

National Bureau of Standards
Library E-01 Acmls Div.

FEB 2 1971

NSRDS—NBS 3, Section 3

A11102 146111

NAT'L INST OF STANDARDS & TECH R.I.C.



A11102146111

/NSRDS-NBS
QC100 .U573 V3;3;1970 C.1 NBS-PUB-C 1964

A UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION



NBS
PUBLICATIONS



Selected Tables of Atomic Spectra

Atomic Energy Levels and Multiplet Tables

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

U.S.
DEPARTMENT
OF
COMMERCE
National
Bureau
of
Standards

QC
100
U573
V3,
Ser.3
970
copy 2.

UNITED STATES DEPARTMENT OF COMMERCE • Maurice H. Stans, *Secretary*

NATIONAL BUREAU OF STANDARDS • Lewis M. Branscomb, *Director*

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

Charlotte E. Moore

Office of Standard Reference Data
National Bureau of Standards
Washington, D.C. 20234



NSRDS-NBS 3, Section 3

Nat. Stand. Ref. Data Ser., Nat. Bur. Stand. (U.S.), 3, Sec. 3, 71 pages (Nov. 1970).

CODEN: NSRDA

© 1970 by the Secretary of Commerce on behalf of the United States Government

Issued November 1970

FEB 12 1971

Not rec.
29400
4373
No. 2, 3, 4, 5
1970
Copy 2.

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.

Library of Congress Catalog Card Number: 64-60074

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

Preface.....	IV
--------------	----

Part A—Atomic Energy Levels

Element:	Z	Spectrum		
Carbon:	6			
		C I.....	A6 I 1 to A6 I	5
		C II.....	A6 II 1 to A6 II	4
		C III.....	A6 III 1 to A6 III	4
		C IV.....	A6 IV 1 to A6 IV	2
		C V.....	A6 v 1 to A6 v	2
		C VI.....	A6 VI 1 to A6 VI	2

Part B—Multiplet Tables

Element:	Z	Spectrum		
Carbon:	6			
		C I.....	B6 I 1 to B6 I	13
		C II.....	B6 II 1 to B6 II	9
		C III.....	B6 III 1 to B6 III	9
		C IV.....	B6 IV 1 to B6 IV	3
		C V.....	B6 v 1 to B6 v	2
		C VI.....	B6 VI 1 to B6 VI	3

NSRDS-NBS 3, SECTION 3

CARBON, Z = 6

A C I Atomic Energy Levels

B C I Multiplet Table

Atomic Energy Levels

Part A

CARBON

C I

6 electrons

 $Z = 6$ Ground state $1s^2 2s^2 2p^2 \ ^3P_0$ $2p^2 \ ^3P_0$ **90820.42** \pm **0.1** cm^{-1} 1101.074 Å (Vac)

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:

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

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

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 Johansson'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.

REFERENCES

- B. Edlén, *Nova Acta Reg. Soc. Sci. Uppsala* [IV] **9**, No. 6, 103 to 112 (1934). I P, T, C L
- G. Herzberg, *Proc. Roy. Soc. (London)* [A] **248**, 309 to 332 (1958). C L
- L. Johansson and U. Litzén, *Ark. Fys. (Stockholm)* **29**, No. 13, 175 to 179 (1965). C L
- L. Johansson, *Ark. Fys. (Stockholm)* **31**, No. 15, 201 to 235 (1966). I P, T, C L, G D
- V. Kaufman and J. Ward, *J. Opt. Soc. Am.* **56**, No. 11, 1591 to 1597 (1966). T, C L
- S. H. Lott, Jr., C. E. Roos and M. L. Ginter, *J. Opt. Soc. Am.* **56**, 775 to 778 (1966). ZE

Atomic Energy Levels

C I

C I

Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval	
$2s^2 2p^2$	$2p^2 \ ^3P$	0	0.00	16.40 27.00	$2s^2 2p(^2P^\circ)4p$	$4p \ ^3D$	1	80782.51	18.76 33.34	
		1	16.40				2	80801.27		
		2	43.40				3	80834.61		
$2s^2 2p^2$	$2p^2 \ ^1D$	2	10192.63		$2s^2 2p(^2P^\circ)4p$	$4p \ ^3S$	1	81105.03		
$2s^2 2p^2$	$2p^2 \ ^1S$	0	21648.01		$2s^2 2p(^2P^\circ)4p$	$4p \ ^3P$	0	81311.01	14.75 18.23	
$2s \ 2p^3$	$2p^3 \ ^5S^\circ$	2	33735.20				1	81325.76		
							2	81343.99		
$2s^2 2p(^2P^\circ)3s$	$3s \ ^3P^\circ$	0	60333.43	19.20 40.51	$2s^2 2p(^2P^\circ)4p$	$4p \ ^1D$	2	81769.79		
		1	60352.63							
		2	60393.14							
$2s^2 2p(^2P^\circ)3s$	$3s \ ^1P^\circ$	1	61981.82		$2s^2 2p(^2P^\circ)4p$	$4p \ ^1S$	0	82251.71		
$2s \ 2p^3$	$2p^3 \ ^3D^\circ$	3	64086.92	-4.03 1.10	$2s^2 2p(^2P^\circ)4d$	$4d \ ^1D^\circ$	2	83497.62		
		2	64090.95		$2s^2 2p(^2P^\circ)5s$	$5s \ ^3P^\circ$	0	83740.06	12.35 38.63	
		1	64089.85				1	83752.41		
							2	83791.04		
$2s^2 2p(^2P^\circ)3p$	$3p \ ^1P$	1	68856.33		$2s^2 2p(^2P^\circ)4d$	$4d \ ^3F^\circ$	2	83747.39	13.87 37.31	
$2s^2 2p(^2P^\circ)3p$	$3p \ ^3D$	1	69689.48	21.18 33.37	$2s^2 2p(^2P^\circ)4d$	$4d \ ^3D^\circ$	3	83761.26		
		2	69710.66				4	83798.57		
		3	69744.03							
$2s^2 2p(^2P^\circ)3p$	$3p \ ^3S$	1	70743.95				1	83820.13	17.95 10.75	
$2s^2 2p(^2P^\circ)3p$	$3p \ ^3P$	0	71352.51	12.39 20.48	$2s^2 2p(^2P^\circ)5s$	$5s \ ^1P^\circ$	1	83877.31		
		1	71364.90		$2s^2 2p(^2P^\circ_{0,1/2})4f$	$4f \ [2\frac{1}{2}]$	3	83919.65		
		2	71385.38			2	83919.76			
$2s^2 2p(^2P^\circ)3p$	$3p \ ^1D$	2	72610.72		"	$4f \ [3\frac{1}{2}]$	3	83926.20		
$2s^2 2p(^2P^\circ)3p$	$3p \ ^1S$	0	73975.91			4	83926.37			
$2s \ 2p^3$	$2p^3 \ ^3P^\circ$	2	75255.27	1.30 -2.15	$2s^2 2p(^2P^\circ)4d$	$4d \ ^1F^\circ$	3	83947.43		
		1	75253.97		$2s^2 2p(^2P^\circ_{1,1/2})4f$	$4f' \ [3\frac{1}{2}]$	3	83986.22	83986.45	
		0	75256.12			4	83986.45			
$2s^2 2p(^2P^\circ)3d$	$3d \ ^1D^\circ$	2	77679.82		"	$4f' \ [4\frac{1}{2}]$	5	84015.86		
$2s^2 2p(^2P^\circ)4s$	$4s \ ^3P^\circ$	0	78104.98	11.76 31.35	$2s^2 2p(^2P^\circ)4d$	$4d \ ^1P^\circ$	4	84016.25		
		1	78116.74				"	$4f' \ [2\frac{1}{2}]$	3	84013.25
		2	78148.09				"	2	84013.40	
$2s^2 2p(^2P^\circ)3d$	$3d \ ^3F^\circ$	2	78199.07	16.44 34.43	$2s^2 2p(^2P^\circ)4d$	$4d \ ^1P^\circ$	1	84036.29	84036.40	
		3	78215.51				2	84036.40		
		4	78249.94				$2s^2 2p(^2P^\circ)4d$	$4d \ ^3P^\circ$	1	84032.15
$2s^2 2p(^2P^\circ)3d$	$3d \ ^3D^\circ$	1	78293.49	14.14 10.62	$2s^2 2p(^2P^\circ)4d$	$4d \ ^3P^\circ$	2	84103.40	-12.99 -5.13	
		2	78307.63			1	84116.09			
		3	78318.25			0	84121.22			
$2s^2 2p(^2P^\circ)4s$	$4s \ ^1P^\circ$	1	78340.28		$2s^2 2p(^2P^\circ)5p$	$5p \ ^1P$	1	84851.53		
$2s^2 2p(^2P^\circ)3d$	$3d \ ^1F^\circ$	3	78529.62		$2s^2 2p(^2P^\circ)5p$	$5p \ ^3D$	1	84935.34	15.02 34.61	
							2	84950.36		
							3	84984.97		
$2s^2 2p(^2P^\circ)3d$	$3d \ ^1P^\circ$	1	78731.27		$2s^2 2p(^2P^\circ)5p$	$5p \ ^3P$	0	85169.61	19.34 14.69	
$2s^2 2p(^2P^\circ)3d$	$3d \ ^3P^\circ$	2	79310.85	-7.93 -4.38	$2s^2 2p(^2P^\circ)5p$	$5p \ ^1D$	1	85188.95		
		1	79318.78				2	85203.64		
		0	79323.16							
$2s^2 2p(^2P^\circ)4p$	$4p \ ^1P$	1	80562.85		$2s^2 2p(^2P^\circ)5p$	$5p \ ^1S$	0	85625.18		

Atomic Energy Levels

C I - Continued

C I - Continued

Config.	Desig.	J	Level	Interval	Config.	Desig.	J	Level	Interval
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^1D^{\circ}$	2	86185.20		$2s^2 2p(^2P^{\circ})7s$	$7s\ ^1P^{\circ}$	1	87789.63	
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^3F^{\circ}$	2	86317.64	9.52	$2s^2 2p(^2P^{\circ})6d$	$6d\ ^1F^{\circ}$	3	87806.93	
		3	86327.16	42.31					
		4	86369.47		$2s^2 2p(^2P^{\circ}_{1/2})6f$	$6f\ [3\frac{1}{2}]$	3	87819.90	
$2s^2 2p(^2P^{\circ})6s$	$6s\ ^3P^{\circ}$	0	86321.94				4	87820.00	
		1	86331.63	9.69	"	$6f\ [2\frac{1}{2}]$	3	87826.94	
		2	86369.60	37.97			2	87827.02	
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^3D^{\circ}$	1	86362.52		"	$6f\ [1\frac{1}{2}]$	1,2	87837.74	
		2	86389.38	26.86	$2s^2 2p(^2P^{\circ})6d$	$6d\ ^1P^{\circ}$	1	87830.17	
		3	86397.80	8.42	$2s^2 2p(^2P^{\circ})6d$	$6d\ ^3P^{\circ}$	2	87832.54	-11.37
$2s^2 2p(^2P^{\circ}_{0/2})5f$	$5f\ [2\frac{1}{2}]$	3	86411.98				1	87843.91	
		2	86412.05				0	[87846.9]	
"	$5f\ [3\frac{1}{2}]$	3	86414.49		$2s^2 2p(^2P^{\circ})7p$	$7p\ ^1P$	1	88061.28	
		4	86414.69		$2s^2 2p(^2P^{\circ})7p$	$7p\ ^3D$	1	88092.01	4.02
$2s^2 2p(^2P^{\circ})6s$	$6s\ ^1P^{\circ}$	1	86416.55				2	88096.03	39.78
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^1F^{\circ}$	3	86449.19				3	88135.81	
$2s^2 2p(^2P^{\circ}_{1/2})5f$	$5f'\ [3\frac{1}{2}]$	3	86469.51		$2s^2 2p(^2P^{\circ})7p$	$7p\ ^3P$	0	88159.87	32.43
		4	86469.66				1	88192.30	5.92
"	$5f'\ [2\frac{1}{2}]$	3	86482.66				2	88198.22	
		2	86482.78		$2s^2 2p(^2P^{\circ})7p$	$7p\ ^1D$	2	88260.37	
"	$5f'\ [1\frac{1}{2}]$	1	86498.55		$2s^2 2p(^2P^{\circ})7p$	$7p\ ^1S$	0	88333.98	
		2	86498.64		$2s^2 2p(^2P^{\circ})7d$	$7d\ ^1D^{\circ}$	2	88498.62	
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^1P^{\circ}$	1	86491.41		$2s^2 2p(^2P^{\circ})7d$	$7d\ ^3F^{\circ}$	2	[88541.4]	[3.5]
$2s^2 2p(^2P^{\circ})5d$	$5d\ ^3P^{\circ}$	2	86506.70	-12.77			3	[88544.9]	[51.6]
		1	86519.47	-3.69			4	[88596.5]	
		0	86523.16		$2s^2 2p(^2P^{\circ})8s$	$8s\ ^3P^{\circ}$	0	88543.76	5.30
$2s^2 2p(^2P^{\circ})6p$	$6p\ ^1P$	1	86912.86				1	88549.06	35.20
$2s^2 2p(^2P^{\circ})6p$	$6p\ ^3D$	1	86956.16	9.29			2	88584.26	
		2	86965.45	36.81	$2s^2 2p(^2P^{\circ})7d$	$7d\ ^3D^{\circ}$	1	[88558.6]	
		3	87002.26				2	88604.75	
$2s^2 2p(^2P^{\circ})6p$	$6p\ ^3P$	0	87077.36				3	[88606.8]	
		1	87103.12	25.76	$2s^2 2p(^2P^{\circ}_{0/2})7f$	$7f\ [2\frac{1}{2}]$	2	88574.85	
		2	87113.21	10.09			3	88574.87	
$2s^2 2p(^2P^{\circ})6p$	$6p\ ^1D$	2	87218.26		"	$7f\ [3\frac{1}{2}]$	3		
$2s^2 2p(^2P^{\circ})6p$	$6p\ ^1S$	0	87341.04				4	88575.31	
$2s^2 2p(^2P^{\circ})6d$	$6d\ ^1D^{\circ}$	2	87633.75		$2s^2 2p(^2P^{\circ})8s$	$8s\ ^1P^{\circ}$	1	88615.01	
$2s^2 2p(^2P^{\circ})6d$	$6d\ ^3F^{\circ}$	2	87708.21	5.17	$2s^2 2p(^2P^{\circ})7d$	$7d\ ^1F^{\circ}$	3	88625.00	
		3	87713.38	47.23	$2s^2 2p(^2P^{\circ}_{1/2})7f$	$7f'\ [3\frac{1}{2}]$	3	88633.98	
		4	87760.61				4	88634.07	
$2s^2 2p(^2P^{\circ})7s$	$7s\ ^3P^{\circ}$	0	87711.37		"	$7f'\ [2\frac{1}{2}]$	3	88638.30	
		1	87718.56	7.19			2		
		2	87753.73	35.17	"	$7f'\ [1\frac{1}{2}]$	2	88645.33	
$2s^2 2p(^2P^{\circ})6d$	$6d\ ^3D^{\circ}$	1	[87735.3]		$2s^2 2p(^2P^{\circ})7d$	$7d\ ^3P^{\circ}$	2	[88636.8]	[-9.8]
		2	87773.09	4.08			1	[88646.6]	[-2.5]
		3	87777.17				0	[88649.1]	
$2s^2 2p(^2P^{\circ}_{0/2})6f$	$6f\ [2\frac{1}{2}]$	3	87762.12		$2s^2 2p(^2P^{\circ})7d$	$7d\ ^1P^{\circ}$	1	88639.02	
		2	87762.22		$2s^2 2p(^2P^{\circ})8p$	$8p\ ^1P$	1	88766.98	
"	$6f\ [3\frac{1}{2}]$	4	87763.10						
		3	87763.24						

Atomic Energy Levels

C I - Continued

C I - Continued

Config.	Desig.	J	Level	Interval	Config.	Desig.	J	Level	Interval
$2s^2 2p(^2P^\circ)8p$	$8p \ ^3D$	1	88790.85		$2s^2 2p(^2P^\circ)10s$	$10s \ ^3P^\circ$	0	89451.82	
		2	[88794.3]				1		
		3	88836.12				2		
$2s^2 2p(^2P^\circ)8p$	$8p \ ^3P$	0	88873.95		$2s^2 2p(^2P^\circ)9d$	$9d \ ^3D^\circ$	1	89510.43	[89510.9]
		1					2		
		2					3		
$2s^2 2p(^2P^\circ)8p$	$8p \ ^1D$	2	88913.56		$2s^2 2p(^2P^\circ)9d$	$9d \ ^1F^\circ$	3	89519.13	
$2s^2 2p(^2P^\circ)8p$	$8p \ ^1S$	0	88960.64		$2s^2 2p(^2P^\circ)9d$	$9d \ ^3P^\circ$	2	[89522.4]	
$2s^2 2p(^2P^\circ)8d$	$8d \ ^1D^\circ$	2	89054.16		$2s^2 2p(^2P^\circ)9d$	$9d \ ^1P^\circ$	1	89525.54	
		3	[89079.9]				1	89555.53	
		4	[89082.1] [89136.9]				1		
$2s^2 2p(^2P^\circ)9s$	$9s \ ^3P^\circ$	0	89081.62	3.79	$2s^2 2p(^2P^\circ)10p$	$10p \ ^3D$	1	89621.06	
		1	89085.41				2		
		2					3		
$2s^2 2p(^2P^\circ)8d$	$8d \ ^3D^\circ$	1	[89091.1]		$2s^2 2p(^2P^\circ)10p$	$10p \ ^1S$	0	89678.11	
		2	89142.66				2	[89710.5]	
		3	[89143.9]						
$2s^2 2p(^2P^\circ_{01/2})8f$	$8f \ [2\frac{1}{2}]$	2	89101.76		$2s^2 2p(^2P^\circ)10d$	$10d \ ^3F^\circ$	3	[89772.87] [89773.2]	
		3	89101.79				4		
"	$8f \ [3\frac{1}{2}]$	3	89101.82		$2s^2 2p(^2P^\circ)10d$	$10d \ ^3D^\circ$	1	89772.87	[89773.2]
		4					2		
$2s^2 2p(^2P^\circ)9s$	$9s \ ^1P^\circ$	1	89149.35		$2s^2 2p(^2P^\circ)10d$	$10d \ ^1F^\circ$	3	[89778.9]	
$2s^2 2p(^2P^\circ)8d$	$8d \ ^1F^\circ$	3	89155.70		$2s^2 2p(^2P^\circ)11p$	$11p \ ^1P$	1	89789.21	
$2s^2 2p(^2P^\circ)8f$	$8f' \ [3\frac{1}{2}]$	3	89162.10		$2s^2 2p(^2P^\circ)11d$	$11d \ ^3D^\circ$	1	89966.66	[89966.8]
		4					2		
$2s^2 2p(^2P^\circ)8d$	$8d \ ^3P^\circ$	2	[89162.2]	[-7.8]	$2s^2 2p(^2P^\circ)11d$	$11d \ ^1F^\circ$	3	[89971.3]	
		1	[89170.0]				3	90820.42 ± 0.1	
		0	[89171.5]						
$2s^2 2p(^2P^\circ)8d$	$8d \ ^1P^\circ$	1	89164.74		$C \text{ II} (^2P^\circ_{01/2})$	Limit	.....	90820.42 ± 0.1	
$2s^2 2p(^2P^\circ)9p$	$9p \ ^1P$	1	89232.41		$C \text{ II} (^2P^\circ_{11/2})$	Limit	.....	90883.84	
$2s^2 2p(^2P^\circ)9p$	$9p \ ^3D$	1	89299.10		$2s 2p^3$	$2p^3 \ ^1D^\circ$	2	[97878]	
		2							
		3							
$2s^2 2p(^2P^\circ)9p$	$9p \ ^1D$	2	89350.10		$2s 2p^2(^4P)3s$	$3s' \ ^5P$	1	103541.8	20.7
							2	103562.5	24.8
							3	103587.3	
$2s^2 2p(^2P^\circ)9p$	$9p \ ^1S$	0	89381.61		$2s 2p^3$	$2p^3 \ ^3S^\circ$	1	105798.7	
$2s^2 2p(^2P^\circ)9d$	$9d \ ^1D^\circ$	2	89431.48		$2s 2p^3$	$2p^3 \ ^1P^\circ$	1	[119878]	
$2s^2 2p(^2P^\circ)9d$	$9d \ ^3F^\circ$	2	[89447.4]	[1.0]					
		3	[89448.4]						
		4							

January 1970.

Atomic Energy Levels

C1 Observed Terms

Configuration $1s^2+$	Observed Terms				
$2s^2 2p^2$	{	$2p^2 \ ^1S$	$2p^2 \ ^3P$	$2p^2 \ ^1D$	
$2s \ 2p^3$	{	$2p^3 \ ^5S^\circ$ $2p^3 \ ^3S^\circ$	$2p^3 \ ^3P^\circ$ [$2p^3 \ ^1P^\circ$]	$2p^3 \ ^3D^\circ$ [$2p^3 \ ^1D^\circ$]	
		$ns (n \geq 3)$	$np (n \geq 3)$		
$2s^2 2p(^2P^\circ)nl$	{	$3-10s \ ^3P^\circ$ $3-9s \ ^1P^\circ$	$3-4p \ ^3S$ $3-10p \ ^1S$	$3-8p \ ^3P$ $3-11p \ ^1P$	$3-10p \ ^3D$ $3-9p \ ^1D$
$2s \ 2p^2(^4P)nl'$		$3s' \ ^5P$			
		$nd (n \geq 3)$			
$2s^2 2p(^2P^\circ)nl$	{	$3-6d \ ^3P^\circ \dagger$ $3-9d \ ^1P^\circ$	$3-11d \ ^3D^\circ$ $3-9d \ ^1D^\circ$	$3-6d \ ^3F^\circ \dagger$ $3-9d \ ^1F^\circ \dagger$	
		Observed Pairs			
		$nf (n \geq 4)$			
$2s^2 2p(^2P^\circ_{1/2})nl$	{		$4-8f \ [2\frac{1}{2}]$ $4-8f \ [3\frac{1}{2}]$		
$2s^2 2p(^2P^\circ_{1/2})nl'$			$4-8f' \ [3\frac{1}{2}]$ $4f' \ [4\frac{1}{2}]$ $4-7f' \ [2\frac{1}{2}]$ $4-7f' \ [1\frac{1}{2}]$		

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

Multiplet Table

Part B

CARBON

C I (Z = 6)

I P 11.260 eV Limit $90820.42 \pm 0.1 \text{ cm}^{-1}$ 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

C I

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Vac						
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	1434.707	P		0.01	8.65	2-3	$2p^2\ ^3P - 3p\ ^3D$
9808.321	P		0.00	1.26	0-2		1434.838	P		0.00	8.64	1-2	UV 3.01F
							1434.937	P		0.00	8.64	0-1	
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	1401.699	P		0.01	8.85	2-2	$2p^2\ ^3P - 3p\ ^3P$
2967.214	A	1	0.01	4.18	2-2	$2p^2\ ^3P - 2p^3\ ^5S^\circ$	1401.571	P		0.00	8.85	1-1	UV 3.02F
2964.840	A	0	0.00	4.18	1-2	UV 1							
Vac							1329.5777	C	(12)*	0.01	9.33	2-2	$2p^2\ ^3P - 2p^3\ ^3P^\circ$
1657.0078‡	D	(30)	0.01	7.49	2-2	$2p^2\ ^3P - 3s\ ^3P^\circ$	1329.1233	C	(9)*	0.00	9.33	1-1	UV 4
1657.3797	D	(12)	0.00	7.48	1-1	UV 2	1329.6001	C	(12)*	0.01	9.33	2-1	
1658.1222	D	(15)	0.01	7.48	2-1		1329.0861	C	(9)*	0.00	9.33	1-0	
1657.9070	D	(12)	0.00	7.48	1-0		1329.0999	C	(9)*	0.00	9.33	1-2	
1656.2665	D	(15)	0.00	7.49	1-2		1328.8332	C	(3)	0.00	9.33	0-1	
1656.9282	D	(12)	0.00	7.48	0-1								
1614.5068	P		0.01	7.68	2-1	$2p^2\ ^3P - 3s\ ^1P^\circ$	1288.0553	P		0.01	9.63	2-2	$2p^2\ ^3P - 3d\ ^1D^\circ$
1613.8033	P		0.00	7.68	1-1	UV 2.01	1287.6075	P		0.00	9.63	1-2	UV 4.01
1613.3763	P		0.00	7.68	0-1								
1561.4382	D	(40)	0.01	7.95	2-3	$2p^2\ ^3P - 2p^3\ ^3D^\circ$	1280.3328	P	(20)	0.01	9.69	2-2	$2p^2\ ^3P - 4s\ ^3P^\circ$
1560.6832	D	(40)*	0.00	7.95	1-2	UV 3	1280.4042	P	(2)	0.00	9.68	1-1	UV 5
1560.3095	D	(15)	0.00	7.95	0-1		1280.8470	P	(8)	0.01	9.68	2-1	
1561.3407	D	(10)	0.01	7.95	2-2		1280.5970	P	(6)	0.00	9.68	1-0	
1560.7079	D	(40)*	0.00	7.95	1-1		1279.8904	P	(8)	0.00	9.69	1-2	
1561.3668	P	(3)	0.01	7.95	2-1		1280.1353	P	(6)	0.00	9.68	0-1	

Multiplet Table

C I - Continued

C I - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
1279.2286	P	(4)	0.01	9.70	2-3	$2p^2\ ^3P - 3d\ ^3F^\circ$ UV 6	1189.6307	P	(20)	0.01	10.43	2-2	$2p^2\ ^3P - 4d\ ^3P^\circ$ UV 14
1279.0558	P	(3)	0.00	9.70	1-2		1190.0650	P	(6)	0.00	10.43	1-1	
1279.4977	P	(2)	0.01	9.70	2-2		1189.4469	P	(15)	0.01	10.43	2-1	
1277.5496	P	(30)*	0.01	9.71	2-3	$2p^2\ ^3P - 3d\ ^3D^\circ$ UV 7	1188.9925	P	(15)	0.00	10.43	1-0	
1277.2823	P	(25)*	0.00	9.71	1-2		1189.2487	P	(8)	0.00	10.43	1-2	
1277.2454	P	(25)*	0.00	9.71	0-1		1188.8332	P	(6)	0.00	10.43	0-1	
1277.7229	P	(8)	0.01	9.71	2-2		1160.8766	P		0.01	10.69	2-2	$2p^2\ ^3P - 5d\ ^1D^\circ$ UV 14.01
1277.5130	P	(30)*	0.00	9.71	1-1		1160.5129	P		0.00	10.69	1-2	
1277.9538	P	(2)	0.01	9.71	2-1								
1277.1901	P	(2)	0.01	9.71	2-1	$2p^2\ ^3P - 4s\ ^1P^\circ$ UV 7.01	1158.9666	P	(4)	0.01	10.70	2-3	$2p^2\ ^3P - 5d\ ^3F^\circ$ UV 15
1276.7498	P	(4)	0.00	9.71	1-1		1158.7319	P	(2)	0.00	10.70	1-2	
1276.4825	P	(2)	0.00	9.71	0-1		1159.0945	P		0.01	10.70	2-2	
1274.1090	P	(1)	0.01	9.74	2-3	$2p^2\ ^3P - 3d\ ^1F^\circ$ UV 8	1158.3969	P	(2)	0.01	10.71	2-2	$2p^2\ ^3P - 6s\ ^3P^\circ$ UV 15.01
							1158.5441	P	(0)*	0.00	10.70	1-1	
							1158.9066	P	(1)	0.01	10.70	2-1	
1270.8439	P		0.01	9.76	2-1	$2p^2\ ^3P - 3d\ ^1P^\circ$ UV 8.01	1158.6742	P	(2)	0.00	10.70	1-0	
1270.4080	P		0.00	9.76	1-1		1158.0347	P	(15)*	0.00	10.71	1-2	
1270.1434	P		0.00	9.76	0-1		1158.3240	P	(2)	0.00	10.70	0-1	
1261.5519	P	(10)	0.01	9.83	2-2	$2p^2\ ^3P - 3d\ ^3P^\circ$ UV 9	1158.0186	P	(15)*	0.01	10.71	2-3	$2p^2\ ^3P - 5d\ ^3D^\circ$ UV 16
1260.9962	P	(3)	0.00	9.83	1-1		1157.7695	P	(7)*	0.00	10.71	1-2	
1261.4257	P	(5)	0.01	9.83	2-1		1157.9097	P	(15)*	0.00	10.71	0-1	
1260.9266	P	(4)	0.00	9.83	1-0		1158.1315	P	(8)*	0.01	10.71	2-2	
1261.1223	P	(5)	0.00	9.83	1-2		1158.1296	P	(8)*	0.00	10.71	1-1	
1260.7355	P	(5)	0.00	9.83	0-1		1158.4919	P	(0)*	0.01	10.71	2-1	
1198.2618	P		0.01	10.35	2-2	$2p^2\ ^3P - 4d\ ^1D^\circ$ UV 9.01	1157.7672	P	(7)*	0.01	10.71	2-1	$2p^2\ ^3P - 6s\ ^1P^\circ$ UV 17
1197.8742	P	(0.5)	0.00	10.35	1-2		1157.4054	P	(3)	0.00	10.71	1-1	
							1157.1857	P	(0)	0.00	10.71	0-1	
1194.0635	P	(10)	0.01	10.39	2-2	$2p^2\ ^3P - 5s\ ^3P^\circ$ UV 9.02	1157.3299	P	(1)	0.01	10.72	2-3	$2p^2\ ^3P - 5d\ ^1F^\circ$ UV 18
1194.2293	P	(4)	0.00	10.38	1-1								
1194.6145	P	(8)	0.01	10.38	2-1								
1194.4055	P	(6)	0.00	10.38	1-0		1156.7646	P	(0)	0.01	10.72	2-1	$2p^2\ ^3P - 5d\ ^1P^\circ$ UV 18.01
1193.6787	P	(15)*	0.00	10.39	1-2		1156.4035	P	(2)*	0.00	10.72	1-1	
1193.9955	P	(4)	0.00	10.38	0-1		1156.1842	P	(0)*	0.00	10.72	0-1	
1194.4882	P	(10)	0.01	10.38	2-3	$2p^2\ ^3P - 4d\ ^3F^\circ$ UV 10	1156.5601	P	(4)	0.01	10.73	2-2	$2p^2\ ^3P - 5d\ ^3P^\circ$ UV 19
1194.3009	P	(4)	0.00	10.38	1-2		1156.0283	P	(3)*	0.00	10.73	1-1	
1194.6862	P		0.01	10.38	2-2		1156.3893	P	(2)*	0.01	10.73	2-1	
1193.2401	P	(30)*	0.01	10.40	2-3	$2p^2\ ^3P - 4d\ ^3D^\circ$ UV 11	1155.9790	P	(3)*	0.00	10.73	1-0	
1193.0088	P	(30)*	0.00	10.39	1-2		1156.1990	P	(0)*	0.00	10.73	1-2	
1193.0308	P	(30)*	0.00	10.39	0-1		1155.8092	P	(1)	0.00	10.73	0-1	
1193.3932	P	(10)	0.01	10.39	2-2		1141.6783	P	(0)	0.01	10.86	2-2	$2p^2\ ^3P - 6d\ ^1D^\circ$ UV 20
1193.2643	P	(30)*	0.00	10.39	1-1		1141.3265	P	(0)?	0.00	10.86	1-2	
1193.6489	P	(15)*	0.01	10.39	2-1								
1192.8347	P	(2)	0.01	10.40	2-1	$2p^2\ ^3P - 5s\ ^1P^\circ$ UV 12	1140.6413	P	(3)	0.01	10.87	2-3	$2p^2\ ^3P - 6d\ ^3F^\circ$ UV 21
1192.4507	P	(4)	0.00	10.40	1-1		1140.3573	P	(2)*	0.00	10.87	1-2	
1192.2175	P	(2)	0.00	10.40	0-1		1140.7086	P		0.01	10.87	2-2	
1191.838	P	(4)	0.01	10.41	2-3	$2p^2\ ^3P - 4d\ ^1F^\circ$ UV 13	1140.1166	P	(1)*	0.01	10.88	2-2	$2p^2\ ^3P - 7s\ ^3P^\circ$ UV 21.01
							1140.2228	P	(0)	0.00	10.88	1-1	
							1140.5739	P	(0)	0.01	10.88	2-1	
1190.6357	P		0.01	10.42	2-1	$2p^2\ ^3P - 4d\ ^1P^\circ$ UV 13.01	1140.3163	P	(2)*	0.00	10.87	1-0	
1190.2530	P	(1)	0.00	10.42	1-1		1139.7657	P	(3)	0.00	10.88	1-2	
1190.0207	P	(1)	0.00	10.42	0-1		1140.0096	P	(1)*	0.00	10.88	0-1	

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
1139.8120	P	(4)*	0.01	10.88	2-3	$2p^2\ ^3P - 6d\ ^3D^\circ$	1122.0038	P		0.00	11.05	1-2	$2p^2\ ^3P - 8d\ ^3D^\circ$
1139.5143	P	(0)	0.00	10.88	1-2	UV 22	1122.3438	P	(2)	0.01	11.05	2-2	UV 27
1139.8650	P	(4)*	0.01	10.88	2-2								
1139.6501	P	(0)	0.01	10.88	2-1	$2p^2\ ^3P - 7s\ ^1P^\circ$	1122.2595	P	(1)	0.01	11.05	2-1	$2p^2\ ^3P - 9s\ ^1P^\circ$
1139.2995	P	(0)	0.00	10.88	1-1	UV 22.01	1121.9196	P		0.00	11.05	1-1	UV 27.01
1139.0867	P	(2)*	0.00	10.88	0-1		1121.7132	P		0.00	11.05	0-1	
1139.4255	P	(1)	0.01	10.89	2-3	$2p^2\ ^3P - 6d\ ^1F^\circ$	1122.1795	P	(1)	0.01	11.05	2-3	$2p^2\ ^3P - 8d\ ^1F^\circ$
						UV 22.02							UV 27.02
1139.1238	P	(2)*	0.01	10.89	2-1	$2p^2\ ^3P - 6d\ ^1P^\circ$	1122.0657	P		0.01	11.05	2-1	$2p^2\ ^3P - 8d\ ^1P^\circ$
1138.7736	P		0.00	10.89	1-1	UV 22.03	1127.7259	P		0.00	11.05	1-1	UV 27.03
1138.5609	P	(1)*	0.00	10.89	0-1		1121.5196	P		0.00	11.05	0-1	
1139.0931	P	(2)*	0.01	10.89	2-2	$2p^2\ ^3P - 6d\ ^3P^\circ$	1118.1252	P		0.00	11.09	1-1	$2p^2\ ^3P - 10s\ ^3P^\circ$
1138.5954	P	(1)*	0.00	10.89	1-1	UV 23	1118.4629	P		0.01	11.09	2-1	27.04
1138.9455	P	(1)	0.01	10.89	2-1		1117.9202	P		0.00	11.09	1-2	
1138.7428	P		0.00	10.89	1-2								$2p^2\ ^3P - 9d\ ^3D^\circ$
1138.3828	P	(0)	0.00	10.89	0-1		1117.3930	P		0.00	11.10	1-2	UV 29
							1117.7302	P	(1)	0.01	11.10	2-2	
1130.5155	P		0.01	10.97	2-2	$2p^2\ ^3P - 7d\ ^1D^\circ$	1114.1258	P		0.00	11.13	1-2	$2p^2\ ^3P - 10d\ ^3D^\circ$
1130.1706	P		0.00	10.97	1-2	UV 23.01	1114.4611	P	(2)*	0.01	11.13	2-2	UV 30
1129.924	P	(1)*	0.01	10.98	2-3	$2p^2\ ^3P - 7d\ ^3F^\circ?$	1111.7255	P		0.00	11.15	1-2	$2p^2\ ^3P - 11d\ ^3D^\circ$
1129.624	P	(1)*	0.00	10.98	1-2	UV 24	1112.0593	P	(0.5)	0.01	11.15	2-2	UV 30.01
1129.4221	P	(0)	0.01	10.98	2-2	$2p^2\ ^3P - 8s\ ^3P^\circ$	945.579	P		0.01	13.12	2-1	$2p^2\ ^3P - 2p^3\ ^3S^\circ$
1129.5267	P		0.00	10.98	1-1	UV 24.01	945.338	P		0.00	13.12	1-1	UV 31
1129.8712	P	(1)	0.01	10.98	2-1		945.191	P		0.00	13.12	0-1	
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	$2p^2\ ^3P - 7d\ ^3D^\circ$	Air						
1129.1607	P	(4)	0.01	10.99	2-2	UV 25	8727.126	P		1.26	2.68	2-0	$2p^2\ ^1D - 2p^2\ ^1S$
													3F
1129.0299	P	(2)*	0.01	10.99	2-1	$2p^2\ ^3P - 8s\ ^1P^\circ$	4246.429	P		1.26	4.18	2-2	$2p^2\ ^1D - 2p^3\ ^5S^\circ$
1128.6859	P	(0)	0.00	10.99	1-1	UV 25.01							0.01
1128.4770	P		0.00	10.99	0-1								
1128.9026	P	(0)	0.01	10.99	2-3	$2p^2\ ^3P - 7d\ ^1F^\circ$	Vac						
						UV 25.02	1992.012	P		1.26	7.49	2-2	$2p^2\ ^1D - 3s\ ^3P^\circ$
1128.752	P	(2)*	0.01	10.99	2-2	$2p^2\ ^3P - 7d\ ^3P^\circ?$	1993.620	P	(2)	1.26	7.48	2-1	UV 32
1128.284	P	(1)*	0.00	10.99	1-1	UV 26	1930.9054	D	(100)	1.26	7.68	2-1	$2p^2\ ^1D - 3s\ ^1P^\circ$
1128.627	P		0.01	10.99	2-1								UV 33
1128.252	P	(1)*	0.00	10.99	1-0								
1128.408	P		0.00	10.99	1-2		1855.484	P		1.26	7.95	2-3	$2p^2\ ^1D - 2p^3\ ^3D^\circ$
1128.075	P		0.00	10.99	0-1		1855.345	P		1.26	7.95	2-2	UV 33.01
							1855.383	P		1.26	7.95	2-1	
1128.7240	P	(2)	0.01	10.99	2-1	$2p^2\ ^3P - 7d\ ^1P^\circ$	1704.632	P		1.26	8.54	2-1	$2p^2\ ^1D - 3p\ ^1P$
1128.3801	P		0.00	10.99	1-1	UV 26.01							UV 33.02F
1128.1713	P		0.00	10.99	0-1								
1123.4597	P		0.01	11.04	2-2	$2p^2\ ^3P - 8d\ ^1D^\circ$	1602.100	P		1.26	9.00	2-2	$2p^2\ ^1D - 3p\ ^1D$
1123.1190	P	(0)*	0.00	11.04	1-2	UV 26.02							UV 33.03F
1122.7250	P	(1)*	0.00	11.04	1-1	$2p^2\ ^3P - 9s\ ^3P^\circ$	1536.980	P		1.26	9.33	2-2	$2p^2\ ^1D - 2p^3\ ^3P^\circ$
1123.0654	P	(0)*	0.01	11.04	2-1	UV 26.03	1537.011	P		1.26	9.33	2-1	UV 33.04
1122.7727	P	(1)*	0.00	11.04	1-0								
1122.5183	P		0.00	11.04	0-1		1481.7635	D	(15)	1.26	9.63	2-2	$2p^2\ ^1D - 3d\ ^1D^\circ$
													UV 34

Multiplet Table

C I - Continued

C I - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac.							Vac						
1471.5521	P		1.26	9.69	2-2	$2p^2\ ^1D - 4s\ ^3P^{\circ}$	1311.3626	P	(10)	1.26	10.72	2-3	$2p^2\ ^1D - 5d\ ^1F^{\circ}$
1472.2313	P	(2)	1.26	9.68	2-1	UV 34.01							UV 48
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	1310.6369	P	(2)	1.26	10.72	2-1	$2p^2\ ^1D - 5d\ ^1P^{\circ}$
													UV 49
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	1310.3744	P		1.26	10.73	2-2	$2p^2\ ^1D - 5d\ ^3P^{\circ}$
1468.4102	P	(3)	1.26	9.71	2-1		1310.1551	P		1.26	10.73	2-1	UV 49.01
1467.4020	P	(12)	1.26	9.71	2-1	$2p^2\ ^1D - 4s\ ^1P^{\circ}$	1291.3036	P	(1)	1.26	10.86	2-2	$2p^2\ ^1D - 6d\ ^1D^{\circ}$
						UV 36							UV 50
1463.3360	D	(20)	1.26	9.74	2-3	$2p^2\ ^1D - 3d\ ^1F^{\circ}$	1289.9772	P	(3)	1.26	10.87	2-3	$2p^2\ ^1D - 6d\ ^3F^{\circ}$
						UV 37	1290.0632	P		1.26	10.87	2-2	UV 51
1459.0317	D	(10)	1.26	9.76	2-1	$2p^2\ ^1D - 3d\ ^1P^{\circ}$	1289.3061	P		1.26	10.88	2-2	$2p^2\ ^1D - 7s\ ^3P^{\circ}$
						UV 38	1289.8910	P	(0)	1.26	10.88	2-1	UV 51.01
1446.7965	P		1.26	9.83	2-2	$2p^2\ ^1D - 3d\ ^3P^{\circ}$	1288.9166	P	(1)	1.26	10.88	2-3	$2p^2\ ^1D - 6d\ ^3D^{\circ}$
1446.6305	P		1.26	9.83	2-1	UV 38.01	1288.9844	P		1.26	10.88	2-2	UV 51.02
1364.1636	P	(12)	1.26	10.35	2-2	$2p^2\ ^1D - 4d\ ^1D^{\circ}$	1288.7096	P	(1)	1.26	10.88	2-1	$2p^2\ ^1D - 7s\ ^1P^{\circ}$
						UV 39							UV 52
1358.7250	P		1.26	10.39	2-2	$2p^2\ ^1D - 5s\ ^3P^{\circ}$	1288.4224	P	(5)	1.26	10.89	2-3	$2p^2\ ^1D - 6d\ ^1F^{\circ}$
1359.4385	P	(1)	1.26	10.38	2-1	UV 39.01							UV 53
1359.2750	P	(4)	1.26	10.38	2-3	$2p^2\ ^1D - 4d\ ^3F^{\circ}$	1288.0367	P	(2)	1.26	10.89	2-1	$2p^2\ ^1D - 6d\ ^1P^{\circ}$
1359.5313	P		1.26	10.38	2-2	UV 40							UV 54
1357.6590	P	(2)	1.26	10.40	2-3	$2p^2\ ^1D - 4d\ ^3D^{\circ}$	1287.9974	P		1.26	10.89	2-2	$2p^2\ ^1D - 6d\ ^3P^{\circ}$
1357.8571	P		1.26	10.39	2-2	UV 40.01	1287.8088	P		1.26	10.89	2-1	UV 54.01
1358.1882	P		1.26	10.39	2-1								
1357.1342	P	(6)	1.26	10.40	2-1	$2p^2\ ^1D - 5s\ ^1P^{\circ}$	1277.0415	P		1.26	10.97	2-2	$2p^2\ ^1D - 7d\ ^1D^{\circ}$
						UV 41							UV 54.02
1355.844	A	(15)	1.26	10.41	2-3	$2p^2\ ^1D - 4d\ ^1F^{\circ}$	1275.6464	P		1.26	10.98	2-2	$2p^2\ ^1D - 8s\ ^3P^{\circ}$
						UV 42	1276.2195	P		1.26	10.98	2-1	UV 54.03
1354.2883	P	(10)	1.26	10.42	2-1	$2p^2\ ^1D - 4d\ ^1P^{\circ}$	1275.3130	P		1.26	10.99	2-2	$2p^2\ ^1D - 7d\ ^3D^{\circ}$
						UV 43							UV 54.04
1352.9883	P		1.26	10.43	2-2	$2p^2\ ^1D - 4d\ ^3P^{\circ}$	1275.1462	P		1.26	10.99	2-1	$2p^2\ ^1D - 8s\ ^1P^{\circ}$
1352.7505	P		1.26	10.43	2-1	UV 43.01							UV 54.05
1315.9181	P	(2)	1.26	10.69	2-2	$2p^2\ ^1D - 5d\ ^1D^{\circ}$	1274.9838	P	(3)	1.26	10.99	2-3	$2p^2\ ^1D - 7d\ ^1F^{\circ}$
						UV 44							UV 55
1313.4645	P	(3)	1.26	10.70	2-3	$2p^2\ ^1D - 5d\ ^3F^{\circ}$	1274.7559	P	(0)	1.26	10.99	2-1	$2p^2\ ^1D - 7d\ ^1P^{\circ}$
1313.6287	P		1.26	10.70	2-2	UV 45							UV 56
1312.7327	P		1.26	10.71	2-2	$2p^2\ ^1D - 6s\ ^3P^{\circ}$	1268.0454	P		1.26	11.04	2-2	$2p^2\ ^1D - 8d\ ^1D^{\circ}$
1313.3874	P	(1)	1.26	10.70	2-1	UV 45.01							UV 56.01
1312.2469	P	(1)	1.26	10.71	2-3	$2p^2\ ^1D - 5d\ ^3D^{\circ}$	1267.596	P	(1)	1.26	11.04	2-3	$2p^2\ ^1D - 8d\ ^3F^{\circ}?$
1312.3919	P		1.26	10.71	2-2	UV 46							UV 57
1312.8547	P		1.26	10.71	2-1		1267.5431	P		1.26	11.04	2-1	$2p^2\ ^1D - 9s\ ^3P^{\circ}$
													UV 57.01
1311.9241	P	(2)	1.26	10.71	2-1	$2p^2\ ^1D - 6s\ ^1P^{\circ}$							
						UV 47							

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 1266.6240	P		1.26	11.05	2-2	$2p^2\ ^1D - 8d\ ^3D^\circ$ UV 57.02	Vac 1733.981	P		2.68	9.83	0-1	$2p^2\ ^1S - 3d\ ^3P^\circ$ UV 62.01
1266.5166	P		1.26	11.05	2-1	$2p^2\ ^1D - 9s\ ^1P^\circ$ UV 57.03	1610.1919	P		2.68	10.38	0-1	$2p^2\ ^1S - 5s\ ^3P^\circ$ UV 62.02
1266.4188	P	(2)	1.26	11.05	2-3	$2p^2\ ^1D - 8d\ ^1F^\circ$ UV 58	1608.4380	P	(3)	2.68	10.39	0-1	$2p^2\ ^1S - 4d\ ^3D^\circ$ UV 62.03
1266.2698	P	(0)	1.26	11.05	2-1	$2p^2\ ^1D - 8d\ ^1P^\circ$ UV 58.01	1606.9601	P	(2)	2.68	10.40	0-1	$2p^2\ ^1S - 5s\ ^1P^\circ$ UV 62.04
1262.0072	P		1.26	11.09	2-2	$2p^2\ ^1D - 9d\ ^1D^\circ$ UV 58.02	1602.9715	D	(6)	2.68	10.42	0-1	$2p^2\ ^1S - 4d\ ^1P^\circ$ UV 63
1261.6833	P		1.26	11.09	2-1	$2p^2\ ^1D - 10s\ ^3P^\circ$ UV 58.03	1600.8176	P		2.68	10.43	0-1	$2p^2\ ^1S - 4d\ ^3P^\circ$ UV 63.01
1260.7510	P		1.26	11.10	2-2	$2p^2\ ^1D - 9d\ ^3D^\circ$ UV 58.04	1545.9864	P		2.68	10.70	0-1	$2p^2\ ^1S - 6s\ ^3P^\circ$ UV 63.02
1260.6128	P	(2)	1.26	11.10	2-3	$2p^2\ ^1D - 9d\ ^1F^\circ$ UV 59	1545.2485	P	(2)	2.68	10.71	0-1	$2p^2\ ^1S - 5d\ ^3D^\circ$ UV 63.03
1260.5109	P		1.26	11.10	2-1	$2p^2\ ^1D - 9d\ ^1P^\circ$ UV 59.01	1543.9595	P	(3)	2.68	10.71	0-1	$2p^2\ ^1S - 6s\ ^1P^\circ$ UV 63.04
1256.5933	P		1.26	11.13	2-2	$2p^2\ ^1D - 10d\ ^3D^\circ$ UV 59.02	1542.1766	D	(8)	2.68	10.72	0-1	$2p^2\ ^1S - 5d\ ^1P^\circ$ UV 64
1045.958	P		1.26	13.12	2-1	$2p^2\ ^1D - 2p^3\ ^3S^\circ$ UV 59.03	1541.5099	P	(2)	2.68	10.73	0-1	$2p^2\ ^1S - 5d\ ^3P^\circ$ UV 64.01
							1513.5336	P		2.68	10.88	0-1	$2p^2\ ^1S - 7s\ ^3P^\circ$ UV 64.02
Air 2582.901	A		2.68	7.48	0-1	$2p^2\ ^1S - 3s\ ^3P^\circ$ UV 60	1511.9073	P	(1)	2.68	10.88	0-1	$2p^2\ ^1S - 7s\ ^1P^\circ$ UV 64.03
2478.561	A	16	2.68	7.68	0-1	$2p^2\ ^1S - 3s\ ^1P^\circ$ UV 61	1510.9812	P	(4)	2.68	10.89	0-1	$2p^2\ ^1S - 6d\ ^1P^\circ$ UV 64.04
2355.445	P		2.68	7.95	0-1	$2p^2\ ^1S - 2p^3\ ^3D^\circ$ UV 61.01	1510.6676	P	(1)	2.68	10.89	0-1	$2p^2\ ^1S - 6d\ ^3P^\circ$ UV 64.05
2117.601	P		2.68	8.54	0-1	$2p^2\ ^1S - 3p\ ^1P$ UV 61.02F	1494.7448	P		2.68	10.98	0-1	$2p^2\ ^1S - 8s\ ^3P^\circ$ UV 64.06
Vac 1865.464	P		2.68	9.33	0-1	$2p^2\ ^1S - 2p^3\ ^3P^\circ$ UV 61.03	1493.2728	P	(0)	2.68	10.99	0-1	$2p^2\ ^1S - 8s\ ^1P^\circ$ UV 64.07
1770.892	P		2.68	9.68	0-1	$2p^2\ ^1S - 4s\ ^3P^\circ$ UV 61.04	1492.7376	P	(2)	2.68	10.99	0-1	$2p^2\ ^1S - 7d\ ^1P^\circ$ UV 64.08
1765.366	P	(3)	2.68	9.71	0-1	$2p^2\ ^1S - 3d\ ^3D^\circ$ UV 61.05	1482.8567	P		2.68	11.04	0-1	$2p^2\ ^1S - 9s\ ^3P^\circ$ UV 64.09
1763.909	P	(8)	2.68	9.71	0-1	$2p^2\ ^1S - 4s\ ^1P^\circ$ UV 61.06	1481.4521	P		2.68	11.05	0-1	$2p^2\ ^1S - 9s\ ^1P^\circ$ UV 64.10
1751.8277	D	(50)	2.68	9.76	0-1	$2p^2\ ^1S - 3d\ ^1P^\circ$ UV 62	1481.1144	P		2.68	11.05	0-1	$2p^2\ ^1S - 8d\ ^1P^\circ$ UV 64.11
							1474.8434	P		2.68	11.09	0-1	$2p^2\ ^1S - 10s\ ^3P^\circ$ UV 64.12

Multiplet Table

CI - Continued

CI - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 1473.2416	P		2.68	11.10	0-1	$2p^2\ ^1S - 9d\ ^1P^\circ$ UV 64.13	Air 4065.246	A	4	7.49	10.54	2-3	$3s\ ^3P^\circ - 5p\ ^3D$ 7
1188.3414	P		2.68	13.12	0-1	$2p^2\ ^1S - 2p^3\ ^3S^\circ$ UV 64.14	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	
Air 2776.277	P		4.18	8.65	2-3	$2p^3\ ^3S^\circ - 3p\ ^3D$ UV 64.15	4029.413	A	4	7.49	10.56	2-2	$3s\ ^3P^\circ - 5p\ ^3P$ 7.01
2778.853	P		4.18	8.64	2-2		4025.221	A	1	7.48	10.56	1-1	
2780.490	P		4.18	8.64	2-1		4031.795	A	3	7.49	10.56	2-1	
2701.263	P		4.18	8.77	2-1	$2p^3\ ^3S^\circ - 3p\ ^3S$ UV 64.16	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	
2655.240	P		4.18	8.85	2-1	$2p^3\ ^3S^\circ - 3p\ ^3P$ UV 64.17	3997.803	P		7.49	10.59	2-2	$3s\ ^3P^\circ - 5p\ ^1D$ 7.02
2656.685	P		4.18	8.85	2-1		3991.337	P		7.48	10.59	1-2	
Vac 1431.597	A	(2)	4.18	12.84	2-3	$2p^3\ ^3S^\circ - 3s'\ ^3P$ UV 65	3769.708	P		7.49	10.78	2-1	$3s\ ^3P^\circ - 6p\ ^1P$ 7.03
1432.105	A		4.18	12.84	2-2		3763.956	A	0	7.48	10.78	1-1	
1432.530	A		4.18	12.84	2-1		3757.048	A	3	7.49	10.79	2-3	$3s\ ^3P^\circ - 6p\ ^3D$ 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	
Air 10691.250	A	10	7.49	8.65	2-3	$3s\ ^3P^\circ - 3p\ ^3D$ 1	3741.443	A	2	7.49	10.80	2-2	$3s\ ^3P^\circ - 6p\ ^3P$ 7.05
10683.082	A	8	7.48	8.64	1-2		3737.186	A	0	7.48	10.80	1-1	
10685.345	A	6	7.48	8.64	0-1		3742.851	A	1	7.49	10.80	2-1	
10729.533	A	6	7.49	8.64	2-2		3740.789	A	0	7.48	10.80	1-0	
10707.333	A	6	7.48	8.64	1-1		3735.776	A	1	7.48	10.80	1-2	
10753.985	A	2	7.49	8.64	2-1		3734.509	A	0	7.48	10.80	0-1	
9658.435	A	10	7.49	8.77	2-1	$3s\ ^3P^\circ - 3p\ ^3S$ 2	3613.235	P		7.49	10.92	2-1	$3s\ ^3P^\circ - 7p\ ^1P$ 7.06
9620.795	A	9	7.48	8.77	1-1		3607.940	A	0	7.48	10.92	1-1	
9603.032	A	7	7.48	8.77	0-1		3603.528	A	2	7.49	10.93	2-3	$3s\ ^3P^\circ - 7p\ ^3D$ 7.07
9094.829	A	12	7.49	8.85	2-2	$3s\ ^3P^\circ - 3p\ ^3P$ 3	3603.440	A	1	7.48	10.92	1-2	
9078.278	A	8	7.48	8.85	1-1		3601.465	A	0	7.48	10.92	0-1	
9111.797	A	10	7.49	8.85	2-1		3608.696	A	1	7.49	10.92	2-2	
9088.508	A	9	7.48	8.85	1-0		3603.952	A	0	7.48	10.92	1-1	
9061.432	A	9	7.48	8.85	1-2		3609.226	P		7.49	10.92	2-1	
9062.466	A	8	7.48	8.85	0-1		3595.456	A	0	7.49	10.93	2-2	$3s\ ^3P^\circ - 7p\ ^3P$ 7.08
4890.645	A	2	7.49	10.02	2-3	$3s\ ^3P^\circ - 4p\ ^3D$ 3.01	3590.972	P		7.48	10.93	1-1	
*4888.912	A	1	7.48	10.02	1-2		3523.366	P		7.49	11.01	2-1	$3s\ ^3P^\circ - 8p\ ^1P$ 7.09
*4888.912	A	1	7.48	10.02	0-1		3518.314	A	0	7.48	11.01	1-1	
4898.629	A	1	7.49	10.02	2-2		3514.801	A	2	7.49	11.01	2-3	$3s\ ^3P^\circ - 8p\ ^3D$ 7.10
4893.429	A	0	7.48	10.02	1-1		3510.132	P		7.49	11.02	2-2	$3s\ ^3P^\circ - 8p\ ^3P$ 7.11
4903.148	P		7.49	10.02	2-1		3458.503	A	1	7.49	11.07	2-3	$3s\ ^3P^\circ - 9p\ ^3D$ 7.12
4826.804	A	3	7.49	10.06	2-1	$3s\ ^3P^\circ - 4p\ ^3S$ 5	3420.405	A	0	7.49	11.11	2-3	$3s\ ^3P^\circ - 10p\ ^3D$ 7.13
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	$3s\ ^3P^\circ - 4p\ ^3P$ 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	$3s\ ^3P^\circ - 4p\ ^1D$ 6.01							
4667.846	P		7.48	10.14	1-2								

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 14542.50	B	179	7.68	8.54	1-1	$3s\ ^1P^\circ - 3p\ ^1P$ 7.14	Air 3732.349	A	2	7.68	11.01	1-1	$3s\ ^1P^\circ - 8p\ ^1P$ 17.09
10631.36	P		7.68	8.85	1-2	$3s\ ^1P^\circ - 3p\ ^3P$	3729.026	A	1	7.68	11.01	1-1	$3s\ ^1P^\circ - 8p\ ^3D$ 17.10
10654.56	P		7.68	8.85	1-1	8							
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	3712.035	A	1	7.68	11.02	1-2	$3s\ ^1P^\circ - 8p\ ^1D$ 17.11
8335.149	A	13	7.68	9.17	1-0	$3s\ ^1P^\circ - 3p\ ^1S$ 10	3705.557	A	1	7.68	11.03	1-0	$3s\ ^1P^\circ - 8p\ ^1S$ 17.12
5380.336	A	10	7.68	9.99	1-1	$3s\ ^1P^\circ - 4p\ ^1P$ 11	3668.600	A	1	7.68	11.06	1-1	$3s\ ^1P^\circ - 9p\ ^1P$ 17.13
5312.174	P		7.68	10.02	1-2	$3s\ ^1P^\circ - 4p\ ^3D$	3652.824	A	0	7.68	11.08	1-2	$3s\ ^1P^\circ - 9p\ ^1D$ 17.14
5317.465	A	1	7.68	10.02	1-1	11.01							
5052.167	A	8	7.68	10.14	1-2	$3s\ ^1P^\circ - 4p\ ^1D$ 12	3648.623	A	0	7.68	11.08	1-0	$3s\ ^1P^\circ - 9p\ ^1S$ 17.15
4932.050	A	8	7.68	10.20	1-0	$3s\ ^1P^\circ - 4p\ ^1S$ 13	3625.609	A	0	7.68	11.10	1-1	$3s\ ^1P^\circ - 10p\ ^1P$ 17.16
4371.368	A	6	7.68	10.52	1-1	$3s\ ^1P^\circ - 5p\ ^1P$ 14	3609.562	A	0	7.68	11.12	1-0	$3s\ ^1P^\circ - 10p\ ^1S$ 17.17
4352.558	P		7.68	10.53	1-2	$3s\ ^1P^\circ - 5p\ ^3D$	3595.140	A	0	7.68	11.13	1-1	$3s\ ^1P^\circ - 11p\ ^1P$ 17.18
4355.408	A	1	7.68	10.53	1-1	15							
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	13697.81	B	6	7.95	8.85	3-2	$2p^3\ ^3D^\circ - 3p\ ^3P$ 17.19
4009.930	A	4	7.68	10.78	1-1	$3s\ ^1P^\circ - 6p\ ^1P$ 17.01	13743.93	B	3	7.95	8.85	2-1	
4001.490	P		7.68	10.78	1-2	$3s\ ^1P^\circ - 6p\ ^3D$	13765.29	B	1	7.95	8.85	1-0	
4002.976	A	2	7.68	10.78	1-1	17.02	13705.41	B	1	7.95	8.85	2-2	
3961.403	A	3	7.68	10.81	1-2	$3s\ ^1P^\circ - 6p\ ^1D$ 17.03	13741.86	B	1	7.95	8.85	1-1	
3942.223	A	3	7.68	10.83	1-0	$3s\ ^1P^\circ - 6p\ ^1S$ 17.04	13703.28	P		7.95	8.85	1-2	
3833.347	A	3	7.68	10.92	1-1	$3s\ ^1P^\circ - 7p\ ^1P$ 17.05	5793.116	A	7	7.95	10.09	3-2	$2p^3\ ^3D^\circ - 4p\ ^3P$ 18
3828.247	P		7.68	10.92	1-2	$3s\ ^1P^\circ - 7p\ ^3D$	5800.594	A	6	7.95	10.08	2-1	
3828.849	A	2	7.68	10.92	1-1	17.06	5805.192	A	4	7.95	10.08	1-0	
3804.305	A	2	7.68	10.94	1-2	$3s\ ^1P^\circ - 7p\ ^1D$ 17.07	5794.459	A	3	7.95	10.09	2-2	
3793.678	A	2	7.68	10.95	1-0	$3s\ ^1P^\circ - 7p\ ^1S$ 17.08	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-	$2p^3\ ^3D^\circ - 4f\ [24]$ 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-	
							5040.134	A	4	7.95	10.41	2-3	[34]

Multiplet Table

C I - Continued

C I - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
5023.849	A	7	7.95	10.41	3-	$2p^3\ ^3D^\circ - 4f' [3\frac{1}{2}]$	4211.115	A	2	7.95	10.89	3-	$2p^3\ ^3D^\circ - 6f' [2\frac{1}{2}]$
5024.916	A	3	7.95	10.41	2-3	18.02	4211.817	A	2	7.95	10.89	2-	18.13
							4211.613	A	1	7.95	10.89	1-2	
5017.090	A	3	7.95	10.42	3-	$2p^3\ ^3D^\circ - 4f' [2\frac{1}{2}]$	4209.195	P		7.95	10.89	3-2	$[1\frac{1}{2}]$
5018.068	A	2	7.95	10.42	2-	18.03	4209.905	A	0	7.95	10.89	2-	
5017.761	A	1	7.95	10.42	1-2		4209.710	A	0	7.95	10.89	1-	
5011.264	P		7.95	10.42	3-2	$[1\frac{1}{2}]$							
5012.279	A	2	7.95	10.42	2-		4157.024	P		7.95	10.93	3-3	$2p^3\ ^3D^\circ - 7p\ ^3D$
5012.003	A	2	7.95	10.42	1-		4164.611	P		7.95	10.92	2-2	18.14
							4165.118	P		7.95	10.92	1-1	
4783.795	A	1	7.95	10.54	3-3	$2p^3\ ^3D^\circ - 5p\ ^3D$							
4792.649	A	0	7.95	10.53	2-2	18.04	4146.264	A	2	7.95	10.93	3-2	$2p^3\ ^3D^\circ - 7p\ ^3P$
4795.878	A	0	7.95	10.53	1-1		4147.976	A	1	7.95	10.93	2-1	18.15
4791.710	A	0	7.95	10.53	3-2		4153.374	A	0	7.95	10.93	1-0	
4796.082	A	0	7.95	10.53	2-1		4146.971	A	0	7.95	10.93	2-2	
4784.721	P		7.95	10.54	2-3		4147.786	P		7.95	10.93	1-1	
4792.407	P		7.95	10.53	1-2								
4734.262	A	5	7.95	10.56	3-2	$2p^3\ ^3D^\circ - 5p\ ^3P$	4083.161	A	1	7.95	10.98	2-	$2p^3\ ^3D^\circ - 7f [2\frac{1}{2}]$
4738.466	A	3	7.95	10.56	2-1	18.05	4082.981	A	1	7.95	10.98	1-2	18.16
4742.570	A	2	7.95	10.56	1-0		4082.415	A	1	7.95	10.98	3-4	$[3\frac{1}{2}]$
4735.165	A	2	7.95	10.56	2-2								
4738.213	A	1	7.95	10.56	1-1		4072.643	A	3	7.95	10.99	3-	$2p^3\ ^3D^\circ - 7f' [3\frac{1}{2}]$
4734.917	P		7.95	10.56	1-2		4073.327	A	1	7.95	10.99	2-3	18.17
4478.009	P		7.95	10.71	3-	$2p^3\ ^3D^\circ - 5f [2\frac{1}{2}]$	4033.228	A	0	7.95	11.02	3-2	$2p^3\ ^3D^\circ - 8p\ ^3P$
4478.825	A	4	7.95	10.71	2-	18.06							18.18
4478.588	A	4	7.95	10.71	1-2		*3996.488	A	0	7.95	11.05	3-	$2p^3\ ^3D^\circ - 8f [2\frac{1}{2}]$
4477.472	A	4	7.95	10.71	3-	$[3\frac{1}{2}]$	3997.136	A	0	7.95	11.05	2-	18.19
4478.319	A	2	7.95	10.71	2-3		3996.966	A	0	7.95	11.05	1-2	
							*3996.488	A	0	7.95	11.05	3-4	$[3\frac{1}{2}]$
4466.476	A	5	7.95	10.72	3-	$2p^3\ ^3D^\circ - 5f' [3\frac{1}{2}]$							
4467.309	A	2	7.95	10.72	2-3	18.07	3986.879	A	1	7.95	11.05	3-4	$2p^3\ ^3D^\circ - 8f' [3\frac{1}{2}]$
													18.20
4463.886	A	2	7.95	10.72	3-	$2p^3\ ^3D^\circ - 5f' [2\frac{1}{2}]$							
4464.677	A	2	7.95	10.72	2-	18.08							
4464.448	A	1	7.95	10.72	1-2		11330.285	A	6	8.54	9.63	1-2	$3p\ ^1P - 3d\ ^1D^\circ$
4460.699	P		7.95	10.72	3-2	$[1\frac{1}{2}]$							19
4461.500	A	1	7.95	10.72	2-								
4461.300	A	1	7.95	10.72	1-		10759.28	P		8.54	9.69	1-2	$3p\ ^1P - 4s\ ^3P^\circ$
							10795.70	P		8.54	9.68	1-1	19.01
4362.663	P		7.95	10.79	3-3	$2p^3\ ^3D^\circ - 6p\ ^3D$	10809.43	P		8.54	9.68	1-0	
4370.452	P		7.95	10.78	2-2	18.09							
4372.018	P		7.95	10.78	1-1		10577.66	P		8.54	9.71	1-2	$3p\ ^1P - 3d\ ^3D^\circ$
							10593.51	P		8.54	9.71	1-1	19.02
4341.640	A	2	7.95	10.80	3-2	$2p^3\ ^3D^\circ - 6p\ ^3P$							
4344.309	A	1	7.95	10.80	2-1	18.10	10541.226	A	4	8.54	9.71	1-1	$3p\ ^1P - 4s\ ^1P^\circ$
4348.966	A	1	7.95	10.80	1-0								20
4342.396	A	0	7.95	10.80	2-2								
4344.111	A	0	7.95	10.80	1-1		10123.871	A	6	8.54	9.76	1-1	$3p\ ^1P - 3d\ ^1P^\circ$
4342.194	P		7.95	10.80	1-2								20.01
4222.631	P		7.95	10.88	3-	$2p^3\ ^3D^\circ - 6f [2\frac{1}{2}]$	9562.618	P		8.54	9.83	1-2	$3p\ ^1P - 3d\ ^3P^\circ$
4223.360	A	3	7.95	10.88	2-	18.11	9555.370	P		8.54	9.83	1-1	20.02
*4223.159	A	4	7.95	10.88	1-2		9551.372	P		8.54	9.83	1-0	
4222.466	A	3	7.95	10.88	3-	$[3\frac{1}{2}]$							
*4223.159	A	4	7.95	10.88	2-3		6828.117	A	6	8.54	10.35	1-2	$3p\ ^1P - 4d\ ^1D^\circ$
													21
4212.342	A	4	7.95	10.89	3-	$2p^3\ ^3D^\circ - 6f' [3\frac{1}{2}]$							
4213.074	A	2	7.95	10.89	2-3	18.12	6693.963	P		8.54	10.39	1-2	$3p\ ^1P - 5s\ ^3P^\circ$
							6711.291	A	1	8.54	10.38	1-1	21.01
							6716.892	P		8.54	10.38	1-0	

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
6672.945	P		8.54	10.39	1-2	$3p\ ^1P - 4d\ ^3D^\circ$	4922.688	A	1	8.54	11.05	1-1	$3p\ ^1P - 8d\ ^1P^\circ$
6680.950	P		8.54	10.39	1-1	21.02							22.18
6655.509	A	6	8.54	10.40	1-1	$3p\ ^1P - 5s\ ^1P^\circ$	4858.875	P		8.54	11.09	1-2	$3p\ ^1P - 9d\ ^1D^\circ$
						21.03							22.19
6587.608	A	8	8.54	10.42	1-1	$3p\ ^1P - 4d\ ^1P^\circ$	4836.764	A	0	8.54	11.10	1-1	$3p\ ^1P - 9d\ ^1P^\circ$
						22							22.20
6556.955	P		8.54	10.43	1-2	$3p\ ^1P - 4d\ ^3P^\circ$	18139.80	B	13	8.65	9.33	3-2	$3p\ ^3D - 2p\ ^3P^\circ$
6551.374	P		8.54	10.43	1-1	22.01	18034.86	B	5	8.64	9.33	2-1	22.21
6549.172	P		8.54	10.43	1-0		17959.24	B	3	8.64	9.33	1-0	
5769.117	P		8.54	10.69	1-2	$3p\ ^1P - 5d\ ^1D^\circ$	18030.47	B	2	8.64	9.33	2-2	
						22.02	17966.12	B	2	8.64	9.33	1-1	
							17962.00	P		8.64	9.33	1-2	
5708.372	P		8.54	10.71	1-2	$3p\ ^1P - 6s\ ^3P^\circ$	11895.75	B	30	8.65	9.69	3-2	$3p\ ^3D - 4s\ ^3P^\circ$
5720.779	A	2	8.54	10.70	1-1	22.03	11892.91	B	17	8.64	9.68	2-1	23
5723.949	P		8.54	10.70	1-0		11879.59	B	8	8.64	9.68	1-0	
5701.932	P		8.54	10.71	1-2	$3p\ ^1P - 5d\ ^3D^\circ$	11848.73	B	6	8.64	9.69	2-2	
5710.681	P		8.54	10.71	1-1	22.04	11862.99	B	5	8.64	9.68	1-1	
							11819.04	P		8.64	9.69	1-2	
5693.110	A	3	8.54	10.71	1-1	$3p\ ^1P - 6s\ ^1P^\circ$	11753.32	B	142	8.65	9.79	3-4	$3p\ ^3D - 3d\ ^3F^\circ$
						22.05	11754.76	B	114	8.64	9.70	2-3	24
5668.951	A	7	8.54	10.72	1-1	$3p\ ^1P - 5d\ ^1P^\circ$	11748.22	B	82	8.64	9.70	1-2	
						22.06	11801.08	B	7	8.65	9.70	3-3	
5324.064	P		8.54	10.86	1-2	$3p\ ^1P - 6d\ ^1D^\circ$	11777.54	B	11	8.64	9.70	2-2	
						22.07	11824.03	P		8.65	9.70	3-2	
5290.261	P		8.54	10.88	1-2	$3p\ ^1P - 7s\ ^3P^\circ$	11659.68	B	47	8.65	9.71	3-3	$3p\ ^3D - 3d\ ^3D^\circ$
5300.118	A	1	8.54	10.88	1-1	22.08	11628.83	B	23	8.64	9.71	2-2	25
5302.147	P		8.54	10.87	1-0		11619.29	B	12	8.64	9.71	1-1	
5280.238	A	2	8.54	10.88	1-1	$3p\ ^1P - 7s\ ^1P^\circ$	11674.14	B	7	8.65	9.71	3-2	
						22.09	11647.99	B	5	8.64	9.71	2-1	
5268.956	A	4	8.54	10.89	1-1	$3p\ ^1P - 6d\ ^1P^\circ$	11614.47	P		8.64	9.71	2-3	
						22.10	11600.24	P		8.64	9.71	1-2	
5089.632	A	0	8.54	10.97	1-2	$3p\ ^1P - 7d\ ^1D^\circ$	10449.93	P		8.65	9.83	3-2	$3p\ ^3D - 3d\ ^3P^\circ$
						22.11	10405.01	P		8.64	9.83	2-1	25.01
5067.543	P		8.54	10.98	1-2	$3p\ ^1P - 8s\ ^3P^\circ$	10377.41	P		8.64	9.83	1-0	
5076.592	A	1	8.54	10.98	1-1	22.12	7116.990	A	8	8.65	10.39	3-2	$3p\ ^3D - 5s\ ^3P^\circ$
5077.968	P		8.54	10.98	1-0		7119.671	A	7	8.64	10.38	2-1	25.02
5059.656	A	0	8.54	10.99	1-1	$3p\ ^1P - 8s\ ^1P^\circ$	*7115.186	A	9	8.64	10.38	1-0	
						22.13	7100.124	A	5	8.64	10.39	2-2	
5053.515	A	2	8.54	10.99	1-1	$3p\ ^1P - 7d\ ^1P^\circ$	7108.935	A	3	8.64	10.38	1-1	
						22.14	7089.46	P		8.64	10.39	1-2	
4949.646	P		8.54	11.04	1-2	$3p\ ^1P - 8d\ ^1D^\circ$	7113.180	A	9	8.65	10.39	3-4	$3p\ ^3D - 4d\ ^3F^\circ$
						22.15	*7115.186	A	9	8.64	10.38	2-3	26
4942.021	A	0	8.54	11.04	1-1	$3p\ ^1P - 9s\ ^3P^\circ$	7111.475	A	7	8.64	10.38	1-2	
4942.926	P		8.54	11.04	1-0	22.16	7132.112	A	1	8.65	10.38	3-3	
4926.416	A	0	8.54	11.05	1-1	$3p\ ^1P - 9s\ ^1P^\circ$	7122.196	A	1	8.64	10.38	2-2	
						22.17	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	

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
7056.871	A	0	8.64	10.40	2-1	$3p^3D - 5s^1P^\circ$	5543.817	A	0	8.65	10.88	3-3	$3p^3D - 6d^3D^\circ$
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-	$3p^3D - 4d^1F^\circ$							
7022.129	P		8.64	10.41	2-3	26.03	5529.781	A	1	8.64	10.88	2-1	$3p^3D - 7s^1P^\circ$
							5523.282	P		8.64	10.88	1-1	26.16
6962.31	A	0	8.65	10.43	3-2	$3p^3D - 4d^3P^\circ$							
6939.91	P		8.64	10.43	2-1	26.04	5526.833	A	2	8.65	10.89	3-2	$3p^3D - 6d^3P^\circ$
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	$3p^3D - 5d^1D^\circ$	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	$3p^3D - 8s^3P^\circ$
							5306.837	A	2	8.64	10.98	2-1	26.18
*6013.215	A	10	8.65	10.71	3-4	$3p^3D - 5d^3F^\circ$	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	$3p^3D - 7d^3D^\circ$
							5300.550	A	3	8.65	10.99	3-2	26.19
*6013.215	A	10	8.65	10.71	3-2	$3p^3D - 6s^3P^\circ$							
6014.845	A	9	8.64	10.70	2-1	26.07	5288.315	A	0	8.64	10.99	2-1	$3p^3D - 8s^1P^\circ$
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	$3p^3D - 9s^3P^\circ$
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	$3p^3D - 5d^3D^\circ$	5144.717	P		8.64	11.05	2-2	$3p^3D - 8d^3D^\circ$
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	$3p^3D - 10s^3P^\circ$
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	$3p^3D - 9d^3D^\circ$
							5057.682	A	0	8.65	11.10	3-2	26.24
5984.260	A	3	8.64	10.71	2-1	$3p^3D - 6s^1P^\circ$	4983.106	P		8.64	11.13	2-2	$3p^3D - 10d^3D^\circ$
5976.678	P		8.64	10.71	1-1	26.09	4991.408	A	0	8.65	11.13	3-2	26.25
5984.517	P		8.65	10.72	3-3	$3p^3D - 5d^1F^\circ$	4935.431	P		8.64	11.15	2-2	$3p^3D - 11d^3D^\circ$
5972.588	A	0	8.64	10.72	2-3	26.10	4949.576	A	0	8.65	11.15	3-2	26.26
5957.559	P		8.64	10.72	2-1	$3p^3D - 5d^1P^\circ$							
5950.040	A	1	8.64	10.72	1-1	26.11	13502.27	B	20	8.77	9.69	1-2	$3p^3S - 4s^3P^\circ$
							13559.66	B	12	8.77	9.68	1-1	26.27
5963.989	A	4	8.65	10.73	3-2	$3p^3D - 5d^3P^\circ$	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	$3p^3S - 4s^1P^\circ$
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	$3p^3S - 3d^1P^\circ$
													28
5548.902	A	1	8.65	10.88	3-4	$3p^3D - 6d^3F^\circ$							
5553.174	A	1	8.64	10.87	2-3	26.13	11669.63	B	24	8.77	9.83	1-2	$3p^3S - 3d^3P^\circ$
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	$3p^3D - 7s^3P^\circ$							
5551.589	A	5	8.64	10.88	2-1	26.14	7662.430	A	5	8.77	10.39	1-2	$3p^3S - 5s^3P^\circ$
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	$3p^3S - 5s^1P^\circ$
													29.02

Multiplet Table

C I - Continued

C I - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
7483.436	A	3	8.77	10.43	1-2	$3p\ ^3S - 4d\ ^3P^\circ$	8058.622	A	8	8.85	10.39	2-2	$3p\ ^3P - 5s\ ^3P^\circ$
7476.178	A	2	8.77	10.43	1-1	29.03	8070.416	A	3	8.85	10.38	1-1	30.01
7473.303	A	1	8.77	10.43	1-0		8083.797	A	5	8.85	10.38	2-1	
							8078.480	A	4	8.85	10.38	1-0	
6397.979	A	5	8.77	10.71	1-2	$3p\ ^3S - 6s\ ^3P^\circ$	8045.333	A	4	8.85	10.39	1-2	
6413.553	A	3	8.77	10.70	1-1	29.04	8062.356	A	3	8.85	10.38	0-1	
6417.544	A	2	8.77	10.70	1-0								
							8021.262	A	3	8.85	10.40	2-3	$3p\ ^3P - 4d\ ^3D^\circ$
6389.871	A	2	8.77	10.71	1-2	$3p\ ^3S - 5d\ ^3D^\circ$	8014.998	P		8.85	10.39	1-2	31
6400.866	P		8.77	10.71	1-1	29.05	8018.564	A	1	8.85	10.39	0-1	
6378.791	A	0	8.77	10.71	1-1	$3p\ ^3S - 6s\ ^1P^\circ$	7860.889	A	8	8.85	10.43	2-2	$3p\ ^3P - 4d\ ^3P^\circ$
						29.06	7840.270	A	2	8.85	10.43	1-1	32
							7852.862	A	4	8.85	10.43	2-1	
6342.315	A	2	8.77	10.73	1-2	$3p\ ^3S - 5d\ ^3P^\circ$	7837.105	A	3	8.85	10.43	1-0	
6337.196	A	1	8.77	10.73	1-1	29.07	7848.246	A	4	8.85	10.43	1-2	
6335.704	A	0	8.77	10.73	1-0		7832.629	A	3	8.85	10.43	0-1	
5877.313	A	2	8.77	10.88	1-2	$3p\ ^3S - 7s\ ^3P^\circ$	6671.840	A	5	8.85	10.71	2-2	$3p\ ^3P - 6s\ ^3P^\circ$
5889.515	A	2	8.77	10.88	1-1	29.08	6679.642	P		8.85	10.70	1-1	33
5892.000	A	1	8.77	10.87	1-0		6688.787	A	4	8.85	10.70	2-1	
							6683.954	A	4	8.85	10.70	1-0	
5870.655	A	3	8.77	10.88	1-2	$3p\ ^3S - 6d\ ^3D^\circ$	6662.733	A	3	8.85	10.71	1-2	
						29.09	6674.110	A	4	8.85	10.70	0-1	
5864.948	A	0	8.77	10.88	1-1	$3p\ ^3S - 7s\ ^1P^\circ$	6659.312	P		8.85	10.71	2-3	$3p\ ^3P - 5d\ ^3D^\circ$
						29.10	6653.946	A	1	8.85	10.71	1-2	34
							6660.382	P		8.85	10.71	0-1	
5850.254	A	0	8.77	10.89	1-2	$3p\ ^3S - 6d\ ^3P^\circ$	6663.044	A	4	8.85	10.71	2-2	
5846.346	A	0	8.77	10.89	1-1	29.11	6665.884	P		8.85	10.71	1-1	
5603.733	A	0	8.77	10.98	1-2	$3p\ ^3S - 8s\ ^3P^\circ$	6611.354	A	4	8.85	10.73	2-2	$3p\ ^3P - 5d\ ^3P^\circ$
5614.809	A	0	8.77	10.98	1-1	29.12	6596.849	A	1	8.85	10.73	1-1	35
5616.490	A	0	8.77	10.98	1-0		6605.785	A	1	8.85	10.73	2-1	
							6595.240	A	1	8.85	10.73	1-0	
5597.300	A	1	8.77	10.99	1-2	$3p\ ^3S - 7d\ ^3D^\circ$	6602.416	A	2	8.85	10.73	1-2	
						29.13	6591.446	A	1	8.85	10.73	0-1	
25833.66	B	1	8.85	9.33	2-2	$3p\ ^3P - 2p^3\ ^3P^\circ$	6107.653	A	1	8.85	10.88	2-2	$3p\ ^3P - 7s\ ^3P^\circ$
25706.03	B	1	8.85	9.33	1-1	29.14	6113.150	A	1	8.85	10.88	1-1	36
25842.20	B	1	8.85	9.33	2-1		6120.818	A	2	8.85	10.88	2-1	
25697.56	B	1	8.85	9.33	1-2		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	
14782.98	B	4	8.85	9.69	2-2	$3p\ ^3P - 4s\ ^3P^\circ$	6098.923	A	1	8.85	10.88	2-3	$3p\ ^3P - 6d\ ^3D^\circ$
14806.73	P		8.85	9.68	1-1	29.15	6092.837	A	1	8.85	10.88	1-2	37
							6100.459	A	4	8.85	10.88	2-2	
14637.03	B	2	8.85	9.70	2-3	$3p\ ^3P - 3d\ ^3F^\circ$							
14628.36	P		8.85	9.70	1-2	29.16							
							6094.298	A	0	8.85	10.88	2-1	$3p\ ^3P - 7s\ ^1P^\circ$
14420.12	B	61	8.85	9.71	2-3	$3p\ ^3P - 3d\ ^3D^\circ$	6086.686	A	0	8.85	10.88	1-1	38
14399.65	B	38	8.85	9.71	1-2	29.17	6082.107	P		8.85	10.88	0-1	
14403.25	B	16	8.85	9.71	0-1								
14442.24	B	13	8.85	9.71	2-2		6078.395	A	2	8.85	10.89	2-2	$3p\ ^3P - 6d\ ^3P^\circ$
14429.03	B	12	8.85	9.71	1-1		6066.646	P		8.85	10.89	1-1	39
14471.78	P		8.85	9.71	2-1		6074.195	P		8.85	10.89	2-1	
							6070.833	A	1	8.85	10.89	1-2	
12614.10	B	26	8.85	9.83	2-2	$3p\ ^3P - 3d\ ^3P^\circ$	6062.089	A	0	8.85	10.89	0-1	
12569.04	B	5	8.85	9.83	1-1	30							
12601.48	B	8	8.85	9.83	2-1		5812.721	P		8.85	10.98	2-2	$3p\ ^3P - 8s\ ^3P^\circ$
12562.12	B	6	8.85	9.83	1-0		5817.701	A	0	8.85	10.98	1-1	40
12581.59	B	6	8.85	9.83	1-2		5824.643	A	1	8.85	10.98	2-1	
12549.48	B	5	8.85	9.83	0-1		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	

Multiplet Table

C I - Continued

C I - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
5798.895	A	0	8.85	10.99	1-2	$3p\ ^3P - 7d\ ^3D^\circ$	6578.772	A	2	9.00	10.89	2-3	$3p\ ^1D - 6d\ ^1F^\circ$
*5805.801	A	3	8.85	10.99	2-2	41						60	
5623.445	P		8.85	11.05	1-2	$3p\ ^3P - 8d\ ^3D^\circ$	6568.708	A	2	9.00	10.89	2-1	$3p\ ^1D - 6d\ ^1P^\circ$
5629.930	A	1	8.85	11.05	2-2	42						61	
5509.469	P		8.85	11.10	1-2	$3p\ ^3P - 9d\ ^3D^\circ$	6292.366	A	2	9.00	10.97	2-2	$3p\ ^1D - 7d\ ^1D^\circ$
5515.691	A	0	8.85	11.10	2-2	43						62	
2904.95	A	-	8.85	13.12	2-1	$3p\ ^3P - 2p^3\ ^3S^\circ$	6246.597	P		9.00	10.99		$3p\ ^1D - 8s\ ^1P^\circ$
2903.26	A	-	8.85	13.12	1-1	UV 66							63
2902.30	A	-	8.85	13.12	0-1								
19721.99	B	23	9.00	9.63	2-2	$3p\ ^1D - 3d\ ^1D^\circ$	6242.699	A	1	9.00	10.99	2-3	$3p\ ^1D - 7d\ ^1F^\circ$
						44							64
17448.60	B	11	9.00	9.71	2-1	$3p\ ^1D - 4s\ ^1P^\circ$	6237.265	A	1	9.00	10.99	2-1	$3p\ ^1D - 7d\ ^1P^\circ$
						45							65
16890.38	B	50	9.00	9.74	2-3	$3p\ ^1D - 3d\ ^1F^\circ$	6079.771	A	1	9.00	11.04	2-2	$3p\ ^1D - 8d\ ^1D^\circ$
						46							66
16333.94	P		9.00	9.76	2-1	$3p\ ^1D - 3d\ ^1P^\circ$	6044.793	A	0	9.00	11.05	2-1	$3p\ ^1D - 9s\ ^1P^\circ$
						47							67
9182.831	A	4	9.00	10.35	2-2	$3p\ ^1D - 4d\ ^1D^\circ$	6042.457	A	1	9.00	11.05	2-3	$3p\ ^1D - 8d\ ^1F^\circ$
						48							68
8873.390	A	3	9.00	10.40	2-1	$3p\ ^1D - 5s\ ^1P^\circ$	6039.171	A	0	9.00	11.05	2-1	$3p\ ^1D - 8d\ ^1P^\circ$
						49							69
8818.480	P		9.00	10.41	2-3	$3p\ ^1D - 4d\ ^1F^\circ$	5943.389	A	0	9.00	11.09	2-2	$3p\ ^1D - 9d\ ^1D^\circ$
						50							70
8753.079	A	3	9.00	10.42	2-1	$3p\ ^1D - 4d\ ^1P^\circ$	5912.577	A	0	9.00	11.10	2-3	$3p\ ^1D - 9d\ ^1F^\circ$
						51							71
7364.734	A	3	9.00	10.69	2-2	$3p\ ^1D - 5d\ ^1D^\circ$	5910.338	P		9.00	11.10	2-1	$3p\ ^1D - 9d\ ^1P^\circ$
						52							72
7266.032	P		9.00	10.71	2-2	$3p\ ^1D - 6s\ ^3P^\circ$	22906.56	B	7	9.17	9.71	0-1	$3p\ ^1S - 4s\ ^1P^\circ$
7286.110	A	0	9.00	10.70	2-1	53							73
7241.319	A	2	9.00	10.71	2-1	$3p\ ^1D - 6s\ ^1P^\circ$	21023.13	B	8	9.17	9.76	0-1	$3p\ ^1S - 3d\ ^1P^\circ$
						54							74
7224.241	A	1	9.00	10.72	2-3	$3p\ ^1D - 5d\ ^1F^\circ$	10096.81	P		9.17	10.40	0-1	$3p\ ^1S - 5s\ ^1P^\circ$
						55							75
7202.264	A	2	9.00	10.72	2-1	$3p\ ^1D - 5d\ ^1P^\circ$	9941.349	P		9.17	10.42	0-1	$3p\ ^1S - 4d\ ^1P^\circ$
						56							76
6654.609	A	3	9.00	10.86	2-2	$3p\ ^1D - 6d\ ^1D^\circ$	8035.962	P		9.17	10.71	0-1	$3p\ ^1S - 6s\ ^1P^\circ$
						57							77
6601.884	P		9.00	10.88	2-2	$3p\ ^1D - 7s\ ^3P^\circ$	7987.889	A	2	9.17	10.72	0-1	$3p\ ^1S - 5d\ ^1P^\circ$
6617.241	A	0	9.00	10.88	2-1	58							78
6586.273	A	2	9.00	10.88	2-1	$3p\ ^1D - 7s\ ^1P^\circ$	7237.185	P		9.17	10.88	0-1	$3p\ ^1S - 7s\ ^1P^\circ$
						59							79
							7216.029	A	0	9.17	10.89	0-1	$3p\ ^1S - 6d\ ^1P^\circ$
													80

Multiplet Table

C1 - Continued

C1 - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 6829.136	P		9.17	10.99	0-1	$3p^1S - 8s^1P^\circ$ 81	Air 24443.38	P		9.63	10.14	2-2	$3d^1D^\circ - 4p^1D$ 92
6817.954	P		9.17	10.99	0-1	$3p^1S - 7d^1P^\circ$ 82	16021.64	B	3	9.63	10.40	2-	$3d^1D^\circ - 4f$ [$2\frac{1}{2}$]
							16004.81	B	2	9.63	10.41	2-3	93 [$3\frac{1}{2}$]
17918.38	B	4	9.33	10.02	2-3	$2p^3P^\circ - 4p^3D$ 83	12949.84	P		9.63	10.59	2-2	$3d^1D^\circ - 5p^1D$ 94
18021.87	P		9.33	10.02	1-2								
18090.06	P		9.33	10.02	0-1		11448.76	P		9.63	10.71	2-	$3d^1D^\circ - 5f$ [$2\frac{1}{2}$] 95
8960.75	A	2	9.33	10.71	2-	$2p^3P^\circ - 5f$ [$2\frac{1}{2}$]							
8959.66	P		9.33	10.71	1-2	84							
8904.34	A	2	9.33	10.72	2-	$2p^3P^\circ - 5f'$ [$2\frac{1}{2}$]	17505.64	B	3	9.70	10.41	3-4	$3d^3F^\circ - 4f$ [$3\frac{1}{2}$]
8903.20	A	1	9.33	10.72	1-2	85	17455.97	B	2	9.70	10.41	2-3	96
8891.73	P		9.33	10.72	2-	[$1\frac{1}{2}$]							
8890.67	A	2	9.33	10.72	1-		17323.51	B	2	9.70	10.41	3-4	$3d^3F^\circ - 4f'$ [$3\frac{1}{2}$]
8892.43	P		9.33	10.72	0-1		17274.99	B	3	9.70	10.41	2-3	97
							17338.56	B	10	9.70	10.42	4-5	[$4\frac{1}{2}$]
8510.445	A	1	9.33	10.79	2-3	$2p^3P^\circ - 6p^3D$ 86	17234.48	B	3	9.70	10.42	3-4	
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	$2p^3P^\circ - 6p^3P$ 87	17814.03	B	3	9.71	10.40	2-	$3d^3D^\circ - 4f$ [$2\frac{1}{2}$]
8437.106	P		9.33	10.80	1-1		17768.94	B	3	9.71	10.40	1-2	98
							17826.33	B	4	9.71	10.41	3-4	[$3\frac{1}{2}$]
							17793.26	P		9.71	10.41	2-3	
7993.420	A	3	9.33	10.88	2-	$2p^3P^\circ - 6f$ [$2\frac{1}{2}$]							
7992.526	A	0	9.33	10.88	1-2	88	17637.38	B	3	9.71	10.41	3-4	$3d^3D^\circ - 4f'$ [$3\frac{1}{2}$] 99
7952.188	A	3	9.33	10.89	2-	$2p^3P^\circ - 6f'$ [$2\frac{1}{2}$]							
7951.346	A	1	9.33	10.89	1-2	89							
7945.380	P		9.33	10.89	2-	[$1\frac{1}{2}$]	18320.67	B	8	9.74	10.41	3-4	$3d^1F^\circ - 4f'$ [$3\frac{1}{2}$]
7944.602	A	3	9.33	10.89	1-		18221.12	B	8	9.74	10.42	3-4	100 [$4\frac{1}{2}$]
7505.673	A	1	9.33	10.98	2-	$2p^3P^\circ - 7f$ [$2\frac{1}{2}$]							
7504.945	P		9.33	10.98	1-2	90	18926.54	B	3	9.76	10.42	1-2	$3d^1P^\circ - 4f'$ [$2\frac{1}{2}$]
7470.094	A	1	9.33	10.99	2-3	$2p^3P^\circ - 7f'$ [$2\frac{1}{2}$]	18844.42	B	2	9.76	10.42	1-2	101 [$1\frac{1}{2}$]
7465.445	A	1	9.33	10.99	1-2	91 [$1\frac{1}{2}$]							
							21259.89	B	8	9.83	10.42	2-3	$3d^3P^\circ - 4f'$ [$2\frac{1}{2}$]
							21295.27	B	1	9.83	10.42	1-2	102
							21191.41	B	4	9.83	10.42	1-	[$1\frac{1}{2}$]
							21211.55	B	2	9.83	10.42	0-1	

NSRDS-NBS 3, SECTION 3

CARBON, $Z = 6$

A C II Atomic Energy Levels

B C II Multiplet Table

Atomic Energy Levels

Part A

CARBON

C II

(BI sequence; 5 electrons)

 $Z = 6$ Ground state $1s^2 2s^2 2p^2 P_{01/2}^{\circ}$ $2p^2 P_{01/2}^{\circ}$ 196664.7 cm^{-1} , 508.480 \AA

24.383 eV

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

Herzberg has remeasured two groups of C II lines, one at 1760 \AA and one at 1335 \AA . 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 $2p^2 P^{\circ}$ and $2p^2 D$ 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 \AA to 1760 \AA 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

C II

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

Atomic Energy Levels

CII - Continued

CII - Continued

Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval
$2p^3$	$2p^3\ ^2P^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$	168729.53 168748.30	18.77	C III (1S_0)	<i>Limit</i>	.....	196664.7	
$2s^2(1S)4f$	$4f\ ^2F^\circ$	$2\frac{1}{2}, 3\frac{1}{2}$	168978.34		$2s\ 2p(^3P^\circ)3d$	$3d'\ ^2D^\circ$	$1\frac{1}{2}$ $2\frac{1}{2}$	198425.43 198436.31	10.88
$2s^2(1S)5s$	$5s\ ^2S$	$0\frac{1}{2}$	173347.84		$2s\ 2p(^3P^\circ)3d$	$3d'\ ^4P^\circ$	$2\frac{1}{2}$ $1\frac{1}{2}$ $0\frac{1}{2}$	198844.00 198865.25 198879.01	-21.25 -13.76
$2s^2(1S)5p$	$5p\ ^2P^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$	175287.39 175294.75	7.36	$2s\ 2p(^3P^\circ)3d$	$3d'\ ^2F^\circ$	$2\frac{1}{2}$ $3\frac{1}{2}$	199941.41 199983.24	41.83
$2s\ 2p(^3P^\circ)3s$	$3s'\ ^2P^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$	177774.59 177793.54	18.95	$2s\ 2p(^3P^\circ)3d$	$3d'\ ^2P^\circ$	$1\frac{1}{2}$ $0\frac{1}{2}$	202179.85 202204.52	-24.67
$2s^2(1S)5d$	$5d\ ^2D$	$1\frac{1}{2}$ $2\frac{1}{2}$	178495.11 178495.71	0.60	$2s\ 2p(^3P^\circ)4s$	$4s'\ ^4P^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$	209552.36 209576.46 209622.32	24.10 45.86
$2s^2(1S)5f$	$5f\ ^2F^\circ$	$2\frac{1}{2}, 3\frac{1}{2}$	178955.94		$2s\ 2p(^3P^\circ)4p$	$4p'\ ^2P$	$0\frac{1}{2}$ $1\frac{1}{2}$	214404.33 214429.95	25.62
$2s^2(1S)5g$	$5g\ ^2G$	$3\frac{1}{2}, 4\frac{1}{2}$	179073.05		$2s\ 2p(^3P^\circ)4p$	$4p'\ ^4D$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$	214759.91 214772.84 214795.27 214829.77	12.93 22.43 34.50
$2s^2(1S)6s$	$6s\ ^2S$	$0\frac{1}{2}$	181264.24		$2s\ 2p(^3P^\circ)4p$	$4p'\ ^4S$	$1\frac{1}{2}$	215767.77	
$2s\ 2p(^3P^\circ)3p$	$3p'\ ^4D$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$	181696.66 181711.03 181736.05 181772.41	14.37 25.02 36.36	$2s\ 2p(^3P^\circ)4p$	$4p'\ ^4P$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$	216362.84 216379.59 216400.57	16.75 20.98
$2s\ 2p(^3P^\circ)3p$	$3p'\ ^2P$	$0\frac{1}{2}$ $1\frac{1}{2}$	182023.86 182043.41	19.55	$2s\ 2p(^3P^\circ)4p$	$4p'\ ^2D$	$1\frac{1}{2}$ $2\frac{1}{2}$	216927 219556.54	
$2s^2(1S)6p$	$6p\ ^2P^\circ$	$0\frac{1}{2}, 1\frac{1}{2}$	182993.23		$2s\ 2p(^3P^\circ)4d$	$4d'\ ^4F^\circ$	$1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$	219570.15 219590.76 219619.88	13.61 20.61 29.12
$2s^2(1S)6d$	$6d\ ^2D$	$1\frac{1}{2}$ $2\frac{1}{2}$	184074.59 184075.28	0.69	$2s\ 2p(^3P^\circ)4d$	$4d'\ ^4D^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$	220125.51 220130.86 220139.41 220150.49	5.35 8.55 11.08
$2s^2(1S)6f$	$6f\ ^2F^\circ$	$2\frac{1}{2}, 3\frac{1}{2}$	184376.06		$2s\ 2p(^3P^\circ)4d$	$4d'\ ^2D^\circ$	$1\frac{1}{2}$ $2\frac{1}{2}$	220601.53 220614.51	12.98
$2s^2(1S)6g$	$6g\ ^2G$	$3\frac{1}{2}, 4\frac{1}{2}$	184449.27		$2s\ 2p(^3P^\circ)4d$	$4d'\ ^4P^\circ$	$2\frac{1}{2}$ $1\frac{1}{2}$ $0\frac{1}{2}$	220811.69 220832.15 220845.07	-20.46 -12.92
$2s^2(1S)6h$	$6h\ ^2H^\circ$	$4\frac{1}{2}, 5\frac{1}{2}$	184466.5		$2s\ 2p(^3P^\circ)4f$	$4f'\ ^2F$	$2\frac{1}{2}$ $3\frac{1}{2}$	221088.88 221097.92	9.04
$2s\ 2p(^3P^\circ)3p$	$3p'\ ^4S$	$1\frac{1}{2}$	184690.98		$2s\ 2p(^3P^\circ)4f$	$4f'\ ^4F$	$1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$	221093.95 221099.11 221105.73 221109.78	5.16 6.62 4.05
$2s^2(1S)7s$	$7s\ ^2S$	$0\frac{1}{2}$	185732.93		$2s\ 2p(^3P^\circ)4d$	$4d'\ ^2F^\circ$	$2\frac{1}{2}$ $3\frac{1}{2}$	221460.88 221503.33	42.45
$2s\ 2p(^3P^\circ)3p$	$3p'\ ^4P$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$	186427.35 186443.69 186466.02	16.34 22.33	$2s\ 2p(^3P^\circ)4f$	$4f'\ ^4G$	$2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$ $5\frac{1}{2}$	221544.81 221553.99 221575.61 221604.90	9.18 21.62 29.29
$2s^2(1S)7p$	$7p\ ^2P^\circ$	$0\frac{1}{2}, 1\frac{1}{2}$	186745.9		$2s\ 2p(^3P^\circ)4f$	$4f'\ ^2G$	$3\frac{1}{2}$ $4\frac{1}{2}$	221587.12 221625.72	38.60
$2s^2(1S)7f$	$7f\ ^2F^\circ$	$2\frac{1}{2}, 3\frac{1}{2}$	187641.6						
$2s^2(1S)7g$	$7g\ ^2G$	$3\frac{1}{2}, 4\frac{1}{2}$	187691.4						
$2s^2(1S)7h$	$7h\ ^2H^\circ$	$4\frac{1}{2}, 5\frac{1}{2}$	187701						
$2s\ 2p(^3P^\circ)3p$	$3p'\ ^2D$	$1\frac{1}{2}$ $2\frac{1}{2}$	188581.25 188615.07	33.82					
$2s^2(1S)8g$	$8g\ ^2G$	$3\frac{1}{2}, 4\frac{1}{2}$	189794.2						
$2s\ 2p(^3P^\circ)3d$	$3d'\ ^4F^\circ$	$1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$ $4\frac{1}{2}$	195752.58 195765.85 195785.74 195813.66	13.27 19.89 27.92					
$2s\ 2p(^3P^\circ)3d$	$3d'\ ^4D^\circ$	$0\frac{1}{2}$ $1\frac{1}{2}$ $2\frac{1}{2}$ $3\frac{1}{2}$	196557.87 196563.41 196571.82 196581.96	5.54 8.41 10.14					

Atomic Energy Levels

C II—Continued

C II—Continued

Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval
2s 2p(³ P°)4 <i>f</i>	4 <i>f</i> ' ⁴ D	3½	221698.48	-9.23	2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ⁴ D	3½	231523.87	-4.52
		2½	221707.71	-21.98			2½	231528.39	-22.8
		1½	221729.69	-13.10			1½	231551.2	-16
		0½	221742.79				0½	231567	
2s 2p(³ P°)4 <i>f</i>	4 <i>f</i> ' ² D	2½	221729.92	-22.34	2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ² D	2½	231551.2	-19.2
		1½	221752.26				1½	231570.4	
2s 2p(³ P°)4 <i>d</i>	4 <i>d</i> ' ² P°	1½	222258.8	-26.9	2s 2p(³ P°)6 <i>s</i>	6 <i>s</i> ' ⁴ P°	0½	233670.9	22.4
		0½	222285.7				1½	233693.3	47.4
								2½	233740.7
2s 2p(³ P°)5 <i>s</i>	5 <i>s</i> ' ⁴ P°	0½	225748.0	23.8	2s 2p(³ P°)6 <i>p</i>	6 <i>p</i> ' ⁴ D	0½	234998	13
		1½	225771.8	46.0			1½	235011	20
		2½	225817.8				2½	235031	36
				3½			235066.8		
2s 2p(³ P°)5 <i>p</i>	5 <i>p</i> ' ² P	0½	227881.21	26.50	2s 2p(³ P°)6 <i>p</i>	6 <i>p</i> ' ⁴ P	0½		
		1½	227907.71				1½		
				2½			235454.2		
2s 2p(³ P°)5 <i>p</i>	5 <i>p</i> ' ⁴ D	0½	228178.6	13.3	2s 2p(³ P°)6 <i>p</i>	6 <i>d</i> ' ⁴ D°	0½		
		1½	228191.9	19.9			1½		
		2½	228211.8	35.2			2½		
		3½	228246.97				3½	236446	
2s 2p(³ P°)5 <i>p</i>	5 <i>p</i> ' ⁴ S	1½	228656.84		2s 2p(³ P°)6 <i>d</i>	6 <i>d</i> ' ⁴ P°	0½		
2s 2p(³ P°)5 <i>p</i>	5 <i>p</i> ' ⁴ P	0½		20.5			1½		
		1½	228947.0				2½	236607	
		2½	228967.49						
2s 2p(³ P°)5 <i>d</i>	5 <i>d</i> ' ⁴ F°	1½	230419	14	2s 2p(³ P°)6 <i>f</i>	6 <i>f</i> ' ⁴ F	1½	236693	5
		2½	230433	25			2½	236698	9
		3½	230458	28			3½	236707	1
		4½	230485.5				4½	236708.1	
2s 2p(³ P°)5 <i>d</i>	5 <i>d</i> ' ⁴ D°	0½		7.5	2s 2p(³ P°)6 <i>f</i>	6 <i>f</i> ' ² F	2½	236693	10
		1½	230755.1	12.3			3½	236703	
		2½	230762.6						
		3½	230774.9		2s 2p(³ P°)6 <i>f</i>	6 <i>f</i> ' ⁴ G	2½	236813	10
			3½	236823.3			19.9		
			4½	236843.2			38.0		
2s 2p(³ P°)5 <i>d</i>	5 <i>d</i> ' ⁴ P°	2½	231052.9	-18.8	2s 2p(³ P°)6 <i>f</i>	6 <i>f</i> ' ² G	3½	236856.6	33.1
		1½	231071.7	-14.9			4½	236889.7	
		0½	231086.6						
2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ² F	2½	231209.25	7.95	2s 2p(³ P°)6 <i>f</i>	6 <i>f</i> ' ⁴ D	0½		
		3½	231217.20				1½		
								2½	236877.8
2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ⁴ F	1½	231213.1	3.5	.....	.....	.....	.....	.....
		2½	231216.62	8.51					
		3½	231225.13	3.54					
		4½	231228.67						
2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ⁴ G	2½	231437.7	13.6	C III (³ P° ₀)	<i>Limit</i>	.....	249031.7	.....
		3½	231451.3	22.2					
		4½	231473.5	28.8					
		5½	231502.3						
2s 2p(³ P°)5 <i>f</i>	5 <i>f</i> ' ² G	3½	231480.7	38.5	C III (³ P° ₁)			249055.4	
		4½	231519.2						

December 1969.

Atomic Energy Levels

C II Observed Terms

Config. $1s^2 +$	Observed Terms		
$2s\ 2p^2$ $2p^3$	$\left\{ \begin{array}{l} 2p^2\ ^2S \\ 2p^3\ ^4S^\circ \end{array} \right.$	$\begin{array}{l} 2p^2\ ^4P \\ 2p^2\ ^2P \\ 2p^3\ ^2P^\circ \end{array}$	$2p^2\ ^2D$ $2p^3\ ^2D^\circ$
	$ns\ (n \geq 3)$	$np\ (n \geq 2)$	$nd\ (n \geq 3)$
$2s^2\ (^1S)\ nl$ $2s\ 2p\ (^3P^\circ)\ nl'$	$3-7s\ ^2S$ $\left\{ \begin{array}{l} 3-6s'\ ^4P^\circ \\ 3s'\ ^2P^\circ \end{array} \right.$	$2-7p\ ^2P^\circ$ $\begin{array}{l} 3-5p'\ ^4S \\ 3-5p'\ ^2P \end{array}$	$3-6d\ ^2D$ $\begin{array}{l} 3-6p'\ ^4P \\ 3-6p'\ ^4D \\ 3-4p'\ ^2D \end{array}$
	$nf\ (n \geq 4)$	$ng\ (n \geq 5)$	$nh\ (n \geq 6)$
$2s^2\ (^1S)\ nl$ $2s\ 2p\ (^3P^\circ)\ nl'$	$4-7f\ ^2F^\circ$ $\left\{ \begin{array}{l} 4-6f'\ ^4D \\ 4, 5f'\ ^2D \end{array} \right.$	$5-8g\ ^2G$ $\begin{array}{l} 4-6f'\ ^4F \\ 4-6f'\ ^2F \end{array}$	$3-6d'\ ^4P^\circ$ $3, 4d'\ ^2P^\circ$ $3-6d'\ ^4D^\circ$ $3, 4d'\ ^2D^\circ$ $3-5d'\ ^4F^\circ$ $3, 4d'\ ^2F^\circ$

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

C II

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Vac						
2325.398	P		0.01	5.34	1½-2½	2p ²P°-2p² ⁴P	577.086	P	(2)	0.01	21.49	1½-0½	2p ²P°-5s ²S
2323.500	P		0.00	5.33	0½-1½	UV 0.01	576.875	P	(1)	0.00	21.49	0½-0½	UV 6.01
2326.930	P		0.01	5.33	1½-1½								
2324.689	P		0.00	5.33	0½-0½		560.4367	P	(4)	0.01	22.13	1½-2½	2p ²P°-5d ²D
2328.122	P		0.01	5.33	1½-0½		560.2394	P	(2)	0.00	22.13	0½-1½	UV 6.02
							560.439	P		0.01	22.13	1½-1½	
Vac													
1335.7077‡	B	(300)	0.01	9.29	1½-2½	2p ²P°-2p² ²D	551.874	P	(0)	0.01	22.47	1½-0½	2p ²P°-6s² S
1334.5323	B	(150)	0.00	9.29	0½-1½	UV 1	551.681	P		0.00	22.47	0½-0½	UV 6.03
1335.6625	B	(30)	0.01	9.29	1½-1½								
1037.0182	P	(150)	0.01	11.96	1½-0½	2p ²P°-2p² ²S	549.5110	P	(5)	0.01	22.57	1½-1½	2p ²P°-3p' ²P
1036.3367	P	(80)	0.00	11.96	0½-0½	UV 2	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	
904.1416	P	(150)	0.01	13.72	1½-1½	2p ²P°-2p² ²P							
903.9616	P	(60)	0.00	13.72	0½-0½	UV 3	543.443	P	(3d)	0.01	22.82	1½-2½	2p ²P°-6d ²D
904.4801	P	(30)	0.01	13.72	1½-0½		543.258	P	(2d)	0.00	22.82	0½-1½	UV 6.05
903.6235	P	(30)	0.00	13.72	0½-1½		543.445	P		0.01	22.82	1½-1½	
858.5590	P	(20)	0.01	14.45	1½-0½	2p ²P°-3s ²S	530.359	P	(4d)	0.01	23.38	1½-2½	2p ²P°-3p' ²D
858.0918	P	(10)	0.00	14.45	0½-0½	UV 4	530.275	P	(3d)	0.00	23.38	0½-1½	UV 6.06
							530.454	P		0.01	23.38	1½-1½	
687.3453	P	(50)	0.01	18.05	1½-2½	2p ²P°-3d ²D							
687.0526	P	(30)	0.00	18.05	0½-1½	UV 5	466.491	P	(2)	0.01	26.59	1½-1½	2p ²P°-4p' ²P
687.3521	P	(6)	0.01	18.05	1½-1½		466.408	P	(1)	0.00	26.58	0½-0½	UV 6.07
							466.546	P	(0)	0.01	26.58	1½-0½	
636.2511	P	(2)	0.01	19.49	1½-0½	2p ²P°-4s ²S	466.353	P	(0)	0.00	26.59	0½-1½	
635.9945	P	(1)	0.00	19.49	0½-0½	UV 5.01							
595.0219	P	(9)	0.01	20.84	1½-2½	2p ²P°-4d ²D	461.12	C	(1d)	0.01	26.89	1½-2½	2p ²P°-4p ²D
594.8000	P	(5)	0.00	20.84	0½-1½	UV 6							UV 6.08
595.0245	P	(1)	0.01	20.84	1½-1½								

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
438.896	P	(1d)	0.01	28.26	1½-1½	2p ²P°-5p' ²P UV 6.09	532.705	P } P } P }	(3d)	5.34	28.61	2½-3½	2p² ⁴P - 5d' ⁴D° UV 9.06
438.825	P		0.00	28.25	0½-0½		532.659			5.33	28.61	1½-2½	
							532.618			5.33	28.61	0½-1½	
1010.371	P	(10+)	5.34	17.61	2½-1½	2p² ⁴P - 2p³ ⁴S° UV 7	531.917	C } P } P }	(1d)	5.34	28.65	2½-2½	2p² ⁴P - 5d' ⁴P° UV 9.07
1010.083	P	(10)	5.33	17.61	1½-1½		531.784			5.33	28.65	1½-1½	
1009.858	P	(9)	5.33	17.61	0½-1½		531.679			5.33	28.65	0½-0½	
806.568	P	(7)*	5.34	20.71	2½-2½	2p² ⁴P - 3s' ⁴P° UV 8	531.864	P } P } P } P } P }	(0d)	5.34	28.65	2½-1½	
806.676	P	(4)	5.33	20.70	1½-1½		531.742			5.33	28.65	1½-0½	
806.686	P		5.33	20.70	0½-0½		531.837			5.33	28.65	1½-2½	
806.860	P	(6)	5.34	20.70	2½-1½		531.721			5.33	28.65	0½-1½	
806.830	P		5.33	20.70	1½-0½								
806.384	C	(5)	5.33	20.71	1½-2½		517.069			C	(1d)	5.34		29.31	2½-3½	2p² ⁴P - 6d' ⁴D° UV 9.08
806.533	P	(7)*	5.33	20.70	0½-1½								
651.345	P	(8)	5.34	24.37	2½-3½	2p² ⁴P - 3d' ⁴D° UV 9	516.652	C	(0d)	5.34	29.33	2½-2½	2p² ⁴P - 6d' ⁴P° UV 9.09
651.269	P	(7)*	5.33	24.37	1½-2½								
651.211	P	(7-)*	5.33	24.37	0½-1½								
651.389	P		5.34	24.37	2½-2½		1760.3954	B	(6)	9.29	16.33	2½-1½	2p² ²D - 3p ²P° UV 10
651.304	P	(7)*	5.33	24.37	1½-1½		1760.8191	B	(3)	9.29	16.33	1½-0½	
651.234	P	(7-)*	5.33	24.37	0½-0½		1760.473	P	(1)	9.29	16.33	1½-1½	
651.424	P		5.34	24.37	2½-1½								
651.327	P		5.33	24.37	1½-0½		1323.9513	P	(9)	9.29	18.65	2½-2½	2p² ²D - 2p³ ²D° UV 11
							1323.9059	P	(6)	9.29	18.66	1½-1½	
641.888	P	(6+)	5.34	24.65	2½-2½	2p² ⁴P - 3d' ⁴P° UV 9.01	1323.8617	P	(1)	9.29	18.66	2½-1½	
641.684	P		5.33	24.66	1½-1½		1323.9955	P	(1)	9.29	18.65	1½-2½	
641.537	P		5.33	24.66	0½-0½								
641.800	P	(6)*	5.34	24.66	2½-1½		1141.625	P	(3)	9.29	20.15	2½-1½	2p² ²D - 4p ²P° UV 11.01
641.627	P	(6)*	5.33	24.66	1½-0½		1141.744	P	(2)	9.29	20.15	1½-0½	
641.771	P	(6)*	5.33	24.65	1½-2½		1141.657	P		9.29	20.15	1½-1½	
641.593	P	(6)*	5.33	24.66	0½-1½								
600.353	P	(3)	5.34	25.99	2½-2½	2p² ⁴P - 4s' ⁴P° UV 9.02	1065.8913	P	(7)	9.29	20.92	2½-1½	2p² ²D - 2p³ ²P° UV 12
600.416	P		5.33	25.98	1½-1½		1066.1332	P	(5)	9.29	20.92	1½-0½	
600.424	P		5.33	25.98	0½-0½		1065.9199	P	(1)	9.29	20.92	1½-1½	
600.518	P	(2)*	5.34	25.98	2½-1½		1063.284	P	(0d)	9.29	20.95	2½-	2p² ²D - 4f ²F° UV 12.01
600.503	P		5.33	25.98	1½-0½	1063.313	P	9.29		20.95	1½-2½		
600.251	P	(1)	5.33	25.99	1½-2½								
600.337	P		5.33	25.98	0½-1½		996.367	P		9.29	21.73	2½-1½	2p² ²D - 5p ²P° UV 12.02
							996.465	P		9.29	21.73	1½-0½	
564.663	P	(5w)	5.34	27.29	2½-3½	2p² ⁴P - 4d' ⁴D° UV 9.03							
564.608	P		5.33	27.29	1½-2½		972.163	P		9.29	22.04	2½-1½	2p² ²D - 3s' ²P° UV 12.03
564.565	P		5.33	27.29	0½-1½		972.366	P		9.29	22.04	1½-0½	
564.698	P		5.34	27.29	2½-2½								
564.635	P		5.33	27.29	1½-1½		961.300	P		9.29	22.19	2½-	2p² ²D - 5f ²F° UV 12.04
564.582	P		5.33	27.29	0½-0½		961.323	P		9.29	22.19	1½-2½	
562.562	P	(3+)	5.34	27.38	2½-2½	2p² ⁴P - 4d' ⁴P° UV 9.04	809.676	P	(4)	9.29	24.60	2½-2½	2p² ²D - 3d' ²D° UV 12.05
562.408	P		5.33	27.38	1½-1½		809.764	P	(3+)	9.29	24.60	1½-1½	
562.298	P		5.33	27.38	0½-0½	809.747	P	9.29		24.60	2½-1½		
562.497	P	(3)*	5.34	27.38	2½-1½	809.692	P	9.29		24.60	1½-2½		
562.367	P	(3)*	5.33	27.38	1½-0½								
562.473	P	(3)*	5.33	27.38	1½-2½		799.660	P	(5-)	9.29	24.79	2½-3½	2p² ²D - 3d' ²F° UV 12.06
562.338	P	(3)*	5.33	27.38	0½-1½		799.944	P	(4)	9.29	24.79	1½-2½	
							799.928	P		9.29	24.79	2½-2½	
547.153	P	(0+)	5.34	28.00	2½-2½	2p² ⁴P - 5s' ⁴P° UV 9.05							
547.206	P		5.33	27.99	1½-1½		785.856	P		9.29	25.07	2½-1½	2p² ²D - 3d' ²P° UV 12.07
547.211	P		5.33	27.99	0½-0½	785.719	P		9.29	25.07	1½-0½		
547.291	P	(0)	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		686.415	P	(2d)	9.29	27.35	2½-2½	2p² ²D - 4d' ²D° UV 12.08
							686.488	P		9.29	27.35	1½-1½	

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 682.253 682.462	P P		9.29 9.29	27.46 27.46	2½-3½ 1½-2½	2p²²D - 4d'²F° UV 12.09	Vac 1915.318 1916.007	P P		14.45 14.45	20.92 20.92	0½-1½ 0½-0½	3s²S - 2p³²P° UV 14.07
Air 2836.710 2837.603	A A	20 18	11.96 11.96	16.33 16.33	0½-1½ 0½-0½	2p²²S - 3p²P° UV 13	1632.496 1633.001	P P		14.45 14.45	22.04 22.04	0½-1½ 0½-0½	3s²S - 3s'²P° UV 14.08
Vac 1514.444 1514.597	P P		11.96 11.96	20.15 20.15	0½-1½ 0½-0½	2p²²S - 4p²P° UV 13.01	Air 7236.42 7231.32 7237.17	A A A	20 18 7	16.33 16.33 16.33	18.05 18.05 18.05	1½-2½ 0½-1½ 1½-1½	3p²P° - 3d²D 3
1383.996 1384.355	P P		11.96 11.96	20.92 20.92	0½-1½ 0½-0½	2p²²S - 2p³²P° UV 13.02	3920.693 3918.978	A A	18 15	16.33 16.33	19.49 19.49	1½-0½ 0½-0½	3p²P° - 4s²S 4
1230.015 1230.302	P P		11.96 11.96	22.04 22.04	0½-1½ 0½-0½	2p²²S - 3s'²P° UV 13.03	2747.282 2746.488	A A	12/ 10	16.33 16.33	20.84 20.84	1½- 0½-1½	3p²P° - 4d²D UV 15
946.198 945.977	P P	(2) (1)	11.96 11.96	25.07 25.07	0½-1½ 0½-0½	2p²²S - 3d'²P° UV 13.04	2402.402 2401.761	A A	7/ 5/	16.33 16.33	21.49 21.49	1½-0½ 0½-0½	3p²P° - 5s²S UV 16
795.134 794.664	C C	(1) (0)	11.96 11.96	27.56 27.56	0½-1½ 0½-0½	2p²²S - 4d'²P° UV 13.05	2137.897 2137.417	A A	5h 3h	16.33 16.33	22.13 22.13	1½- 0½-1½	3p²P° - 5d²D UV 17
Air 4744.77 4737.97 4747.28 4735.46	A A A A	5 3 2 2	13.72 13.72 13.72 13.72	16.33 16.33 16.33 16.33	1½-1½ 0½-0½ 1½-0½ 0½-1½	2p²²P - 3p²P° 1	2018.38 2017.94	A A	2/ 1/	16.33 16.33	22.47 22.47	1½-0½ 0½-0½	3p²P° - 6s²S UV 18
2512.065 2509.121 2511.734	A A A	12 10 5	13.72 13.72 13.72	18.65 18.66 18.66	1½-2½ 0½-1½ 1½-1½	2p²²P - 2p³²D° UV 14	Vac 1987.76 1988.09 1988.51 1987.33	A A A A	3 2 1 1	16.33 16.33 16.33 16.33	22.57 22.57 22.57 22.57	1½-1½ 0½-0½ 1½-0½ 0½-1½	3p²P° - 3p'²P UV 19
Vac 1928.305 1927.015	P P		13.72 13.72	20.15 20.15	1½-1½ 0½-0½	2p²²P - 4p²P° UV 14.01	1758.101 1758.802	P P		16.33 16.33	23.38 23.38	1½-2½ 0½-1½	3p²P° - 3p'²D UV 20
1721.682 1721.012 1722.238 1720.456	P P P P	(2) (1) (0) (0)	13.72 13.72 13.72 13.72	20.92 20.92 20.92 20.92	1½-1½ 0½-0½ 1½-0½ 0½-1½	2p²²P - 2p³²P° UV 14.02	Air 2249.578 2250.713 2251.539	P P P		17.61 17.61 17.61	22.90 23.12 23.11	1½-1½ 1½-2½ 1½-1½ 1½-0½	2p³⁴S° - 3p'⁴S UV 21
1489.692 1489.194	P P		13.72 13.72	22.04 22.04	1½-1½ 0½-0½	2p²²P - 3s'²P° UV 14.03	2249.578 2250.713 2251.539	P P P		17.61 17.61 17.61	23.12 23.12 23.11	1½-2½ 1½-1½ 1½-0½	2p³⁴S° - 3p'⁴P UV 22
1139.332 1138.936 1139.473	P C P	(3) (2) (0)	13.72 13.72 13.72	24.60 24.60 24.60	1½-2½ 0½-1½ 1½-1½	2p²²P - 3d'²D° UV 14.04	5889.77 5891.59 5889.27	A A A	15 12 6	18.05 18.05 18.05	20.15 20.15 20.15	2½-1½ 1½-0½ 1½-1½	3d²D - 4p²P° 5
1092.726 1091.937 1092.431 1092.232	P P P P	(2) (1) (0) (0)	13.72 13.72 13.72 13.72	25.07 25.07 25.07 25.07	1½-1½ 0½-0½ 1½-0½ 0½-1½	2p²²P - 3d'²P° UV 14.05	4267.258 4267.003	A A	20 18	18.05 18.05	20.95 20.95	2½-3½ 1½-2½	3d²D - 4f²F° 6
Air 6578.05 6582.88	A A	18 15	14.45 14.45	16.33 16.33	0½-1½ 0½-0½	3s²S - 3p²P° 2	3361.051 3361.721 3360.891	A A A	8 6 3	18.05 18.05 18.05	21.73 21.73 21.73	2½-1½ 1½-0½ 1½-1½	3d²D - 5p²P° 7
2173.848 2174.168	A A	5 3	14.45 14.45	20.15 20.15	0½-1½ 0½-0½	3s²S - 4p²P° UV 14.06	3100.570 3102.250 2992.618	A P A	2 18h	18.05 18.05 18.05	22.04 22.04 22.19	2½-1½ 1½-0½	3d²D - 3s'²P° 7.01
													3d²D - 5f²F°

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 2669.960	A	3l	18.05	22.69	2½-1½	3d ²D - 6p ²P° UV 23	Air 5662.47 5648.07 5640.55	A A A	12 10 8	20.71 20.70 20.70	22.90 22.90 22.90	2½-1½ 1½-1½ 0½-1½	3s' ⁴P° - 3p' ⁴S 15
2574.826	A	10hl	18.05	22.86		3d ²D - 6f ²F° UV 24	5145.16 5139.17	A A	15 9	20.71 20.70	23.12 23.12	2½-2½ 1½-1½	3s' ⁴P° - 3p' ⁴P 16
2426.70	A	2l	18.05	23.15		3d ²D - 7p ²P° UV 25	5137.26 5151.09	A A	7 13	20.70 20.71	23.11 23.12	0½-0½ 2½-1½	
2375.08	A	4hl	18.05	23.26		3d ²D - 7f ²F° UV 26	5143.49 5133.28 5132.94	A A A	12 12 12	20.70 20.70 20.70	23.11 23.12 23.12	1½-0½ 1½-2½ 0½-1½	
3165.467	A	9	18.65	22.57	2½-1½	2p³ ²D° - 3p' ²P	2091.63	A	2	20.71	26.63	2½-3½	3s' ⁴P° - 4p' ⁴D
3167.931	A	8	18.66	22.57	1½-0½	9	*2091.17	A	2	20.70	26.63	1½-2½	UV 28
3165.974	A	4	18.66	22.57	1½-1½		*2091.17 2093.13	A A	2 1	20.70 20.71	26.63 26.63	0½-1½ 2½-2½	
2620.20	A	3hl	18.65	23.38	2½-2½	2p³ ²D° - 3p' ²D							
2622.90	A	2hl	18.66	23.38	1½-1½	UV 27							
8682.56	A	8	19.49	20.92	0½-1½	4s ²S - 2p³ ²P°	13942.61	P		20.84	21.73	2½-1½	4d ²D - 5p ²P°
8696.71	A	5	19.49	20.92	0½-0½	9.01	13955.55	P		20.84	21.73	1½-0½	16.01
5535.35	A	5	19.49	21.73	0½-1½	4s ²S - 5p ²P°	9229.81	P		20.84	22.19	2½-	4d ²D - 5f ²F°
5537.61	A	3	19.49	21.73	0½-0½	10	9229.20	P		20.84	22.19	1½-2½	16.02
4862.57	A	4	19.49	22.04	0½-1½	4s ²S - 3s' ²P°	6723.65	A	1h	20.84	22.69	2½-1½	4d ²D - 6p ²P°
4867.07	A	2	19.49	22.04	0½-0½	10.01							16.03
9236.818	P		20.15	21.49	1½-0½	4p ²P° - 5s ²S	6151.43	A	4hl	20.84	22.86		4d ²D - 6f ²F°
9231.120	P		20.15	21.49	0½-0½	10.02	5368.58	A	1uh	20.84	23.15		16.04
6259.59	A	4h	20.15	22.13	1½-2½	4p ²P° - 5d ²D	5122.15	A	2Hl	20.84	23.26		4d ²D - 7p ²P°
6257.18	A	2h	20.15	22.13	0½-1½	10.03							16.05
5334.79	A	6l	20.15	22.47	1½-0½	4p ²P° - 6s ²S	3137.92	A	1h	20.84	24.79	2½-3½	4d ²D - 3d' ²F°
5332.89	A	4l	20.15	22.47	0½-0½	11	3142.04	A	0h	20.84	24.79	1½-2½	16.07
5121.82	A	5	20.15	22.57	1½-1½	4p ²P° - 3p' ²P							
5125.20	A	4	20.15	22.57	0½-0½	12	7519.50	A	7	20.92	22.57	1½-1½	2p³ ²P° - 3p' ²P
5126.93	A	2	20.15	22.57	1½-0½		*7519.86	A	4l	20.92	22.57	0½-0½	16.08
*5120.10	A	3l	20.15	22.57	0½-1½		7530.60	A	2	20.92	22.57	1½-0½	
4638.91	A	2hl	20.15	22.82	1½-2½	4p ²P° - 6d ²D	7508.90	A	3	20.92	22.57	0½-1½	
4637.63	A	1hl	20.15	22.82	0½-1½	12.01							2p³ ²P° - 3p' ²D
4307.59	A	2hl	20.15	23.03	1½-0½	4p ²P° - 7s ²S	5032.07	A	7hl	20.92	23.38	1½-2½	17
4306.33	A	1hl	20.15	23.03	0½-0½	12.02	5035.91	A	5hl	20.92	23.38	0½-1½	
3831.743	A	8hl	20.15	23.38	1½-2½	4p ²P° - 3p' ²D	5040.74	A	2hl	20.92	23.38	1½-1½	
3835.730	A	6hl	20.15	23.38	0½-1½	13	2188.39	A	2	20.92	26.59	1½-1½	2p³ ²P° - 4p' ²P
3836.683	A	2hl	20.15	23.38	1½-1½		2188.72	A	1	20.92	26.58	0½-0½	UV 29
6783.90	A	10	20.71	22.54	2½-3½	3s' ⁴P° - 3p' ⁴D	2189.62	A	1	20.92	26.58	1½-0½	
6779.93	A	8	20.70	22.53	1½-2½	14	2187.48	A	1	20.92	26.59	0½-1½	
6780.61	A	5	20.70	22.53	0½-1½		10504.23	P		20.95	22.13	-3½	4f ²F° - 5d ²D
6800.68	A	7	20.71	22.53	2½-2½		10504.89	P		20.95	22.13	2½-1½	17.01
6791.47	A	7	20.70	22.53	1½-1½		9903.46	P		20.95	22.20		4f ²F° - 5g ²G
6787.22	A	6	20.70	22.53	0½-0½								17.02
6812.29	A	3	20.71	22.53	2½-1½		6622.05	A	1H	20.95	22.82		4f ²F° - 6d ²D
6798.11	A	3	20.70	22.53	1½-0½								17.03

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 6461.95	A	5Hl	20.95	22.87		4f ² F° - 6g ² G 17.04	Air *7119.90	A	12	22.54	24.28	3½ - 4½	3p' ⁴ D - 3d' ⁴ F° 20
6454.77	A	1Hs	20.95	22.87		4f ² F° - 6h ² H° 17.05F	7115.63	A	10	22.53	24.27	2½ - 3½	
5342.40	A	2Hl	20.95	23.27		4f ² F° - 7g ² G 17.06	7113.04	A	7	22.53	24.27	1½ - 2½	
5339.85	A	1Hs	20.95	23.27		4f ² F° - 7h ² H° 17.07F	7112.48	A	6	22.53	24.27	0½ - 1½	
4802.70	A	1H	20.95	23.53		4f ² F° - 8g ² G 17.08	7134.11	A	6	22.54	24.27	3½ - 3½	
10364.81	P		21.49	22.69	0½ - 1½	5s ² S - 6p ² P° 17.09	7125.73	A	7	22.53	24.27	2½ - 2½	
7461.75	P		21.49	23.15	0½ -	5s ² S - 7p ² P° 17.10	*7119.90	A	12	22.53	24.27	1½ - 1½	
11385.59	P		21.73	22.82	1½ - 2½	5p ² P° - 6d ² D 17.11	7144.19	A	1	22.54	24.27	3½ - 2½	
11377.07	P		21.73	22.82	0½ - 1½		7132.45	A	1	22.53	24.27	2½ - 1½	
9577.59	P		21.73	23.03	1½ - 0½	5p ² P° - 7s ² S 17.12	6750.55	A	8	22.54	24.37	3½ - 3½	3p' ⁴ D - 3d' ⁴ D° 21
9570.84	P		21.73	23.03	0½ - 0½		6738.62	A	6	22.53	24.37	2½ - 2½	
7505.31	A	2hl	21.73	23.38	1½ - 2½	5p ² P° - 3p' ² D 17.13	6731.07	A	5	22.53	24.37	1½ - 1½	
*7519.86	A	4l	21.73	23.38	0½ - 1½		*6727.19	A	4	22.53	24.37	0½ - 0½	
2554.478	A	3	21.73	26.59	1½ - 1½	5p ² P° - 4p' ² P UV 30	6755.16	A	3	22.54	24.37	3½ - 2½	3p' ⁴ D - 3d' ⁴ P° 22
2555.66	A	1	21.73	26.58	0½ - 0½		6742.43	A	3	22.53	24.37	2½ - 1½	
2556.12	A	0	21.73	26.58	1½ - 0½		6733.58	A	2	22.53	24.37	1½ - 0½	
9238.30	P		22.04	23.38	1½ - 2½	3s' ² P° - 3p' ² D 17.14	6734.00	A	2	22.53	24.37	2½ - 3½	
9251.01	P		22.04	23.38	0½ - 1½		*6727.19	A	4	22.53	24.37	1½ - 2½	
2728.707	A	4	22.04	26.59	1½ - 1½	3s' ² P° - 4p' ² P UV 31	6724.56	A	2	22.53	24.37	0½ - 1½	
2729.213	A	2	22.04	26.58	0½ - 0½		5856.04	A	5	22.54	24.65	3½ - 2½	3p' ⁴ D - 4s' ⁴ P° 23
2730.61	A	1	22.04	26.58	1½ - 0½		5836.35	A	4	22.53	24.66	2½ - 1½	
2727.36	A	2w	22.04	26.59	0½ - 1½		*5823.14	A	2	22.53	24.66	1½ - 0½	
10930.87	P		22.13	23.26	2½ -	5d ² D - 7f ² F° 17.15	5843.61	A	2	22.53	24.65	2½ - 2½	
10930.15	P		22.13	23.26	1½ - 2½		5827.85	A	2	22.53	24.66	1½ - 1½	
11444.54	P		22.19	23.27		5f ² F° - 7g ² G 17.16	5818.30	A	2	22.53	24.66	0½ - 0½	
11587.00	P		22.20	23.27		5g ² G - 7h ² H° 17.17	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' ⁴ D - 4d' ⁴ F° UV 32
							*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' ⁴ D - 4d' ⁴ F° 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' ⁴ D - 4d' ⁴ D° 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	

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
2269.70	A	2	22.54	28.00	$3\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4D - 5s' \ ^4P^\circ$	4317.260	A	8	23.12	25.99	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 4s' \ ^4P^\circ$
*2270.20	A	2	22.53	27.99	$2\frac{1}{2}-1\frac{1}{2}$	UV 34	4321.647	A	3	23.12	25.98	$1\frac{1}{2}-1\frac{1}{2}$	28
*2270.20	A	2	22.53	27.99	$1\frac{1}{2}-0\frac{1}{2}$		4323.102	A	3	22.11	25.98	$0\frac{1}{2}-0\frac{1}{2}$	
2267.77	A	0	22.53	28.00	$2\frac{1}{2}-2\frac{1}{2}$		4325.827	A	4	23.12	25.98	$2\frac{1}{2}-1\frac{1}{2}$	
2268.91	A	1	22.53	27.99	$1\frac{1}{2}-1\frac{1}{2}$		4326.156	A	5	23.12	25.98	$1\frac{1}{2}-0\frac{1}{2}$	
2269.36	A	0	22.53	27.99	$0\frac{1}{2}-0\frac{1}{2}$		4313.100	A	6	23.12	25.99	$1\frac{1}{2}-2\frac{1}{2}$	
2266.53	P		22.53	28.00	$1\frac{1}{2}-2\frac{1}{2}$		4318.600	A	5	23.11	25.98	$0\frac{1}{2}-1\frac{1}{2}$	
2268.15	P		22.53	27.99	$0\frac{1}{2}-1\frac{1}{2}$								
2052.16	A	2h	22.54	28.58	$3\frac{1}{2}-4\frac{1}{2}$	$3p' \ ^4D - 5d' \ ^4F^\circ$	2967.868	A	7	23.12	27.29	$2\frac{1}{2}-3\frac{1}{2}$	$3p' \ ^4P - 4d' \ ^4D^\circ$
*2051.79	A	2h	22.53	28.57	$2\frac{1}{2}-3\frac{1}{2}$	UV 35	2966.871	A	5	23.12	27.29	$1\frac{1}{2}-2\frac{1}{2}$	UV 40
*2051.79	A	2h	22.53	28.57	$1\frac{1}{2}-2\frac{1}{2}$		2966.187	A	3	23.11	27.29	$0\frac{1}{2}-1\frac{1}{2}$	
*2051.79	A	2h	22.53	28.27	$0\frac{1}{2}-1\frac{1}{2}$		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	$0\frac{1}{2}-0\frac{1}{2}$	
6098.51	A	9	22.57	24.60	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^2P - 3d' \ ^2D^\circ$	2969.59	A	0	23.12	27.29	$2\frac{1}{2}-1\frac{1}{2}$	
6095.29	A	7	22.57	24.60	$0\frac{1}{2}-1\frac{1}{2}$	24	2968.094	P		23.12	27.29	$1\frac{1}{2}-0\frac{1}{2}$	
6102.56	A	4	22.57	24.60	$1\frac{1}{2}-1\frac{1}{2}$								
4964.73	A	4	22.57	25.07	$1\frac{1}{2}-1\frac{1}{2}$	$3p' \ ^2P - 3d' \ ^2P^\circ$	2910.729	A	3	23.12	27.38	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 4d' \ ^4P^\circ$
4953.85	A	3	22.57	25.07	$0\frac{1}{2}-0\frac{1}{2}$	25	2907.09	A	1	23.12	27.38	$1\frac{1}{2}-1\frac{1}{2}$	UV 41
4958.67	A	1	22.57	25.07	$1\frac{1}{2}-0\frac{1}{2}$		2904.629	P		23.11	27.38	$0\frac{1}{2}-0\frac{1}{2}$	
4959.92	A	1	22.57	25.07	$0\frac{1}{2}-1\frac{1}{2}$		*2908.957	A	2w	23.12	27.38	$2\frac{1}{2}-1\frac{1}{2}$	
							2906.011	A	2	23.12	27.38	$1\frac{1}{2}-0\frac{1}{2}$	
2591.845	A	4	22.57	27.35	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^2P - 4d' \ ^2D^\circ$	*2908.957	A	2w	23.12	27.38	$1\frac{1}{2}-2\frac{1}{2}$	
2591.410	A	2	22.57	27.35	$0\frac{1}{2}-1\frac{1}{2}$	UV 36	2905.715	A	2	23.11	27.38	$0\frac{1}{2}-1\frac{1}{2}$	
2592.71	A	1	22.57	27.35	$1\frac{1}{2}-1\frac{1}{2}$								
							2540.39	A	3	23.12	28.00	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 5s' \ ^4P^\circ$
							2541.95	P		23.12	27.99	$1\frac{1}{2}-1\frac{1}{2}$	UV 42
							2542.43	P		23.11	27.99	$0\frac{1}{2}-0\frac{1}{2}$	
7063.70	A	8	22.90	24.65	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4S - 3d' \ ^4P^\circ$	*2543.45	A	2	23.12	27.99	$2\frac{1}{2}-1\frac{1}{2}$	
7053.09	A	6	22.90	24.66	$1\frac{1}{2}-1\frac{1}{2}$	26	*2543.45	A	2	23.12	27.99	$1\frac{1}{2}-0\frac{1}{2}$	
7046.26	A	4	22.90	24.66	$1\frac{1}{2}-0\frac{1}{2}$		2538.98	A	2	23.12	28.00	$1\frac{1}{2}-2\frac{1}{2}$	
4009.884	A	7	22.90	25.99	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4S - 4s' \ ^4P^\circ$	2540.88	A	1	23.11	27.99	$0\frac{1}{2}-1\frac{1}{2}$	
4017.278	A	5	22.90	25.98	$1\frac{1}{2}-1\frac{1}{2}$	27							
4021.167	A	3	22.90	25.98	$1\frac{1}{2}-0\frac{1}{2}$		*2256.19	A	2h	23.12	28.61	$2\frac{1}{2}-3\frac{1}{2}$	$3p' \ ^4P - 5d' \ ^4D^\circ$
							2255.68	A	1h	23.12	28.61	$1\frac{1}{2}-2\frac{1}{2}$	UV 43
2767.673	A	3	22.90	27.38	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4S - 4d' \ ^4P^\circ$	2255.23	A	0h	23.11	28.61	$0\frac{1}{2}-1\frac{1}{2}$	
2766.118	A	2	22.90	27.38	$1\frac{1}{2}-1\frac{1}{2}$	UV 37	2256.79	A	0h	23.12	28.61	$2\frac{1}{2}-2\frac{1}{2}$	
2765.120	A	1	22.90	27.38	$1\frac{1}{2}-0\frac{1}{2}$		*2256.19	A	2h	23.12	28.61	$1\frac{1}{2}-1\frac{1}{2}$	
2430.78	A	1	22.90	28.00	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4S - 5s' \ ^4P^\circ$							
2433.49	A	0	22.90	27.99	$1\frac{1}{2}-1\frac{1}{2}$	UV 38	2242.10	A	1h	23.12	28.65	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 5d' \ ^4P^\circ$
2434.90	P		22.90	27.99	$1\frac{1}{2}-0\frac{1}{2}$		*2241.05	A	1h	23.12	28.65	$2\frac{1}{2}-1\frac{1}{2}$	UV 44
							*2241.05	A	1h	23.12	28.65	$1\frac{1}{2}-2\frac{1}{2}$	
2156.28	A	1h	22.90	28.65	$1\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4S - 5d' \ ^4P^\circ$							
2155.39	A	0h	22.90	28.65	$1\frac{1}{2}-1\frac{1}{2}$	UV 39							
2154.70	A	0h	22.90	28.65	$1\frac{1}{2}-0\frac{1}{2}$		2114.72	A	0h	23.12	28.98	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 6s' \ ^4P^\circ$
													UV 45
9882.68	P		23.12	24.37	$2\frac{1}{2}-3\frac{1}{2}$	$3p' \ ^4P - 3d' \ ^4D^\circ$							
9870.78	P		23.12	24.37	$1\frac{1}{2}-2\frac{1}{2}$	27.01							
9863.06	P		23.11	24.37	$0\frac{1}{2}-1\frac{1}{2}$		8793.8	A	1H	23.38	24.79	$2\frac{1}{2}-3\frac{1}{2}$	$3p' \ ^2D - 3d' \ ^2F^\circ$
							8799.9	A	0H	23.38	24.79	$1\frac{1}{2}-2\frac{1}{2}$	28.01
8076.64	A	8	23.12	24.65	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^4P - 3d' \ ^4P^\circ$							
8048.32	A	3	23.12	24.66	$1\frac{1}{2}-1\frac{1}{2}$	27.02							
8028.86	A	2	23.11	24.66	$0\frac{1}{2}-0\frac{1}{2}$		3124.133	A	2hs	23.38	27.35	$2\frac{1}{2}-2\frac{1}{2}$	$3p' \ ^2D - 4d' \ ^2D^\circ$
8062.78	A	6	23.12	24.66	$2\frac{1}{2}-1\frac{1}{2}$		3122.086	A	1hs	23.38	27.35	$1\frac{1}{2}-1\frac{1}{2}$	28.02
8039.39	A	6	23.12	24.66	$1\frac{1}{2}-0\frac{1}{2}$								
8062.12	A	5	23.12	24.65	$1\frac{1}{2}-2\frac{1}{2}$		3039.714	A	3h	23.38	27.46	$2\frac{1}{2}-3\frac{1}{2}$	$3p' \ ^2D - 4d' \ ^2F^\circ$
8037.76	A	5	23.11	24.66	$0\frac{1}{2}-1\frac{1}{2}$		3040.512	A	2h	23.38	27.46	$1\frac{1}{2}-2\frac{1}{2}$	29

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.	
			Low	High						Low	High			
Air							Air							
5257.24	A	7	24.28	26.63	4½-3½	3d' 4F° - 4p' 4D 30	2822.812	A	2	24.28	28.67	4½-4½	3d' 4F° - 5f' 4F UV 47	
5259.06	A	5	24.27	26.63	3½-2½		*2820.70	A	1w	24.27	28.67	3½-3½		
*5259.71	A	5	24.27	26.63	2½-1½		2820.00	A	1	24.27	28.67	2½-2½		
*5259.71	A	5	24.27	26.63	1½-0½		*2819.13	A	1w	24.27	28.67	1½-1½		
5249.51	A	2	24.27	26.63	3½-3½		2823.11	P		24.28	28.67	4½-3½		
*5253.57§	A	4	24.27	26.63	2½-2½		*2821.54	A	1w	24.27	28.67	3½-2½		
5256.09	A	2	24.27	26.63	1½-1½		2820.27	P		24.27	28.67	2½-1½		
5244.05	P		24.27	26.63	2½-3½		2820.60	P		24.27	28.67	3½-4½		
5249.90	P		24.27	26.63	1½-2½	*2819.13	A	1w	24.27	28.67	2½-3½			
							*2819.13	A	1w	25.27	28.67	1½-2½		
3953.95	A	0	24.28	27.41	4½-3½	3d' 4F° - 4f' 2F 31	*2801.21	A	5w	24.28	28.70	4½-5½	3d' 4F° - 5f' 4G UV 48	
3949.530	A	4	24.27	27.41	3½-3½		*2801.21	A	5w	24.27	28.70	3½-4½		
*3947.715	A	6l	24.27	27.41	2½-2½		*2801.43	A	3w	24.27	28.70	2½-3½		
3946.429	A	1	24.27	27.41	2½-3½		*2801.43	A	3w	24.27	28.69	1½-2½		
3952.058	A	9	24.28	27.41	4½-4½	3d' 4F° - 4f' 4F 32	2803.45	A	0h	24.28	28.70	4½-4½		
3948.333	A	6	24.27	27.41	3½-3½		2802.95	A	0h	24.27	28.70	3½-3½		
3946.278	A	5	24.27	27.41	2½-2½		2802.39	A	0h	24.27	28.69	2½-2½		
3945.003	A	5	24.27	27.41	1½-1½		2805.20	P		24.28	28.70	4½-3½		
3952.679	A	1	24.28	27.41	4½-3½		2804.07	P		24.27	28.69	3½-2½		
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		2797.70	A	1h	24.27	28.70	3½-4½		3d' 4F° - 5f' 2G UV 49
3945.197	A	4	24.27	27.41	2½-3½		2799.15	A	1h	24.27	28.70	2½-3½		
3944.193	A	3	24.27	27.41	1½-2½									
							2546.81	A	2h	24.28	29.14	4½-3½	3d' 4F° - 6p' 4D UV 50	
							*2547.35	A	1h	24.27	29.14	3½-2½		
3876.187	A	12	24.28	27.47	4½-5½	3d' 4F° - 4f' 4G 33	*2547.35	A	1h	24.27	29.14	2½-1½		
3876.408	A	12	24.27	27.47	3½-4½		*2547.35	A	1h	24.27	29.14	1½-0½		
3876.664	A	12	24.27	27.47	2½-3½									
3876.055	A	9	24.27	27.47	1½-2½		2434.24	A	2wh	24.28	29.37	4½-5½	3d' 4F° - 6f' 4G UV 51	
3880.588	A	7	24.28	27.47	4½-4½	*2434.81	A	1wh	24.27	29.36	3½-4½			
3879.640	A	7	24.27	27.47	3½-3½	*2434.81	A	1wh	24.27	29.36	2½-3½			
3878.028	A	7	24.27	27.47	2½-2½	*2434.81	A	1wh	24.27	29.36	1½-2½			
3883.824	A	1	24.28	27.47	4½-3½									
3881.028	P		24.27	27.47	3½-2½									
							2434.12	A	0wh	24.27	29.37	3½-4½	3d' 4F° - 6f' 2G UV 52	
							2432.90	A	0wh	24.27	29.37	2½-3½		
3873.067	A	0h	24.28	27.48	4½-4½	3d' 4F° - 4f' 2G 33.01								
3874.666	A	2h	24.27	27.47	3½-3½									
3878.861	P		24.28	27.47	4½-3½									
3868.874	A	6h	24.27	27.48	3½-4½		5478.59	A	4	24.37	26.63	3½-3½	3d' 4D° - 4p' 4D 34	
3871.669	A	7h	24.27	27.47	2½-3½		5485.90	A	2	24.37	26.63	2½-2½		
							5490.16	A	1	24.37	26.63	1½-1½		
						5492.36	P		24.37	26.63	0½-0½			
3862.181	A	2	24.28	27.49	4½-3½	5488.95	A	1	24.37	26.63	3½-2½			
3856.62	A	0h	24.27	27.49	3½-2½	5492.67	P		24.37	26.63	2½-1½			
3850.419	P		24.27	27.49	2½-1½	5494.04	P		24.37	26.63	1½-0½			
3846.512	P		24.27	27.49	1½-0½	5475.54	P		24.37	26.63	2½-3½			
						5483.35	A	1	24.37	26.63	1½-2½			
3853.34	P		24.27	27.49	3½-2½	3d' 4F° - 4f' 2D 33.03	5488.47	P		24.37	26.63	0½-1½		
3847.07	P		24.27	27.49	2½-1½									
							5044.35	A	5	24.37	26.83	3½-2½	3d' 4D° - 4p' 4P 35	
3082.381	A	2h	24.28	28.30	4½-3½	3d' 4P° - 5p' 4D 33.04	5047.11	A	3	24.37	26.83	2½-1½		
*3083.052	A	2wh	24.27	28.29	3½-2½		5049.24	A	2	24.37	26.82	1½-0½		
*3083.052	A	2wh	24.27	28.29	2½-1½		*5041.76§§	A	2	24.37	26.83	2½-2½		
*3083.052	A	2wh	24.27	28.29	1½-0½		5044.98	A	1	24.37	26.83	1½-1½		
*2821.54	A	1w	24.27	28.67	3½-3½	3d' 4F° - 5f' 2F UV 46	4077.778	A	4	24.37	27.41	3½-3½	3d' 4D° - 4f' 2F 35.01	
*2820.70	A	1w	24.27	28.67	2½-2½		*4077.625	A	2	24.37	27.41	2½-2½		
							4076.142	A	5	24.37	27.41	2½-3½		
							4076.251	A	3	24.37	27.41	1½-2½		

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
*4075.851	A	12l	24.37	27.41	3½-4½	3d' 4D°-4f' 4F	4411.506	A	7	24.60	27.41	2½-3½	3d' 2D°-4f' 2F
4074.845	A	8	24.37	27.41	2½-3½	36	4411.163	A	6	24.60	27.41	1½-2½	39
*4074.518	A	10	24.37	27.41	1½-2½		4413.255	A	1	24.60	27.41	2½-2½	
*4074.518	A	10	24.37	27.41	0½-1½								
4076.526	A	4	24.37	27.41	3½-3½		4409.979	A	5	24.60	27.41	2½-3½	3d' 2D°-4f' 4F
*4075.851	A	12l	24.37	27.41	2½-2½		4409.161	A	2	24.60	27.41	1½-2½	40
4075.395	A	4	24.37	27.41	1½-1½								
*4077.625	A	2	24.37	27.41	3½-2½		4297.616	P		24.60	27.49	2½-3½	3d' 2D°-4f' 4D
4076.83	A	0	24.37	27.41	2½-1½		4293.904	P		24.60	27.49	1½-2½	41
							4295.920	A	4h	24.60	27.49	2½-2½	
3980.323	A	8	24.37	27.49	3½-3½	3d' 4D°-4f' 4D	*4289.876	A	2h	24.60	27.49	1½-1½	
3977.269	A	5h	24.37	27.49	2½-2½	37	*4291.819	A	3h	24.60	27.49	2½-1½	
*3972.439	A	6h	24.37	27.49	1½-1½								
3969.520	A	3	24.37	27.49	0½-0½		*4291.819	A	3h	24.60	27.49	2½-2½	3d' 2D°-4f' 2D
*3978.759	A	4h	24.37	27.49	3½-2½		4285.704	A	3h	24.60	27.49	1½-1½	42
*3973.760	A	7h	24.37	27.49	2½-1½		*4289.876	A	2h	24.60	27.49	1½-2½	
*3970.386	A	4s	24.37	27.49	1½-0½								
*3978.759	A	4h	24.37	27.49	2½-3½		3392.146	A	2h	24.60	28.26	2½-1½	3d' 2D°-5p' 2P
3975.953	A	1h	24.37	27.49	1½-2½		3393.946	A	1h	24.60	28.25	1½-0½	42.01
3971.574	A	2	24.37	27.49	0½-1½								
3975.341	A	2h	24.37	27.49	3½-2½	3d' 4D°-4f' 2D	3049.671	A	3	24.60	28.67	2½-3½	3d' 2D°-5f' 2F
*3970.386	A	4s	24.37	27.49	2½-1½	38	3049.398	A	3	24.60	28.67	1½-2½	43
*3973.760	A	7h	24.37	27.49	2½-2½								
3968.92	A	0h	24.37	27.49	1½-1½		3048.933	A	2	24.60	28.67	2½-3½	3d' 2D°-5f' 4F
*3972.439	A	6h	24.37	27.49	1½-2½		3048.69	A	0	24.60	28.67	1½-2½	43.01
3157.13	A	0h	24.37	28.30	3½-3½	3d' 4D°-5p' 4D	*2612.45	A	2WH	24.60	29.35	2½-3½	3d' 2D°-6f' 2F
3159.64	P		24.37	28.29	2½-2½	38.01	*2612.45	A	2WH	24.60	29.35	1½-2½	43.02
3160.79	P		24.37	28.29	1½-1½								
3161.57	P		24.37	28.29	0½-0½								
3086.903	A	1h	24.37	28.39	3½-2½	3d' 4D°-5p' 4P	6253.84	A	2	24.65	26.63	2½-3½	3d' 4P°-4p' 4D
3087.90	A	0h	24.37	28.39	2½-1½	38.02	6275.79	A	1	24.66	26.63	1½-2½	43.03
							6290.01	A	1	24.66	26.63	0½-1½	
							6267.36	P		24.65	26.63	2½-2½	
*2885.469	A	6w	24.37	28.67	3½-3½	3d' 4D°-5f' 2F	6284.56	A	0	24.66	26.63	1½-1½	
*2885.469	A	6w	24.37	28.67	1½-2½	UV 53	6295.20	A	0	24.66	26.63	0½-0½	
*2885.469	A	6w	24.37	28.67	3½-3½	3d' 4D°-5f' 4F	5907.21	A	6	24.65	26.75	2½-1½	3d' 4P°-4p' 4S
*2884.808	A	4w	24.37	28.67	2½-1½	UV 54	5914.64	A	4	24.66	26.75	1½-1½	44
*2884.808	A	4w	24.37	28.67	1½-2½		5919.45	A	3	24.66	26.75	0½-1½	
*2884.808	A	4w	24.37	28.67	0½-1½								
2861.060	A	2h	24.37	28.70	3½-3½	3d' 4D°-5f' 4D	5694.30	A	2	24.65	26.83	2½-2½	3d' 4P°-4p' 4P
2859.85	P		24.37	28.71	2½-2½	UV 55	5708.03	A	0	24.66	26.83	1½-1½	44.01
2857.30	P		24.37	28.71	1½-1½		*5701.16	A	2w	24.65	26.83	2½-1½	
2855.57	P		24.37	28.71	0½-0½		5713.56	A	0	24.66	26.82	1½-0½	
							*5701.16	A	2w	24.66	26.83	1½-2½	
2858.00	A	1h	24.37	28.71	2½-2½	3d' 4D°-5f' 2D	5712.51	A	1	24.66	26.83	0½-1½	
						UV 56							
							4374.272	A	9	24.65	27.49	2½-3½	3d' 4P°-4f' 4D
2571.76	A	1h	24.37	29.19	3½-2½	3d' 4D°-6p' 4P	4376.562	A	5h	24.66	27.49	1½-2½	45
						UV 57	4375.009	A	4	24.66	27.49	0½-1½	
							*4372.487	A	7	24.65	27.49	2½-2½	
2491.37	A	2wh	24.37	29.35	3½-4½	3d' 4D°-6f' 4F	*4372.350	A	6	24.66	27.49	1½-1½	
*2490.87	A	2wh	24.37	29.35	2½-3½	UV 58	*4372.487	A	7	24.66	27.49	0½-0½	
*2490.87	A	2wh	24.37	29.35	1½-2½		*4368.263	A	4	24.65	27.49	2½-1½	
*2490.87	A	2wh	24.37	29.35	0½-1½		4369.857	A	2	24.66	27.49	1½-0½	
							*4368.263	A	4	24.65	27.49	2½-2½	3d' 4P°-4f' 2D
6250.74	A	4	24.60	26.59	2½-1½	3d' 2D°-4p' 2P	4368.047	A	1h	24.66	27.49	1½-1½	46
6256.54	A	2	24.60	26.58	1½-0½	38.03	*4372.350	A	6	24.66	27.49	1½-2½	
6246.57	A	1*	24.60	26.59	1½-1½		4370.661	A	1h	24.66	27.49	0½-1½	

Multiplet Table

C II - Continued

C II - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
3400.041	P		24.65	28.30	2½-3½	3d' 4P°-5p' 4D	*5113.69	A	4h	25.07	27.49	1½-2½	3d' 2P°-4f' 2D
3406.58	P		24.66	28.29	1½-2½	46.01	5114.26	A	4h	25.07	27.49	0½-1½	51
3410.49	P		24.66	28.29	0½-1½		5107.91	A	1hp	25.07	27.49	1½-1½	
3353.302	A	2h	24.65	28.35	2½-1½	3d' 4P°-5p' 4S	3406.361	A	2H	25.07	28.71	1½-2½	3d' 2P°-5f' 4D
3355.690	A	1h	24.66	28.35	1½-1½	46.02							52
3357.19	A	0h	24.66	28.35	0½-1½								
3059.091	A	3h	24.65	28.70	2½-3½	3d' 4P°-5f' 4D	3403.66	A	1H	25.07	28.71	1½-2½	3d' 2P°-5f' 2D
3060.64	A	1h	24.66	28.71	1½-2½	47	3404.33	A	1H	25.07	28.71	0½-1½	53
3059.83	A	0h	24.66	28.71	0½-1½		3401.53	A	0H	25.07	28.71	1½-1½	
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		5367.67	A	1h	25.99	28.30	2½-3½	4s' 4P°-5p' 4D
							5364.67	P		25.98	28.29	1½-2½	54
*3056.85	A	1WH	24.65	28.71	2½-2½	3d' 4P°-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°-6f' 4D	6385.72	A	1h	26.63	28.58	3½-4½	4p' 4D-5d' 4F°
						UV 59	6383.12	P		26.63	28.57	2½-3½	55
4734.60	A	2hp	24.79	27.41	3½-3½	3d' 2F°-4f' 2F	5286.47	A	1h	26.63	28.98	3½-2½	4p' 4D-6s' 4P°
4727.41	A	2h	24.79	27.41	2½-2½	48	*5290.09	A	0h	26.63	28.97	2½-1½	56
							*5290.09	A	0h	26.63	28.97	1½-0½	
4629.98	A	2h	24.79	27.47	3½-4½	3d' 2F°-4f' 4G							
4625.56	A	3h	24.79	27.47	2½-3½	49	*8413.42	A	2h	27.23	28.70	4½-5½	4d' 4F°-5f' 4G
4619.23	A	8h	24.79	27.48	3½-4½	3d' 2F°-4f' 2G	*8413.42	A	2h	27.23	28.70	3½-4½	57
4618.40	A	6h	24.79	27.47	2½-3½	50	*8414.49	A	1h	27.22	28.70	2½-3½	
4627.44	A	1h	24.79	27.47	3½-3½		*8414.49	A	1h	27.22	28.69	1½-2½	
3174.58	A	0H	24.79	28.70	3½-4½	3d' 2F°-5f' 4G	5791.77	A	1H	27.23	29.37	4½-5½	4d' 4F°-6f' 4G
3172.62	A	1H	24.79	28.70	2½-3½	50.01							58
3170.03	A	2H	24.79	28.70	3½-4½	3d' 2F°-5f' 2G							
3169.66	A	1H	24.79	28.70	2½-3½	50.02	6037.96	A	0h	27.29	29.35	3½-4½	4d' 4D°-6f' 4F
2712.32	A	0H	24.79	29.36	3½-4½	3d' 2F°-6f' 4G	6034.42	P		27.29	29.35	2½-3½	59
2710.59	A	1H	24.79	29.36	2½-3½	UV 60							
*2708.4	A	1H	24.79	29.37	3½-4½	3d' 2F°-6f' 2G							
*2708.4	A	1H	24.79	29.37	2½-3½	UV 61							
5119.45	A	4h	25.07	27.49	1½-2½	3d' 2P°-4f' 4D							
*5120.10	A	3f	25.07	27.49	0½-1½	50.03	Air						
*5113.69	A	4h	25.07	27.49	1½-1½		2570.57	A	2wh				
5116.75	A	2h	25.07	27.49	0½-0½								
							Vac						
							533.935	C	(1d)				
							437.102	C	(1d)				
							425.326	C	(0w)				
Unclassified Lines of C II													

NSRDS-NBS 3, SECTION 3

CARBON, $Z=6$

- A C III Atomic Energy Levels
- B C III Multiplet Table

Atomic Energy Levels

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** \pm 2, 258.906 Å (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. Ölme.

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 $4d' \ ^3F^\circ$ and $5f' \ ^3G$, and "y" for $4f' \ ^3G$ and $5g' \ ^3H^\circ$. In both cases the uncertainty is probably less than 50 cm^{-1} .

REFERENCES

B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 49 to 62 (1934). I P, T, C L, G DK. Bockasten, Ark. Fys. (Stockholm) **9**, No. 30, 457 to 481 (1955). I P, T, C L

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

C III

C III

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

Atomic Energy Levels

C III - Continued

C III - Continued

Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval				
$2p(^2P^{\circ})3d$	$3d' ^3F^{\circ}$	2	333387.01	24.54 35.69	$2s(^2S)7s$	$7s ^3S$	1	363613					
		3	333411.55				$2s(^2S)7p$	$7p ^1P^{\circ}$		1	364896		
		4	333447.24							$2s(^2S)7d$	$7d ^3D$	1, 2, 3	365638
$2p(^2P^{\circ})3d$	$3d' ^3D^{\circ}$	1	337655.98	12.91 19.15	$2s(^2S)7g$	$7g ^3G$	3, 4, 5	365998.4					
		2	337668.89				$2s(^2S)7d$	$7d ^1D$	2			366028	
		3	337688.04						$2s(^2S)7f$	$7f ^3F^{\circ}$	2	366069.0?	
$2s(^2S)5s$	$5s ^1S$	0	338514.33	-25.69 -14.30	$2s(^2S)8p$	$8p ^1P^{\circ}$	1	369926					
		$2s(^2S)5s$	$5s ^3S$				1	339934.72			$2s(^2S)8d$		$8d ^3D$	1, 2, 3	370499
							$2p(^2P^{\circ})3d$	$3d' ^3P^{\circ}$	2	340101.84		$2s(^2S)9d$		$9d ^3D$	1, 2, 3	373828
1	340127.53			$2p(^2P^{\circ})4s$	$4s' ^3P^{\circ}$	0			376403.6				
0	340141.83	1	381105.4										
$2p(^2P^{\circ})3d$	$3d' ^1F^{\circ}$	3	341370.94	-3.31 -2.39	$2p(^2P^{\circ})4p$	$4p' ^1P$	1	381105.4					
		$2s(^2S)5p$	$5p ^1P^{\circ}$				1	343258.03	$2p(^2P^{\circ})4p$	$4p' ^3D$	1	381971	
							$2s(^2S)5p$	$5p ^3P^{\circ}$			2		344232.98	0.15 0.43	2	2	382010
1	344236.29			$2p(^2P^{\circ})4p$	$4p' ^3P$	0					384365		
0	344238.68	1	384405.4										
$2p(^2P^{\circ})3p$	$3p' ^1S$	0	345095.43	0.28	$2p(^2P^{\circ})4p$	$4p' ^1D$	2	385638.1					
		$2s(^2S)5d$	$5d ^3D$				1	345496.57	$2p(^2P^{\circ})4d$	$4d' ^1D^{\circ}$	2	385817.2	
							2	345496.72			$2p(^2P^{\circ})4d$	$4d' ^3F^{\circ}$	2
3	345497.15			3									
$2s(^2S)5g$	$5g ^3G$	3, 4	346579.21	0.28	$C\text{ IV}(^2S_{0,1/2})$	Limit	..... 386241.0 ± 2					
		5	346579.49				$2p(^2P^{\circ})4d$	$4d' ^3D^{\circ}$	1	387697			
		$2s(^2S)5g$	$5g ^1G$						4		346579.31	$2p(^2P^{\circ})4f$	$4f' ^3G$	3	388125 + y
$2s(^2S)5d$	$5d ^1D$			2	346658.34	4			5				
				$2p(^2P^{\circ})3d$	$3d' ^1P^{\circ}$		1	346712.73		$2p(^2P^{\circ})4f$	$4f' ^3F$		
		$2s(^2S)5f$	$5f ^3F^{\circ}$				2	347151.89				0.79 1.06	$2p(^2P^{\circ})4d$
3	347153.26					1	2						
4	347155.41			3	388773								
$2s(^2S)5f$	$5f ^1F^{\circ}$	3	348859.99	1.37 2.15	$2p(^2P^{\circ})4d$	$4d' ^1F^{\circ}$	3	388773					
		$2s(^2S)6s$	$6s ^3S$				1	354858.03	$2p(^2P^{\circ})4f$	$4f' ^3D$	1	389668.3	
							$2s(^2S)6p$	$6p ^3P^{\circ}$			0		357049.38	2	3
1	357050.17			$2p(^2P^{\circ})5p$	$5p' ^1P$	1					407431		
2	357051.23	$2p(^2P^{\circ})5p$	$5p' ^3D$			1			407826				
$2s(^2S)6p$	$6p ^1P^{\circ}$			1	357109.68	0.30 0.42	$2p(^2P^{\circ})5p$	$5p' ^3D$		2	407826		
		$2s(^2S)6d$	$6d ^3D$	1	358097.78				3	4			
				2								358692.18	$2p(^2P^{\circ})4d$	$4d' ^3P^{\circ}$	1	388493
3	2			388773									
$2s(^2S)6g$	$6g ^1G$	4	358692.18	0.2	$2p(^2P^{\circ})4d$	$4d' ^1F^{\circ}$	3	388773					
		$2s(^2S)6g$	$6g ^3G$				3, 4	358692.2	1	2			
							5	358692.4			$2p(^2P^{\circ})4d$	$4d' ^1P^{\circ}$	3	388773
$2s(^2S)6d$	$6d ^1D$			2	358732.93	$2p(^2P^{\circ})4f$	$4f' ^3D$	1					389668.3
		$2s(^2S)6h$	$6h ^3H^{\circ}$	4, 5, 6	358776.3			2	3				
				$2s(^2S)6h$	$6h ^1H^{\circ}$					5	358776.3	$2p(^2P^{\circ})5p$		$5p' ^1P$	1	407431
$2s(^2S)6f$	$6f ^3F^{\circ}$					2	358850.02			1	2		
		3	358850.32			$2p(^2P^{\circ})5p$	$5p' ^3D$	1	407826				
		4	358850.74	2									
$2s(^2S)6f$	$6f ^1F^{\circ}$	3	359121.95										

Atomic Energy Levels

C III - Continued

C III - Continued

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

January 1970.

Atomic Energy Levels

C III OBSERVED TERMS

Configuration $1s^2 +$	Observed Terms		
$2s^2$	$2s \ ^1S$		
$2p^2$	$\left\{ \begin{array}{l} 2p^2 \ ^1S \quad 2p^2 \ ^3P \\ \quad \quad \quad 2p^2 \ ^1D \end{array} \right.$		
	$ns (n \geq 3)$	$np (n \geq 2)$	$nd (n \geq 3)$
$2s(2S)nl$	$\left\{ \begin{array}{l} 3-7s \ ^3S \\ 3-5s \ ^1S \end{array} \right.$		
$2p(2P^\circ)nl'$	$\left\{ \begin{array}{l} 3-4s' \ ^3P^\circ \\ 3s' \ ^1P^\circ \end{array} \right.$		
		$\begin{array}{l} 2-6p \ ^3P^\circ \\ 2-8p \ ^1P^\circ \end{array}$	$\begin{array}{l} 3-9d \ ^3D \\ 3-7d \ ^1D \end{array}$
		$\begin{array}{l} 3p' \ ^3S \quad 3-7p' \ ^3P \quad 3-7p' \ ^3D \\ 3p' \ ^1S \quad 3-5p' \ ^1P \quad 3-5p' \ ^1D \end{array}$	$\begin{array}{l} 3-6d' \ ^3P^\circ \quad 3-6d' \ ^3D^\circ \quad 3, 4d' \ ^3F^\circ \\ 3d' \ ^1P^\circ \quad 3-5d' \ ^1D^\circ \quad 3, 4d' \ ^1F^\circ \end{array}$
	$nf (n \geq 4)$	$ng (n \geq 5)$	$nh (n \geq 6)$
$2s(2S)nl$	$\left\{ \begin{array}{l} 4-7f \ ^3F^\circ \\ 4-6f \ ^1F^\circ \end{array} \right.$		
$2p(2P^\circ)nl'$	$4f' \ ^3D \quad 4, 5f' \ ^3F \quad 4, 5f' \ ^3G$		
		$\begin{array}{l} 5-7g \ ^3G \\ 5, 6g \ ^1G \end{array}$	$\begin{array}{l} 6h \ ^3H^\circ \\ 6h \ ^1H^\circ \end{array}$
		$5g' \ ^3F^\circ \quad 5, 6g' \ ^3G^\circ \quad 5g' \ ^3H^\circ$	

Multiplet Table

Part B

CARBON

C III (Z=6)

I P 47.887 eV Limit $386241.0 \pm 2 \text{ cm}^{-1}$ 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

C III

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 1908.734	P		0.00	6.50	0-1	$2s^2 1S - 2p \ ^3P^\circ$ UV 0.01	Vac 290.498	P		0.00	42.68	0-1	$2s^2 1S - 5p \ ^3P^\circ$ UV 3.04
977.026‡	B	(18)	0.00	12.69	0-1	$2s^2 1S - 2p \ ^1P^\circ$ UV 1	288.423	P		0.00	42.99	0-1	$2s^2 1S - 3d' \ ^1P^\circ$ UV 3.05
386.2028	P	(14)	0.00	32.10	0-1	$2s^2 1S - 3p \ ^1P^\circ$ UV 2	280.073	P		0.00	44.27	0-1	$2s^2 1S - 6p \ ^3P^\circ$ UV 3.06
385.043	P		0.00	32.20	0-1	$2s^2 1S - 3p \ ^3P^\circ$ UV 2.01	280.043	B	(3)	0.00	44.27	0-1	$2s^2 1S - 6p \ ^1P^\circ$ UV 3.07
324.413	P		0.00	38.22	0-1	$2s^2 1S - 3s' \ ^3P^\circ$ UV 2.02	274.051	B	(2d)	0.00	45.24	0-1	$2s^2 1S - 7p \ ^1P^\circ$ UV 3.08
322.5741	P	(8)	0.00	38.43	0-1	$2s^2 1S - 3s' \ ^1P^\circ$ UV 2.03	270.324	B	(0+d)	0.00	45.86	0-1	$2s^2 1S - 8p \ ^1P^\circ$ UV 3.09
314.667	P		0.00	39.40	0-1	$2s^2 1S - 4p \ ^3P^\circ$ UV 2.04							
310.1697	P	(5)	0.00	39.97	0-1	$2s^2 1S - 4p \ ^1P^\circ$ UV 3	1175.711	A	5	6.50	17.05	2-2	$2p \ ^3P^\circ - 2p^2 \ ^3P$ UV 4
296.159	P		0.00	41.86	0-1	$2s^2 1S - 3d' \ ^3D^\circ$ UV 3.01	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	
294.007	P		0.00	42.17	0-1	$2s^2 1S - 3d' \ ^3P^\circ$ UV 3.02	1070.331	P		6.50	18.09	2-2	$2p \ ^3P^\circ - 2p^2 \ ^1D$ UV 4.01
							1069.686	P		6.50	18.09	1-2	
291.3261	P	(2)	0.00	42.56	0-1	$2s^2 1S - 5p \ ^1P^\circ$ UV 3.03	768.467	P		6.50	22.63	1-0	$2p \ ^3P^\circ - 2p^2 \ ^1S$ UV 4.02

Multiplet Table

C III - Continued

C III - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
538.3120	P	(100)	6.50	29.53	2-1	2p ³ P°-3s ³ S	341.641	P		6.50	42.79	1-0	2p ³ P°-3p' ¹ S
538.1487	P	(60)	6.50	29.53	1-1	UV 5							UV 7.09
538.0801	P	(20)	6.49	29.53	0-1								
513.401	P		6.50	30.64	1-0	2p ³ P°-3s ¹ S	341.242	B	(7)	6.50	42.84	2-	2p ³ P°-5d ³ D
						UV 5.01	341.179	B	(6)	6.50	42.84	1-	UV 7.10
							341.143	B	(5-)	6.49	42.84	0-	
459.633	B	(15)	6.50	33.48	2-	2p ³ P°-3d ³ D	339.892	P		6.50	42.98	2-2	2p ³ P°-5d ¹ D
459.521	B	(14)	6.50	33.48	1-	UV 6	339.827	P		6.50	42.98	1-2	UV 7.11
459.462	B	(13-)	6.49	33.48	0-1								
446.357	P		6.50	34.28	2-2	2p ³ P°-3d ¹ D	330.687	B	(1+)	6.50	44.00	2-1	2p ³ P°-6s ³ S
446.245	P		6.50	34.28	1-2	UV 6.01	*330.637	B	(1)	6.50	44.00	1-1	UV 7.12
							*330.637	B	(1)	6.50	44.00	0-1	
389.0898	P	(5)	6.50	38.37	2-1	2p ³ P°-4s ³ S	327.176	B	(4+d)	6.50	44.40	2-3	2p ³ P°-6d ³ D
389.0045	P	(3)	6.50	38.37	1-1	UV 6.02	327.112	B	(4d)	6.50	44.40		UV 7.13
388.9687	P	(1)	6.49	38.37	0-1								
385.608	P		6.50	38.65	1-0	2p ³ P°-4s ¹ S	326.492	P		6.50	44.48	2-2	2p ³ P°-6d ¹ D
						UV 6.03	326.432	P		6.50	44.48	1-2	UV 7.14
374.149	P		6.50	39.64	2-1	2p ³ P°-3p' ¹ P	321.372	B	(0d)	6.50	45.08	-1	2p ³ P°-7s ³ S
374.070	P		6.50	39.64	1-1	UV 6.04							UV 7.15
374.037	P		6.49	39.64	0-1								
371.747	B	(10+)	6.50	39.85	2-3	2p ³ P°-4d ³ D	319.266	B	(3d)	6.50	45.33		2p ³ P°-7d ³ D
*371.694	B	(10)	6.50	39.85	1-2	UV 7							UV 7.16
*371.694	B	(10)	6.50	39.85	0-1		318.897	P		6.50	45.38	2-2	2p ³ P°-7d ¹ D
371.784	B	(8)	6.50	39.85	2-2								UV 7.17
370.951	B	(0d)	6.50	39.92		2p ³ P°-4f ³ F°?	314.395	B	(1d)	6.50	45.93		2p ³ P°-8d ³ D
						UV 7.01F							UV 7.18
*369.415	B	(5)	6.50	40.06	2-3	2p ³ P°-3p' ³ D	311.157	B	(0d)	6.50	46.35		2p ³ P°-9d ³ D
*369.415	B	(5)	6.50	40.06	1-2	UV 7.02							UV 7.19
*369.415	B	(5)	6.49	40.06	0-1		*303.432	B	(4d)	6.50	47.36	2-3	2p ³ P°-4p' ³ D
369.472	B	(2)	6.50	40.06	2-2		*303.432	B	(4d)	6.50	47.36	1-2	UV 7.20
							303.468	B	(1)	6.50	47.36	2-2	
367.964	P		6.50	40.20	2-2	2p ³ P°-4d ¹ D	*301.243	B	(3)	6.50	47.66	2-2	2p ³ P°-4p' ³ P
367.888	P		6.50	40.20	1-2	UV 7.03	*301.243	B	(3)	6.50	47.65	1-1	UV 7.21
363.8598	P	(6)	6.50	40.58	2-1	2p ³ P°-3p' ³ S	301.279	B	(1)	6.50	47.65	2-1	
363.7852	P	(5)	6.50	40.58	1-1	UV 7.04	301.206	B	(2)	6.50	47.66	1-2	
363.7538	P	(4)	6.49	40.58	0-1								
*360.623	B	(7)	6.50	40.88	2-2	2p ³ P°-3p' ³ P	281.390	B	(2)	6.50	50.56	2-3	2p ³ P°-5p' ³ D
*360.623	B	(7)	6.50	40.88	1-1	UV 7.05							UV 7.22
360.675	B	(5)	6.50	40.88	2-1		280.522	B	(2d)	6.50	50.70	2-2	2p ³ P°-5p' ³ P
*360.623	B	(7)	6.50	40.88	1-0								UV 7.23
*360.557	B	(6)	6.50	40.88	1-2								
*360.557	B	(6)	6.49	40.87	0-1		271.014	B	(1d)	6.50	52.25	2-3	2p ³ P°-6p' ³ D
356.289	P		6.50	41.30	2-2	2p ³ P°-3p' ¹ D							UV 7.24
356.217	P		6.50	41.30	1-2	UV 7.06	270.583	B	(1d)	6.50	52.32	2-2	2p ³ P°-6p' ³ P
349.499	P		6.50	41.97	1-0	2p ³ P°-5s ¹ S							UV 7.25
						UV 7.07	265.287	B	(0d)	6.50	53.24	2-3	2p ³ P°-7p' ³ D
347.854	B	(3)	6.50	42.15	2-1	2p ³ P°-5s ³ S							UV 7.26
*347.777	B	(3-)	6.50	42.15	1-1	UV 7.08	265.029	B	(0d)	6.50	53.28	2-2	2p ³ P°-7p' ³ P
*347.777	B	(3-)	6.50	42.15	0-1								UV 7.27

Multiplet Table

C III - Continued

C III - Continued

IA	Ref	Int	EP		J	Multiplet No.	IA	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Air 2844.117	A	2	12.69	17.05	1-2	$2p \ ^1P^\circ - 2p^2 \ ^3P$ UV 7.28	Vac *585.417	B	(8)	17.05	38.23	2-2	$2p^2 \ ^3P - 3s' \ ^3P^\circ$
							585.496	B	(5+)	17.04	38.22	1-1	UV 11.15
							585.666	B	(6)	17.05	38.22	2-1	
2296.870	A	16	12.69	18.09	1-2	$2p \ ^1P^\circ - 2p^2 \ ^1D$ UV 8	585.608	B	(6-)	17.04	38.21	1-0	
							585.261	B	(6)	17.04	38.23	1-2	
							*585.417	B	(8b)	17.04	38.22	0-1	
Vac 1247.383	A	3	12.69	22.63	1-0	$2p \ ^1P^\circ - 2p^2 \ ^1S$ UV 9	554.655	B	(2)	17.05	39.40	2-2	$2p^2 \ ^3P - 4p' \ ^3P^\circ$
							554.502	P		17.04	39.40	1-1	UV 11.16
690.526	B	(7)	12.69	30.64	1-0	$2p \ ^1P^\circ - 3s \ ^1S$ UV 10	499.530	B	(9)	17.05	41.87	2-3	$2p^2 \ ^3P - 3d' \ ^3D^\circ$
							499.462	B	(8)	17.04	41.86	1-2	UV 11.17
							499.425	B	(7)	17.04	41.86	0-1	
574.2809	P	(60)	12.69	34.28	1-2	$2p \ ^1P^\circ - 3d \ ^1D$ UV 11	499.583	B	(7-)	17.05	41.86	2-2	
							493.587	B	(7)	17.05	42.17	2-3	$2p^2 \ ^3P - 3d' \ ^3P^\circ$
477.6246	P	(3)	12.69	38.65	1-0	$2p \ ^1P^\circ - 4s \ ^1S$ UV 11.01	493.396	B	(5-)	17.04	42.17	1-1	UV 11.18
							493.519	B	(5+)	17.05	42.17	2-1	
							493.364	B	(5)	17.04	42.17	1-0	
460.0487	P	(8)	12.69	39.64	1-1	$2p \ ^1P^\circ - 3p' \ ^1P$ UV 11.02	493.464	B	(5+)	17.04	42.17	1-2	
							493.341	B	(5)	17.04	42.17	0-1	
460.7338	P	(12)	12.69	40.20	1-2	$2p \ ^1P^\circ - 4d \ ^1D$ UV 11.03	483.733	B	(5)	17.05	42.68	2-	$2p^2 \ ^3P - 5p' \ ^3P^\circ$
							483.618	B	(4)	17.04	42.68	1-	UV 11.19
							483.567	B	(3-)	17.04	42.68	0-1	
433.3391	P	(8)	12.69	41.30	1-2	$2p \ ^1P^\circ - 3p' \ ^1D$ UV 11.04	455.479	P		17.05	44.27	2-2	$2p^2 \ ^3P - 6p' \ ^3P^\circ$
							455.382	P		17.04	44.27	1-1	UV 11.20
433.438	P		12.69	41.97	1-0	$2p \ ^1P^\circ - 5s \ ^1S$ UV 11.05	418.609	B	(2d)	17.05	46.67	2-2	$2p^2 \ ^3P - 4s' \ ^3P^\circ$
411.9577	P	(3)	12.69	42.79	1-0	$2p \ ^1P^\circ - 3p' \ ^1S$ UV 11.06							UV 11.21
409.325	B	(6)	12.69	42.98	1-2	$2p \ ^1P^\circ - 5d \ ^1D$ UV 11.07	399.688	B	(6+d)	17.05	48.07	2-3	$2p^2 \ ^3P - 4d' \ ^3D^\circ$
							399.637	B	(6d)	17.04	48.07		UV 11.22
390.055	B	(3)	12.69	44.48	1-2	$2p \ ^1P^\circ - 6d \ ^1D$ UV 11.08	398.42	B	(2w)	17.05	48.17	2-2	$2p^2 \ ^3P - 4d' \ ^3D^\circ$
													UV 11.23
379.254	B	(0d)	12.69	45.38	1-2	$2p \ ^1P^\circ - 7d \ ^1D$ UV 11.09	366.169	B	(4d)	17.05	50.90	2-3	$2p^2 \ ^3P - 5d' \ ^3D^\circ$
													UV 11.24
358.740	B	(4s)	12.69	47.25	1-1	$2p \ ^1P^\circ - 4p' \ ^1P$ UV 11.10	365.778	B	(1d)	17.05	50.94	2-2	$2p^2 \ ^3P - 5d' \ ^3P^\circ$
													UV 11.25
353.000	B	(3d)	12.69	47.81	1-2	$2p \ ^1P^\circ - 4p' \ ^1D$ UV 11.11	350.330	B	(2w)	17.05	52.44	2-3	$2p^2 \ ^3P - 6d' \ ^3D^\circ$
													UV 11.26
327.784	B	(1s)	12.69	50.51	1-1	$2p \ ^1P^\circ - 5p' \ ^1P$ UV 11.12	350.132	B	(0d)	17.05	52.46	2-2	$2p^2 \ ^3P - 6d' \ ^3P^\circ$
													UV 11.27
325.570	B	(1d)	12.69	50.77	1-2	$2p \ ^1P^\circ - 5p' \ ^1P$ UV 11.13	884.516	B	(8)	18.09	32.10	2-1	$2p^2 \ ^1D - 3p' \ ^1P^\circ$
													UV 11.28
							609.275	B	(6)	18.09	38.43	2-1	$2p^2 \ ^1D - 3s' \ ^1P^\circ$
													UV 11.29
818.181	P		17.05	32.20	2-2	$2p^2 \ ^3P - 3p' \ ^3P^\circ$	566.490	B	(4)	18.09	39.97	2-1	$2p^2 \ ^1D - 4p' \ ^1P^\circ$
817.950	P		17.04	32.20	1-1	UV 11.14							UV 11.30
							565.5280	P	(5)	18.09	40.01	2-3	$2p^2 \ ^1D - 4f' \ ^1F^\circ$
													UV 11.31

Multiplet Table

C III - Continued

C III - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 535.2885	P	(20)	18.09	41.25	2-2	$2p^2\ ^1D - 3d'\ ^1D^\circ$ UV 11.32	Air 4647.42 4650.25 4651.47	A A A	14 13 11	29.53 29.53 29.53	32.20 32.20 32.20	1-2 1-1 1-0	$3s\ ^3S - 3p\ ^3P^\circ$ 1
511.5225	P	(20)	18.09	42.32	2-3	$2p^2\ ^1D - 3d'\ ^1D^\circ$ UV 11.33	Vac 1426.45 1427.85 1428.53	B B B	(4) (3) (2)	29.53 29.53 29.53	38.23 38.22 38.21	1-2 1-1 1-0	$3s\ ^3S - 3s'\ ^3P^\circ$ UV 11.52
506.658	B	(0)	18.09	42.56	2-1	$2p^2\ ^1D - 5p\ ^1P^\circ$ UV 11.34	1256.52	B	(1d)	29.53	39.40	1-	$3s\ ^3S - 4p\ ^3P^\circ$ UV 11.53
492.6500	P	(5)	18.09	43.25	2-3	$2p^2\ ^1D - 5f\ ^1F^\circ$ UV 11.36	1005.471 1005.601	P P		29.53 29.53	41.86 41.86	1-2 1-1	$3s\ ^3S - 3d'\ ^3D^\circ$ UV 11.54
473.410	P		18.09	44.27	2-1	$2p^2\ ^1D - 6p\ ^1P^\circ$ UV 11.37	981.462 981.214 981.077	P P P		29.53 29.53 29.53	42.17 42.17 42.17	1-2 1-1 1-0	$3s\ ^3S - 3d'\ ^3P^\circ$ UV 11.55
468.931	B	(0)	18.09	44.52	2-3	$2p^2\ ^1D - 6f\ ^1F^\circ$ UV 11.38	943.218 943.189 943.168	P P P		29.53 29.53 29.53	42.68 42.68 42.68	1-2 1-1 1-0	$3s\ ^3S - 5p\ ^3P^\circ$ UV 11.56
456.58	P		18.09	45.24	2-1	$2p^2\ ^1D - 7p\ ^1P^\circ$ UV 11.39	841.480 841.488 841.493	P P P		29.53 29.53 29.53	44.27 44.27 44.27	1-2 1-1 1-0	$3s\ ^3S - 6p\ ^3P^\circ$ UV 11.57
446.329	P		18.09	45.86	2-1	$2p^2\ ^1D - 8p\ ^1P^\circ$ UV 11.40							
416.769	B	(5)	18.09	47.83	2-2	$2p^2\ ^1D - 4d'\ ^1D^\circ$ UV 11.41							
411.697	B	(0)	18.09	48.20	2-3	$2p^2\ ^1D - 4d'\ ^1F^\circ$ UV 11.42	Air 8500.32	A	10	30.64	32.10	0-1	$3s\ ^1S - 3p\ ^1P^\circ$ 1.01
379.065	B	(1)	18.09	50.79	2-2	$2p^2\ ^1D - 5d'\ ^1D^\circ$ UV 11.43	Vac 1591.48	B	(2)	30.64	38.43	0-1	$3s\ ^1S - 3s'\ ^1P^\circ$ UV 11.58
1308.73	B	(2)	22.63	32.10	0-1	$2p^2\ ^1S - 3p\ ^1P^\circ$ UV 11.44	1329.187	P		30.64	39.97	0-1	$3s\ ^1S - 4p\ ^1P^\circ$ UV 11.59
784.393	B	(3)	22.63	38.43	0-1	$2p^2\ ^1S - 3s'\ ^1P^\circ$ UV 11.45	1040.715	P		30.64	42.56	0-1	$3s\ ^1S - 5p\ ^1P^\circ$ UV 11.60
714.879	B	(1)	22.63	39.97	0-1	$2p^2\ ^1S - 4p\ ^1P^\circ$ UV 11.46	1004.596	P		30.64	42.99	0-1	$3s\ ^1S - 3d'\ ^1P^\circ$ UV 11.61
622.144	B	(2)	22.63	42.56	0-1	$2p^2\ ^1S - 5p\ ^1P^\circ$ UV 11.47	909.592	P		30.64	44.27	0-1	$3s\ ^1S - 6p\ ^1P^\circ$ UV 11.62
609.025	B	(4)	22.63	42.99	0-1	$2p^2\ ^1S - 3d'\ ^1P^\circ$ UV 11.48							
572.771	P		22.63	44.27	0-1	$2p^2\ ^1S - 6p\ ^1P^\circ$ UV 11.49	Air 5695.92	A	12	32.10	34.28	1-2	$3p\ ^1P^\circ - 3d\ ^1D$ 2
548.318	P		22.63	45.24	0-1	$2p^2\ ^1S - 7p\ ^1P^\circ$ UV 11.50	Vac 1894.49	B	(0)	32.10	38.65	1-0	$3p\ ^1P^\circ - 4s\ ^1S$ UV 11.63
533.601	P		22.63	45.86	0-1	$2p^2\ ^1S - 8p\ ^1P^\circ$ UV 11.51	1645.06	B	(1)	32.10	39.64	1-1	$3p\ ^1P^\circ - 3p'\ ^1P$ UV 11.64
							1531.85	B	(2)	32.10	40.20	1-2	$3p\ ^1P^\circ - 4d\ ^1D$ UV 11.65

Multiplet Table

C III - Continued

C III - Continued

IA	Ref	Int	EP		J	Multiplet No.	IA	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Vac							Air						
1347.947	P		32.10	41.30	1-2	3p ¹ P°-3p' ¹ D UV 11.66	2091.974	P	6	33.48	39.40	3-2	3d ³ D -4p' ³ P°
						2092.060	P	33.48		39.40	2-1	UV 12.01	
						2092.111	P	33.48		39.40	1-0		
1256.549	P		32.10	41.97	1-0	3p ¹ P°-5s ¹ S UV 11.67	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		
1160.576	P		32.10	42.79	1-0	3p ¹ P°-3p' ¹ S UV 11.68	Vac						
							1922.93	A	5	33.48	39.92	3-4	3d ³ D -4f' ³ F°
1139.899	P		32.10	42.98	1-2	3p ¹ P°-5d ¹ D UV 11.69	1923.14	A	4	33.48	39.92	2-3	UV 12.02
							1923.31	A	2	33.48	39.92	1-2	
							1923.268	P		33.48	39.92	3-3	
1001.988	P		32.10	44.48	1-2	3p ¹ P°-6d ¹ D UV 11.70	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 ³ D -3d' ³ F°
							1577.32	B	(2+)	33.48	41.34	2-3	UV 12.03
							1577.89	B	(3)	33.48	41.33	1-2	
Air													
9715.11	A	5	32.20	33.48	2-3	3p ³ P°-3d ³ D							
9705.39	A	3	32.20	33.48	1-2	2.01	1477.68	B	(3)	33.48	41.87	3-3	3d ³ D -3d' ³ D°
9701.12	A	2	32.20	33.48	0-1		1478.05	B	(2)	33.48	41.86	2-2	UV 12.04
9717.73	A	2	32.20	33.48	2-2		1478.30	B	(1)	33.48	41.86	1-1	
9706.44	A	2	32.20	33.48	1-1								
9718.79	P		32.20	33.48	2-1		1426.78	B	(1)	33.48	42.17	3-2	3d ³ D -3d' ³ P°
							1426.16	B	(0)	33.48	42.17	2-1	UV 12.05
2010.094	A	5	32.20	38.37	2-1	3p ³ P°-4s ³ S	1425.903	P		33.48	42.17	1-0	
2009.570	A	4	32.20	38.37	1-1	UV 11.71							
2009.327	A	2	32.20	38.37	0-1		1347.378	P		33.48	42.68	3-2	3d ³ D -5p' ³ P°
							1347.267	P		33.48	42.68	2-1	UV 12.06
							1347.203	P		33.48	42.68	1-0	
Vac													
1620.05	B	(3)	32.20	39.85	2-3	3p ³ P°-4d ³ D							
1620.33	B	(2)	32.20	39.85	1-2	UV 11.72	1296.30	B	(2d)	33.48	43.04		3d ³ D -5f' ³ F°
1620.59	B	(0)	32.20	39.85	0-1								UV 12.07
*1620.68	B	(1)	32.20	39.85	2-2								
*1620.68	B	(1)	32.20	39.85	1-1								
1576.888	P		32.20	40.06	2-3	3p ³ P°-3p' ³ D	Air						
1577.532	P		32.20	40.06	1-2	UV 11.73	2982.106	A	8	34.28	38.43	2-1	3d ¹ D -3s' ¹ P°
1578.001	P		32.20	40.06	0-1								UV 13
1480.298	P		32.20	40.58	2-1	3p ³ P°-3p' ³ S	2176.963	A	4	34.28	39.97	2-1	3d ¹ D -4p' ¹ P°
1480.011	P		32.20	40.58	1-1	UV 11.74							UV 14
1479.887	P		32.20	40.58	0-1								
1428.17	B	(2+)	32.20	40.88	2-2	3p ³ P°-3p' ³ P	2162.944	A	9	34.28	40.01	2-3	3d ¹ D -4f' ¹ F°
1428.66	B	(0)	32.20	40.88	1-1	UV 11.75							UV 15
1428.95	B	(1)	32.20	40.88	2-1								
1429.08	B	(0)	32.20	40.87	1-0		Vac						
							1779.12	B	(0)	34.28	41.25	2-2	3d ¹ D -3d' ¹ D°
													UV 16
1165.87	B	(1d)	32.20	42.84	2-3	3p ³ P°-5d ³ D							
1165.71	B	(0d)	32.20	42.84	1-2	UV 11.76	1541.115	P		34.28	42.32	2-3	3d ¹ D -3d' ¹ F°
													UV 17
1016.534	P		32.20	44.40	2-3	3p ³ P°-6d ³ D							
						UV 11.77	1497.563	P		34.28	42.56	2-1	3d ¹ D -5p' ¹ P°
													UV 18
							1423.896	P		34.28	42.99	2-1	3d ¹ D -3d' ¹ P°
													UV 19
Air													
2610.020	A	6	33.48	38.23	3-2	3d ³ D -3s' ³ P°							
2614.478	A	5	33.48	38.22	2-1	UV 12	1381.652	P		34.28	43.25	2-3	3d ¹ D -5f' ¹ F°
2616.627	A	4	33.48	38.21	1-0								UV 20
2609.83	A	1	33.48	38.23	2-2								
2614.414	P		33.48	38.22	1-1								
2609.746	P		33.48	38.23	1-2								

Multiplet Table

C III - Continued

C III - Continued

I A	Ref	Int	EP		J	Multiplet No.	I A	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Air							Air						
*7612.65	A	7	38.23	39.85	2-3	3s' 3P°-4d 3D	2727.555	P		38.43	42.98	1-2	3s' 1P°-5d 1D
7586.40	A	4	38.22	39.85	1-2	2.02							UV 25
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		9358.37	A	1	38.65	39.97	0-1	4s 1S -4p 1P°
6744.38	A	7	38.23	40.06	2-3	3s' 3P°-3p' 3D							7.02
6731.04	A	6	38.22	40.06	1-2	3	3170.016	A	4h	38.65	42.56	0-1	4s 1S -5p 1P°
*6727.39§	A	6	38.21	40.06	0-1								8
6762.17	A	4	38.23	40.06	2-2								
*6742.24§	A	5	38.22	40.06	1-1		2857.013	A	1	38.65	42.99	0-1	4s 1S -3d' 1P°
6773.37	A	1	38.23	40.06	2-1								UV 26
5272.53	A	6	38.23	40.58	2-1	3s' 3P°-3p' 3S	2202.54	A	1	38.65	44.27	0-1	4s 1S -6p 1P°
5253.58	A	5	38.22	40.58	1-1	4							UV 27
5244.67	A	3	38.21	40.58	0-1								
4665.86	A	8	38.23	40.88	2-2	3s' 3P°-3p' 3P							
4659.06	A	5	38.22	40.88	1-1	5	4516.77	A	6l	39.40	42.15	2-1	4p 3P°-5s 3S
4673.95	A	6	38.23	40.88	2-1		4515.78	A	5l	39.40	42.15	1-1	9
4663.64	A	6	38.22	40.87	1-0		4515.33	A	3l	39.40	42.15	0-1	
4651.01	A	5	38.22	40.88	1-2		*3609.625	A	6	39.40	42.84	2-3	4p 3P°-5d 3D
4652.06	A	5	38.21	40.88	0-1		*3609.063	A	5	39.40	42.84	1-2	10
3161.92	A	2	38.23	42.15	2-1	3s' 3P°-5s 3S	3608.81	A	3	39.40	42.84	0-1	
3155.09	A	1	38.22	42.15	1-1	5.01	*3609.625	A	6	39.40	42.84	2-2	
3151.85	A	0	38.21	42.15	0-1		*3609.063	A	5	39.40	42.84	1-1	
2688.830	P		38.23	42.84	2-3	3s' 3P°-5d 3D	*2697.75§§	A	7	39.40	44.00	2-1	4p 3P°-6s 3S
						UV 21	2697.42	A	3	39.40	44.00	1-1	UV 28
11981.20	P		38.37	39.40	1-2	4s 3S -4p 3P°	2480.861	A	4h	39.40	44.40	2-3	4p 3P°-6d 3D
11988.08	P		38.37	39.40	1-1	5.02	2480.502	A	4h	39.40	44.40		UV 29
11991.31	P		38.37	39.40	1-0								
3543.614	P		38.37	41.86	1-2	4s 3S -3d' 3D°	7707.43	A	6	39.64	41.25	1-2	3p' 1P -3d' 1D°
3545.236	P		38.37	41.86	1-1	5.03							10.01
3262.272	A	3	38.37	42.17	1-2	4s 3S -3d' 3P°	4247.308	A	4	39.64	42.56	1-1	3p' 1P -5p 1P°
3259.541	A	2	38.37	42.17	1-1	6							11
3258.00	A	1	38.37	42.17	1-0		3703.71	A	4hs	39.64	42.99	1-1	3p' 1P -3d' 1P°
2874.722	A	3	38.37	42.68	1-2	4s 3S -5p 3P°							12
2874.43	A	2	38.37	42.68	1-1	UV 22	2673.765	P		39.64	44.27	1-1	3p' 1P -6p 1P°
2874.24	A	0	38.37	42.68	1-0								UV 30
2100.46	A	0	38.37	44.27	1-2	4s 3S -6p 3P°							
						UV 23	8332.99	A	7	39.85	41.34	3-4	4d 3D -3d' 3F°
							8341.59	A	6	39.85	41.34	2-3	12.01
							8347.94	A	5	39.85	41.33	1-2	
7037.25	A	7h	38.43	40.20	1-2	3s' 1P°-4d 1D	8357.86	A	2	39.85	41.34	3-3	
						6.01	8358.72	A	2	39.85	41.33	2-2	
							8375.040	P		39.85	41.33	3-2	
4325.560	A	8	38.43	41.30	1-2	3s' 1P°-3p' 1D	6156.68	A	3	39.85	41.87	3-3	4d 3D -3d' 3D°
						7	6155.09	A	2	39.85	41.86	2-2	13
3506.783	P		38.43	41.97	1-0	3s' 1P°-5s 1S	6154.13	A	1	39.85	41.86	1-1	
						7.01	6163.96	A	0	39.85	41.86	3-2	
2849.050	A	5	38.43	42.79	1-0	3s' 1P°-3p' 1S	6159.97	A	0	39.85	41.86	2-1	
						UV 24	6147.81	A	0	39.85	41.87	2-3	
							6149.23	A	0	39.85	41.86	1-2	

Multiplet Table

C III - Continued

C III - Continued

IA	Ref	Int	EP		J	Multiplet No.	IA	Ref	Int	EP		J	Multiplet No.	
			Low	High						Low	High			
Air							Air							
5359.95	A	2	39.85	42.17	3-2	4d ³ D - 3d' ³ P° 13.01	4186.900	A	9h	40.01	42.97	3-4	4f ¹ F° - 5g ¹ G 18	
5345.84	A	1p	39.85	42.17	2-1									
5337.42	A	0	39.85	42.17	1-0									
5353.12	A	0p	39.85	42.17	2-2			4173.089	A	2	40.01	42.98	3-2	4f ¹ F° - 5d ¹ D 18.01
5341.46	A	0	39.85	42.17	1-1									
5348.816	P		39.85	42.17	1-2		2777.714	A	5hl	40.01	44.47	3-4	4f ¹ F° - 6g ¹ G UV 35	
4388.016	A	4	39.85	42.68	3-2	4d ³ D - 5p ³ P° 14								
4382.898	A	3	39.85	42.68	2-1									
4379.481	A	2	39.85	42.68	1-0									
4383.544	A	2	39.85	42.68	2-2									
4379.952	A	2	39.85	42.68	1-1			9699.570	P		40.06	41.34	3-4	3p' ³ D - 3d' ³ F° 18.02
4380.570	P		39.85	42.68	1-2		9696.483	P		40.06	41.34	2-3		
							9696.540	P		40.06	41.33	1-2		
3889.144	A	6	39.85	43.04	3-4	4d ³ D - 5f ³ F° 15	6872.05	A	4	40.06	41.87	3-3	3p' ³ D - 3d' ³ D° 19	
3885.941	A	5	39.85	43.04	2-3			6862.71	A	3	40.06	41.86	2-2	
3883.816	A	4	39.85	43.04	1-2			6857.27	A	2	40.06	41.86	1-1	
3889.475	A	1	39.85	43.04	3-3			6881.09	A	1	40.06	41.86	3-2	
3886.145	P		39.85	43.04	2-2			6868.80	A	1	40.06	41.86	2-1	
3889.670	P		39.85	43.04	3-2			6853.70	A	1	40.06	41.87	2-3	
2808.07	A	1	39.85	44.27	3-2		4d ³ D - 6p ³ P° UV 31	6851.20	A	1	40.06	41.86	1-2	
2806.31	A	1	39.85	44.27	2-1									
*2805.13	A	0	39.85	44.27	1-0			5894.07	A	3	40.06	42.17	3-2	3p' ³ D - 3d' ³ P° 20
2806.231	P		39.85	44.27	2-2			5871.69	A	2	40.06	42.17	2-1	
*2805.13	A	0	39.85	44.27	1-1			5858.35	A	1	40.06	42.17	1-0	
2672.959	A	5hs	39.85	44.49	3-4	4d ³ D - 6f ³ F° UV 32	5880.54	A	1	40.06	42.17	2-2		
2671.318	A	4hs	39.85	44.49	2-3			5863.24	A	1	40.06	42.17	1-1	
2670.240	A	3hs	39.85	44.49	1-2			5872.101	P		40.06	42.17	1-2	
								4739.66	A	2	40.06	42.68	3-2	3p' ³ D - 5p ³ P° 20.01
								4730.16	A	1	40.06	42.68	2-1	
							4724.33	A	1p	40.06	42.68	1-0		
4257.894	A	2	39.92	42.84	4-3	4f ³ F° - 5d ³ D 15.01	4162.86	A	7	40.06	43.04	3-4	3p' ³ D - 5f ³ F° 21	
4256.455	A	1	39.92	42.84	3-2			4156.49	A	6	40.06	43.04	2-3	
4255.42	A	1	39.92	42.84	2-1			4152.512	A	5	40.06	43.04	1-2	
4070.261	A	9	39.92	42.97	4-5	4f ³ F° - 5g ³ G 16	4163.26	A	2	40.06	43.04	3-3		
4068.912	A	9	39.92	42.97	3-4			4156.76	A	2	40.06	43.04	2-2	
4067.940	A	8	39.92	42.97	2-3			4163.487	P		40.06	43.04	3-2	
2725.90	A	7l	39.92	44.47	4-5	4f ³ F° - 6g ³ G UV 33	2799.47	A	4wh	40.06	44.49	3-4	3p' ³ D - 6f ³ F° UV 36	
2725.30	A	7l	39.92	44.47	3-4			2796.46	A	3wh	40.06	44.49	2-3	
2724.85	A	6l	39.92	44.47	2-3			2794.56	A	2wh	40.06	44.49	1-2	
9331.014	P		39.97	41.30	1-2	4p ¹ P° - 3p' ¹ D 16.01	11790.91	P		40.20	41.25	2-2	4d ¹ D - 3d' ¹ D° 21.01	
6205.56	A	5	39.97	41.97	1-0	4p ¹ P° - 5s ¹ S 16.02	5826.42	A	7	40.20	42.32	2-3	4d ¹ D - 3d' ¹ F° 22	
4121.843	A	5l	39.97	42.98	1-2	4p ¹ P° - 5d ¹ D 17	5249.11	A	4l	40.20	42.56	2-1	4d ¹ D - 5p ¹ P° 23	
2751.828	A	3hl	39.97	44.48	1-2	4p ¹ P° - 6d ¹ D UV 34	4443.08	A	2?	40.20	42.99	2-1	4d ¹ D - 3d' ¹ P° 23.01	
							4056.062	A	7	40.20	43.25	2-3	4d ¹ D - 5f ¹ F° 21	
9597.807	P		40.01	41.30	3-2	4f ¹ F° - 3p' ¹ D 17.01	3038.91	A	1	40.20	44.27	2-1	4d ¹ D - 6p ¹ P° 25	

Multiplet Table

C III - Continued

C III - Continued

I A	Ref	Int	EP		J	Multiplet No.	I A	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Air 2863.712	A	4s	40.20	44.52	2-3	4d ¹ D —6f ¹ F° UV 37	Air 6774.93	A	0	42.17	44.00	2-1	3d' ³ P°—6s ³ S 36
							2016.84	A	1WH	42.17	48.31	2-3	3d' ³ P°—4f' ³ D UV 42
							2015.7	A	0WH	42.17	48.31		
7796.00	A	4	40.58	42.17	1-2	3p' ³ S —3d' ³ P°							
7780.42	A	3	40.58	42.17	1-1	26							
7771.760	P		40.58	42.17	1-0								
							5771.66	A	2hl	42.32	44.47	3-4	3d' ¹ F°—6g ¹ G 37
12583.93	P		40.88	41.87	2-3	3p' ³ P —3d' ³ D°							
12555.56	P		40.88	41.86	1-2	27							
12542.68	P		40.87	41.86	0-1		6460.33	A	0w	42.56	44.48	1-2	5p ¹ P°—6d ¹ D 38
9651.475	P		40.88	42.17	2-2	3p' ³ P —3d' ³ P°							
9593.322	P		40.88	42.17	1-1	28							
6899.64	A	1	40.88	42.68	2-2	3p' ³ P —5p ³ P°	7210.52	A	2WH	42.68	44.40	2-3	5p ³ P°—6d ³ D
6880.500	P		40.88	42.68	1-1	29	7212.29	A	1WH	42.68	44.40	1-	39
2142.49	A	1	40.88	46.67	2-2	3p' ³ P —4s' ³ P°							
2145.58	A	0w	40.88	46.67		UV 38							
							8652.6	A	1WH	42.84	44.27	3-2	5d ³ D —6p ³ P° 40
9859.405	P		41.30	42.56	2-1	3p' ¹ D —5p ¹ P°							
						30	7486.52	A	3hs	42.84	44.49		5d ³ D —6f ³ F° 41
7353.96	A	0	41.30	42.99	2-1	3p' ¹ D —3d' ¹ P°							
						31	4859.6	A	0w	42.84	45.39	3-4	5d ³ D —7f ³ F°? 42
6350.76	A	2h	41.30	43.25	2-3	3p' ¹ D —5f ¹ F°							
						32							
4166.95	A	1	41.30	44.27	2-1	3p' ¹ D —6p ¹ P°	8196.48	A	10hs	42.97	44.48		5g ^{3,1} G—6h ^{3,1} H° 43
						33							
							8021.14	A	1Hs	42.98	44.52	2-3	5d ¹ D —6f ¹ F° 44
8296.51	A	1+h	41.34	42.84	4-3	3d' ³ F°—5d ³ D							
8272.26	A	1h	41.34	42.84	3-2	34							
8255.62	A	1-h	41.33	42.84	2-1								
*7612.65	A	7	41.34	42.97	4-5	3d' ³ F°—5g ³ G	8665.22	A	3WH	43.04	44.47	4-5	5f ³ F°—6g ³ G
7592.28	A	5l	41.34	42.97	3-4	35	8663.65	A	2WH	43.04	44.47	3-4	45
7578.16	A	4l	41.33	42.97	2-3								
							5305.10	A	2Hl	43.04	45.38		5f ³ F°—7g ³ G 46
2255.51	P		41.87	47.36	3-3	3d' ³ D°—4p' ³ D							
2256.54	P		41.86	47.36	2-2	UV 39							
2139.86	A	1	41.87	47.66	3-2	3d' ³ D°—4p' ³ P	3999.92	B	(0+d)	47+	50+	4-5	4d' ³ F°—5f' ³ G
2140.92	A	1w	41.86	47.65	2-1	UV 40	4001.56	B	(0d)	47+	50+		47
Vac 1979.16	A	2	41.87	48.13	3-4	3d' ³ D°—4f' ³ F	4315.44	A	3wh	48.07	50.94	3-4	4d' ³ D°—5f' ³ F 48
1979.62	A	1	41.87	48.13		UV 41							

C III - Continued

C III - Continued

IA	Ref	Int	EP		J	Multiplet No.	IA	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Air 4358.90	A	2WH	48+	50+	5-6	4f' ³ C — 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
*4367.50§ 4361.87	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

NSRDS-NBS 3, SECTION 3

CARBON, $Z = 6$

A C IV Atomic Energy Levels

B C IV Multiplet Table

Part A

CARBON

C IV

(Li I sequence; 3 electrons)

 $Z = 6$ Ground state $1s^2 2s^2 S_{01/2}$ $2s^2 S_{01/2}$ $520178.4 \pm 1.5 \text{ cm}^{-1}$, 192.242 \AA (Vac)

I P 64.492 eV

The analysis is by Bockasten, who has observed and remeasured the spectrum from 1900 Å to 9950 Å, with the sliding spark as source, and remeasured the resonance doublet. The new measurements combined with Edlén's wavelengths for ten lines in the region 380 Å to 1250 Å have been used to recalculate the term system. The author has, also, made a detailed study of the Stark effect.

The term system "as obtained from the observations" is quoted in the table except for $7p^2 P^\circ$ and $7g^2 G$. The theoretical or "unperturbed" term values calculated for hydrogenic terms and from an extended Ritz formula are quoted for higher series members; these are entered in brackets.

In his 1934 Monograph, Edlén's list of classified lines includes the additional terms of the $np^2 P^\circ$ series, $n = 10$ and 11 , and $10d^2 D$. These have been included from his observations. The higher terms have been derived from the calculated wavelengths in the 1969 reference. The unresolved $2P^\circ$ term, 64520 cm^{-1} , has been used to calculate the $nd^2 D$ terms ($n = 11$ to 14).

The limit is well determined from the unperturbed terms of the $ns^2 S$ series ($n = 2, 3, 4, 6$). The value as corrected by Ölme is quoted.

In 1939 Edlén and Tyrén reported observations of series in the region from 60 Å to 15 Å in the vacuum spark spectra of the elements B to F. They interpreted the lines as transitions from doubly-excited states, indicating "the existence of discrete energy levels lying above the ionization limits by amounts up to five times the ionization potential of the same spectrum." In a private communication Edlén has reported that eleven lines were measured by Tyrén between 40.3 Å and 41.5 Å, near the C V resonance line. These authors conclude that the lines "must for the main part be of the type

$$1s^2 nl - 1s nl 2p (n \geq 2) \text{ in C IV.}^{33}$$

On the basis of a theoretical study Wu has attempted to classify some of these satellite lines.

REFERENCES

- B. Edlén and F. Tyrén, *Nature* **143**, 940 to 941 (1939). C L
- T.-Y. Wu, *Phys. Rev.* **58**, 1114 to 1115 (1940). C L
- K. Bockasten, *Ark. Fys. (Stockholm)* **10**, No. 40, 567 to 582 (1956). I P, T, C L
- K. Bockasten, R. Hallin and T. P. Hughes, *Proc. Phys. Soc. (London)* **81**, No. 521, 522 to 530 (1963). C L
- A. Ölme, *Ark. Fys. (Stockholm)* **40**, No. 2, 35 to 47 (1968). I P
- B. Edlén, private communication (1969) (1970). C L, I P
- V. M. Perevertun and S. M. Mukhtarov, *Opt. and Spectr.* **26**, No. 1, 50 to 51 (1969). C L

Atomic Energy Levels

C IV					C IV				
Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval
1s ² 2s	2s ² S	0½	0.0		1s ² 7f	7f ² F°	2½, 3½	[484343.5]	
1s ² 2p	2p ² P°	0½ 1½	64484.0 64591.7	107.7	7g	7g ² G	3½, 4½	[484345.42]	
1s ² 3s	3s ² S	0½	302849.0		7h	7h ² H°	4½, 5½	[484345.84]	
1s ² 3p	3p ² P°	0½ 1½	320050.1 320081.7	31.6	7i	7i ² I	5½, 6½	[484345.96]	
1s ² 3d	3d ² D	1½ 2½	324879.8 324890.3	10.5	1s ² 8s	8s ² S	0½	[491650.8]	
1s ² 4s	4s ² S	0½	401348.1		1s ² 8p	8p ² P°	0½ 1½	[492477.7] [492479.3]	[1.6]
1s ² 4p	4p ² P°	0½ 1½	408311.1 408324.2	13.1	1s ² 8d	8d ² D	1½ 2½	[492728.5]	
1s ² 4d	4d ² D	1½ 2½	410336.1 410340.1	4.0	1s ² 8f	8f ² F°	2½, 3½	[492742.2]	
1s ² 4f	4f ² F°	2½ 3½	410434.2		8g	8g ² G	3½, 4½	[492743.49]	
1s ² 5s	5s ² S	0½	445368.5		8h	8h ² H°	4½, 5½	[492743.78]	
1s ² 5p	5p ² P°	0½ 1½	448855.8 448862.9	7.1	8i	8i ² I	5½, 6½	[492743.86]	
1s ² 5d	5d ² D	1½ 2½	449888.2 449889.9	1.7	1s ² 9s	9s ² S	0½	[497736.7]	
1s ² 5f	5f ² F°	2½ 3½	449939.8		1s ² 9p	9p ² P°	0½ 1½	[498314.6] [498315.7]	[1.1]
1s ² 5g	5g ² G	3½ 4½	449948.4		1s ² 9d	9d ² D	1½ 2½	[498490.6]	
1s ² 6s	6s ² S	0½	468784.0		1s ² 9f	9f ² F°	2½, 3½	[498500.3]	
1s ² 6p	6p ² P°	0½ 1½	470775.0 470778.9	3.9	9g	9g ² G	3½, 4½	[498501.17]	
1s ² 6d	6d ² D	1½ 2½	471370.3 471371.5	1.2	9h	9h ² H°	4½, 5½	[498501.37]	
1s ² 6f	6f ² F°	2½, 3½	[471403.2]		9i	9i ² I	5½, 6½	[498501.44]	
6g	6g ² G	3½, 4½	[471406.16]		1s ² 10p	10p ² P°	0½ 1½	502412	
6h	6h ² H°	4½, 5½	[471406.80]		1s ² 10d	10d ² D	1½ 2½	502598	
1s ² 7s	7s ² S	0½	482706.0		1s ² 11p	11p ² P°	0½ 1½	505510	
1s ² 7p	7p ² P°	0½ 1½	[483948.4] [483950.8]	[2.4]	1s ² 11d	11d ² D	1½ 2½	[505696]	
1s ² 7d	7d ² D	1½ 2½	484320.6		1s ² 12p	12p ² P°	0½ 1½	[507906]	
					1s ² 12d	12d ² D	1½ 2½	[508018]	
					1s ² 13p	13p ² P°	0½ 1½	[509728]	
					1s ² 13d	13d ² D	1½ 2½	[509821]	
					1s ² 14d	14d ² D	1½ 2½	[511254]	
					C v (1S ₀)	Limit		520178.4 ± 1.5	

December 1969.

Multiplet Table

Part B

CARBON

C IV (Z = 6)

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

Anal A List A December 1969

REFERENCES

- B. Edlén and F. Tyrén, Nature **143**, 940 to 941 (1939). C L
- T.-Y. Wu, Phys. Rev. **58**, 1114 to 1115 (1940). C L
- B. Edlén, private communication (1969). W L 40.3 Å to 41.5 Å
- 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

C IV

I A	Ref	Int	EP		J	Multiplet No.	I A	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
1548.202‡	C	20	0.00	8.01	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 2p^2P^\circ$	199.04	B		0.00	62.29	$0\frac{1}{2}-$	$2s^2S - 10p^2P^\circ$
1550.774	C	19	0.00	7.99	$0\frac{1}{2}-0\frac{1}{2}$	UV 1							UV 5.04
312.418	B	15	0.00	39.68	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 3p^2P^\circ$	197.82	B	(2)	0.00	62.67	$0\frac{1}{2}-$	$2s^2S - 11p^2P^\circ$
312.455	B	14	0.00	39.68	$0\frac{1}{2}-0\frac{1}{2}$	UV 2							UV 5.05
307.806	B	1	0.00	40.28	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 3d^2D$	196.96	D	(1)	0.00	62.97	$0\frac{1}{2}-$	$2s^2S - 12p^2P^\circ$
						UV 2.01 F							UV 5.06
244.907	B	10	0.00	50.62	$0\frac{1}{2}-$	$2s^2S - 4p^2P^\circ$	196.27	D	(1)	0.00	63.20	$0\frac{1}{2}-$	$2s^2S - 13p^2P^\circ$
						UV 3							UV 5.07
222.791	B	7	0.00	55.65	$0\frac{1}{2}-$	$2s^2S - 5p^2P^\circ$	419.714	B	14	8.01	37.55	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 3s^2S$
						UV 4	419.525	B	13	7.99	37.55	$0\frac{1}{2}-0\frac{1}{2}$	UV 6
212.421	B	5	0.00	58.37	$0\frac{1}{2}-$	$2s^2S - 6p^2P^\circ$	384.178	B	17	8.01	40.28	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^\circ - 3d^2D$
						UV 5	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	$1\frac{1}{2}-1\frac{1}{2}$	
206.641	B	3d	0.00	60.00	$0\frac{1}{2}-$	$2s^2S - 7p^2P^\circ$	296.951	B	7	8.01	49.76	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 4s^2S$
						UV 5.01	296.857	B	6	7.99	49.76	$0\frac{1}{2}-0\frac{1}{2}$	UV 8
203.057	B	1d	0.00	61.06	$0\frac{1}{2}-$	$2s^2S - 8p^2P^\circ$	289.230	B	10	8.01	50.87	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^\circ - 4d^2D$
						UV 5.02	289.143	B	9	7.99	50.87	$0\frac{1}{2}-1\frac{1}{2}$	UV 9
200.68	B	odd	0.00	61.78	$0\frac{1}{2}-$	$2s^2S - 9p^2P^\circ$	262.624	B	4	8.01	55.22	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 5s^2S$
						UV 5.03	262.550	B	3	7.99	55.22	$0\frac{1}{2}-0\frac{1}{2}$	UV 9.01

Multiplet Table

C IV - Continued

C IV - Continued

I A	Ref	Int	EP		J	Multiplet No.	I A	Ref	Int	EP		J	Multiplet No.
			Low	High						Low	High		
Vac													
259.542	B	7	8.01	55.78	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^\circ - 5d^2D$	Vac						
259.471	B	6	7.99	55.78	$0\frac{1}{2}-1\frac{1}{2}$	UV 10	770.379	B	0d	39.68	55.78	$1\frac{1}{2}-2\frac{1}{2}$	$3p^2P^\circ - 5d^2D$
							770.19	P		39.68	55.78	$0\frac{1}{2}-1\frac{1}{2}$	UV 11.17
247.415	B	1	8.01	58.12	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 6s^2S$							
247.357	B	0	7.99	58.12	$0\frac{1}{2}-0\frac{1}{2}$	UV 10.01							
245.830	B	5d	8.01	58.44	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^\circ - 6d^2D$	1198.58	B	1d	40.28	50.62		$3d^2D - 4p^2P^\circ$
245.775	B	4d	7.99	58.44	$0\frac{1}{2}-1\frac{1}{2}$	UV 11							UV 11.18
239.196	B	0	8.01	59.85	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 7s^2S$	1168.990	B	4	40.28	50.89	$2\frac{1}{2}-3\frac{1}{2}$	$3d^2D - 4f^2F^\circ$
239.11	P		7.99	59.85	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.01	1168.873	B	3+	40.28	50.89	$1\frac{1}{2}-2\frac{1}{2}$	UV 11.19
238.250	B	3d	8.01	60.05	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^\circ - 7d^2D$							
238.200	B	2d	7.99	60.05	$0\frac{1}{2}-1\frac{1}{2}$	UV 11.02							
234.19	D	(2)	8.01	60.96	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 8s^2S$	Air						
						UV 11.03	2103.94	A	2	49.76	55.65	$0\frac{1}{2}-1\frac{1}{2}$	$4s^2S - 5p^2P^\circ$
233.53	B	2dd	8.00	61.09		$2p^2P^\circ - 8d^2D$	2104.24	A	1	49.76	55.65	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.20
						UV 11.04							
230.9	D	1	8.01	61.71	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 9s^2S$	2698.67	A	4	50.62	55.22	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 5s^2S$
						UV 11.05	*2697.75§	A	4	50.62	55.22	$0\frac{1}{2}-0\frac{1}{2}$	UV 12
230.43	B	1dd	8.00	61.80		$2p^2P^\circ - 9d^2D$	2405.10	A	6l	50.62	55.78	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2P^\circ - 5d^2D$
						UV 11.06	2404.44	A	5	50.62	55.78	$0\frac{1}{2}-1\frac{1}{2}$	UV 12.01
228.27	B	0dd	8.00	62.31		$2p^2P^\circ - 10d^2D$	2405.20	P		50.62	55.78	$1\frac{1}{2}-1\frac{1}{2}$	
						UV 11.07							
226.72	D	(3)	8.00	62.70		$2p^2P^\circ - 11d^2D$	2595.089	A	4	50.87	55.65	$2\frac{1}{2}-1\frac{1}{2}$	$4d^2D - 5p^2P^\circ$
						UV 11.08	2595.295	A	3	50.87	55.65	$1\frac{1}{2}-0\frac{1}{2}$	UV 13
225.49	D	(2)	8.00	62.98		$2p^2P^\circ - 12d^2D$	2527.7	A	1h	50.87	55.78		$4d^2D - 5d^2D$
						UV 11.09							UV 13.01F
224.5	D	(1)	8.00	63.21		$2p^2P^\circ - 13d^2D$	2524.41	A	9l	50.87	55.78		$4d^2D - 5f^2F^\circ$
						UV 11.10							UV 14
223.9	D	(1)	8.00	63.39		$2p^2P^\circ - 14d^2D$	2523.7	A	4hs	50.87	55.79		$4d^2D - 5g^2G$
						UV 11.11							UV 14.01F
Air													
5801.33	A	10	37.55	39.68	$0\frac{1}{2}-1\frac{1}{2}$	$3s^2S - 3p^2P^\circ$							
5811.98	A	9	37.55	39.68	$0\frac{1}{2}-0\frac{1}{2}$	1							
Vac													
948.098	B	1	37.55	50.62	$0\frac{1}{2}-1\frac{1}{2}$	$3s^2S - 4p^2P^\circ$	2533.77	A	2l	50.89	55.78		$4f^2F^\circ - 5d^2D$
948.214	B	0	37.55	50.62	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.12							UV 14.02
684.87	P		37.55	55.65	$0\frac{1}{2}-1\frac{1}{2}$	$3s^2S - 5p^2P^\circ$	2530.6	A	6hl	50.89	55.78		$4f^2F^\circ - 5f^2F^\circ$
684.90	P		37.55	55.65	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.13							UV 14.03F
							2529.98	A	11s	50.89	55.79		$4f^2F^\circ - 5g^2G$
													UV 15
1230.511	B	3	39.68	49.76	$1\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 4s^2S$							
1230.046	B	2	39.68	49.76	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.14							
1107.933	B	2	39.68	50.87	$1\frac{1}{2}-2\frac{1}{2}$	$3p^2P^\circ - 4d^2D$	3934.29	A	2	55.22	58.37	$0\frac{1}{2}-1\frac{1}{2}$	$5s^2S - 6p^2P^\circ$
1107.600	B	1	39.68	50.87	$0\frac{1}{2}-1\frac{1}{2}$	UV 11.15	3934.89	A	1	55.22	58.37	$0\frac{1}{2}-0\frac{1}{2}$	2
798.17	P		39.68	55.22	$1\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 5s^2S$							
797.97	P		39.68	55.22	$0\frac{1}{2}-0\frac{1}{2}$	UV 11.16							

Multiplet Table

C IV—Continued

C IV—Continued

IA	Ref	Int	E P		J	Multiplet No.	IA	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Air 5018.39 5016.58	A A	2 1	55.65 55.65	58.12 58.12	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p^2P^\circ - 6s^2S$ 3	Air 2901.60	A	2 <i>wh</i>	55.78 60.05	60.05		$5d^2D - 7f^2F^\circ$ UV 19
4441.49 4440.34	A A	3/ 2/	55.65 55.65	58.44 58.44	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$	$5p^2P^\circ - 6d^2D$ 4	4658.30	A	9 <i>W</i>	55.79	58.45		$5g^2G - 6h^2H^\circ$ etc. 8
2953.95 2953.4	A A	1 0	55.65 55.65	59.85 59.85	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p^2P^\circ - 7s^2S$ UV 16	2906.29	A	5 <i>W</i>	55.79	60.05		$5g^2G - 7h^2H^\circ$ etc. UV 20
2819.24	A	1/	55.65	60.05		$5p^2P^\circ - 7d^2D$ UV 17	2335.9	A	2 <i>W</i>	55.79	61.09		$5g^2G - 8h^2H^\circ$ etc. UV 21
4785.88 4786.7 ?	A A	1 0	55.78 55.78	58.37 58.37	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-0\frac{1}{2}$	$5d^2D - 6p^2P^\circ$ 5	7726.2	A	6 <i>W</i>	58.45	60.05		$6h^2H^\circ - 7i^2I$ etc. 8.01
m4646.99 m4646.62	P P	C III C III	55.78 55.78	58.45 58.45	$2\frac{1}{2}-$ $1\frac{1}{2}-$	$5d^2D - 6f^2F^\circ$ 6	4685.4	A	1 <i>W</i>	58.45	61.09		$6h^2H^\circ - 8i^2I$ etc. 8.02
2935.12	A	1	55.78	60.00		$5d^2D - 7p^2P^\circ$ UV 18	3689.6	A	2 <i>W</i>	58.45	61.80		$6h^2H^\circ - 9i^2I$ etc. 8.03

NSRDS-NBS 3, SECTION 3

CARBON, $Z = 6$

- A C v Atomic Energy Levels
- B C v Multiplet Table

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 $2p\ ^1P^\circ$ 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 $2p\ ^1P^\circ$ as given by Accad et al. The five-term series $ns\ ^3S$, $np\ ^3\ ^1P^\circ$ and $nd\ ^3\ ^1D$, 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 $5300000\ \text{cm}^{-1}$ to $5800000\ \text{cm}^{-1}$. Both the observed positions and intensities of these lines agree well with the theoretical interpretation.

REFERENCES

- B. Edlén and F. Tyrén, *Nature* **143**, No. 3631, 940 to 941 (1939). C L
- C. L. Pekeris, *Phys. Rev.* **112**, No. 5, 1649 to 1658 (1958). Theory
- 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). C L
- Y. Accad., C. L., Pekeris, B. Schiff, *Phys. Rev.* **183**, No. 1, 78 to 80 (1969). Theory
- U. Feldman and L. Cohen, *Astroph. J.* **158**, No. 3, Part 2, L169 to L170 (1969). C L
- B. Edlén and B. Löfstrand, *J. Phys. B (Proc. Phys. Soc. London)* [2] **3**, No. 10, 1380 to 1388 (1970). I P, T. C L. Theory

Atomic Energy Levels

C v					C v				
Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval
1s ²	1s ² ¹ S	0	0		1s 6p	6p ³ P°	0, 1, 2	[3085435]	
1s 2s	2s ³ S	1	2411262		1s 6d	6d ³ D	1, 2, 3	[3086138]	
1s 2s	2s ¹ S	0	2455024		1s 6f	6f ³ F°	2, 3, 4	[3086186.0]	
1s 2p	2p ³ P°	0	2455161	- 13 136	1s 6f	6f ¹ F°	3		
		1	2455148		1s 6d	6d ¹ D	2	[3086189]	
		2	2455284		1s 6g	6g ³ G	3, 4, 5	[3086189.6]	
1s 2p	2p ¹ P°	1	2483371	1s 6g	6g ¹ G	4			
1s 3s	3s ³ S	1	2839562		1s 6h	6h ³ H°	4, 5, 6	[3086190.8]	
1s 3s	3s ¹ S	0	[2851180]		1s 6h	6h ¹ H°	5		
1s 3p	3p ³ P°	0, 1, 2	2851418		1s 6p	6p ¹ P°	1	3086439	
1s 3d	3d ³ D	1, 2	2857305	10	1s 6p				
		3	2857315		1s 7s	7s ³ S	1	[3105066]	
1s 3d	3d ¹ D	2	2857529		1s 7p	7p ³ P°	0, 1, 2	[3105933]	
1s 3p	3p ¹ P°	1	2859375		1s 7d	7d ³ D	1, 2, 3	[3106374]	
1s 4s	4s ³ S	1	[2983541]		1s 7d	7d ¹ D	2	[3106407]	
1s 4p	4p ³ P°	0, 1, 2	2988359		1s 7g	7g ³ G	3, 4, 5	[3106407.4]	
1s 4d	4d ³ D	1, 2, 3	2990776		1s 7g	7g ¹ G	4		
1s 4d	4d ¹ D	2	2990923		1s 7h	7h ³ H°	4, 5, 6	[3106408.2]	
1s 4f	4f ³ F°	2, 3, 4	[2990923.4]		1s 7h	7h ¹ H°	5		
1s 4f	4f ¹ F°	3		1s 7i	7i ³ I	5, 6, 7	[3106408.6]		
1s 4p	4p ¹ P°	1	2991710		1s 7i	7i ¹ I		6	
1s 5s	5s ³ S	1	[3048927]		1s 7p	7p ¹ P°	1	[3106541]	
1s 5p	5p ³ P°	0, 1, 2	3051332		1s 8s	8s ³ S	1	[3118635]	
1s 5d	5d ³ D	1, 2, 3	3052589		1s 8p	8p ³ P°	0, 1, 2	[3119212]	
1s 5f	5f ³ F°	2, 3, 4	[3052653.3]		1s 8d	8d ³ D	1, 2, 3	[3119507]	
1s 5f	5f ¹ F°	3		1s 8d	8d ¹ D	2	[3119530]		
1s 5d	5d ¹ D	2	[3052656]		1s 8p	8p ¹ P°	1	[3119619]	
1s 5g	5g ³ G	3, 4, 5	[3052659.4]						
1s 5g	5g ¹ G	4							
1s 5p	5p ¹ P°	1	3053044						
1s 6s	6s ³ S	1	[3084048]		C VI(² S _{01/2})	Limit	.....	3162395 ± 30	

June 1, 1970.

Part B

CARBON

C v (Z=6)

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

Anal A List A June 1970

REFERENCES

- A B. Edlén and B. Löfstrand, *J. Phys. B (Proc. Phys. Soc. London)* [2] **3**, No. 10, 1380 to 1388 (1970). I P, T, C L; W L 32 Å to 40 Å; 156 Å to 267 Å; 2270 Å to 3526 Å. See A, also, for quoted wavelengths.
- 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; W L, 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

C v

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 40.7306	A	3	0.00	304.39	0-1	1s ² 1S -2p 3P° 1	Vac 32.188	B		0.00	385.15	0-1	1s ² 1S -7p 1P° 10
40.2680‡	A	10	0.00	307.89	0-1	1s ² 1S -2p 1P° 2	32.064	B		0.00	386.77	0-1	1s ² 1S -8p 1P° 11
35.070	P		0.00	353.52	0-1	1s ² 1S -3p 3P° 3							
34.9728	A	5	0.00	354.51	0-1	1s ² 1S -3p 1P° 4	Air 2270.91 2277.92 2277.25	A 3 A 2 A 1	3	298.95 298.95 298.95	304.41 304.39 304.39	1-2 1-1 1-0	2s 3S -2p 3P° 12
33.463	P		0.00	370.50	0-1	1s ² 1S -4p 3P° 5	Vac 227.192	A	5	298.95	353.52	1-	2s 3S -3p 3P° 13
33.4257	A	3	0.00	370.92	0-1	1s ² 1S -4p 1P° 6	173.281	A	2	298.95	370.50	1-	2s 3S -4p 3P° 14
32.773	P		0.00	378.31	0-1	1s ² 1S -5p 3P° 7	156.233	A	1	298.95	378.31	1-	2s 3S -5p 3P° 15
32.7542	A	2	0.00	378.52	0-1	1s ² 1S -5p 1P° 8							
32.3998	A	1	0.00	382.66	0-1	1s ² 1S -6p 1P° 9	Air 3526.7	A		304.38	307.89	0-1	2s 1S -2p 1P° 16

Multiplet Table

C V—Continued

C V—Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac *247.31§	A		304.38	354.51	0-1	2s 1S - 3p 1P° 17	Vac 717.58	P		353.52	370.80		3p 3P° - 4d 3D 31
186.329	P		304.38	370.92	0-1	2s 1S - 4p 1P° 18	506.31	P		353.52	378.01	-1	3p 3P° - 5s 3S 32
167.218	P		304.38	378.52	0-1	2s 1S - 5p 1P° 19	497.09	P		353.52	378.46		3p 3P° - 5d 3D 33
158.374	P		304.38	382.66	0-1	2s 1S - 6p 1P° 20	763.07	P		354.25	370.50		3d 3D - 4p 3P° 34
260.229	A	1	304.41	352.05	2-1	2p 3P° - 3s 3S 21	748.43	P		354.25	370.82		3d 3D - 4f 3F° 35
*260.136	A	1 -	304.39	352.05	1-1								
*260.136	A	1 -	304.39	352.05	0-1		749.66	P		354.28	370.82	2-3	3d 1D - 4f 1F° 36
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	760.18	P		354.51	370.82	1-2	3p 1P° - 4d 1D 37
*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	1619.80	P		370.82	378.47		4f 3,1F° - 5g 3,1G 38
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 2980.97	P		378.47	382.63		5f 3,1F° - 6g 3,1G 39
Air 8432.2	P		352.05	353.52		3s 3S - 3p 3P° 27	2981.41	P		378.47	382.63		5g 3,1G - 6h 3,1H° 40
Vac 672.06	P		352.05	370.50	1-	3s 3S - 4p 3P° 28	4943.88	P	(1)	382.63	385.14		6f 3,1F° - 7g 3,1G 41
472.21	P		352.05	378.31	1-	3s 3S - 5p 3P° 29	4944.56	P	(1)	382.63	385.14		6g 3,1G - 7h 3,1H° 42
756.87	P		353.52	369.90	-1	3p 3P° - 4s 3S 30	4944.76	P		382.63	385.14		6h 3,1H° - 7i 3,1I 43

NSRDS-NBS 3, SECTION 3

CARBON, $Z = 6$

A C VI Atomic Energy Levels

B C VI Multiplet Table

Part A

CARBON

C VI

(HI 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)

IP 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.

REFERENCES

F. Tyrén, Zeit. Phys. **109**, 722 to 727 (1938); **98**, 771 to 772 (1936). C LJ. D. Garcia and J. E. Mack, J. Opt. Soc. Am. **55**, No. 6, 654 to 685 (1965). I P, T, C LB. Edlén, Ark. Fys. (Stockholm) **31**, No. 35, 509 to 510 (1966). C L

C VI

C VI

Config.	Desig.	J	Level	Interval	Config.	Desig.	J	Level	Interval	
1s	$1s^2S$	$0\frac{1}{2}$	0.0		6p	$6p^2P^\circ$	$0\frac{1}{2}$	3842298.2		
2p	$2p^2P^\circ$	$0\frac{1}{2}$	2963877.9		6s	$6s^2S$	$0\frac{1}{2}$	3842299.2	1.0	
2s	$2s^2S$	$0\frac{1}{2}$	2963904.0	26.1	6p, 6d	$6d^2D$	$6p^2P^\circ$	$1\frac{1}{2}$	3842315.8	16.6
2p	$2p^2P^\circ$	$1\frac{1}{2}$	2964352.8	448.8	6d, 6f	$6d^2D$	$6f^2F^\circ$	$2\frac{1}{2}$	3842321.6	5.8
3p	$3p^2P^\circ$	$0\frac{1}{2}$	3512921.4		6g, 6g	$6g^2G$	$6f^2F^\circ$	$3\frac{1}{2}$	3842324.6	3.0
3s	$3s^2S$	$0\frac{1}{2}$	3512929.2	7.8	6g, 6h	$6g^2G$	$6h^2H^\circ$	$4\frac{1}{2}$	3842326.3	1.7
3d	$3d^2D$	$1\frac{1}{2}$	3513061.9	32.7	6h	$6h^2H^\circ$	$5\frac{1}{2}$	3842327.5	1.2	
3p	$3p^2P^\circ$	$1\frac{1}{2}$	3513062.1	0.2	7p	$7p^2P^\circ$	$0\frac{1}{2}$	3871421.9		
3d	$3d^2D$	$2\frac{1}{2}$	3513108.7	46.6	7s	$7s^2S$	$0\frac{1}{2}$	3871422.5	0.6	
4p	$4p^2P^\circ$	$0\frac{1}{2}$	3705067.3		7d, 7d	$7d^2D$	$7p^2P^\circ$	$1\frac{1}{2}$	3871432.9	10.4
4s	$4s^2S$	$0\frac{1}{2}$	3705070.6	3.3	7d, 7f	$7d^2D$	$7f^2F^\circ$	$2\frac{1}{2}$	3871436.6	3.7
4d	$4d^2D$	$1\frac{1}{2}$	3705126.6	56.0	7f, 7g	$7g^2G$	$7f^2F^\circ$	$3\frac{1}{2}$	3871438.4	1.8
4p	$4p^2P^\circ$	$1\frac{1}{2}$	3705126.7	0.1	7g, 7h	$7g^2G$	$7h^2H^\circ$	$4\frac{1}{2}$	3871439.5	1.1
4d, 4f	$4d^2D$	$2\frac{1}{2}$	3705146.3	19.6	7h, 7i	$7i^2I$	$7h^2H^\circ$	$5\frac{1}{2}$	3871440.3	0.8
4f	$4f^2F^\circ$	$3\frac{1}{2}$	3705156.2	9.9	7i	$7i^2I$	$6\frac{1}{2}$	3871440.8	0.5	
5p	$5p^2P^\circ$	$0\frac{1}{2}$	3793995.2		8p	$8p^2P^\circ$	$0\frac{1}{2}$	3890323.4		
5s	$5s^2S$	$0\frac{1}{2}$	3793996.9	1.7	8s	$8s^2S$	$0\frac{1}{2}$	3890323.8	0.4	
5d	$5d^2D$	$1\frac{1}{2}$	3794025.5	28.6	8p, 8d	$8d^2D$	$8p^2P^\circ$	$1\frac{1}{2}$	3890330.8	7.0
5p	$5p^2P^\circ$	$1\frac{1}{2}$	3794025.6	0.1	8d, 8f	$8d^2D$	$8f^2F^\circ$	$2\frac{1}{2}$	3890333.3	2.5
5d, 5f	$5d^2D$	$2\frac{1}{2}$	3794035.6	10.0	8f, 8g	$8g^2G$	$8f^2F^\circ$	$3\frac{1}{2}$	3890334.5	1.2
5f, 5g	$5g^2G$	$3\frac{1}{2}$	3794040.7	5.1	8g, 8h	$8g^2G$	$8h^2H^\circ$	$4\frac{1}{2}$	3890335.3	0.8
5g	$5g^2G$	$4\frac{1}{2}$	3794043.7	3.0	8h, 8i	$8i^2I$	$8h^2H^\circ$	$5\frac{1}{2}$	3890335.7	0.4
					8i, 8k	$8i^2I$	$8k^2K^\circ$	$6\frac{1}{2}$	3890336.1	0.4
					8k	$8k^2K^\circ$	$7\frac{1}{2}$	3890336.4	0.3	

Atomic Energy Levels

C VI - Continued

C VI - Continued

Config.	Desig.	<i>J</i>	Level	Interval	Config.	Desig.	<i>J</i>	Level	Interval
9 <i>p</i>	9 <i>p</i> ² P°	0½	3903281.8		13 <i>p</i>	13 <i>p</i> ² P°	0½	3928683.1	
9 <i>s</i>	9 <i>s</i> ² S	0½	3903282.1	0.3	13 <i>s</i>	13 <i>s</i> ² S	0½	3928683.2	0.1
9 <i>p</i> , 9 <i>d</i>	9 <i>d</i> ² D	1½	3903287.0	4.9	etc.		12½	to 86.2	3.0
9 <i>d</i> , 9 <i>f</i>	9 <i>d</i> ² D	2½	3903288.7	1.7	14 <i>p</i>	14 <i>p</i> ² P°	0½	3931903.7	
9 <i>f</i> , 9 <i>g</i>	9 <i>g</i> ² G	3½	3903289.6	0.9	14 <i>s</i>	14 <i>s</i> ² S	0½	3931903.8	0.1
9 <i>g</i> , 9 <i>h</i>	9 <i>h</i> ² H°	4½	3903290.1	0.5	etc.		13½	to 06.3	2.5
9 <i>h</i> , 9 <i>i</i>	9 <i>i</i> ² I	5½	3903290.5	0.4	15 <i>p</i>	15 <i>p</i> ² P°	0½	3934501.9	
9 <i>i</i> , 9 <i>k</i>	9 <i>i</i> ² I	6½	3903290.7	0.2	15 <i>s</i>	15 <i>s</i> ² S	0½	3934502.0	0.1
9 <i>k</i> , 9 <i>l</i>	9 <i>l</i> ² L	7½	3903290.9	0.2	etc.		14½	to 04.0	2.0
9 <i>l</i>	9 <i>l</i> ² L	8½	3903291.0	0.1	16 <i>s</i> , 16 <i>p</i>	16 <i>s</i> ² S 16 <i>p</i> ² P°	0½	3936628.4	
10 <i>p</i>	10 <i>p</i> ² P°	0½	3912550.6		etc.		15½	to 30.1	1.7
10 <i>s</i>	10 <i>s</i> ² S	0½	3912550.8	0.2	17 <i>s</i> , 17 <i>p</i>	17 <i>s</i> ² S 17 <i>p</i> ² P°	0½	3938390.7	
10 <i>p</i> , 10 <i>d</i>	10 <i>d</i> ² D	1½	3912554.4	3.6	etc.		16½	to 92.1	1.4
10 <i>d</i> , 10 <i>f</i>	10 <i>d</i> ² D	2½	3912555.7	1.3	18 <i>p</i>	18 <i>p</i> ² P°	0½	3939867.5	
10 <i>f</i> , 10 <i>g</i>	10 <i>g</i> ² G	3½	3912556.3	0.6	18 <i>s</i>	18 <i>s</i> ² S	0½	3939867.6	0.1
10 <i>g</i> , 10 <i>h</i>	10 <i>g</i> ² G	4½	3912556.7	0.4	etc.		17½	to 68.7	1.1
10 <i>h</i> , 10 <i>i</i>	10 <i>i</i> ² I	5½	3912556.9	0.2	19 <i>p</i>	19 <i>p</i> ² P°	0½	3941117.3	
10 <i>i</i> , 10 <i>k</i>	10 <i>i</i> ² I	6½	3912557.1	0.2	19 <i>s</i>	19 <i>s</i> ² S	0½	3941117.4	0.1
10 <i>k</i> , 10 <i>l</i>	10 <i>l</i> ² L	7½	3912557.2	0.1	etc.		18½	to 18.4	1.0
10 <i>l</i> , 10 <i>m</i>	10 <i>l</i> ² L	8½	3912557.3	0.2	20 <i>s</i> , 20 <i>p</i>	20 <i>s</i> ² S 20 <i>p</i> ² P°	0½	3942184.4	
10 <i>m</i>	10 <i>m</i> ² M°	9½	3912557.4	0.1	etc.		19½	to 85.3	0.9
11 <i>p</i>	11 <i>p</i> ² P°	0½	3919408.3		∞ = Limit	.....		3952061.3	
11 <i>s</i>	11 <i>s</i> ² S	0½	3919408.5	0.2					
etc.		10½	to 13.5	5.0					
12 <i>p</i>	12 <i>p</i> ² P°	0½	3924624.1						
12 <i>s</i>	12 <i>s</i> ² S	0½	3924624.2	0.1					
etc.		11½	to 28.1	3.9					

November 1967.

Multiplet Table

Part B

CARBON

C VI (Z=6)

IP 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

C VI

IA	Ref	Int	E P		J	Multiplet No.	IA	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
33.7342†	A		0.00	367.52	0½—1½	1s ²S — 2p ²P°	25.3911	A		0.00	488.29	0½—	1s ²S — 17p ²P°
33.7396	A		0.00	367.46	0½—0½	1							16
28.4652	A		0.00	435.55	0½—1½	1s ²S — 3p ²P°							
28.4663	A		0.00	435.54	0½—0½	2	25.3816	A		0.00	488.47	0½—	1s ²S — 18p ²P°
													17
26.9896	A		0.00	459.37	0½—1½	1s ²S — 4p ²P°							
26.9901	A		0.00	459.36	0½—0½	3	25.3735	A		0.00	488.62	0½—	1s ²S — 19p ²P°
													18
26.3572	A		0.00	470.39	0½—1½	1s ²S — 5p ²P°							
26.3574	A		0.00	470.38	0½—0½	4	25.3666	A		0.00	488.76	0½—	1s ²S — 20p ²P°
													19
26.0260	A		0.00	476.37	0½—1½	1s ²S — 6p ²P°							
26.0261	A		0.00	476.37	0½—0½	5							
25.8302	A		0.00	479.98	0½—1½	1s ²S — 7p ²P°	182.290	A		367.52	435.54	1½—0½	2p ²P° — 3s ²S
25.8303	A		0.00	479.98	0½—0½	6	182.132	A		367.46	435.54	0½—0½	20
25.7048	A		0.00	482.33	0½—1½	1s ²S — 8p ²P°	182.230	A		367.52	435.56	1½—2½	2p ²P° — 3d ²D
25.7048	A		0.00	482.33	0½—0½	7	182.088	A		367.46	435.55	0½—1½	21
							182.246	A		367.52	435.55	1½—1½	
25.6194	A		0.00	483.93	0½—1½	1s ²S — 9p ²P°							
25.6195	A		0.00	483.93	0½—0½	8	135.004	A		367.52	459.36	1½—0½	2p ²P° — 4s ²S
							134.918	A		367.46	459.36	0½—0½	22
25.5587	A		0.00	485.08	0½—1½	1s ²S — 10p ²P°							
25.5588	A		0.00	485.08	0½—0½	9							
25.5140	A		0.00	485.93	0½—	1s ²S — 11p ²P°	134.953	A		367.50	459.37		2p ²P° — 4d ²D etc. 23 etc.
													10
25.4801	A		0.00	486.58	0½—	1s ²S — 12p ²P°	120.534	A		367.52	470.38	1½—0½	2p ²P° — 5s ²S
							120.465	A		367.46	470.38	0½—0½	24
25.4538	A		0.00	487.08	0½—	1s ²S — 13p ²P°	120.496	A		367.50	470.39		2p ²P° — 5d ²D etc. 25 etc.
													12
25.4330	A		0.00	487.48	0½—	1s ²S — 14p ²P°	113.902	A		367.52	476.37	1½—0½	2p ²P° — 6s ²S
							113.841	A		367.46	476.37	0½—0½	26
25.4162	A		0.00	487.80	0½—	1s ²S — 15p ²P°	113.870	A		367.50	476.37		2p ²P° — 6d ²D etc. 27 etc.
													14
25.4024	A		0.00	488.07	0½—	1s ²S — 16p ²P°	110.245	A		367.52	479.98	1½—0½	2p ²P° — 7s ²S
							110.187	A		367.46	479.98	0½—0½	28

Multiplet Tables

C VI—Continued

CVI—Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac							Vac						
110.216	A		367.50	479.98		$2p^2P^\circ - 7d^2D$ etc. 29 etc.	520.810 520.429	A A		435.55 435.54	459.36 459.36	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 4s^2S$ 49
107.995	A		367.52	482.33	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 8s^2S$	355.954	A		435.55	470.38	$1\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 5s^2S$
107.939	A		367.46	482.33	$0\frac{1}{2}-0\frac{1}{2}$	30	355.776	A		435.54	470.38	$0\frac{1}{2}-0\frac{1}{2}$	50
107.967	A		367.50	482.33		$2p^2P^\circ - 8d^2D$ etc. 31 etc.	303.732 303.603	A A		435.55 435.54	476.37 476.37	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 6s^2S$ 51
106.504	A		367.52	483.93	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 9s^2S$	279.049	A		435.55	479.98	$1\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 7s^2S$
106.450	A		367.46	483.93	$0\frac{1}{2}-0\frac{1}{2}$	32	278.939	A		435.54	479.98	$0\frac{1}{2}-0\frac{1}{2}$	52
106.477	A		367.50	483.93		$2p^2P^\circ - 9d^2D$ etc. 33 etc.	265.068 264.969	A A		435.55 435.54	482.33 482.33	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 8s^2S$ 53
105.463	A		367.52	485.08	$1\frac{1}{2}-0\frac{1}{2}$	$2p^2P^\circ - 10s^2S$	256.266	A		435.55	483.93	$1\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 9s^2S$
105.410	A		367.46	485.08	$0\frac{1}{2}-0\frac{1}{2}$	34	256.173	A		435.54	483.93	$0\frac{1}{2}-0\frac{1}{2}$	54
105.437	A		367.50	485.08		$2p^2P^\circ - 10d^2D$ etc. 35 etc.	250.320 250.232	A A		435.55 435.54	485.08 485.08	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3p^2P^\circ - 10s^2S$ 55
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	520.298 520.459	A A		435.54 435.54	459.37 459.36	$0\frac{1}{2}-1\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3s^2S - 4p^2P^\circ$ 56
104.680	A		367.50	485.93		$2p^2P^\circ - 11d^2D$ etc. 37 etc.	355.750 355.788	A A		435.54 435.54	470.39 470.38	$0\frac{1}{2}-1\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$3s^2S - 5p^2P^\circ$ 57
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	520.606	A		435.56	459.37		$3d^2D - 4f^2F^\circ$ etc. 58 etc.
104.112	A		367.50	486.58		$2p^2P^\circ - 12d^2D$ etc. 39 etc.	355.895	A		435.56	470.39		$3d^2D - 5f^2F^\circ$ etc. 59 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	303.699	A		435.56	476.38		$3d^2D - 6f^2F^\circ$ etc. 60 etc.
103.674	A		367.50	487.08		$2p^2P^\circ - 13d^2D$ etc. 41 etc.	279.025	A		435.56	479.98		$3d^2D - 7f^2F^\circ$ etc. 61 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	265.049	A		435.56	482.33		$3d^2D - 8f^2F^\circ$ etc. 62 etc.
103.329	A		367.50	487.48		$2p^2P^\circ - 14d^2D$ etc. 43 etc.	256.249	A		435.56	483.93		$3d^2D - 9f^2F^\circ$ etc. 63 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	250.304	A		435.56	458.08		$3d^2D - 10f^2F^\circ$ etc. 64 etc.
103.052	A		367.50	487.80		$2p^2P^\circ - 15d^2D$ etc. 45 etc.							
							1125.237 1124.485	A A		459.37 459.36	470.38 470.38	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 5s^2S$ 65
182.097	A		367.47	435.55	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 3p^2P^\circ$	729.009	A		459.37	476.37	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 6s^2S$
182.144	A		367.47	435.54	$0\frac{1}{2}-0\frac{1}{2}$	46	728.694	A		459.36	476.37	$0\frac{1}{2}-0\frac{1}{2}$	66
134.912	A		367.47	459.37	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 4p^2P^\circ$	601.338	A		459.37	479.98	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 7s^2S$
134.923	A		367.47	459.36	$0\frac{1}{2}-0\frac{1}{2}$	47	601.123	A		459.36	479.98	$0\frac{1}{2}-0\frac{1}{2}$	67
120.464	A		367.47	470.39	$0\frac{1}{2}-1\frac{1}{2}$	$2s^2S - 5p^2P^\circ$	539.965	A		459.37	482.33	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 8s^2S$
120.469	A		367.47	470.38	$0\frac{1}{2}-0\frac{1}{2}$	48	539.792	A		459.36	482.33	$0\frac{1}{2}-0\frac{1}{2}$	68
							504.654 504.503	A A		459.37 459.36	483.93 483.93	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$4p^2P^\circ - 9s^2S$ 69

C VI - Continued

C VI - Continued

I A	Ref	Int	E P		J	Multiplet No.	I A	Ref	Int	E P		J	Multiplet No.
			Low	High						Low	High		
Vac 482.104 481.966	A A		459.37 459.36	485.08 485.08	1½—0½ 0½—0½	4p ²P°—10s ²S 70	Vac 915.277 915.023	A A		470.39 470.38	483.93 483.93	1½—0½ 0½—0½	5p ²P°— 9s ²S 81
1124.164 1124.548	A A		459.36 459.36	470.39 470.38	0½—1½ 0½—0½	4s ²S — 5p ²P° 71	843.702 843.486	A A		470.39 470.38	485.08 485.08	1½—0½ 0½—0½	5p ²P°—10s ²S 82
1124.879	A		459.37	470.39		4d ²D — 5f ²F° etc. 72 etc.	Air 2070.252	A		470.39	476.38		5d ²D — 6f ²F° etc. 83 etc.
728.934	A		459.37	476.38		4d ²D — 6f ²F° etc. 73 etc.	Vac 1291.935	A		470.39	479.98		5d ²D — 7f ²F° etc. 84 etc.
601.311	A		459.37	479.98		4d ²D — 7f ²F° etc. 74 etc.	1038.417	A		470.39	482.33		5d ²D — 8f ²F° etc. 85 etc.
539.954	A		459.37	482.33		4d ²D — 8f ²F° etc. 75 etc.	915.280	A		470.39	483.93		5d ²D — 9f ²F° etc. 86 etc.
504.650	A		459.37	483.93		4d ²D — 9f ²F° etc. 76 etc.	843.715	A		470.39	485.08		5d ²D — 10f ²F° etc. 87 etc.
482.103	A		459.37	485.08		4d ²D — 10f ²F° etc. 77 etc.	Air 3434.651 3432.575	A A		476.37 476.37	479.98 479.98	1½—0½ 0½—0½	6p ²P°— 7s ²S 88
Air 2070.865 2069.561	A A		470.39 470.38	476.37 476.37	1½—0½ 0½—0½	5p ²P°— 6s ²S 78	2082.323 2081.560	A A		476.37 476.37	482.33 482.33	1½—0½ 0½—0½	6p ²P°— 8s ²S 89
Vac 1292.041 1291.534	A A		470.39 470.38	479.98 479.98	1½—0½ 0½—0½	5p ²P°— 7s ²S 79	Vac 1640.250 1639.777	A A		476.37 476.37	483.93 483.93	1½—0½ 0½—0½	6p ²P°— 9s ²S 90
1038.441 1038.113	A A		470.39 470.38	482.33 482.33	1½—0½ 0½—0½	5p ²P°— 8s ²S 80	1423.792 1423.435	A A		476.37 476.37	485.08 485.08	1½—0½ 0½—0½	6p ²P°—10s ²S 91

**Announcement of New Publications in
National Standard Reference Data Series**

Superintendent of Documents,
Government Printing Office,
Washington, D.C. 20402

Dear Sir:

Please add my name to the announcement list of new publications to be issued in the series: National Standard Reference Data Series—National Bureau of Standards.

(cut here)

Name.....

Company.....

Address.....

City..... State..... Zip Code.....

(Notification key N-337)

**Publications in the National Standard Reference Data Series
National Bureau of Standards**

You may use this listing as your order form by checking the proper box of the publication(s) you desire or by providing the full identification of the publication you wish to purchase. The full letter symbols with each publication number and full title of the publication and author must be given in your order, e.g. NSRDS-NBS-17, Tables of Molecular Vibrational Frequencies, Part 3, by T. Shimanouchi.

Pay for publications by check, money order, or Superintendent of Documents coupons or deposit account. Make checks and money orders payable to Superintendent of Documents. Foreign

remittances should be made either by international money order or draft on an American bank. Postage stamps are not acceptable.

No charge is made for postage to destinations in the United States and possessions, Canada, Mexico, and certain Central and South American countries. To other countries, payments for documents must cover postage. Therefore, one-fourth of the price of the publication should be added for postage.

Send your order together with remittance to Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

- NSRDS-NBS 1, **National Standard Reference Data System—Plan of Operation**, by E. L. Brady and M. B. Wallenstein, 1964 (15 cents).
- NSRDS-NBS 2, **Thermal Properties of Aqueous Univalent Electrolytes**, by V. B. Parker, 1965 (45 cents).
- NSRDS-NBS 3, Sec. 1, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si II, Si III, Si IV**, by C. E. Moore, 1965 (35 cents).
- NSRDS-NBS 3, Sec. 2, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Si I**, by C. E. Moore, 1967 (20 cents).
- NSRDS-NBS 3, Sec. 3, **Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables, Cl I, Cl II, Cl III, Cl IV, Cl V, Cl VI**, by C. E. Moore, 1970 (In press).
- NSRDS-NBS 4, **Atomic Transition Probabilities, Volume 1, Hydrogen Through Neon**, by W. L. Wiese, M. W. Smith and B. M. Glennon, 1966 (\$2.50).
- NSRDS-NBS 5, **The Band Spectrum of Carbon Monoxide**, by P. H. Krupenie, 1966 (70 cents).
- NSRDS-NBS 6, **Tables of Molecular Vibrational Frequencies, Part 1**, by T. Shimanouchi, 1967 (40 cents).
- NSRDS-NBS 7, **High Temperature Properties and Decomposition of Inorganic Salts, Part 1, Sulfates**, by K. H. Stern and E. L. Weise, 1966 (35 cents).
- NSRDS-NBS 8, **Thermal Conductivity of Selected Materials**, by R. W. Powell, C. Y. Ho, and P. E. Liley, 1966 (\$1.00).
- NSRDS-NBS 9, **Bimolecular Gas Phase Reactions (rate coefficients)**, by A. F. Trotman-Dickenson and G. S. Milne, 1967 (\$2.00).
- NSRDS-NBS 10, **Selected Values of Electric Dipole Moments for Molecules in the Gas Phase**, by R. D. Nelson, Jr., D. R. Lide, Jr., and A. A. Maryott, 1967 (40 cents).
- NSRDS-NBS 11, **Tables of Molecular Vibrational Frequencies, Part 2**, by T. Shimanouchi, 1967 (30 cents).
- NSRDS-NBS 12, **Tables for the Rigid Asymmetric Roto: Transformation Coefficients from Symmetric to Asymmetric Bases and Expectation Values of P_2^2 , P_2^4 , and P_2^6** , by R. H. Schwendeman, 1968 (60 cents).
- NSRDS-NBS 13, **Hydrogenation of Ethylene on Metallic Catalysts**, by J. Horiuti and K. Miyahara, 1968 (\$1.00).
- NSRDS-NBS 14, **X-Ray Wavelengths and X-Ray Atomic Energy Levels**, by J. A. Bearden, 1967 (40 cents).
- NSRDS-NBS 15, **Molten Salts, Vol. 1, Electrical Conductance, Density, and Viscosity Data**, by G. Janz, F. W. Dampier, G. R. Lakshminarayanan, P. K. Lorenz, and R. P. T. Tomkins, 1968 (\$3.00).
- NSRDS-NBS 16, **Thermal Conductivity of Selected Materials, Part 2**, by C. Y. Ho, R. W. Powell, and P. E. Liley, 1968 (\$2.00).
- NSRDS-NBS 17, **Tables of Molecular Vibration Frequencies, Part 3**, by T. Shimanouchi, 1968 (30 cents).
- NSRDS-NBS 18, **Critical Analysis of the Heat-Capacity Data of the Literature and Evaluation of Thermodynamic Properties of Copper, Silver, and Gold From 0 to 300 K**, by G. T. Furukawa, W. G. Saba, and M. L. Reilly, 1968 (40 cents).
- NSRDS-NBS 19, **Thermodynamic Properties of Ammonia as an Ideal Gas**, by L. Haar, 1968 (20 cents).
- NSRDS-NBS 20, **Gas Phase Reaction Kinetics of Neutral Oxygen Species**, by H. S. Johnson, 1968 (45 cents).
- NSRDS-NBS 21, **Kinetic Data on Gas Phase Unimolecular Reactions**, by S. W. Benson and H. E. O'Neal, 1970 (\$7.00).
- NSRDS-NBS 22, **Atomic Transition Probabilities, Vol. II, Sodium Through Calcium, A Critical Data Compilation**, by W. L. Wiese, M. W. Smith, and B. M. Miles, 1969 (\$4.50).
- NSRDS-NBS 23, **Partial Grotrian Diagrams of Astrophysical Interest**, by C. E. Moore and P. W. Merrill, 1968 (55 cents).
- NSRDS-NBS 24, **Theoretical Mean Activity Coefficients of Strong Electrolytes in Aqueous Solutions from 0 to 100 °C**, by Walter J. Hamer, 1968 (\$4.25).
- NSRDS-NBS 25, **Electron Impact Excitation of Atoms**, by B. L. Moiseiwitsch and S. J. Smith, 1968 (\$2.00).
- NSRDS-NBS 26, **Ionization Potentials, Appearance Potentials, and Heats of Formation of Positive Ions**, by J. L. Franklin, J. G. Dillard, H. M. Rosenstock, J. T. Herron, K. Draxl, and F. H. Field, 1969 (\$4.00).
- NSRDS-NBS 27, **Thermodynamic Properties of Argon from the Triple Point to 300 K at Pressures to 1000 Atmospheres**, by A. L. Gosman, R. D. McCarty, and J. G. Hust, 1969 (\$1.25).
- NSRDS-NBS 28, **Molten Salts, Vol. 2, Section 1, Electrochemistry of Molten Salts: Gibbs Free Energies and Excess Free Energies From Equilibrium-Type Cells, Section 2, Surface Tension Data**, by G. J. Janz and C. G. M. Dilkhuis, G. R. Lakshminarayanan, R. P. T. Tomkins, and J. Wong, 1969 (\$2.75).

- NSRDS-NBS 29, **Photon Cross Sections, Attenuation Coefficients and Energy Absorption Coefficients from 10 KeV to 100 GeV**, by J. H. Hubbell, 1969 (75 cents).
- NSRDS-NBS 30, **High Temperature Properties and Decomposition of Inorganic Salts, Part 2, Carbonates**, by K. H. Stern and E. L. Weise, 1969 (45 cents).
- NSRDS-NBS 31, **Bond Dissociation Energies in Simple Molecules**, by B. deB. Darwent, 1970 (55 cents).
- NSRDS-NBS 32, **Phase Behavior in Binary Multi-component Systems at Elevated Pressures: *n*-Pentane and Methane-*n*-Pentane**, by V. M. Berry and B. H. Sage, 1970 (In press).
- NSRDS-NBS 33, **Electrolytic and Conductance and the Conductance of the Acids in Water**, by W. J. Hamer and H. J. DeWane, 1970 (50 cents).
- NSRDS-NBS 34, **Ionization Potentials and Ionization Limits Derived from the Analyses of Optical Spectra**, by C. E. Moore, 1970 (75 cents).

Latest developments in the subject area of this publication, as well as in other areas where the National Bureau of Standards is active, are reported in the NBS Technical News Bulletin. See following page.

HOW TO KEEP ABREAST OF NBS ACTIVITIES

Your purchase of this publication indicates an interest in the research, development, technology, or service activities of the National Bureau of Standards.

The best source of current awareness in your specific area, as well as in other NBS programs of possible interest, is the TECHNICAL NEWS BULLETIN, a monthly magazine designed for engineers, chemists, physicists, research and product development managers, librarians, and company executives.

If you do not now receive the TECHNICAL NEWS BULLETIN and would like to subscribe, and/or to review some recent issues, please fill out and return the form below.

<p>Mail to: Office of Technical Information and Publications National Bureau of Standards Washington, D. C. 20234</p> <p>Name _____</p> <p>Affiliation _____</p> <p>Address _____</p> <p>City _____ State _____ Zip _____</p> <p><input type="checkbox"/> Please send complimentary past issues of the Technical News Bulletin.</p> <p><input type="checkbox"/> Please enter my 1-yr subscription. Enclosed is my check or money order for \$3.00 (additional \$1.00 for foreign mailing). <i>Check is made payable to: SUPERINTENDENT OF DOCUMENTS.</i></p> <p>NSRDS-NBS 3, Section 3</p>
--

(cut here)

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH reports National Bureau of Standards research and development in physics, mathematics, chemistry, and engineering. Comprehensive scientific papers give complete details of the work, including laboratory data, experimental procedures, and theoretical and mathematical analyses. Illustrated with photographs, drawings, and charts.

Published in three sections, available separately:

● Physics and Chemistry

Papers of interest primarily to scientists working in these fields. This section covers a broad range of physical and chemical research, with major emphasis on standards of physical measurement, fundamental constants, and properties of matter. Issued six times a year. Annual subscription: Domestic, \$9.50; foreign, \$11.75*.

● Mathematical Sciences

Studies and compilations designed mainly for the mathematician and theoretical physicist. Topics in mathematical statistics, theory of experiment design, numerical analysis, theoretical physics and chemistry, logical design and programming of computers and computer systems. Short numerical tables. Issued quarterly. Annual subscription: Domestic, \$5.00; foreign, \$6.25*.

● Engineering and Instrumentation

Reporting results of interest chiefly to the engineer and the applied scientist. This section includes many of the new developments in instrumentation resulting from the Bureau's work in physical measurement, data processing, and development of test methods. It will also cover some of the work in acoustics, applied mechanics, building research, and cryogenic engineering. Issued quarterly. Annual subscription: Domestic, \$5.00; foreign, \$6.25*.

TECHNICAL NEWS BULLETIN

The best single source of information concerning the Bureau's research, developmental, cooperative and publication activities, this monthly publication is designed for the industry-oriented individual whose daily work involves intimate contact with science and technology—for *engineers, chemists, physicists, research managers, product-development managers, and company executives*. Annual subscription: Domestic, \$3.00; foreign, \$4.00*.

* Difference in price is due to extra cost of foreign mailing.

Order NBS publications from:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

NONPERIODICALS

Applied Mathematics Series. Mathematical tables, manuals, and studies.

Building Science Series. Research results, test methods, and performance criteria of building materials, components, systems, and structures.

Handbooks. Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications. Proceedings of NBS conferences, bibliographies, annual reports, wall charts, pamphlets, etc.

Monographs. Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

National Standard Reference Data Series. NSRDS provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated.

Product Standards. Provide requirements for sizes, types, quality and methods for testing various industrial products. These standards are developed cooperatively with interested Government and industry groups and provide the basis for common understanding of product characteristics for both buyers and sellers. Their use is voluntary.

Technical Notes. This series consists of communications and reports (covering both other agency and NBS-sponsored work) of limited or transitory interest.

Federal Information Processing Standards Publications. This series is the official publication within the Federal Government for information on standards adopted and promulgated under the Public Law 89-306, and Bureau of the Budget Circular A-86 entitled, Standardization of Data Elements and Codes in Data Systems.

U.S. DEPARTMENT OF COMMERCE
WASHINGTON, D.C. 20230

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, \$300



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE