p\ ^2P^\circ$	$0\frac{1}{2}$	*[492477.7]*	[1.6]
		$1\frac{1}{2}$	*[492479.3]*	
$1s^2\,8d$	$8d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[492728.5]	
$1s^2\,8f$	$8f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	*[492742.2]*	
$8g$	$8g\ ^2G$	$3\frac{1}{2}$, $4\frac{1}{2}$	[492743.49]	
$8h$	$8h\ ^2H^\circ$	$4\frac{1}{2}$, $5\frac{1}{2}$	[492743.78]	
$8i$	$8i\ ^2I$	$5\frac{1}{2}$, $6\frac{1}{2}$	[492743.86]	
$1s^2\,9s$	$9s\ ^2S$	$0\frac{1}{2}$	[497736.7]	
$1s^2\,9p$	$9p\ ^2P^\circ$	$0\frac{1}{2}$	*[498314.6]*	[1.1]
		$1\frac{1}{2}$	*[498315.7]*	
$1s^2\,9d$	$9d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[498490.6]	
$1s^2\,9f$	$9f\ ^2F^\circ$	$2\frac{1}{2}$, $3\frac{1}{2}$	*[498500.3]*	
$9g$	$9g\ ^2G$	$3\frac{1}{2}$, $4\frac{1}{2}$	[498501.17]	
$9h$	$9h\ ^2H^\circ$	$4\frac{1}{2}$, $5\frac{1}{2}$	[498501.37]	
$9i$	$9i\ ^2I$	$5\frac{1}{2}$, $6\frac{1}{2}$	[498501.44]	
$1s^2\,10p$	$10p\ ^2P^\circ$	$0\frac{1}{2}$, $1\frac{1}{2}$	*502412*	
$1s^2\,10d$	$10d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	502598	
$1s^2\,11p$	$11p\ ^2P^\circ$	$0\frac{1}{2}$, $1\frac{1}{2}$	*505510*	
$1s^2\,11d$	$11d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[505696]	
$1s^2\,12p$	$12p\ ^2P^\circ$	$0\frac{1}{2}$, $1\frac{1}{2}$	[507906]	
$1s^2\,12d$	$12d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[508018]	
$1s^2\,13p$	$13p\ ^2P^\circ$	$0\frac{1}{2}$, $1\frac{1}{2}$	[509728]	
$1s^2\,13d$	$13d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[509821]	
$1s^2\,14d$	$14d\ ^2D$	$1\frac{1}{2}$, $2\frac{1}{2}$	[511254]	
C v($^1S_0$)	**Limit**		**520178.4 ± 1.5**	

December 1969.

Part B

CARBON

C IV ($Z = 6$)

I P 64.492 eV   Limit 520178.4 $\pm$ 1.5 cm^{-1} 192.242 Å (Vac)

Anal A   List A   December 1969

REFERENCES

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T.-Y. Wu, Phys. Rev. **58**, 1114 to 1115 (1940). C L

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A. H. Gabriel, C. Jordan, Nature **221**, No. 5184, 947 to 949 (1969). C L; W L 41 Å

A   K. Bockasten, Ark. Fys. (Stockholm) **10**, No. 40, 567 to 582 (1960). I P, T, C L, I; W L 384 Å to 7726 Å

B   B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 40 to 44 (1934). I P, T, C L, G D, I; W L 197 Å to 5812 Å

C   K. Bockasten, R. Hallin and T. P. Hughes, Proc. Phys. Soc. (London) **81**, No. 521, 522 to 530 (1963). C L; W L 1548 Å
   to 1550 Å

D   V. M. Perevertun and S. M. Mukhtarov, Optics and Spectr. **26**, No. 1, 50–51 (1969). C L, (I); W L 196 Å to 239 Å

P   Predicted wavelength

New Multiplet Numbers, not inserted between older ones, start with UV 16.

*Blend   *and § Blend of C III and C IV

C IV

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
1548.202‡	C	20	0.00	8.01	$0\frac{1}{2}$–$1\frac{1}{2}$	$2s\ ^2S\ -\ 2p\ ^2P°$
1550.774	C	19	0.00	7.99	$0\frac{1}{2}$–$0\frac{1}{2}$	UV 1
312.418	B	15	0.00	39.68	$0\frac{1}{2}$–$1\frac{1}{2}$	$2s\ ^2S\ -\ 3p\ ^2P°$
312.455	B	14	0.00	39.68	$0\frac{1}{2}$–$0\frac{1}{2}$	UV 2
307.806	B	1	0.00	40.28	$0\frac{1}{2}$–$1\frac{1}{2}$	$2s\ ^2S\ -\ 3d\ ^2D$ UV 2.01 F
244.907	B	10	0.00	50.62	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 4p\ ^2P°$ UV 3
222.791	B	7	0.00	55.65	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 5p\ ^2P°$ UV 4
212.421	B	5	0.00	58.37	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 6p\ ^2P°$ UV 5
206.641	B	3d	0.00	60.00	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 7p\ ^2P°$ UV 5.01
203.057	B	1d	0.00	61.06	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 8p\ ^2P°$ UV 5.02
200.68	B	0dd	0.00	61.78	$0\frac{1}{2}$–	$2s\ ^2S\ -\ 9p\ ^2P°$ UV 5.03

C IV

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
199.04	B		0.00	62.29	$0\frac{1}{2}$–	$2s\ ^2S\ -10p\ ^2P°$ UV 5.04
197.82	B	(2)	0.00	62.67	$0\frac{1}{2}$–	$2s\ ^2S\ -11p\ ^2P°$ UV 5.05
196.96	D	(1)	0.00	62.97	$0\frac{1}{2}$–	$2s\ ^2S\ -12p\ ^2P°$ UV 5.06
196.27	D	(1)	0.00	63.20	$0\frac{1}{2}$–	$2s\ ^2S\ -13p\ ^2P°$ UV 5.07
419.714	B	14	8.01	37.55	$1\frac{1}{2}$–$0\frac{1}{2}$	$2p\ ^2P°-\ 3s\ ^2S$
419.525	B	13	7.99	37.55	$0\frac{1}{2}$–$0\frac{1}{2}$	UV 6
384.178	B	17	8.01	40.28	$1\frac{1}{2}$–$2\frac{1}{2}$	$2p\ ^2P°-\ 3d\ ^2D$
384.032	B	16	7.99	40.28	$0\frac{1}{2}$–$1\frac{1}{2}$	UV 7
384.19	P		8.01	40.28	$1\frac{1}{2}$–$1\frac{1}{2}$	
296.951	B	7	8.01	49.76	$1\frac{1}{2}$–$0\frac{1}{2}$	$2p\ ^2P°-\ 4s\ ^2S$
296.857	B	6	7.99	49.76	$0\frac{1}{2}$–$0\frac{1}{2}$	UV 8
289.230	B	10	8.01	50.87	$1\frac{1}{2}$–$2\frac{1}{2}$	$2p\ ^2P°-\ 4d\ ^2D$
289.143	B	9	7.99	50.87	$0\frac{1}{2}$–$1\frac{1}{2}$	UV 9
262.624	B	4	8.01	55.22	$1\frac{1}{2}$–$0\frac{1}{2}$	$2p\ ^2P°-\ 5s\ ^2S$
262.550	B	3	7.99	55.22	$0\frac{1}{2}$–$0\frac{1}{2}$	UV 9.01

C IV — Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
259.542	B	7	8.01	55.78	$1\tfrac12 - 2\tfrac12$	$2p\,^2P° -\ 5d\,^2D$
259.471	B	6	7.99	55.78	$0\tfrac12 - 1\tfrac12$	UV 10
247.415	B	1	8.01	58.12	$1\tfrac12 - 0\tfrac12$	$2p\,^2P° -\ 6s\,^2S$
247.357	B	0	7.99	58.12	$0\tfrac12 - 0\tfrac12$	UV 10.01
245.830	B	5d	8.01	58.44	$1\tfrac12 - 2\tfrac12$	$2p\,^2P°\quad 6d\,^2D$
245.775	B	4d	7.99	58.44	$0\tfrac12 - 1\tfrac12$	UV 11
239.196	B	0	8.01	59.85	$1\tfrac12 - 0\tfrac12$	$2p\,^2P° -\ 7s\,^2S$
239.11	P		7.99	59.85	$0\tfrac12 - 0\tfrac12$	UV 11.01
238.250	B	3d	8.01	60.05	$1\tfrac12 - 2\tfrac12$	$2p\,^2P° -\ 7d\,^2D$
238.200	B	2d	7.99	60.05	$0\tfrac12 - 1\tfrac12$	UV 11.02
234.19	D	(2)	8.01	60.96	$1\tfrac12 - 0\tfrac12$	$2p\,^2P° -\ 8s\,^2S$ UV 11.03
233.53	B	2dd	8.00	61.09		$2p\,^2P° -\ 8d\,^2D$ UV 11.04
230.9	D	1	8.01	61.71	$1\tfrac12 - 0\tfrac12$	$2p\,^2P° -\ 9s\,^2S$ UV 11.05
230.43	B	1dd	8.00	61.80		$2p\,^2P° -\ 9d\,^2D$ UV 11.06
228.27	B	0dd	8.00	62.31		$2p\,^2P° -10d\,^2D$ UV 11.07
226.72	D	(3)	8.00	62.70		$2p\,^2P° -11d\,^2D$ UV 11.08
225.49	D	(2)	8.00	62.98		$2p\,^2P° -12d\,^2D$ UV 11.09
224.5	D	(1)	8.00	63.21		$2p\,^2P° -13d\,^2D$ UV 11.10
223.9	D	(1)	8.00	63.39		$2p\,^2P° -14d\,^2D$ UV 11.11
Air						
5801.33	A	10	37.55	39.68	$0\tfrac12 - 1\tfrac12$	$3s\,^2S\ -\ 3p\,^2P°$
5811.98	A	9	37.55	39.68	$0\tfrac12 - 0\tfrac12$	1
Vac						
948.098	B	1	37.55	50.62	$0\tfrac12 - 1\tfrac12$	$3s\,^2S\ -\ 4p\,^2P°$
948.214	B	0	37.55	50.62	$0\tfrac12 - 0\tfrac12$	UV 11.12
684.87	P		37.55	55.65	$0\tfrac12 - 1\tfrac12$	$3s\,^2S\ -\ 5p\,^2P°$
684.90	P		37.55	55.65	$0\tfrac12 - 0\tfrac12$	UV 11.13
1230.511	B	3	39.68	49.76	$1\tfrac12 - 0\tfrac12$	$3p\,^2P° -\ 4s\,^2S$
1230.046	B	2	39.68	49.76	$0\tfrac12 - 0\tfrac12$	UV 11.14
1107.933	B	2	39.68	50.87	$1\tfrac12 - 2\tfrac12$	$3p\,^2P° -\ 4d\,^2D$
1107.600	B	1	39.68	50.87	$0\tfrac12 - 1\tfrac12$	UV 11.15
798.17	P		39.68	55.22	$1\tfrac12 - 0\tfrac12$	$3p\,^2P° -\ 5s\,^2S$
797.97	P		39.68	55.22	$0\tfrac12 - 0\tfrac12$	UV 11.16

C IV — Continued

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
770.379	B	0d	39.68	55.78	$1\tfrac12 - 2\tfrac12$	$3p\,^2P° -\ 5d\,^2D$
770.19	P		39.68	55.78	$0\tfrac12 - 1\tfrac12$	UV 11.17
1198.58	B	1d	40.28	50.62		$3d\,^2D\ -\ 4p\,^2P°$ UV 11.18
1168.990	B	4	40.28	50.89	$2\tfrac12 - 3\tfrac12$	$3d\,^2D\ -\ 4f\,^2F°$
1168.873	B	3+	40.28	50.89	$1\tfrac12 - 2\tfrac12$	UV 11.19
Air						
2103.94	A	2	49.76	55.65	$0\tfrac12 - 1\tfrac12$	$4s\,^2S\ -\ 5p\,^2P°$
2104.24	A	1	49.76	55.65	$0\tfrac12 - 0\tfrac12$	UV 11.20
2698.67	A	4	50.62	55.22	$1\tfrac12 - 0\tfrac12$	$4p\,^2P° -\ 5s\,^2S$
*2697.75§	A	4	50.62	55.22	$0\tfrac12 - 0\tfrac12$	UV 12
2405.10	A	6l	50.62	55.78	$1\tfrac12 - 2\tfrac12$	$4p\,^2P° -\ 5d\,^2D$
2404.44	A	5	50.62	55.78	$0\tfrac12 - 1\tfrac12$	UV 12.01
2405.20	P		50.62	55.78	$1\tfrac12 - 1\tfrac12$	
2595.089	A	4	50.87	55.65	$2\tfrac12 - 1\tfrac12$	$4d\,^2D\ -\ 5p\,^2P°$
2595.295	A	3	50.87	55.65	$1\tfrac12 - 0\tfrac12$	UV 13
2527.7	A	1h	50.87	55.78		$4d\,^2D\ -\ 5d\,^2D$ UV 13.01F
2524.41	A	9l	50.87	55.78		$4d\,^2D\ -\ 5f\,^2F°$ UV 14
2523.7	A	4hs	50.87	55.79		$4d\,^2D\ -\ 5g\,^2G$ UV 14.01F
2533.77	A	2l	50.89	55.78		$4f\,^2F° -\ 5d\,^2D$ UV 14.02
2530.6	A	6hl	50.89	55.78		$4f\,^2F° -\ 5f\,^2F°$ UV 14.03F
2529.98	A	11s	50.89	55.79		$4f\,^2F° -\ 5g\,^2G$ UV 15
3934.29	A	2	55.22	58.37	$0\tfrac12 - 1\tfrac12$	$5s\,^2S\ -\ 6p\,^2P°$
3934.89	A	1	55.22	58.37	$0\tfrac12 - 0\tfrac12$	2

Multiplet Table

C IV—Continued

IA	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
5018.39	A	2	55.65	58.12	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°-\ 6s\ ^2S$
5016.58	A	1	55.65	58.12	$0\frac{1}{2}-0\frac{1}{2}$	3
4441.49	A	3l	55.65	58.44	$1\frac{1}{2}-2\frac{1}{2}$	$5p\ ^2P°-\ 6d\ ^2D$
4440.34	A	2l	55.65	58.44	$0\frac{1}{2}-1\frac{1}{2}$	4
2953.95	A	1	55.65	59.85	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°-\ 7s\ ^2S$
2953.4	A	0	55.65	59.85	$0\frac{1}{2}-0\frac{1}{2}$	UV 16
2819.24	A	1l	55.65	60.05		$5p\ ^2P°-\ 7d\ ^2D$ UV 17
			· · · · · ·	· · · · · ·		
4785.88	A	1	55.78	58.37	$2\frac{1}{2}-1\frac{1}{2}$	$5d\ ^2D\ -\ 6p\ ^2P°$
4786.7 ?	A	0	55.78	58.37	$1\frac{1}{2}-0\frac{1}{2}$	5
4646.99	P	C III	55.78	58.45	$2\frac{1}{2}-$	$5d\ ^2D\ -\ 6f\ ^2F°$
4646.62	P	C III	55.78	58.45	$1\frac{1}{2}-$	6
2935.12	A	1	55.78	60.00		$5d\ ^2D\ -\ 7p\ ^2P°$ UV 18

C IV—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Air						
2901.60	A	2wh	55.78	60.05		$5d\ ^2D\ -\ 7f\ ^2F°$ UV 19
		· · · · · ·	· · · · · ·	· · · · · ·		
4658.30	A	9W	55.79	58.45		$5g\ ^2G\ -\ 6h\ ^2H°$ etc. 8
2906.29	A	5W	55.79	60.05		$5g\ ^2G\ -\ 7h\ ^2H°$ etc. UV 20
2335.9	A	2W	55.79	61.09		$5g\ ^2G\ -\ 8h\ ^2H°$ etc. UV 21
		· · · · · ·	· · · · · ·	· · · · · ·		
7726.2	A	6W	58.45	60.05		$6h\ ^2H°-\ 7i\ ^2I$ etc. 8.01
4685.4	A	1W	58.45	61.09		$6h\ ^2H°-\ 8i\ ^2I$ etc. 8.02
3689.6	A	2W	58.45	61.80		$6h\ ^2H°-\ 9i\ ^2I$ etc. 8.03

CARBON, Z = 6

Part A   CARBON

C v

He I sequence; 2 electrons $Z=6$

Ground state $1s^2\,{}^1S_0$

$1s^2\,{}^1S_0$ **3162395 ±30** cm^{-1}, 31.622 Å (Vac)   IP 392.007 ± 0.004 eV

The earlier analysis has been revised and extended by B. Edlén and B. Löfstrand especially for inclusion here. The terms are based on "new measurements in the region below 300 Å and some previous observations at longer wavelengths." In deriving the term values the theoretical values of $2p\,{}^1P°$ and of the difference $2s\,{}^3S$—$2s\,{}^1S$ have been adopted in order to fix the terms with $n=2$. For $n>2$ the terms "follows directly from the observations."

The limit has been determined by adopting the theoretical ionization energy of $2p\,{}^1P°$ as given by Accad et al. The five-term series $ns\,{}^3S$, $np\,{}^{3,1}P°$ and $nd\,{}^{3,1}D$, are represented by two-parameter Ritz formulae. The authors have applied the polarization formula to the hydrogen-like terms in C v and predicted the wavelengths of several hydrogen-like transitions.

All predicted terms are entered in brackets in the table.

A number of C v lines can be identified in spectra obtained from beam foil observations and laser-produced plasma, by means of wavelengths predicted from the present term values. Edlén and Löfstrand report 12 such lines in their 1970 paper.

In 1939 Edlén and Tyrén observed a group of carbon lines near 34 Å analogous to those of He I interpreted as transitions of the type $1s\,2s$—$2p\,2s$ and $1s\,2p$—$2p\,2p$, giving rise to energy states "extremely high above the ionization limit." Feldman and Cohen have measured seven such lines in a low-inductance vacuum spark spectrum, classified them as due to the above transitions and in addition, $1s\,3s$—$2p\,3s$. The high levels involved lie in the range from 5300000 cm^{-1} to 5800000 cm^{-1}. Both the observed positions and intensities of these lines agree well with the theoretical interpretation.

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Atomic Energy Levels

C V

Config.	Desig.	J	Level	Interval
1s²	1s² ¹S → $1s^2\ {}^1S$	0	0	
1s 2s	2s ³S	1	2411262	
1s 2s	2s ¹S	0	2455024	
1s 2p	2p ³P°	0	*2455161*	− 13
		1	*2455148*	136
		2	*2455284*	
1s 2p	2p ¹P°	1	*2483371*	
1s 3s	3s ³S	1	2839562	
1s 3s	3s ¹S	0	[2851180]	
1s 3p	3p ³P°	0,1,2	*2851418*	
1s 3d	3d ³D	1,2	2857305	10
		3	2857315	
1s 3d	3d ¹D	2	2857529	
1s 3p	3p ¹P°	1	*2859375*	
1s 4s	4s ³S	1	[2983541]	
1s 4p	4p ³P°	0,1,2	*2988359*	
1s 4d	4d ³D	1,2,3	2990776	
1s 4d	4d ¹D	2	2990923	
1s 4f	4f ³F°	2,3,4	[*2990923.4*]	
1s 4f	4f ¹F°	3		
1s 4p	4p ¹P°	1	*2991710*	
1s 5s	5s ³S	1	[3048927]	
1s 5p	5p ³P°	0,1,2	*3051332*	
1s 5d	5d ³D	1,2,3	3052589	
1s 5f	5f ³F°	2,3,4	[*3052653.3*]	
1s 5f	5f ¹F°	3		
1s 5d	5d ¹D	2	[3052656]	
1s 5g	5g ³G	3,4,5	[*3052659.4*]	
1s 5g	5g ¹G	4		
1s 5p	5p ¹P°	1	*3053044*	
1s 6s	6s ³S	1	[3084048]	

C V

Config.	Desig.	J	Level	Interval
1s 6p	6p ³P°	0,1,2	[*3085435*]	
1s 6d	6d ³D	1,2,3	[3086138]	
1s 6f	6f ³F°	2,3,4	[3086186.0]	
1s 6f	6f ¹F°	3		
1s 6d	6d ¹D	2	[3086189]	
1s 6g	6g ³G	3,4,5	[3086189.6]	
1s 6g	6g ¹G	4		
1s 6h	6h ³H°	4,5,6	[3086190.8]	
1s 6h	6h ¹H°	5		
1s 6p	6p ¹P°	1	*3086439*	
1s 7s	7s ³S	1	[3105066]	
1s 7p	7p ³P°	0,1,2	[*3105933*]	
1s 7d	7d ³D	1,2,3	[3106374]	
1s 7d	7d ¹D	2	[3106407]	
1s 7g	7g ³G	3,4,5	[3106407.4]	
1s 7g	7g ¹G	4		
1s 7h	7h ³H°	4,5,6	[3106408.2]	
1s 7h	7h ¹H°	5		
1s 7i	7i ³I	5,6,7	[3106408.6]	
1s 7i	7i ¹I	6		
1s 7p	7p ¹P°	1	[3106541]	
1s 8s	8s ³S	1	[3118635]	
1s 8p	8p ³P°	0,1,2	[*3119212*]	
1s 8d	8d ³D	1,2,3	[3119507]	
1s 8d	8d ¹D	2	[3119530]	
1s 8p	8p ¹P°	1	[3119619]	
C VI($^2S_{0\,1/2}$)	**Limit**	....	**3162395 ± 30**	

Part B

CARBON

C v (Z=6)

I P 392.077 ± 0.004 eV   Limit 3162395 ± 30 cm⁻¹   31.622 Å (Vac)

Anal A   List A   June 1970

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B   F. Tyrén, Zeit. Phys. **98**, 768 to 774 (1936). C L

P   Predicted wavelength

B. C. Boland, F. E. Irons and R. W. P. McWhirter, J. Phys. B (Proc. Phys. Soc. London) [2] **1**, No. 6, 1180 to 1191 (1968). Laser-produced plasma source. C L; W L 718 Å to 765 Å, 2982 Å, 3526 Å, 4944.7 Å

G. S. Bakken, A. C. Conrad and J. A. Jordan, Jr., J. Phys. B (Proc. Phys. Soc. London) [2] **2**, No. 12, 1378 to 1380 (1969). Beam foil observations. W L 4943.2 Å, 4944.3 Å, (I)

U. Feldman and L. Cohen, Astroph. J. **158**. No. 3, Part 2, L169 to L170 (1969). C L; WL, 7 lines, 33.8 Å to 34.7 Å

R. Girardeau, G. Beauchemin and R. Drouin, private communication (1970). See A. Beam foil observations. W L, 5 lines, 672 Å to 760 Å

*Blend

*and §   Blend of C IV and C V

C V

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 40.7306	A	3	0.00	304.39	0—1	1s² ¹S —2p ³P° 1
40.2680‡	A	10	0.00	307.89	0—1	1s² ¹S —2p ¹P° 2
35.070	P		0.00	353.52	0—1	1s² ¹S —3p ³P° 3
34.9728	A	5	0.00	354.51	0—1	1s² ¹S —3p ¹P° 4
33.463	P		0.00	370.50	0—1	1s² ¹S —4p ³P° 5
33.4257	A	3	0.00	370.92	0—1	1s² ¹S —4p ¹P° 6
32.773	P		0.00	378.31	0—1	1s² ¹S —5p ³P° 7
32.7542	A	2	0.00	378.52	0—1	1s² ¹S —5p ¹P° 8
32.3998	A	1	0.00	382.66	0—1	1s² ¹S —6p ¹P° 9

C V

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 32.188	B		0.00	385.15	0—1	1s² ¹S —7p ¹P° 10
32.064	B		0.00	386.77	0—1	1s² ¹S —8p ¹P° 11
Air 2270.91	A	3	298.95	304.41	1—2	2s ³S —2p ³P° 12
2277.92	A	2	298.95	304.39	1—1	
2277.25	A	1	298.95	304.39	1—0	
Vac 227.192	A	5	298.95	353.52	1—	2s ³S —3p ³P° 13
173.281	A	2	298.95	370.50	1—	2s ³S —4p ³P° 14
156.233	A	1	298.95	378.31	1—	2s ³S —5p ³P° 15
Air 3526.7	A		304.38	307.89	0—1	2s ¹S —2p ¹P° 16

C V—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac *247.31§	A		304.38	354.51	0—1	2s ¹S —3p ¹P° 17
186.329	P		304.38	370.92	0—1	2s ¹S —4p ¹P° 18
167.218	P		304.38	378.52	0—1	2s ¹S —5p ¹P° 19
158.374	P		304.38	382.66	0—1	2s ¹S —6p ¹P° 20
260.229	A	1	304.41	352.05	2—1	2p ³P° —3s ³S 21
*260.136	A	1—	304.39	352.05	1—1	
*260.136	A	1—	304.39	352.05	0—1	
248.738	A	6	304.41	354.25	2—3	2p ³P° —3d ³D 22
*248.661	A	6	304.39	354.25	1—	
*248.661	A	6	304.39	354.25	0—1	
186.745	A	3	304.41	370.80	2—	2p ³P° —4d ³D 23
*186.697	A	3	304.39	370.80	1—	
*186.697	A	3	304.39	370.80	0—1	
167.402	A	1	304.40	378.46		2p ³P° —5d ³D 24
267.267	A	3	307.89	354.28	1—2	2p ¹P° —3d ¹D 25
197.024	A	1	307.89	370.82	1—2	2p ¹P° —4d ¹D 26
Air 8432.2	P		352.05	353.52		3s ³S —3p ³P° 27
Vac 672.06	P		352.05	370.50	1—	3s ³S —4p ³P° 28
472.21	P		352.05	378.31	1—	3s ³S —5p ³P° 29
756.87	P		353.52	369.90	—1	3p ³P° —4s ³S 30

C V—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac 717.58	P		353.52	370.80		3p ³P° —4d ³D 31
506.31	P		353.52	378.01	—1	3p ³P° —5s ³S 32
497.09	P		353.52	378.46		3p ³P° —5d ³D 33
763.07	P		354.25	370.50		3d ³D —4p ³P° 34
748.43	P		354.25	370.82		3d ³D —4f ³F° 35
749.66	P		354.28	370.82	2—3	3d ¹D —4f ¹F° 36
760.18	P		354.51	370.82	1—2	3p ¹P° —4d ¹D 37
1619.80	P		370.82	378.47		4f ³,¹F° —5g ³,¹G 38
Air 2980.97	P		378.47	382.63		5f ³,¹F° —6g ³,¹G 39
2981.41	P		378.47	382.63		5g ³,¹G —6h ³,¹H° 40
4943.88	P	(1)	382.63	385.14		6f ³,¹F° —7g ³,¹G 41
4944.56	P	(1)	382.63	385.14		6g ³,¹G —7h ³,¹H° 42
4944.76	P		382.63	385.14		6h ³,¹H° —7i ³,¹I 43

CARBON, Z = 6

Part A   CARBON

C VI

(H I sequence; 1 electron) $Z = 6$

Ground state $1s\,^2S_{0\frac{1}{2}}$

$1s\,^2S_{0\frac{1}{2}}$ **3952061.3** cm^{-1}, 25.303 Å (Vac)   I P 489.981 eV

In 1938 Tyrén reported several members of the Lyman Series as observed, in the region 25 Å to 35 Å.

The terms listed below have been calculated by J. D. Garcia and J. E. Mack as part of their extensive calculations of H-like spectra to Ca XX. Their values refer to the isotope ^{12}C for which they used the value R = 109732.29205.

Edlén has also calculated centre-of-gravity wavelengths of the Lyman lines $1s - np$, $n = 2$ to 7, for the natural isotope mixture, but the difference is negligible in the case of C VI.

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C VI

Config.	Desig.		J	Level	Interval
	1s ²S		0½	0.0	
		2p ²P°	0½	2963877.9	
	2s ²S		0½	2963904.0	26.1
		2p ²P°	1½	2964352.8	448.8
		3p ²P°	0½	3512921.4	
	3s ²S		0½	3512929.2	7.8
	3d ²D		1½	3513061.9	32.7
		3p ²P°	1½	3513062.1	0.2
	3d ²D		2½	3513108.7	46.6
		4p ²P°	0½	3705067.3	
	4s ²S		0½	3705070.6	3.3
	4d ²D		1½	3705126.6	56.0
		4p ²P°	1½	3705126.7	0.1
4f	4d ²D	4f ²F°	2½	3705146.3	19.6
		4f ²F°	3½	3705156.2	9.9
		5p ²P°	0½	3793995.2	
	5s ²S		0½	3793996.9	1.7
	5d ²D		1½	3794025.5	28.6
		5p ²P°	1½	3794025.6	0.1
5f	5d ²D	5f ²F°	2½	3794035.6	10.0
5g	5g ²G	5f ²F°	3½	3794040.7	5.1
	5g ²G		4½	3794043.7	3.0

C VI

Config.		Desig.		J	Level	Interval
6p			6p ²P°	0½	3842298.2	
6s		6s ²S		0½	3842299.2	1.0
6p,	6d	6d ²D	6p ²P°	1½	3842315.8	16.6
6d,	6f	6d ²D	6f ²F°	2½	3842321.6	5.8
6f,	6g	6g ²G	6f ²F°	3½	3842324.6	3.0
6g,	6h	6g ²G	6h ²H°	4½	3842326.3	1.7
6h			6h ²H°	5½	3842327.5	1.2
7p			7p ²P°	0½	3871421.9	
7s		7s ²S		0½	3871422.5	0.6
7p,	7d	7d ²D	7p ²P°	1½	3871432.9	10.4
7d,	7f	7d ²D	7f ²F°	2½	3871436.6	3.7
7f,	7g	7g ²G	7f ²F°	3½	3871438.4	1.8
7g,	7h	7g ²G	7h ²H°	4½	3871439.5	1.1
7h,	7i	7i ²I	7h ²H°	5½	3871440.3	0.8
7i		7i ²I		6½	3871440.8	0.5
8p			8p ²P°	0½	3890323.4	
8s		8s ²S		0½	3890323.8	0.4
8p,	8d	8d ²D	8p ²P°	1½	3890330.8	7.0
8d,	8f	8d ²D	8f ²F°	2½	3890333.3	2.5
8f,	8g	8g ²G	8f ²F°	3½	3890334.5	1.2
8g,	8h	8g ²G	8h ²H°	4½	3890335.3	0.8
8h,	8i	8i ²I	8h ²H°	5½	3890335.7	0.4
8i,	8k	8i ²I	8k ²K°	6½	3890336.1	0.4
8k			8k ²K°	7½	3890336.4	0.3

C VI — Continued

Config.	Desig.	J	Level	Interval
9p	9p ²P°	0½	3903281.8	
9s	9s ²S	0½	3903282.1	0.3
9p, 9d	9d ²D 9p ²P°	1½	3903287.0	4.9
9d, 9f	9d ²D 9f ²F°	2½	3903288.7	1.7
9f, 9g	9g ²G 9f ²F°	3½	3903289.6	0.9
9g, 9h	9g ²G 9h ²H°	4½	3903290.1	0.5
9h, 9i	9i ²I 9h ²H°	5½	3903290.5	0.4
9i, 9k	9i ²I 9k ²K°	6½	3903290.7	0.2
9k, 9l	9l ²L 9k ²K°	7½	3903290.9	0.2
9l	9l ²L	8½	3903291.0	0.1
10p	10p ²P°	0½	3912550.6	
10s	10s ²S	0½	3912550.8	0.2
10p, 10d	10d ²D 10p ²P°	1½	3912554.4	3.6
10d, 10f	10d ²D 10f ²F°	2½	3912555.7	1.3
10f, 10g	10g ²G 10f ²F°	3½	3912556.3	0.6
10g, 10h	10g ²G 10h ²H°	4½	3912556.7	0.4
10h, 10i	10i ²I 10h ²H°	5½	3912556.9	0.2
10i, 10k	10i ²I 10k ²K°	6½	3912557.1	0.2
10k, 10l	10l ²L 10k ²K°	7½	3912557.2	0.1
10l, 10m	10l ²L 10m ²M°	8½	3912557.3	0.2
10m	10m ²M°	9½	3912557.4	0.1
11p	11p ²P°	0½	3919408.3	
11s	11s ²S	0½	3919408.5	0.2
etc.		10½	to 13.5	5.0
12p	12p ²P°	0½	3924624.1	
12s	12s ²S	0½	3924624.2	0.1
etc.		11½	to 28.1	3.9

C VI — Continued

Config.	Desig.	J	Level	Interval
13p	13p ²P°	0½	3928683.1	
13s	13s ²S	0½	3928683.2	0.1
etc.		12½	to 86.2	3.0
14p	14p ²P°	0½	3931903.7	
14s	14s ²S	0½	3931903.8	0.1
etc.		13½	to 06.3	2.5
15p	15p ²P°	0½	3934501.9	
15s	15s ²S	0½	3934502.0	0.1
etc.		14½	to 04.0	2.0
16s, 16p	16s ²S 16p ²P°	0½	3936628.4	
etc.		15½	to 30.1	1.7
17s, 17p	17s ²S 17p ²P°	0½	3938390.7	
etc.		16½	to 92.1	1.4
18p	18p ²P°	0½	3939867.5	
18s	18s ²S	0½	3939867.6	0.1
etc.		17½	to 68.7	1.1
19p	19p ²P°	0½	3941117.3	
19s	19s ²S	0½	3941117.4	0.1
etc.		18½	to 18.4	1.0
20s, 20p	20s ²S 20p ²P°	0½	3942184.4	
etc.		19½	to 85.3	0.9
	∞ = Limit	....	3952061.3	

November 1967.

Part B

CARBON

C VI ($Z=6$)

I P 489.981 eV   Limit 3952061.3 cm^{-1} 25.303 Å (Vac)

Anal A   List B   November 1967

REFERENCES

A   J. D. Garcia and J. E. Mack, J. Opt. Soc. Am. **55**, No. 6, 654 to 685 (1965). I P, T, C L; W L 25 Å to 24643 Å (All wavelengths are from theoretical calculations of H-like spectra. For unresolved groups the wavelength has been derived from "the wave number of the statistically weighted mean of all components.")

B. Edlén, Ark. Fys. (Stockholm) **31**, 509 to 510 (1966). C L

C VI

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
3.7342‡	A		0.00	367.52	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 2p\ ^2P°$
3.7396	A		0.00	367.46	$0\frac{1}{2}$—$0\frac{1}{2}$	1
3.4652	A		0.00	435.55	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 3p\ ^2P°$
3.4663	A		0.00	435.54	$0\frac{1}{2}$—$0\frac{1}{2}$	2
5.9896	A		0.00	459.37	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 4p\ ^2P°$
5.9901	A		0.00	459.36	$0\frac{1}{2}$—$0\frac{1}{2}$	3
5.3572	A		0.00	470.39	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 5p\ ^2P°$
5.3574	A		0.00	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	4
5.0260	A		0.00	476.37	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 6p\ ^2P°$
5.0261	A		0.00	476.37	$0\frac{1}{2}$—$0\frac{1}{2}$	5
5.8302	A		0.00	479.98	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 7p\ ^2P°$
5.8303	A		0.00	479.98	$0\frac{1}{2}$—$0\frac{1}{2}$	6
5.7048	A		0.00	482.33	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 8p\ ^2P°$
5.7048	A		0.00	482.33	$0\frac{1}{2}$—$0\frac{1}{2}$	7
5.6194	A		0.00	483.93	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S — 9p\ ^2P°$
5.6195	A		0.00	483.93	$0\frac{1}{2}$—$0\frac{1}{2}$	8
5.5587	A		0.00	485.08	$0\frac{1}{2}$—$1\frac{1}{2}$	$1s\ ^2S —10p\ ^2P°$
5.5588	A		0.00	485.08	$0\frac{1}{2}$—$0\frac{1}{2}$	9
5.5140	A		0.00	485.93	$0\frac{1}{2}$—	$1s\ ^2S —11p\ ^2P°$
						10
5.4801	A		0.00	486.58	$0\frac{1}{2}$—	$1s\ ^2S —12p\ ^2P°$
						11
5.4538	A		0.00	487.08	$0\frac{1}{2}$—	$1s\ ^2S —13p\ ^2P°$
						12
5.4330	A		0.00	487.48	$0\frac{1}{2}$—	$1s\ ^2S —14p\ ^2P°$
						13
5.4162	A		0.00	487.80	$0\frac{1}{2}$—	$1s\ ^2S —15p\ ^2P°$
						14
5.4024	A		0.00	488.07	$0\frac{1}{2}$—	$1s\ ^2S —16p\ ^2P°$
						15

C VI

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
25.3911	A		0.00	488.29	$0\frac{1}{2}$—	$1s\ ^2S —17p\ ^2P°$
						16
25.3816	A		0.00	488.47	$0\frac{1}{2}$—	$1s\ ^2S —18p\ ^2P°$
						17
25.3735	A		0.00	488.62	$0\frac{1}{2}$—	$1s\ ^2S —19p\ ^2P°$
						18
25.3666	A		0.00	488.76	$0\frac{1}{2}$—	$1s\ ^2S —20p\ ^2P°$
						19
182.290	A		367.52	435.54	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P°— 3s\ ^2S$
182.132	A		367.46	435.54	$0\frac{1}{2}$—$0\frac{1}{2}$	20
182.230	A		367.52	435.56	$1\frac{1}{2}$—$2\frac{1}{2}$	$2p\ ^2P°— 3d\ ^2D$
182.088	A		367.46	435.55	$0\frac{1}{2}$—$1\frac{1}{2}$	21
182.246	A		367.52	435.55	$1\frac{1}{2}$—$1\frac{1}{2}$	
135.004	A		367.52	459.36	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P°— 4s\ ^2S$
134.918	A		367.46	459.36	$0\frac{1}{2}$—$0\frac{1}{2}$	22
134.953	A		367.50	459.37		$2p\ ^2P°— 4d\ ^2D$
						etc. 23 etc.
120.534	A		367.52	470.38	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P°— 5s\ ^2S$
120.465	A		367.46	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	24
120.496	A		367.50	470.39		$2p\ ^2P°— 5d\ ^2D$
						etc. 25 etc.
113.902	A		367.52	476.37	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P°— 6s\ ^2S$
113.841	A		367.46	476.37	$0\frac{1}{2}$—$0\frac{1}{2}$	26
113.870	A		367.50	476.37		$2p\ ^2P°— 6d\ ^2D$
						etc. 27 etc.
110.245	A		367.52	479.98	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P°— 7s\ ^2S$
110.187	A		367.46	479.98	$0\frac{1}{2}$—$0\frac{1}{2}$	28

C VI—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
110.216	A		367.50	479.98		$2p\ ^2P^\circ$— $7d\ ^2D$ etc. 29 etc.
107.995	A		367.52	482.33	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$— $8s\ ^2S$
107.939	A		367.46	482.33	$0\frac{1}{2}$—$0\frac{1}{2}$	30
107.967	A		367.50	482.33		$2p\ ^2P^\circ$— $8d\ ^2D$ etc. 31 etc.
106.504	A		367.52	483.93	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$— $9s\ ^2S$
106.450	A		367.46	483.93	$0\frac{1}{2}$—$0\frac{1}{2}$	32
106.477	A		367.50	483.93		$2p\ ^2P^\circ$— $9d\ ^2D$ etc. 33 etc.
105.463	A		367.52	485.08	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$10s\ ^2S$
105.410	A		367.46	485.08	$0\frac{1}{2}$—$0\frac{1}{2}$	34
105.437	A		367.50	485.08		$2p\ ^2P^\circ$—$10d\ ^2D$ etc. 35 etc.
104.706	A		367.52	485.93	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$11s\ ^2S$
104.654	A		367.46	485.93	$0\frac{1}{2}$—$0\frac{1}{2}$	36
104.680	A		367.50	485.93		$2p\ ^2P^\circ$—$11d\ ^2D$ etc. 37 etc.
104.137	A		367.52	486.58	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$12s\ ^2S$
104.086	A		367.46	486.58	$0\frac{1}{2}$—$0\frac{1}{2}$	38
104.112	A		367.50	486.58		$2p\ ^2P^\circ$—$12d\ ^2D$ etc. 39 etc.
103.699	A		367.52	487.08	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$13s\ ^2S$
103.648	A		367.46	487.08	$0\frac{1}{2}$—$0\frac{1}{2}$	40
103.674	A		367.50	487.08		$2p\ ^2P^\circ$—$13d\ ^2D$ etc. 41 etc
103.354	A		367.52	487.48	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$14s\ ^2S$
103.303	A		367.46	487.48	$0\frac{1}{2}$—$0\frac{1}{2}$	42
103.329	A		367.50	487.48		$2p\ ^2P^\circ$—$14d\ ^2D$ etc. 43 etc.
103.077	A		367.52	487.80	$1\frac{1}{2}$—$0\frac{1}{2}$	$2p\ ^2P^\circ$—$15s\ ^2S$
103.026	A		367.46	487.80	$0\frac{1}{2}$—$0\frac{1}{2}$	44
103.052	A		367.50	487.80		$2p\ ^2P^\circ$—$15d\ ^2D$ etc. 45 etc.
182.097	A		367.47	435.55	$0\frac{1}{2}$—$1\frac{1}{2}$	$2s\ ^2S$ — $3p\ ^2P^\circ$
182.144	A		367.47	435.54	$0\frac{1}{2}$—$0\frac{1}{2}$	46
134.912	A		367.47	459.37	$0\frac{1}{2}$—$1\frac{1}{2}$	$2s\ ^2S$ — $4p\ ^2P^\circ$
134.923	A		367.47	459.36	$0\frac{1}{2}$—$0\frac{1}{2}$	47
120.464	A		367.47	470.39	$0\frac{1}{2}$—$1\frac{1}{2}$	$2s\ ^2S$ — $5p\ ^2P^\circ$
120.469	A		367.47	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	48

CVI—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet No.
Vac						
520.810	A		435.55	459.36	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $4s\ ^2S$
520.429	A		435.54	459.36	$0\frac{1}{2}$—$0\frac{1}{2}$	49
355.954	A		435.55	470.38	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $5s\ ^2S$
355.776	A		435.54	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	50
303.732	A		435.55	476.37	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $6s\ ^2S$
303.603	A		435.54	476.37	$0\frac{1}{2}$—$0\frac{1}{2}$	51
279.049	A		435.55	479.98	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $7s\ ^2S$
278.939	A		435.54	479.98	$0\frac{1}{2}$—$0\frac{1}{2}$	52
265.068	A		435.55	482.33	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $8s\ ^2S$
264.969	A		435.54	482.33	$0\frac{1}{2}$—$0\frac{1}{2}$	53
256.266	A		435.55	483.93	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$— $9s\ ^2S$
256.173	A		435.54	483.93	$0\frac{1}{2}$—$0\frac{1}{2}$	54
250.320	A		435.55	485.08	$1\frac{1}{2}$—$0\frac{1}{2}$	$3p\ ^2P^\circ$—$10s\ ^2S$
250.232	A		435.54	485.08	$0\frac{1}{2}$—$0\frac{1}{2}$	55
520.298	A		435.54	459.37	$0\frac{1}{2}$—$1\frac{1}{2}$	$3s\ ^2S$ — $4p\ ^2P^\circ$
520.459	A		435.54	459.36	$0\frac{1}{2}$—$0\frac{1}{2}$	56
355.750	A		435.54	470.39	$0\frac{1}{2}$—$1\frac{1}{2}$	$3s\ ^2S$ — $5p\ ^2P^\circ$
355.788	A		435.54	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	57
520.606	A		435.56	459.37		$3d\ ^2D$ — $4f\ ^2F^\circ$ etc. 58 etc.
355.895	A		435.56	470.39		$3d\ ^2D$ — $5f\ ^2F^\circ$ etc. 59 etc.
303.699	A		435.56	476.38		$3d\ ^2D$ — $6f\ ^2F^\circ$ etc. 60 etc.
279.025	A		435.56	479.98		$3d\ ^2D$ — $7f\ ^2F^\circ$ etc. 61 etc.
265.049	A		435.56	482.33		$3d\ ^2D$ — $8f\ ^2F^\circ$ etc. 62 etc.
256.249	A		435.56	483.93		$3d\ ^2D$ — $9f\ ^2F^\circ$ etc. 63 etc.
250.304	A		435.56	458.08		$3d\ ^2D$ — $10f\ ^2F^\circ$ etc. 64 etc.
1125.237	A		459.37	470.38	$1\frac{1}{2}$—$0\frac{1}{2}$	$4p\ ^2P^\circ$— $5s\ ^2S$
1124.485	A		459.36	470.38	$0\frac{1}{2}$—$0\frac{1}{2}$	65
729.009	A		459.37	476.37	$1\frac{1}{2}$—$0\frac{1}{2}$	$4p\ ^2P^\circ$— $6s\ ^2S$
728.694	A		459.36	476.37	$0\frac{1}{2}$—$0\frac{1}{2}$	66
601.338	A		459.37	479.98	$1\frac{1}{2}$—$0\frac{1}{2}$	$4p\ ^2P^\circ$— $7s\ ^2S$
601.123	A		459.36	479.98	$0\frac{1}{2}$—$0\frac{1}{2}$	67
539.965	A		459.37	482.33	$1\frac{1}{2}$—$0\frac{1}{2}$	$4p\ ^2P^\circ$— $8s\ ^2S$
539.792	A		459.36	482.33	$0\frac{1}{2}$—$0\frac{1}{2}$	68
504.654	A		459.37	483.93	$1\frac{1}{2}$—$0\frac{1}{2}$	$4p\ ^2P^\circ$— $9s\ ^2S$
504.503	A		459.36	483.93	$0\frac{1}{2}$—$0\frac{1}{2}$	69

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
32.104	A		459.37	485.08	$1\frac{1}{2}-0\frac{1}{2}$	$4p\ ^2P°-10s\ ^2S$
31.966	A		459.36	485.08	$0\frac{1}{2}-0\frac{1}{2}$	70
24.164	A		459.36	470.39	$0\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S - 5p\ ^2P°$
24.548	A		459.36	470.38	$0\frac{1}{2}-0\frac{1}{2}$	71
24.879	A		459.37	470.39		$4d\ ^2D - 5f\ ^2F°$ etc. 72 etc.
28.934	A		459.37	476.38		$4d\ ^2D - 6f\ ^2F°$ etc. 73 etc.
01.311	A		459.37	479.98		$4d\ ^2D - 7f\ ^2F°$ etc. 74 etc.
39.954	A		459.37	482.33		$4d\ ^2D - 8f\ ^2F°$ etc. 75 etc.
04.650	A		459.37	483.93		$4d\ ^2D - 9f\ ^2F°$ etc. 76 etc.
82.103	A		459.37	485.08		$4d\ ^2D -10f\ ^2F°$ etc. 77 etc.
Air						
70.865	A		470.39	476.37	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°\quad 6s\ ^2S$
69.561	A		470.38	476.37	$0\frac{1}{2}-0\frac{1}{2}$	78
Vac						
92.041	A		470.39	479.98	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°- 7s\ ^2S$
91.534	A		470.38	479.98	$0\frac{1}{2}-0\frac{1}{2}$	79
38.441	A		470.39	482.33	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°- 8s\ ^2S$
38.113	A		470.38	482.33	$0\frac{1}{2}-0\frac{1}{2}$	80

I A	Ref	Int	EP Low	EP High	J	Multiplet No.
Vac						
915.277	A		470.39	483.93	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°- 9s\ ^2S$
915.023	A		470.38	483.93	$0\frac{1}{2}-0\frac{1}{2}$	81
843.702	A		470.39	485.08	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P°-10s\ ^2S$
843.486	A		470.38	485.08	$0\frac{1}{2}-0\frac{1}{2}$	82
Air						
2070.252	A		470.39	476.38		$5d\ ^2D - 6f\ ^2F°$ etc. 83 etc.
Vac						
1291.935	A		470.39	479.98		$5d\ ^2D - 7f\ ^2F°$ etc. 84 etc.
1038.417	A		470.39	482.33		$5d\ ^2D - 8f\ ^2F°$ etc. 85 etc.
915.280	A		470.39	483.93		$5d\ ^2D - 9f\ ^2F°$ etc. 86 etc.
843.715	A		470.39	485.08		$5d\ ^2D -10f\ ^2F°,$ etc. 87 etc.
Air						
3434.651	A		476.37	479.98	$1\frac{1}{2}-0\frac{1}{2}$	$6p\ ^2P°- 7s\ ^2S$
3432.575	A		476.37	479.98	$0\frac{1}{2}-0\frac{1}{2}$	88
2082.323	A		476.37	482.33	$1\frac{1}{2}-0\frac{1}{2}$	$6p\ ^2P°- 8s\ ^2S$
2081.560	A		476.37	482.33	$0\frac{1}{2}-0\frac{1}{2}$	89
Vac						
1640.250	A		476.37	483.93	$1\frac{1}{2}-0\frac{1}{2}$	$6p\ ^2P°- 9s\ ^2S$
1639.777	A		476.37	483.93	$0\frac{1}{2}-0\frac{1}{2}$	90
1423.792	A		476.37	485.08	$1\frac{1}{2}-0\frac{1}{2}$	$6p\ ^2P°-10s\ ^2S$
1423.435	A		476.37	485.08	$0\frac{1}{2}-0\frac{1}{2}$	91

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