

Papers

Absolute Frequencies of Lasing Transitions in Nine CO₂ Isotopic Species

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(Invited Paper)

The authors would like to dedicate this work to the memory of the late Russell Petersen, who did so much for the measurement of absolute frequencies at optical wavelengths, and whose work has been an essential foundation stone for this paper. Russ was also a true friend, and his premature death leaves a large gap in the lives of people who were privileged to know him.

Abstract—New measurements of beat frequencies in lasers of CO₂ isotopic species are combined with similar measurements by Petersen *et al.* and by ourselves, using more refined statistical techniques, to give high-accuracy values of absolute frequencies in the 9–12 μ m range.

INTRODUCTION

SINCE the publication of our last work on absolute frequencies of CO₂ laser lines [1] (hereafter called *I*), a number of developments have made it desirable to reexamine this subject.¹

1) Petersen *et al.* [2] (hereafter called *PII*) have made further measurements, mostly in 626, including beat frequencies of widely spaced lines and more precise measurement of the absolute frequency of *R_f* (30).

2) We have extended our previous measurements, particularly of 636, to higher *J* values, and have made the first measurements of 727 and 638.

3) We have improved our instrumentation and measurement techniques, and thus have been able to measure pressure shifts in CO₂ laser lines with the line center stabilized from the fluorescence of CO₂.

4) We have recognized deficiencies in our earlier weighting of measurements, and have become familiar with the use of resistant statistical procedures for minimizing the effects of "outliers."

As a result of the above, the number of beat frequency measurements has increased to 915, the number of isotopic species has increased to nine, and the precision of

predicted frequencies has increased by an order of magnitude. In the present paper, we shall discuss points 2) and 4) above, and include the results of 1); point 3) is discussed in detail in companion papers [3], [4]. Relevant results of the latter papers are described in the next section.

SUMMARY OF RECENT EXPERIMENTS

In [3] and [4], we found anomalous blue shifts of CO₂ absorptions with pressure which were in the range of 40–90 kHz/torr for the 626, 636, 828, and 838 CO₂ isotopic species. (See Table I of either reference.) Since the CO₂ pressures used in the frequency stabilization cells were typically in the 50 ± 15 mtorr range, the implication is that there is a systematic 3.6 ± 2.2 kHz frequency shift which we chose to ignore when generating the predicted absolute frequencies. Our decision not to take into account pressure shift was based on the considerations that follow.

The anomalous blue pressure shifts we measured could not be explained by any of the theories that we explored or that were suggested to us since all of them predict red pressure shifts. The pressure shifts we measured were very small and necessitated the improvement of our experimental apparatus and measurement technique well beyond what was available when most of our data were gathered. Consistent and reproducible pressure shifts were only obtained after we initiated a new measurement technique in order to eliminate frequency offset errors caused by the nonzero slope of the power-versus-frequency characteristics of the lasers over the frequency range of the nonlinear saturation resonance dip. This nonzero power slope is a universal problem in most stabilization schemes used with lasers. Furthermore, this so-called "instrumental" frequency shift has a quadratic dependence on pressure and may easily dominate over the true pressure shift at stabilization cell pressures greater than about 60 mtorr. Moreover, the sense of this "instrumental" frequency shift

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¹Throughout this paper, we shall designate the various isotopic species of CO₂ by the final digits of the isotopes it contains. Thus, ¹⁶O ¹²C ¹⁶O will be abbreviated as 626, and so on.

can be either red or blue, depending on the adjustment of the grating position in the CO₂ laser (see [4, Fig. 13]). Thus, the "instrumental" frequency offset can either add to or subtract from the true pressure shift. Because this problem was not understood at the time most of our data were taken, we believe that the *a posteriori* minimum standard deviations, derived from the data in the manner described in the next section, represent the best estimates available of such errors.

It is more likely than not that systematic frequency errors due to pressure and "instrumental" shifts are also present in the data contained in Petersen *et al.* [5] (hereafter called *PI*) and *PII*; this could easily explain the discrepancies we describe below.

Frequency reproducibility and various causes of frequency shifts and errors are discussed in greater detail in [4] and the bibliography cited therein. Reference [4] provides guidelines for the long-term line-center stabilization of CO₂ lasers with a high degree of frequency reproducibility. We believe that up to at least two orders of magnitude improvement of the standard deviations listed in Tables I and II could be achieved with relatively straightforward (albeit expensive and time consuming) engineering.

FITTING AND WEIGHTING

In our previous work [1], the weighting was done rather simply: each measurement was assigned a nominal standard deviation derived from the observed Allan variance of the measurement. To this was added in quadrature a value of 3 kHz intended to account for pressure shifts and other unknown sources of error. By this process, we underestimated the precision of some of our measurements and overestimated that of others. We then combined our measurements with those of *PI*, who had assigned their nominal standard deviations differently, to form an *a priori* weighting matrix $\sigma^2 D$ where D is a diagonal matrix with elements equal to the inverse square of the nominal standard deviations (NSD's). The fitting process described in *I* then gave a value of $\sigma \approx 2.5$. This, combined mechanically with the NSD's of the absolute frequencies of *PI* (~ 25 kHz), gave the precisions quoted in *I* of several tens of kilohertz. We felt uncomfortable with this process, but did not at that time recognize what we should do about it.

We have now improved our treatment of weighting by understanding that we must use the data themselves in more detail in determining the weighting matrix rather than simply relying on *a priori* assignments.

The data were taken over a period of years, with differing measurement techniques, with lasers of differing stability and intensity, and with isotopic mixtures having different properties. It is therefore reasonable to assign to each data file, within which these properties are constant, a single number to characterize the overall quality of measurement within that file. Furthermore, even within a given file, the intensity and other properties of individual lines vary, measurements being in general better for intermediate J values, and less good at high and low J values. These differences show up rather well as differences among the observed Allan variances of individual measurements.

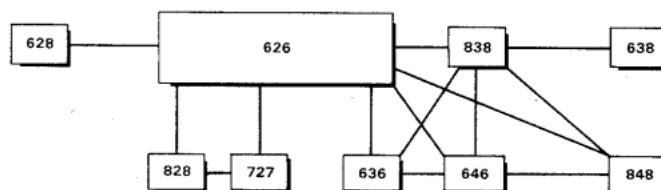


Fig. 1. Schematic structure of available frequency comparisons.

We have therefore taken the NSD of each measurement to be a combination in quadrature of a minimum standard deviation (MSD) for the data file and a multiple of the observed Allan variance (MAV) of the individual measurements [1] to give an overall NSD for the measurement. The minimum standard deviation and the multiple of the Allan variance were chosen by an iterative procedure described below.

The structure of the available frequency comparisons determined the order in which the particular isotopic species were considered. This structure is shown schematically in Fig. 1. There is a hierarchy in the measurements, and it determined the manner in which we undertook our data treatment. The measurement in *PII* of the absolute frequency of 626 $R_1(30)$ was so much more precise than any previously available absolute frequencies in CO₂ that we used it to the exclusion of all others. The intercomparisons in *PI* and *PII* of 626 frequencies made it possible to do a least squares fit of this species without reference to any of our own measurements, and we did this first of all as a base. Our fit differed from that in *PII*, and in some of our own previous work (in *I*), in that we included all the L 's, even though $L(001)$ was not significantly different from zero. The reason for doing this here, as well as in all the other species, was the fact that if we omitted it (or the other L 's), it was equivalent to the assumption that these were zero *with zero uncertainty*. This assumption then led to erroneously low uncertainties in the other constants and in the computed frequencies, particularly in the extrapolations to higher J values. For this reason, we have included L 's in our computations for all isotopic species. We must add, though, that some of our own measurements of 626 include higher J values, so that our final $L(001)$ is significantly different from zero. But the reader should be aware of the numerical experiments of Bailly and Schwartz [6] which suggest that the use of constants derived in this way may give rise to *larger* errors for extrapolated lines.

Next we proceeded to include our measurements of highest quality, namely, those of 828, 636, and 838. It will be seen from Fig. 1 that the 626–828 comparisons are independent of the 626–636–838 comparisons, and accordingly, we set about these computations separately, although more or less simultaneously. In both cases, we started by assuming a large MSD and a large MAV for our own measurements, while accepting the NSD's of *PI* and *PII*. The idea was that in *PII* a remarkably good fit had been arrived at, and that it would serve as a basic standard on which our fit would be constructed. We then proceeded with iterations of least square fits, reducing the MSD's and MAV's of our measurements in accordance with the outcome of the previous fit. Our criteria were based on the relative deviations (RD's), defined as the observed re-

sidual (measured minus calculated) divided by the NSD, and on their mean square for a given file. Reduction was continued with the goal of achieving a mean square RD in the range 0.7–1.0 for each individual file containing at least six measurements.

As this process went on, the RD's naturally became larger, not only in our measurements, but also in those of *PI* and *PII*, and some of them began to get uncomfortably large, i.e., >2 . It is a well-known fact that least squares fits are very sensitive to such measurements, known in the statistical trade as "outliers." In our case, this sensitivity showed up as "ripples" when the residuals were plotted against *J* values.

During the past two decades, a great deal of attention has been paid to the problems of minimizing the ill effects of outliers, under the name of "robust methods"; the textbook by Mosteller and Tukey [7] gives a comparatively simple treatment, while a recent summary and many references are given by Mallows [8]. An interesting and informative example of the application of some of these methods to a single vibration-rotation band spectrum (that of HF) is given by Beaton and Tukey [9]. The latter, after a discussion of the difficulties, characterize their problem (a considerably simpler one than ours) from the point of view of the statistician by saying: "Clearly the whole thing is a can of worms." We have attempted to emerge from this situation by using the spirit of robust statistics as simply and consistently as we could.

The problem of outliers has troubled statisticians since the time of Gauss. For years, before the coming of the computer, the only practical way of dealing with outliers was rejection, and a number of rules were proposed. But no method with an all-or-nothing approach could be entirely satisfactory. The central task of robust statistics has been to investigate methods that retain the many virtues of least squares while decreasing the sensitivity to outliers, without reducing it to zero. The methods suitable to our problem are the so-called "*M* methods" (for maximum likelihood); their implementation leads to a series of iteratively reweighted least-squares computations which fit in very well with our approach described above for finding suitable weights for individual data files. In general, *M* methods, as applied to the regression (i.e., fitting) problem, involve performing a least squares fit, computing the residuals, reweighting the measurements according to some recipe that attributes lower weights to measurements with larger residuals, and then fitting again. (The recipes go by names such as Huber, Hampel, biweights, or wave [7], [8].) It will be seen that, in a way, this is what we described above in our treatment of data files. As the MSD's and the MAV's for each file were reduced, though, some of the individual measurements within each file began to show large RD's. Our recipe for dealing with this situation was essentially that of Huber: whenever the absolute value of the RD rose above 2, we simply multiplied the NSD by the absolute value of the RD.

The results of these various successive reweightings, as applied to the 626–828 and 626–636–838 systems, were interesting and revealing. Initially, we left the NSD's of

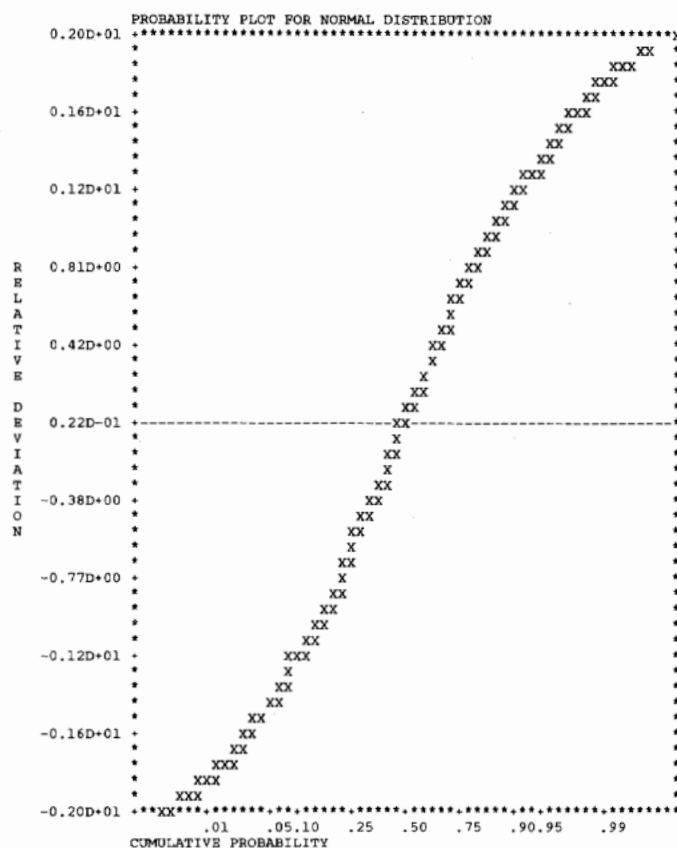


Fig. 2. Cumulative probability plot of the relative deviations on a scale suitable for normal distribution.

PI and *PII* untouched; the resulting fits showed, as expected, that our first estimates of MSD's and MAV's for our own measurements were too large, and we reduced them accordingly. The reweighting of individual outliers decreased the residuals of most of the other measurements, while increasing those of the outliers, again as expected. But as this process continued, the residuals for the measurements of *PI* and *PII* were changing, and in a significant way: although the 626–828 and 626–636–838 comparisons were based on entirely independent data (aside from those of *PI* and *PII*), the *PI* and *PII* residuals for the two fits were converging to essentially the same numbers (to within 1 KHz for almost all cases). For a few such measurements, the absolute value of the RD's were greater than 2. It thus became apparent that the reweighting process had to be applied to the measurements of *PI* and *PII* also. When we did this, a consistent and satisfactory fit was achieved for all four species taken together. With this set of frequencies and NSD's as a base, we then proceeded to treat each remaining species individually in a similar manner to derive suitable NSD's for it. A final fit containing all nine species then required only a few minor adjustments in order to meet our criteria.

The success of the above strategy may be judged in part from an examination of Fig. 2, which is a cumulative probability plot of the relative deviations on a scale suitable for a normal distribution. In this plot, it can be seen that for RD's of small absolute value, the distribution is normal, with the right slope; that is, the NSD's have been chosen in a manner in accord with the data. For large RD's, the

TABLE I
ABSOLUTE FREQUENCY AND FOUR-FREQUENCY BEAT MEASUREMENTS OF
PETERSEN *et al.*[2]

16 12 16					
ABSOLUTE FREQUENCY OF	O	C	O LINE	PETERSEN ET AL. II	
	MEASURED FREQUENCY	NOMINAL STD. DEV.	CALCULATED FREQUENCY	MEASURED - CALCULATED	
626 R I (30)	29442483.3197	3.1D-03	29442483.3197	0.0000	
FOUR-FREQUENCY BEATS PETERSEN ET AL. II					
	MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
2*626 R I (12) - 626 R II (10) - 636 P I (50)	22941.9100	2.5D-03	22941.9093	0.0007	0.27
2*626 P I (34) - 636 P II (28) - 636 P I (50)	15433.4420	2.5D-03	15433.4426	-0.0006	-0.33

TABLE II
DATA FILES OF OTHER EXPERIMENTALLY MEASURED BEAT FREQUENCIES

646 II 838 I						FILE 1						646 II 636 II						FILE 5									
MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION		MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION	
4	P	34	R	40		-7159.2421	3.2D-02	-7159.1960	-0.0462	-1.46	59	R	38	P	12	-14331.3360	1.1D-02	-14331.3421	0.0061	0.57							
5	P	36	R	34		15671.1037	1.1D-02	15671.1055	-0.0019	-0.17	60	R	36	P	14	8321.8964	5.1D-03	8321.8957	0.0008	0.16							
MEAN SQUARE RELATIVE DEVIATION = 1.080										MEAN SQUARE RELATIVE DEVIATION = 0.847																	
MINIMUM STANDARD DEVIATION = 1.0D-02										MINIMUM STANDARD DEVIATION = 4.0D-03																	
646 II 838 II						FILE 2						646 II 626 I						FILE 6									
MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION		MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION	
6	R	8	P	46		-6490.6258	2.1D-02	-6490.5961	-0.0297	-1.42	75	P	20	R	4	25062.3291	4.4D-03	25062.3316	-0.0026	-0.58							
7	R	10	P	44		-19638.7933	1.9D-02	-19638.7750	-0.0184	-0.98	76	P	20	R	6	-19348.3027	5.3D-03	-19348.3042	0.0015	0.28							
8	R	12	P	44		21596.6345	1.6D-02	21596.6526	-0.0181	-1.15	77	P	18	R	8	-7809.6393	4.8D-03	-7809.6363	-0.0030	-0.62							
9	R	14	P	42		7215.5741	6.0D-03	7215.5744	-0.0004	-0.06	78	P	14	R	12	14815.0729	4.2D-03	14815.0701	0.0027	0.65							
10	R	16	P	40		-7485.7109	6.0D-03	-7485.7123	0.0015	0.24	79	P	10	R	18	-3147.9528	4.1D-03	-3147.9492	-0.0036	-0.89							
11	R	18	P	38		-22501.1735	6.0D-03	-22501.1824	0.0089	1.49	80	R	8	P	20	8373.9482	4.6D-03	8373.9437	0.0045	0.98							
12	R	20	P	38		15120.7941	6.0D-03	15120.7886	0.0055	0.91	81	R	6	P	40	9719.4683	2.0D-02	9719.4386	0.0297	1.46							
13	R	22	P	36		-1101.0643	6.0D-03	-1101.0603	-0.0039	-0.65	82	R	8	P	44	-7978.4011	4.4D-03	-7978.4039	0.0028	0.63							
14	R	24	P	34		-17622.0003	6.0D-03	-17622.0026	0.0024	0.39	83	R	10	P	46	4990.3315	4.2D-03	4990.3346	-0.0031	-0.74							
15	R	26	P	34		17312.9047	6.0D-03	17312.9043	0.0004	0.06	84	R	12	P	48	17860.3458	4.6D-03	17860.3420	0.0038	0.82							
16	R	28	P	32		-390.1402	6.0D-03	-390.1390	-0.0012	-0.20	85	P	28	P	4	4328.1697	4.4D-03	4328.1677	0.0020	0.46							
17	R	30	P	30		-18375.2423	6.0D-03	-18375.2443	0.0020	0.34	86	P	30	P	6	-6822.8313	6.0D-03	-6822.8361	0.0048	0.80							
18	R	32	P	30		13900.9659	6.1D-03	13900.9640	0.0019	0.31	87	P	34	P	12	21114.3634	4.5D-03	21114.3683	-0.0050	-1.11							
19	R	34	P	28		-5237.6531	6.2D-03	-5237.6508	-0.0024	-0.38	88	P	36	P	14	10321.8849	5.8D-03	10321.8795	0.0054	0.93							
20	R	36	P	26		-24639.5949	6.5D-03	-24639.5844	-0.0105	-1.62	MEAN SQUARE RELATIVE DEVIATION = 0.925																
21	R	38	P	26		5013.4164	7.3D-03	5013.4148	0.0017	0.23	MINIMUM STANDARD DEVIATION = 1.0D-02																
22	R	40	P	24		-15501.8980	8.0D+00	-15509.6015	7.7035	0.96																	
MEAN SQUARE RELATIVE DEVIATION = 0.706										MEAN SQUARE RELATIVE DEVIATION = 0.864																	
MINIMUM STANDARD DEVIATION = 6.0D-03										MINIMUM STANDARD DEVIATION = 1.0D-02																	
646 I 636 I						FILE 3						646 I 646 I						FILE 7									
MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION		MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION	
23	R	50	P	16		-1040.9501	9.0D+00	-1050.3070	9.3569	1.04	89	P	6	P	8	48282.3289	2.2D-02	48282.3655	-0.0366	-1.64							
24	R	22	P	36		18694.1966	1.0D-02	18694.2019	-0.0053	-0.51	90	P	8	P	10	48768.4779	2.2D-02	48768.4778	0.0001	0.00							
25	R	18	P	38		-6621.6212	1.1D-02	-6621.6340	0.0128	1.12	91	P	10	P	12	49254.2100	2.2D-02	49254.1994	0.0106	0.47							
26	R	16	P	40		9304.8813	1.1D-02	9304.8779	0.0034	0.32	92	P	12	P	14	49739.5977	2.2D-02	49739.6107	-0.0130	-0.58							
27	R	12	P	42		-17798.2453	1.2D-02	-17798.2255	-0.0198	-1.63	93	P	14	P	16	50224.7930	2.2D-02	50224.7930	0.0000	0.00							
28	R	10	P	44		-2152.2334	1.1D-02	-2152.2310	-0.0024	-0.22	94	P	16	P	18	50709.8119	2.2D-02	50709.8285	-0.0167	-0.75							
29	R	8	P	46		13608.4650	1.2D-02	13608.4505	0.0145	1.18	95	P	18	P	20	51194.8090	2.2D-02	51194.8012	0.0078	0.35							
30	R	4	P	48		-15619.5867	1.2D-02	-15619.5826	-0.0041	-0.33	96	P	20	P	22	51679.8171	2.2D-02	51679.7962	0.0209	0.93							
MEAN SQUARE RELATIVE DEVIATION = 0.864										MEAN SQUARE RELATIVE DEVIATION = 0.692																	
MINIMUM STANDARD DEVIATION = 1.0D-02										MINIMUM STANDARD DEVIATION = 4.0D-03																	
626 I 626 I PETERSEN ET AL. I						FILE 4						646 I 646 I						FILE 7									
MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION		MEASURED FREQUENCIES						NOMINAL STD. DEV.		CALCULATED FREQUENCIES		MEASURED - CALCULATED		RELATIVE DEVIATION	
31	P	10	P	12		50622.5349	1.9D-03	50622.5354	-0.0005	-0.27	97	P	22	P	24	52164.9284	2.2D-02	52164.9284	0.0000	0.00							
32	P	12	P	14		51352.9398	1.8D-03	51352.9382	0.0016	0.88	98	P	24	P	26	52650.1922	2.2D-02	52650.2037	-0.0114	-0.51							
33	P	14	P	16		52083.9924	1.9D-03	52083.9932	-0.0008	-0.43	99	P	26	P	28	53135.7559	2.2D-02	53135.7963	-0.0404	-1.81							
34	P	16	P	18		52815.9168	1.8D-03	52815.9149	0.0019	1.04	100	P	28	P	30	53621.6695	2.1D-01	53621.7721	-0.1026	-1.02							
35	P	18	P	20		53548.9212	2.0D-03	53548.9198	0.0014	0.69	101	P	30	P	32	54108.2229	2.2D-02	54108.2274	-0.0045	-0.20							
36	P	20	P	22		54283.2255	1.9D-03	54283.2264	-0.0009	-0.49	102	P	32	P	34	54595.2655	2.2D-02	54595.2611	0.0044	0.20							
37	P	22	P	24		55019.0548	1.7D-03	55019.0556	-0.0008	-0.45	103	P	34	P	36	55082.9553	2.2D-02	55082.9756	-0.0203	-0.91							
38	P	24	P	26		55756.6255	3.6D-03	55756.6308	-0.0053	-1.47	104	P	36	P	38	55571.5107	2.2D-02	55571.4764	0.0343	1.54							
39	P	26	P	28		56496.1807	2.1D-03	56496.1784	0.0023	0.88	105	P	38	P	40	56060.8768	2.2D-02	56060.8727	0.0041	0.19							
40	P	28	P	30		57237.9238	3.3D-03	57237.9279	-0.0041	-1.22	106	P	40	P	42	56551.2652	2.2D-02	56551.2775	-0.0123	-0.55							
41	P	30	P	32		57982.1158	3.3D-03	57982.1120	0.0038	1.15	107	P	42	P	44	57042.8084	2.2D-02	57042.8084	0.0000	0.00							
42	P	32	P	34		58728.9700	1.8D-03	58728.9671	0.0029	1.63	108	P	44	P	46	57535.5639	2.2D-02	57535.5870	-0.0232	-1.04							
43	P	34	P	36		59478.7329	2.6D-03	59478.7335	-0.0006	-0.28	109	P	46	P	48	58029.7491	2.2D-02	58029.7401	0.0090	0.40							
44	P	36	P	38		60231.6550	2.3D-03	60231.6556	-0.0006	-0.28	MEAN SQUARE RELATIVE DEVIATION = 0.925																
45	P	38	P	40		60987.9862	3.3D-03	60987.9824	0.0038	1.15	MINIMUM STANDARD DEVIATION = 1.0D-02																
46	P	40	P	42		61747.9649	2.6D-03	61747.9672	-0.0023	-0.88																	
47	P	42	P	44		62511.8642	3.3D-03	62511.8688	-0.0043	-1.30																	
48	R	12	R	10		42201.9216	1.7D-03	42201.6930	-0.0014	-0.83																	
49	R	14	R	12		41461.7219	1.8D-03	41461.7197	0.0022	1.23																	
50	R	16	R	14		40719.5614	1.7D-03	40719.5632	-0.0018	-1.04																	
51	R	18	R	16		39975.0115	2.1D-03	39975.0092	0.0023	1.11																	
52	R	20	R	18		39227.8396	1.8D-03	39227.8415	-0.0019	-1.03																	
53	R	22	R	20		38477.8438	1.8D-03	38477.8416	0.0022	1.24																	
54	R	24	R	22		37724.7889	1.7D-03	37724.7889	-0.0000	-0.01																	
55	R	26	R	24		36968.4624	1.8D-03	36968.4602	0.0022	1.21																	
56	R	28	R	26		36208.6288	2.1D-03	36208.6294	-0.0006	-0.28																	
57	R	30	R	28		35445.0688	2.3D-03	35445.0672	0.0016	0.69																	
58	R	32	R	30		34677.5481	4.7D-03	34677.5412	0.0069	1.47																	
MEAN SQUARE RELATIVE DEVIATION = 0.964										MEAN SQUARE RELATIVE DEVIATION = 0.925																	
MINIMUM STANDARD DEVIATION = 1.0D-02										MINIMUM STANDARD DEVIATION = 1.0D-02																	

TABLE II
CONTINUED

838 I 626 I					FILE 8					636 I 838 I					FILE 12				
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
110	P 24	P 54			11037.5702	6.2D-03	11037.5765	-0.0064	-1.02	193	P 6	P 26			-1337.5216	3.1D-03	-1337.5214	-0.0002	-0.06
111	P 22	P 52			-6149.0882	5.4D-03	-6149.0982	0.0100	1.85	194	P 8	P 28			601.9577	3.0D-03	601.9577	0.0023	0.75
112	P 16	P 48			6978.8512	2.3D-03	6978.8506	0.0005	0.23	195	P 10	P 30			2640.5230	3.0D-03	2640.5222	0.0007	0.24
113	P 14	P 46			-10569.9635	2.2D-03	-10569.9616	-0.0019	-0.86	196	P 12	P 32			4780.1392	3.0D-03	4780.1415	-0.0023	-0.76
114	P 10	P 44			17132.4674	5.4D-03	17132.4618	0.0057	1.05	197	P 14	P 34			7022.8167	3.0D-03	7022.8154	0.0013	0.43
115	P 8	P 42			-899.8337	2.0D-03	-899.8348	0.0011	0.55	198	P 16	P 36			9370.5730	3.0D-03	9370.5748	-0.0018	-0.59
116	R 6	P 32			10019.7692	2.0D-03	10019.7722	-0.0030	-1.49	199	P 18	P 38			11825.4802	3.0D-03	11825.4822	-0.0020	-0.65
117	R 8	P 30			-9223.6287	4.5D-03	-9223.6229	-0.0059	-1.32	200	P 20	P 40			14389.6307	3.0D-03	14389.6315	-0.0009	-0.29
118	R 12	P 28			8976.7389	1.3D-02	8976.7473	-0.0084	-0.66	201	P 22	P 42			17065.1487	3.1D-03	17065.1486	0.0001	0.02
119	R 14	P 26			-10822.7996	2.0D-03	-10822.8000	0.0004	0.21	202	P 24	P 44			19854.1909	3.2D-03	19854.1905	0.0004	0.13
120	R 18	P 24			4760.1677	6.9D-03	4760.1642	0.0035	0.51	203	P 26	P 46			22758.9187	3.1D-02	22758.9455	-0.0269	-0.87
121	R 20	P 22			-15619.8875	2.0D-03	-15619.8865	-0.0010	-0.49	204	P 28	P 48			25781.6146	2.2D-02	25781.6327	-0.0181	-0.81
122	R 22	P 20			18328.9962	1.3D-02	18329.0001	-0.0039	-0.30	205	P 30	P 48			-29304.9840	9.4D-03	-29304.9761	-0.0078	-0.83
123	R 24	P 20			-2697.8647	2.0D-03	-2697.8648	0.0000	0.02	206	R 4	P 16			13017.5435	4.7D-03	13017.5415	0.0019	0.41
124	R 28	P 18			8177.8620	9.4D-03	8177.8672	-0.0052	-0.56	207	R 6	P 14			11338.4507	3.1D-03	11338.4496	0.0011	0.37
125	R 30	P 16			-13475.4456	2.1D-03	-13475.4441	-0.0016	-0.75	208	R 8	P 12			9744.8419	3.1D-03	9744.8436	-0.0017	-0.55
126	R 32	P 16			16983.2621	2.9D-03	16983.2576	0.0045	1.56	209	R 10	P 10			8234.8874	3.0D-03	8234.8913	-0.0038	-1.26
127	R 34	P 14			-5349.2315	5.3D-03	-5349.2260	-0.0055	-1.04	210	R 12	P 8			6806.7822	3.1D-03	6806.7796	0.0026	0.84
128	R 38	P 12			665.1957	5.4D-03	665.2050	-0.0094	-1.74	211	R 14	P 6			5458.7297	1.3D-02	5458.7130	0.0167	1.30
129	R 42	P 10			4537.1911	2.4D-03	4537.1907	0.0004	0.17	212	R 16	P 6			-20671.3890	1.1D-02	-20671.3760	-0.0129	-1.17
130	R 46	P 8			6233.2598	2.9D-03	6233.2566	0.0031	1.09	213	R 18	R 6			17569.4290	3.0D-03	17569.4266	0.0024	0.80
MEAN SQUARE RELATIVE DEVIATION = 0.969										214	R 20	R 8			-21169.2825	5.8D-03	-21169.2903	0.0077	1.33
MINIMUM STANDARD DEVIATION = 2.0D-03										215	R 30	R 8			16458.9016	3.0D-03	16458.9063	-0.0046	-1.53
										216	R 30	R 10			-21600.5674	3.0D-03	-21600.5625	-0.0049	-1.63
										217	R 32	R 10			15411.9586	3.0D-03	15411.9618	-0.0032	-1.07
										218	R 32	R 12			-21966.8604	5.0D-03	-21966.8674	0.0070	1.40
										219	R 34	R 12			14426.7391	3.0D-03	14426.7394	-0.0003	-0.08
										220	R 34	R 14			-22269.8942	3.0D-03	-22269.8918	-0.0024	-0.78
										221	R 36	R 14			13501.3715	3.0D-03	13501.3682	0.0033	1.09
										222	R 36	R 16			-22511.3384	3.0D-03	-22511.3387	0.0003	0.11
										223	R 38	R 16			12633.9581	3.1D-03	12633.9564	0.0017	0.53
										224	R 38	R 18			-22692.9289	3.1D-03	-22692.9316	0.0028	0.90
										225	R 40	R 18			11822.5833	3.2D-03	11822.5857	-0.0024	-0.76
										226	R 40	R 20			-22816.4178	3.2D-03	-22816.4191	0.0013	0.40
										227	R 42	R 20			11065.3045	3.8D-03	11065.3071	-0.0026	-0.67
										228	R 42	R 22			-22883.5824	4.3D-03	-22883.5796	-0.0028	-0.66
										229	R 44	R 22			10360.1401	1.2D-02	10360.1349	0.0052	0.42
										230	R 44	R 24			-22896.1873	4.4D-02	-22896.2266	0.0393	0.89
MEAN SQUARE RELATIVE DEVIATION = 0.662										MEAN SQUARE RELATIVE DEVIATION = 0.693									
MINIMUM STANDARD DEVIATION = 2.0D-03										MINIMUM STANDARD DEVIATION = 3.0D-03									
838 II 626 I					FILE 9														
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
131	P 44	R 48			-3736.3136	2.4D-03	-3736.3106	-0.0030	-1.26	231	P 26	R 54			22347.0775	4.6D-02	22347.0026	0.0749	1.62
132	P 46	R 44			-1487.8073	2.4D-03	-1487.8078	0.0005	0.20	232	P 28	R 50			16722.3299	7.7D-03	16722.3260	0.0038	0.50
133	P 48	R 40			3394.3817	2.6D-03	3394.3818	-0.0001	-0.03	233	P 30	R 48			-14817.7123	1.8D-02	-14817.7133	-0.0026	-1.35
134	P 50	R 36			10870.3992	2.8D-03	10870.3975	0.0017	0.61	234	P 30	R 46			13547.7059	4.9D-03	13547.7068	-0.0009	-0.63
135	P 52	R 34			-13001.1764	3.6D-03	-13001.1718	-0.0046	-1.28	235	P 32	R 44			-17198.7376	4.6D-03	-17198.7377	0.0001	0.03
136	P 54	R 30			-1979.4347	5.0D-03	-1979.4376	0.0029	0.58	236	P 32	R 42			12776.8995	3.9D-03	12776.8981	0.0014	0.35
MEAN SQUARE RELATIVE DEVIATION = 0.662										237	P 34	R 40			-17194.6878	1.9D-02	-17194.7133	0.0255	1.38
MINIMUM STANDARD DEVIATION = 2.0D-03										238	P 34	R 38			14368.3062	3.9D-03	14368.3034	0.0028	0.72
										239	P 36	R 36			-14844.8607	4.0D-03	-14844.8592	-0.0015	-0.37
										240	P 38	R 32			-10184.0193	3.9D-03	-10184.0201	0.0008	0.13
										241	P 40	R 28			-3242.8117	1.7D-02	-3242.8254	0.0138	0.80
										242	P 42	R 24			5952.1680	5.4D-03	5952.1672	0.0008	0.14
										243	P 44	R 20			17378.3478	5.9D-03	17378.3471	0.0007	0.12
										244	P 46	R 18			-8958.0653	9.4D-03	-8958.0690	0.0037	0.39
										245	P 48	R 14			5391.1865	1.3D-02	5391.1968	-0.0102	-0.76
MEAN SQUARE RELATIVE DEVIATION = 0.718										MEAN SQUARE RELATIVE DEVIATION = 0.633									
MINIMUM STANDARD DEVIATION = 2.0D-03										MINIMUM STANDARD DEVIATION = 3.5D-03									
838 II 626 II					FILE 10					636 II 626 I					FILE 13				
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
137	P 22	P 56			11363.1587	1.0D-02	11363.1403	0.0184	1.80	231	P 26	R 54			22347.0775	4.6D-02	22347.0026	0.0749	1.62
138	P 20	P 54			-7985.4539	3.1D-03	-7985.4521	-0.0018	-0.59	232	P 28	R 50			16722.3299	7.7D-03	16722.3260	0.0038	0.50
139	P 18	P 50			-226.5840	2.0D-03	-226.5833	-0.0007	-0.30	233	P 30	R 48			-14817.7123	1.8D-02	-14817.7133	-0.0026	-1.35
140	P 12	P 48			-20076.4522	2.8D-03	-20076.4496	-0.0026	-0.93	234	P 30	R 46			13547.7059	4.9D-03	13547.7068	-0.0009	-0.63
141	P 8	P 46			4519.9313	2.3D-03	4519.9331	-0.0018	-0.76	235	P 32	R 44			-17198.7376	4.6D-03	-17198.7377	0.0001	0.03
142	P 6	P 44			-15742.1778	2.2D-03	-15742.1809	0.0031	1.44	236	P 32	R 42			12776.8995	3.9D-03	12776.8981	0.0014	0.35
143	P 6	P 36			4077.6088	2.0D-03	4077.6104	-0.0015	-0.76	237	P 34	R 40			-17194.6878	1.9D-02	-17194.7133	0.0255	1.38
144	R 8	P 34			-17321.0480	2.0D-03	-17321.0494	0.0013	0.65	238	P 34	R 38			14368.3062	3.9D-03	14368.3034	0.0028	0.72
145	R 12	P 32			-1014.8261	2.0D-03	-1014.8271	0.0010	0.51	239	P 36	R 36			-14844.8607	4.0D-03	-14844.8592	-0.0015	-0.37
146	R 16	P 30			13487.9554	1.4D-02	13487.9593	-0.0039	-0.29	240	P 38	R 32			-10184.0193	3.9D-03	-10184.0201	0.0008	0.13
147	R 18	P 28			-8846.4276	2.0D-03	-8846.4281	0.0005	0.26	241	P 40	R 28			-3242.8117	1.7D-02	-3242.8254	0.0138	0.80
148	R 22	P 26			3355.2898	1.0D-02	3355.2967	-0.0070	-0.66	242	P 42	R 24			5952.1680	5.4D-03	5952.1672	0.0008	0.14
149	R 24	P 24			-19354.5835	5.5D-02	-19354.5594	-0.0241	-0.44	243	P 44	R 20			17378.3478	5.9D-03	17378.3471	0.0007	0.12
150	R 26	P 24			13789.2406	1.4D-02	13789.2498	-0.0093	-0.66	244	P 46	R 18			-8958.0653	9.4D-03	-8958.0690	0.0037	0.39
151	R 28	P 22			-9411.6633	7.2D-03	-9411.6591	-0.0042	-0.58	245	P 48	R 14			5391.1865	1.3D-02	5391.1968	-0.0102	-0.76
152	R 32	P 20			-1206.6769	1.1D-02	-1206.6725	-0.0044	-0.39										
153	R 36	P 18			5282.0410	2.0D-03	5282.0406	0.0004	0.19										
154	R 40	P 16			-18700.3676	2.0D-03	-18700.3656	-0.0010	-0.94										
155	R 42	P 14			10078.5231	2.1D-03	10078.5208	0.0022	1.00										
156	R 44	P 14			-14347.0300	2.3D-03	-14347.0297	-0.0003	-0.14										
157	R 46	P 14			13209.0860	2.1D-03	13209.0886	-0.0025	-1.23										
158	R 48	P 12																	

TABLE II
CONTINUED

636 II 626 II										FILE 15										FILE 17 CONTINUED									

TABLE II
CONTINUED

628 II 626 II										FILE 20										FILE 23 CONTINUED									
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
460	P 14	P 2			-8995.7370	2.0D-02	-8995.7449	0.0079	0.39	545	P 16	R 12		5869.6927	2.1D-02	5869.7179	-0.0252	-1.21	545	P 16	R 12		5869.6927	2.1D-02	5869.7179	-0.0252	-1.21		
461	P 16	P 4			-10207.3805	1.1D-02	-10207.3815	0.0011	0.10	546	P 14	R 14		11115.6071	1.6D-02	11115.6252	-0.0181	-1.12	546	P 14	R 14		11115.6071	1.6D-02	11115.6252	-0.0181	-1.12		
462	P 17	P 6			13648.3603	8.4D-03	13648.3575	0.0028	0.34	547	P 12	R 16		16410.0910	6.0D-03	16410.0915	-0.0006	-0.09	547	P 12	R 16		16410.0910	6.0D-03	16410.0915	-0.0006	-0.09		
463	P 18	P 6			-11287.3101	8.9D-03	-11287.3136	0.0034	0.38	548	P 10	R 20		-17474.4004	6.0D-03	-17474.4015	0.0011	0.19	548	P 10	R 20		-17474.4004	6.0D-03	-17474.4015	0.0011	0.19		
464	P 19	P 8			13033.1747	9.5D-03	13033.1734	0.0013	0.14	549	P 8	R 22		-11331.4045	6.0D-03	-11331.4165	0.0120	2.00	549	P 8	R 22		-11331.4045	6.0D-03	-11331.4165	0.0120	2.00		
465	P 20	P 8			-12234.5737	1.2D-02	-12234.5811	0.0074	0.60	550	P 6	R 24		-5134.5290	2.1D-02	-5134.5526	0.0236	1.13	550	P 6	R 24		-5134.5290	2.1D-02	-5134.5526	0.0236	1.13		
466	P 21	P 10			12550.1729	1.2D-02	12550.1681	0.0048	0.41	551	P 4	R 26		1118.0352	6.4D-03	1118.0413	-0.0061	-0.96	551	P 4	R 26		1118.0352	6.4D-03	1118.0413	-0.0061	-0.96		
467	P 22	P 10			-13048.2990	8.5D-03	-13048.3018	0.0028	0.33	552	R 4	R 38		-18799.8482	6.4D-03	-18799.8408	-0.0074	-1.16	552	R 4	R 38		-18799.8482	6.4D-03	-18799.8408	-0.0074	-1.16		
468	P 23	P 12			12200.0504	1.1D-02	12200.0472	0.0032	0.29	553	R 6	R 40		-11010.7969	6.2D-03	-11010.7906	-0.0063	-1.01	553	R 6	R 40		-11010.7969	6.2D-03	-11010.7906	-0.0063	-1.01		
469	P 24	P 12			-13727.6689	1.2D-02	-13727.6724	0.0035	0.29	554	R 8	R 42		-3135.2900	6.5D-03	-3135.2965	0.0065	1.00	554	R 8	R 42		-3135.2900	6.5D-03	-3135.2965	0.0065	1.00		
470	P 25	P 14			11983.4458	1.2D-02	11983.4372	0.0086	0.71	555	R 10	R 44		4832.2545	5.0D-02	4832.3024	-0.0479	-0.95	555	R 10	R 44		4832.2545	5.0D-02	4832.3024	-0.0479	-0.95		
471	P 26	P 14			-14271.9607	1.4D-02	-14271.9704	0.0097	0.70	556	R 12	R 46		12898.1593	1.4D-02	12898.1481	0.0112	0.79	556	R 12	R 46		12898.1593	1.4D-02	12898.1481	0.0112	0.79		
472	P 27	P 16			11900.8865	1.3D-02	11900.8834	0.0032	0.25	557	R 14	R 48		21068.8439	2.4D-02	21068.8663	-0.0243	-0.99	557	R 14	R 48		21068.8439	2.4D-02	21068.8663	-0.0243	-0.99		
473	P 28	P 16			-14680.5561	1.4D-02	-14680.5573	0.0012	0.08	558	R 16	R 50		29353.6242	2.0D+00	29351.5805	2.0436	1.01	558	R 16	R 50		29353.6242	2.0D+00	29351.5805	2.0436	1.01		
474	P 29	P 18			11952.8576	1.7D-02	11952.8471	0.0104	0.60																				
475	P 30	P 18			-14952.8708	1.7D-02	-14952.8802	0.0094	0.56																				
476	P 31	P 20			12139.7054	1.7D-02	12139.7037	0.0018	0.10																				
477	P 32	P 20			-15088.4708	2.1D-02	-15088.4757	0.0048	0.24																				
478	P 33	P 22			12461.8333	8.7D-02	12461.7385	0.0947	1.09																				
479	P 34	P 22			-15086.9341	3.6D-02	-15086.9730	0.0388	1.07																				
480	P 35	P 24			12919.2206	8.1D-02	12919.1438	0.0768	0.94																				
481	P 36	P 24			-14948.0939	8.6D-03	-14948.0986	-0.0047	-0.15																				
482	P 37	P 26			13511.4182	5.0D-01	13512.0138	-0.5956	-1.19																				
483	P 38	P 26			-14672.1023	5.0D-01	-14671.6811	-0.4211	-0.84																				
484	R 10	R 22			16756.5847	3.1D-02	16756.6285	-0.0437	-1.42																				
485	R 11	R 24			-243.1566	7.2D-03	-243.1620	0.0054	0.75																				
486	R 12	R 26			-16622.8270	7.2D-03	-16622.8252	-0.0018	-0.25																				
487	R 13	R 26			3066.7362	2.4D-02	3066.7052	0.0310	1.28																				
488	R 14	R 28			-12865.4072	7.2D-03	-12865.4011	-0.0061	-0.85																				
489	R 15	R 28			6484.3022	1.1D-02	6484.2891	0.0131	1.17																				
490	R 16	R 30			-9002.8082	7.6D-03	-9002.7992	-0.0090	-1.18																				
491	R 17	R 30			10007.4936	1.4D-02	10007.4873	0.0063	0.45																				
492	R 18	R 32			-5037.2774	8.2D-03	-5037.2681	-0.0092	-1.12																				
493	R 19	R 32			13634.1611	1.2D-02	13634.1521	0.0090	0.76																				
494	R 20	R 34			-971.1091	7.5D-03	-971.0986	-0.0105	-1.40																				
495	R 21	R 34			17362.1009	1.1D-02	17362.0927	0.0081	0.74																				
496	R 22	R 36			3193.3774	8.5D-03	3193.3788	-0.0014	-0.16																				
497	R 23	R 38			-10373.4583	2.1D-02	-10373.4621	0.0037	0.18																				
498	R 24	R 38			7453.7939	9.9D-03	7453.7954	-0.0015	-0.15																				
499	R 25	R 40			-5683.2856	2.6D-02	-5683.3023	0.0167	0.64																				
500	R 26	R 40			11807.7382	1.2D-02	11807.7462	-0.0080	-0.69																				
501	R 27	R 42			-903.0373	1.3D-02	-903.0223	-0.0150	-1.12																				
502	R 28	R 44			-13023.8032	2.4D-02	-13023.7773	-0.0259	-1.07																				
503	R 29	R 44			3964.7799	2.2D-02	3964.8123	-0.0323	-1.47																				
504	R 30	R 46			-7737.4299	4.4D-02	-7737.3810	-0.0489	-1.11																				
505	R 31	R 46			8917.5384	6.7D-02	8917.6046	-0.0662	-0.98																				
506	R 32	R 48			-2370.0104	1.4D-01	-2369.8511	-0.1593	-1.13																				
507	R 33	R 48			13952.7139	1.1D-01	13952.7273	-0.0134	-0.13																				
										MEAN SQUARE RELATIVE DEVIATION = 0.619										MEAN SQUARE RELATIVE DEVIATION = 0.615									
										MINIMUM STANDARD DEVIATION = 7.0D-03										MINIMUM STANDARD DEVIATION = 5.0D-03									
546 I 848 I					FILE 21					838 I 848 I					FILE 25														
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION										
508	P 16	P 44			19546.4293	2.1D-01	19546.5664	-0.1371	-0.65	579	P 16	R 48		-17808.6959	1.1D-00	-17809.9612	1.2653	1.20											
509	P 14	P 44			15753.5122	7.3D-01	15754.7341	-1.2218	-1.68	580	P 16	R 46		9830.7771	1.1D-00	9829.7048	1.0722	1.02											
510	P 12	P 42			12055.7987	3.6D-01	12055.4345	0.3642	1.01	581	P 18	R 44		-9100.9898	1.1D-00	-9101.1174	0.1277	0.12											
511	P 10	P 40			8445.6764	2.6D-01	8445.4294	0.2470	0.95	582	P 18	R 42		19752.9729	1.1D-00	19752.1165	0.8564	0.81											
512	P 8	P 38			4921.7383	2.2D-01	4921.6558	0.0825	0.37	583	P 20	R 40		1349.9060	1.1D-00	1349.4669	0.4411	0.42											
513	P 6	P 36			1481.1673	2.2D-01	1481.2044	-0.0371	-0.37	584	P 22	R 38		-1713.3451	1.1D-00	-1713.4531	0.1101	1.12											
514	R 4	P 26			8173.6184	2.4D-01	8173.5267	0.0917	0.39	585	P 22	R 36		13507.6460	1.1D-00	13508.0750	-0.4290	-0.40											
515	R 6	P 24			4933.3184	2.4D-01	4933.1761	0.1423	0.60	586	P 24	R 34		-4474.2626	1.1D-00	-4473.0357	-1.2268	-1.16											
516	R 8	P 22			1758.5372	2.7D-01	1758.3888	0.1484	0.55	587	P 24	R 32		27344.0154	1.1D-00	27344.5794	-0.5640	-0.53											
517	R 10	P 20			-1352.9184	2.6D-01	-1353.0042	0.0859	0.33	588	P 26	R 30		9849.5733	2.0D-00	9851.7431	-2.1759	-1.09											
518	R 12	P 18			-4403.1776	2.9D-01	-4403.1038	-0.0739	-0.26	589	P 28	R 28		-7743.5011	1.1D-00	-7743.1624	-0.3387	-0.32											
519	R 14	P 16			-7394.1535	2.9D-01	-7393.9446	-0.2089	-0.73	590	P 28	R 26		25814.0242	1.1D-00	25813.9558	0.0684	0.06											
520	R 16	P 14																											

TABLE II
CONTINUED

638 I 838 I										FILE 27										FILE 30 CONTINUED									
					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION										
624	R 19	R 12			6013.9325	7.0D-03	6013.9419	-0.0094	-1.33	708	P 23	P 12		3895.0866	5.2D-03	3895.0957	-0.0091	-1.77	734	P 7	P 22		-7782.9525	1.0D-02	-7782.9711	0.0186	1.80		
625	R 18	R 12			-12866.7625	6.0D-02	-12866.7912	0.0288	0.48	709	P 21	P 10		4090.5427	5.4D-03	4090.5452	-0.0026	-0.48	735	P 9	P 24		-6292.7973	1.1D-02	-6292.7797	-0.0176	-1.63		
626	R 17	R 10			5470.0377	2.2D-01	5469.9777	0.0600	0.28	710	P 19	P 8		4422.0226	5.4D-03	4422.0176	0.0050	0.93	736	P 10	P 26		18788.4009	1.0D-01	18788.3128	0.0881	0.88		
627	R 16	R 10			-13733.0860	4.0D-01	-13733.1270	0.0410	0.10	711	P 17	P 6		4888.8658	2.1D-02	4888.8419	0.0239	1.16	737	P 11	P 26		-4907.6349	1.0D-02	-4907.6284	-0.0065	-0.65		
628	R 15	R 8			4962.4663	2.8D-02	4962.4641	0.0022	0.08	712	P 37	P 26		6374.3746	7.0D-03	6374.3736	0.0010	0.18	738	P 12	P 28		20402.3747	1.0D-01	20402.2953	0.0794	0.79		
629	R 14	R 8			-14561.9229	5.8D-03	-14561.9264	0.0035	0.60	713	P 39	P 28		7281.1435	7.4D-03	7281.1431	0.0004	0.05	739	P 13	P 28		-3628.1000	1.0D-02	-3628.0934	-0.0067	-0.66		
630	R 13	R 6			4492.1347	5.8D-03	4492.1363	-0.0016	-0.28	714	P 41	P 30		8326.1415	8.0D-02	8326.1344	0.0071	0.09	740	P 14	P 30		21909.2498	1.0D-01	21909.1589	0.0909	0.90		
631	R 20	R 14			-11963.5793	4.2D-03	-11963.5773	-0.0020	-0.49	715	P 43	P 32		9509.1426	1.0D-02	9509.1463	-0.0038	-0.37	741	P 15	P 30		-2454.6772	1.0D-02	-2454.6710	-0.0064	-0.54		
632	R 21	R 14			6593.6123	4.3D-03	6593.6080	0.0043	1.01	716	P 45	P 34		10829.8844	1.1D-02	10829.8853	-0.0009	-0.08	742	P 16	P 32		23308.2314	1.0D-01	23308.3863	-0.1549	-1.54		
633	R 22	R 16			-11024.1524	4.5D-03	-11024.1575	0.0051	1.12	717	P 47	P 36		12287.9635	2.1D-02	12287.9651	-0.0016	-0.08	743	P 17	P 32		-1387.7916	1.0D-02	-1387.7809	-0.0107	-1.07		
634	R 23	R 16			7208.1385	4.0D-02	7208.2113	-0.0728	-1.81	718	P 49	P 38		13882.9107	5.0D-02	13882.9058	0.0049	0.10	744	P 19	P 34		-427.7490	1.3D-02	-427.7572	0.0082	0.64		
635	R 24	R 18			-10049.2302	3.4D-02	-10049.2213	-0.0089	-0.26	719	P 51	P 40		15614.2090	2.0D-01	15614.1337	0.0753	0.38	745	P 21	P 35		425.1372	1.5D-02	425.1445	-0.0073	-0.48		
636	R 25	R 18			7856.9622	1.1D-02	7856.9677	-0.0055	-0.50	720	R 7	R 20		-16668.8601	7.0D-03	-16668.8506	-0.0095	-1.35	746	P 23	P 38		1170.7619	1.2D-02	1170.7517	0.0102	0.88		
637	R 26	R 20			-9039.5061	1.4D-02	-9039.4798	-0.0264	-1.90	721	R 5	R 18		-19736.3621	1.1D-02	-19736.3622	0.0001	0.01	747	P 25	P 40		1808.9587	2.5D-02	1808.9748	-0.0061	-0.25		
638	R 27	R 20			8539.0673	6.3D-03	8539.0682	-0.0009	-0.14	722	R 9	R 22		-13884.2650	5.1D-03	-13884.2691	0.0042	0.82	748	P 27	P 42		2339.7857	1.5D-02	2339.8075	-0.0218	-1.43		
639	R 29	R 22			9253.6878	1.2D-02	9253.6732	0.0146	1.23	723	R 11	R 24		-10784.5707	5.2D-03	-10784.5781	0.0074	1.43	749	P 29	P 44		2763.3268	1.1D-02	2763.3270	-0.0002	-0.02		
640	R 31	R 24			9999.8970	1.7D-02	9999.9038	-0.0068	-0.41	724	R 13	R 26		-7571.8011	5.4D-03	-7571.7931	0.0079	1.48	750	P 31	P 46		3079.6972	1.2D-02	3079.6946	0.0025	0.21		
641	R 32	R 26			-5808.9557	6.7D-02	-5808.9809	0.0252	0.38	725	R 15	R 28		-4247.9928	3.0D-02	-4247.9826	-0.0102	-0.34	751	P 33	P 48		3289.1669	1.4D-02	3289.1556	0.0113	0.83		
642	R 33	R 26			10776.1428	4.0D-01	10776.8320	-0.6892	-1.72	726	R 19	R 32		2724.1714	2.1D-02	2724.1888	-0.0174	-0.84	752	P 35	P 50		3392.0571	2.1D-02	3392.0391	0.0180	0.85		
643	P 19	P 26			2712.8405	4.2D-03	2712.8428	-0.0024	-0.56	727	R 21	R 34		6368.1665	5.6D-03	6368.1665	0.0000	0.00	753	P 37	P 52		3388.7851	2.0D-02	3388.7582	0.0269	1.34		
644	P 17	P 24			2471.8390	4.2D-03	2471.8358	0.0032	0.76	728	R 23	R 36		10114.4103	5.1D-03	10114.4075	0.0028	0.55	754	P 39	P 54		3279.8345	1.5D-02	3279.8096	0.0249	1.62		
645	P 15	P 22			2278.9502	1.3D-01	2278.8594	0.0908	0.68	729	R 25	R 38		13960.6155	9.4D-03	13960.6097	0.0058	0.62	755	R 25	R 8		-8219.1890	1.1D-02	-8219.1867	-0.0024	-0.22		
646	P 13	P 20			2133.3070	5.4D-03	2133.3085	-0.0015	-0.28	730	R 27	R 40		17904.4188	1.1D-02	17904.4306	-0.0118	-1.06	756	R 23	R 6		-4558.3434	1.0D-02	-4558.3436	0.0002	0.02		
647	P 11	P 18			2034.7217	2.1D-01	2034.7229	-0.0012	-0.72	731	R 29	R 44		-7333.0741	7.4D-03	-7333.0790	0.0050	0.67	757	R 25	R 8		-8219.1890	1.1D-02	-8219.1867	-0.0024	-0.22		
648	P 21	P 28			3002.4753	4.2D-03	3002.4802	-0.0049	-1.18	732	R 31	R 46		-2448.4524	8.3D-03	-2448.4675	0.0151	1.81	758	R 27	R 10		-11963.6344	1.0D-02	-11963.6301	-0.0043	-0.43		
649	P 23	P 30			3341.3465	4.2D-03	3341.3413	0.0051	1.21	733	R 33	R 48		2521.5070	5.0D-02	2521.5361	-0.0291	-0.58	759	R 29	R 12		-15789.7767	1.0D-02	-15789.7756	-0.0011	-0.11		
650	P 25	P 32			3730.0101	4.4D-03	3730.0114	-0.0014	-0.31	MEAN SQUARE RELATIVE DEVIATION = 0.733										760	R 33	R 14		13050.3959	1.0D-02	13050.4053	-0.0095	-0.95	
651	P 27	P 34			4169.0632	2.6D-02	4169.0645	-0.0013	-0.05	MINIMUM STANDARD DEVIATION = 5.0D-03										761	R 35	R 16		8406.8535	1.0D-02	8406.8569	-0.0034	-0.33	
652	P 29	P 36			4659.0591	4.2D-03	4659.0591	-0.0000	-0.01											762	R 37	R 18		3690.2144	1.0D-02	3690.2198	-0.0054	-0.53	
653	P 31	P 38			5202.3808	2.0D-00	5200.5331	1.8477	0.92											763	R 39	R 20		-1097.2789	1.1D-02	-1097.2814	0.0025	0.23	
654	P 35	P 42			6440.2300	2.0D-00	6439.9186	0.3114	0.16											764	R 41	22		-5953.3930	1.0D-02	-5953.3927	-0.0003	-0.03	
MEAN SQUARE RELATIVE DEVIATION = 0.736										727 II 828 II										FILE 31									
MINIMUM STANDARD DEVIATION = 4.0D-03																													
638 II 838 II					MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION						MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION										
655	P 31	P 40			7910.8711	1.6D-01	7910.6586	0.2124	1.33	734	P 7	P 22		-7782.9525	1.0D-02	-7782.9711	0.0186	1.80	767	P 44	P 50		192162.1695	3.5D-03	192162.1678	0.0017	0.48		
656	P 33	P 42			6237.1588	2.8D-01	6236.9398	0.2189	0.80	735	P 9	P 24		-6292.7973	1.1D-02	-6292.7797	-0.0176	-1.63	768	P 34	P 44		304958.2085	3.5D-03	304958.2072	0.0013	0.37		
657	P 35	P 44			4439.3678	2.2D-01	4439.3598	0.0080	0.70	736	P 10	P 26		18788.4009	1.0D-01	18788.3128	0.0881	0.88	769	P 12	P 34		605305.8709	3.5D-03	605305.8643	0.0066	1.89		
658	P 37	P 46			2517.9215	3.9D-01	2518.4069	-0.4853	-1.24	737	P 11	P 26		-4907.6349	1.0D-02	-4907.6284	-0.0065	-0.65	770	P 2	P 12		245814.2717	3.5D-03	245814.2671	0.0046	1.30		
659	P 27	P 36			10885.2301	1.1D-02	10885.2313	-0.0012	-0.11	738	P 12	P 28		20402.3747	1.0D-01	20402.2953	0.0794	0.79	771	R 12	P 12		580247.7308	3.5D-03	580247.7360	-0.0052	-1.48		
660	P 26	P 34			-14548.5076	7.1D-02	-14548.4923	-0.0153	-0.22	739	P 13	P 28		-3628.1000	1.0D-02	-3628.0934	-0.0067	-0.66	772	R 12	R 2		218371.9595	3.5D-03	218371.9577	0.0018	0.52		
661	P 25	P 34			12185.6108	8.0D-02	12185.7255	-0.1147	-1.43	740	P 14	P 30		21909.2498	1.0D-01	21909.1589	0.0909	0.90	773	R 30	R 12		346208.9282	5.0D-03	346208.9209	0.0073	1.47		
662	P 24	P 32			-13009.5931	2.2D-02	-13009.5517	-0.0414	-1.92	741</																			

TABLE II
CONTINUED

636 II 626 I PETERSEN ET AL. II FILE 35							636 II 838 II FILE 44						
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION			MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
782	P 28 R 30	328184.8403	2.1D-03	328184.8416	-0.0013	-0.61	807	P 10 P 24	21477.0711	5.9D-03	21477.0769	-0.0057	-0.98
MEAN SQUARE RELATIVE DEVIATION = 0.377							808	P 12 P 24	-29965.8197	4.0D-02	-29965.8680	0.0482	1.20
626 II 838 II PETERSEN ET AL. II FILE 36							809	P 12 P 26	19344.7640	3.9D-03	19344.7569	0.0071	1.83
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	810	P 14 P 28	16963.5016	2.5D-03	16963.5020	-0.0004	-0.18
783	P 10 R 26	359806.9768	5.0D-03	359806.9861	-0.0093	-1.86	811	P 16 P 30	14332.8394	2.5D-03	14332.8412	-0.0018	-0.71
MEAN SQUARE RELATIVE DEVIATION = 3.443							812	P 18 P 32	11452.4145	2.5D-03	11452.4140	0.0005	0.20
626 I 626 I PETERSEN ET AL. I FILE 37							813	P 20 P 34	8321.9703	5.3D-03	8321.9710	-0.0007	-0.13
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	814	P 22 P 36	4941.3721	2.5D-03	4941.3741	-0.0020	-0.79
784	R 34 R 32	33905.8081	1.0D+04	33905.8153	-0.0072	-0.00	815	P 26 P 40	-2570.2803	5.0D-03	-2570.2748	-0.0055	-1.10
785	R 36 R 34	33129.6573	1.0D+04	33129.6494	0.0079	0.00	816	P 28 P 42	-6701.0443	4.3D-03	-6701.0443	-0.0000	-0.00
MEAN SQUARE RELATIVE DEVIATION = 0.000							817	R 20 R 8	-15461.1918	7.1D-03	-15461.1886	-0.0032	-0.45
626 I 626 I PETERSEN ET AL. II FILE 38							818	R 20 R 6	23415.4701	7.2D-03	23415.4740	-0.0039	-0.54
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	819	R 24 R 12	-18031.8904	2.2D-02	-18031.8872	-0.0032	-0.15
786	R 34 R 32	33905.8143	2.0D-03	33905.8153	-0.0010	-0.49	820	R 28 R 16	-21491.6774	4.5D-03	-21491.6790	0.0015	0.34
787	R 36 R 34	33129.6499	2.0D-03	33129.6494	0.0005	0.27	821	R 30 R 18	-23549.5759	2.7D-03	-23549.5778	0.0019	0.71
MEAN SQUARE RELATIVE DEVIATION = 0.157							822	R 32 R 18	9221.9394	6.0D-03	9221.9450	-0.0057	-0.95
838 I 626 I FILE 39							MEAN SQUARE RELATIVE DEVIATION = 0.639 MINIMUM STANDARD DEVIATION = 2.5D-03						
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	636 I 838 I FILE 45						
788	R 12 P 28	8976.7564	1.3D-02	8976.7473	0.0092	0.68	823	P 12 P 32	4780.1431	3.6D-03	4780.1415	0.0016	0.44
789	R 18 P 24	4760.1769	8.3D-03	4760.1642	0.0127	1.53	824	P 24 P 44	19854.1965	3.7D-03	19854.1905	0.0060	1.62
790	R 22 P 22	18329.0141	1.4D-02	18329.0001	0.0140	1.01	825	P 26 P 46	22758.9620	3.1D-02	22758.9455	0.0164	0.53
791	R 28 P 18	8177.8748	1.0D-02	8177.8672	0.0076	0.73	826	P 28 P 48	25781.6454	2.2D-02	25781.6327	0.0127	0.87
792	R 34 P 14	-5349.2247	7.0D-03	-5349.2260	0.0013	0.19	827	P 30 P 48	-29304.9734	3.8D-03	-29304.9761	0.0027	0.72
MEAN SQUARE RELATIVE DEVIATION = 0.880 MINIMUM STANDARD DEVIATION = 5.0D-03							828	R 14 P 6	5458.7122	1.3D-02	5458.7130	-0.0008	-0.06
838 II 626 II FILE 40							829	R 26 R 6	-20671.3741	1.1D-02	-20671.3760	0.0020	0.18
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	830	R 30 R 8	16458.8999	3.5D-03	16458.9063	-0.0064	-1.83
793	R 16 P 30	13487.9741	1.4D-02	13487.9593	0.0147	1.03	831	R 30 R 10	-21600.5595	3.5D-03	-21600.5625	0.0030	0.86
794	R 22 P 26	3355.3042	1.1D-02	3355.2967	0.0074	0.65	832	R 38 R 16	12633.9589	3.5D-03	12633.9564	0.0025	0.72
795	R 24 P 24	-19354.5072	5.5D-02	-19354.5594	0.0522	0.95	833	R 44 R 24	-22896.2488	4.4D-02	-22896.2266	-0.0223	-0.50
796	R 26 P 24	13789.2600	1.5D-02	13789.2498	0.0101	0.69	834	R 44 R 22	10360.1346	3.8D-03	10360.1349	-0.0003	-0.09
797	R 28 P 22	-9411.6537	8.5D-03	-9411.6591	0.0054	0.64	MEAN SQUARE RELATIVE DEVIATION = 0.735 MINIMUM STANDARD DEVIATION = 3.5D-03						
798	R 32 P 20	-1206.6613	1.2D-02	-1206.6725	0.0112	0.92	828 I 626 I FILE 46						
MEAN SQUARE RELATIVE DEVIATION = 0.686 MINIMUM STANDARD DEVIATION = 5.0D-03									MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
636 II 626 II FILE 41							835	P 12 P 4	11402.1668	3.0D-03	11402.1635	0.0032	1.08
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	836	P 14 P 6	13214.1949	1.0D-02	13214.2005	-0.0057	-0.54
799	R 26 P 32	16291.1810	1.5D-02	16291.1666	0.0145	0.99	837	R 18 R 24	12623.4398	3.0D-03	12623.4400	-0.0002	-0.06
800	R 28 P 30	-8003.7138	5.0D-03	-8003.7196	0.0058	1.17	838	R 24 R 30	1955.8275	3.0D-03	1955.8296	-0.0021	-0.69
MEAN SQUARE RELATIVE DEVIATION = 1.177 MINIMUM STANDARD DEVIATION = 5.0D-03							839	R 26 R 32	-1693.8331	3.0D-03	-1693.8341	0.0010	0.34
636 I 626 I FILE 42							840	R 44 R 48	-8744.9183	2.0D-02	-8744.9481	0.0298	1.47
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	MEAN SQUARE RELATIVE DEVIATION = 0.703 MINIMUM STANDARD DEVIATION = 3.0D-03						
801	R 18 P 38	8753.7811	5.0D-03	8753.7741	0.0070	1.41	828 II 626 II FILE 47						
802	R 38 P 24	-17932.7629	5.0D-03	-17932.7674	0.0045	0.90			MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
803	R 42 P 22	-4554.5741	5.0D-03	-4554.5795	0.0054	1.08	841	P 16 R 10	5059.5351	3.1D-03	5059.5329	0.0022	0.70
MEAN SQUARE RELATIVE DEVIATION = 1.318 MINIMUM STANDARD DEVIATION = 5.0D-03							842	P 58 P 32	6761.8321	3.1D-03	6761.8353	-0.0031	-1.02
636 II 626 I FILE 43							843	R 6 R 36	14672.7538	3.0D-03	14672.7511	0.0027	0.91
		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	844	R 5 R 38	-16889.7839	3.0D-03	-16889.7878	0.0039	1.30
804	P 30 R 48	-14817.7148	8.8D-03	-14817.7133	-0.0016	-0.18	845	R 12 R 44	8456.7008	3.0D-03	8456.6965	0.0042	1.41
805	P 34 R 40	-17194.7060	8.8D-03	-17194.7133	0.0073	0.83	846	R 12 R 46	-20067.1385	3.0D-03	-20067.1400	0.0015	0.48
806	P 40 R 28	-3242.8353	8.4D-03	-3242.8254	-0.0099	-1.18	847	R 14 R 46	17247.2168	3.0D-03	17247.2135	0.0033	1.10
MEAN SQUARE RELATIVE DEVIATION = 0.703 MINIMUM STANDARD DEVIATION = 5.0D-03							MEAN SQUARE RELATIVE DEVIATION = 1.065 MINIMUM STANDARD DEVIATION = 3.0D-03						
727 I 626 I FILE 48									MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION
848	P 11 P 4	-17647.7470	5.5D-03	-17647.7429	-0.0041	-0.75	848	P 11 P 4	-17647.7470	5.5D-03	-17647.7429	-0.0041	-0.75
849	P 14 P 8	6874.7993	1.1D-02	6874.8072	-0.0079	-0.71	849	P 14 P 8	6874.7993	1.1D-02	6874.8072	-0.0079	-0.71
850	P 16 P 10	7083.6245	1.3D-02	7083.6108	0.0136	1.02	850	P 16 P 10	7083.6245	1.3D-02	7083.6108	0.0136	1.02
851	P 18 P 12	7246.9813	8.6D-03	7246.9794	0.0019	0.23	851	P 18 P 12	7246.9813	8.6D-03	7246.9794	0.0019	0.23
852	P 20 P 14	7364.3981	7.4D-03	7364.3966	0.0015	0.20	852	P 20 P 14	7364.3981	7.4D-03	7364.3966	0.0015	0.20
853	P 22 P 16	7435.3200	2.5D-02	7435.3684	-0.0485	-1.90	853	P 22 P 16	7435.3200	2.5D-02	7435.3684	-0.0485	-1.90
854	P 24 P 18	7459.4563	2.1D-02	7459.4231	0.0332	1.58	854	P 24 P 18	7459.4563	2.1D-02	7459.4231	0.0332	1.58
855	P 26 P 22	7365.0181	7.1D-03	7365.0096	0.0085	1.21	855	P 26 P 22	7365.0181	7.1D-03	7365.0096	0.0085	1.21
856	P 30 P 24	7245.7135	1.1D-02	7245.7154	-0.0018	-0.16	856	P 30 P 24	7245.7135	1.1D-02	7245.7154	-0.0018	-0.16
857	P 32 P 26	7077.8445	2.1D-02	7077.8540	-0.0095	-0.46	857	P 32 P 26	7077.8445	2.1D-02	7077.8540	-0.0095	-0.46
858	R 16 R 22	-1709.4564	5.7D-03	-1709.4571	0.0007	0.12	858	R 16 R 22	-1709.4564	5.7D-03	-1709.4571	0.0007	0.12
859	R 18 R 24	-2573.1318	6.7D-03	-2573.1324	0.0006	0.09	859	R 18 R 24	-2573.1318	6.7D-03	-2573.1324	0.0006	0.09
860	R 20 R 26	-3469.3766	6.7D-03	-3469.3749	-0.0018	-0.26	860	R 20 R 26	-3469.3766	6.7D-03	-3469.3749	-0.0018	-0.26
861	R 22 R 28	-4397.1875	6.0D-03	-4397.1845	-0.0030	-0.50	861	R 22 R 28	-4397.1875	6.0D-03	-4397.1845	-0.0030	-0.50
862	R 24 R 30	-5355.5325	6.2D-03	-5355.5238	-0.0087	-1.42	862	R 24 R 30	-5355.5325	6.2D-03	-5355.5238	-0.0087	-1.42
863	R 26 R 32	-6343.3239	6.7D-03	-6343.3162	-0.0077	-1.15	863	R 26 R 32	-6343.3239	6.7D-03	-6343.3162	-0.0077	-1.15
864	R 28 R 34	-7359.4297	3.0D-02	-7359.4436	0.0139	0.46	864	R 28 R 34	-7359.4297	3.0D-02	-7359.4436	0.0139	0.46
865	R 30 R 36	-8402.7850	6.0D-02	-8402.7439	-0.0410	-0.68	865	R 30 R 36	-8402.7850	6.0D-02	-8402.7439	-0.0410	-0.68
MEAN SQUARE RELATIVE DEVIATION = 0.797 MINIMUM STANDARD DEVIATION = 5.0D-03							MEAN SQUARE RELATIVE DEVIATION = 0.797 MINIMUM STANDARD DEVIATION = 5.0D-03						

TABLE II
CONTINUED

727 II 626 II						727 I 828 I					
FILE 49						FILE 50					
MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION		MEASURED FREQUENCIES	NOMINAL STD. DEV.	CALCULATED FREQUENCIES	MEASURED - CALCULATED	RELATIVE DEVIATION	
866 R 8 R 20	3619.2420	7.5D-02	3619.2337	0.0083	0.11	890 P 11 P 14	17571.1866	3.1D-02	17571.1739	0.0127	0.41
867 R 12 R 24	9026.1165	4.2D-02	9026.0486	0.0679	1.62	891 P 13 P 16	16464.5348	2.1D-02	16464.5340	0.0008	0.04
868 R 14 R 26	11900.4484	4.1D-02	11900.4697	-0.0212	-0.52	892 P 15 P 18	15378.4528	2.3D-02	15378.4417	0.0111	0.48
869 R 16 R 28	14886.3725	4.1D-02	14886.2939	0.0786	1.91	893 P 17 P 20	14312.9445	1.4D-02	14312.9178	0.0266	1.87
870 R 18 R 30	17981.6146	1.0D-01	17981.5015	0.1131	1.13	894 P 19 P 22	13267.9582	3.5D-02	13267.9455	0.0127	0.36
871 R 20 R 34	-11923.5957	2.0D-01	-11923.4477	-0.1481	-0.74	895 P 21 P 24	12243.4655	1.3D-02	12243.4698	-0.0043	-0.34
872 R 22 R 36	-7841.2942	2.3D-02	-7841.3196	0.0255	1.09	896 P 23 P 26	11239.4173	1.5D-02	11239.3978	0.0195	1.32
873 R 24 R 38	-3660.1942	2.4D-01	-3660.0474	-0.1468	-0.62	897 P 25 P 28	10255.6161	2.1D-02	10255.5985	0.0176	0.85
874 R 26 R 42	4990.2819	1.1D-01	4990.1475	0.1344	1.27	898 P 27 P 30	9291.9188	1.2D-02	9291.9024	0.0164	1.35
875 P 18 P 6	-19973.0465	3.2D-02	-19973.0479	0.0015	0.05	899 P 29 P 32	8348.0970	1.4D-02	8348.1019	-0.0049	-0.36
876 P 20 P 8	-20770.2840	6.8D-02	-20770.3650	0.0810	1.18	900 P 31 P 34	7423.9762	1.6D-02	7423.9505	0.0256	1.65
877 P 22 P 10	-21431.0251	6.2D-02	-21430.9790	-0.0461	-0.74	901 P 33 P 36	6519.1666	1.3D-02	6519.1639	0.0027	0.21
878 P 24 P 12	-21954.1263	1.9D-02	-21954.1229	-0.0053	-0.28	902 P 35 P 38	5633.4466	3.6D-02	5633.4188	0.0278	0.78
879 P 26 P 14	-22339.0516	5.1D-02	-22339.1137	0.0621	1.22	903 P 37 P 40	4766.3755	8.8D-02	4766.3543	0.0213	0.24
880 P 28 P 16	-22585.3754	3.8D-02	-22585.3530	-0.0224	-0.59	904 R 9 R 8	-7881.7101	2.8D-02	-7881.7495	0.0395	1.42
881 P 30 P 18	-22692.3527	2.6D-02	-22692.3291	-0.0236	-0.89	905 R 11 R 10	-5753.7303	1.7D-02	-5753.7448	0.0145	0.86
882 P 32 P 20	-22659.6282	1.8D-02	-22659.6179	-0.0103	-0.56	906 R 13 R 12	-3607.3040	1.6D-02	-3607.3314	0.0274	1.77
883 P 34 P 22	-22486.8518	5.1D-02	-22486.8841	0.0323	0.63	907 R 15 R 14	-1442.8863	1.4D-02	-1442.8958	0.0096	0.66
884 P 36 P 24	-22172.9032	1.0D-01	-22173.8825	0.9792	0.98	908 R 17 R 16	739.1469	8.5D-03	739.1365	0.0104	1.23
885 P 38 P 26	-21720.4713	3.0D-02	-21720.4588	-0.0125	-0.41	909 R 19 R 18	2938.3090	1.3D-02	2938.3004	0.0086	0.67
886 P 40 P 28	-21126.5984	6.1D-02	-21126.5513	-0.0470	-0.77	910 R 21 R 20	5154.0934	1.3D-02	5154.0910	0.0025	0.19
887 P 42 P 30	-20392.1634	2.3D-01	-20392.1910	0.0276	0.12	911 R 23 R 22	7385.9704	8.4D-03	7385.9632	0.0072	0.86
888 P 44 P 32	-19517.5042	9.5D-02	-19517.5031	-0.0011	-0.01	912 R 25 R 24	9633.3340	9.1D-03	9633.3315	0.0025	0.28
889 P 46 P 34	-18502.7148	5.6D-01	-18502.7076	-0.0072	-0.01	913 R 27 R 26	11895.5648	8.6D-03	11895.5698	-0.0050	-0.58
						914 R 29 R 28	14172.0088	1.1D-02	14172.0109	-0.0021	-0.19
						915 R 31 R 30	16461.9469	9.8D-03	16461.9469	0.0000	0.48
						916 R 33 R 34	-8983.0905	1.1D-02	-8983.0959	0.0054	0.48
						917 R 35 R 36	-5840.9559	1.2D-02	-5840.9588	0.0029	0.25

MEAN SQUARE RELATIVE DEVIATION = 0.777
MINIMUM STANDARD DEVIATION = 1.0D-02

MEAN SQUARE RELATIVE DEVIATION = 0.785
MINIMUM STANDARD DEVIATION = 8.0D-03

observed points show a curvature of a kind appropriate to the procedures of robust statistics, which leads to a cutoff for outliers.

RESULTS AND DISCUSSION

The results are contained in Tables I–XII. In Table I are the absolute frequency of 626 $R_f(30)$ and the four-frequency beats, all taken from *PII*. The NSD of the absolute frequency is taken without change from that work, and is implicit in the standard deviations of all our predicted frequencies. Since this is the only absolute frequency measurement, measured and calculated frequencies necessarily agree. As for the four-frequency beats, the NSD's have been reduced somewhat from those given in *PII* because of the excellent agreement with predicted values.

In Table II are given the measured beat frequencies that, with Table I, form the experimental basis of our work. The individual files are arranged in somewhat haphazard order, based largely on chronology. Files 4, 26, and 37 are from *PI*. The latter file contains the two measurements that were later rejected by Petersen *et al.* [2]; they are replaced by the measurements in file 38. We have followed *PII* in rejecting file 37 by giving these measurements very large NSD's. The other measurements from *PII* are given in files 32–36. Files 1–26 and 37 contain the measurements used in *I*; files 27–31 and 39–50 contain our later measurements of the new species and remeasurements of some beats that at one point seemed out of line with the emerging fit. At the head of each file are shown the species(e.g., 626) and bands (I or II) in that file; at the end of each file are given the mean-square relative deviation and (for our own measurements only) the minimum standard deviation (MSD) for that file. Each individual measurement is designated by an ordinal number as well as by the branches and *J* values compared in that measurement. The measured frequencies and the nominal standard deviations are the input to our computations, and the remaining columns

show the closeness of the fit. In Tables III–XI are shown the molecular constants derived from the fit and the frequencies, wavenumbers (using $c = 299\,792\,458$ m/s), and standard deviations predicted. We have printed the molecular constants with more figures than their standard deviations warrant, so that those who wish to use the constants to generate frequencies will find agreement with our predicted frequencies. We may also remark that some linear combinations of molecular constants [e.g., $B(001)-B(I)$] are better determined than any of the constants individually. With each constant is printed an ordinal number; these numbers are used to designate the rows and columns of the variance-covariance matrix, the lower triangle of which is shown in Table XII.

An example of the reweighting process described above may be seen by comparing the NSD's of files 4 and 26 of Table II to the corresponding ones of *PI*. It will be seen that, with the exception of measurements 38, 40, 41, 47, and 58 in file 4, and of measurements 618 and 623 in file 26, all the NSD's in these files have been multiplied by a factor $\frac{2}{3}$. All but one (58) of the the exceptions in file 4 are in the *P* branch of the I-band. It is in just this branch that our predictions differ most from those of *PII*, with differences of 10–12 kHz in the range $P(30)-P(56)$. These differences are greater than the sum of the claimed standard deviations for most of this range. As described above, we were forced into our changes in relative weights in the *PI* data by the results of our own measurements; for the band in question, the most important ones are to be found in files 8, 14, and 16. We believe that our predictions are superior because of our additional high-quality data, particularly at high *J*. For other lines of 626, our predictions and those of *PII* are in better agreement.

Two other lines are subjects of study in *PII*. The first, $P_1(50)$ of 636, is found from the two measurements of four-frequency beats in Table I, which were included as part of the data of our total fit. Although our predicted frequen-

TABLE III
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 626

				16 12 16 O C O							
				NUMBER	SYMBOL	CONSTANTS (MHZ)				STD.DEV. (MHZ)	
				1	V(001-I) =	2.880	881	382	455 D+07	3.6D-03	
				2	V(001-II) =	3.188	996	017	636 D+07	3.7D-03	
				3	B(001) =	1.160	620	695	034 D+04	2.3D-05	
				4	B(I) =	1.169	756	942	611 D+04	2.5D-05	
				5	B(II) =	1.170	636	464	791 D+04	2.4D-05	
				6	D(001) =	3.988	109	863	D-03	3.2D-08	
				7	D(I) =	3.445	940	508	D-03	3.3D-08	
				8	D(II) =	4.711	559	114	D-03	3.3D-08	
				9	H(001) =	0.481	534	D-09		1.9D-11	
				10	H(I) =	5.625	110	D-09		1.8D-11	
				11	H(II) =	7.066	300	D-09		1.8D-11	
				12	L(001) =	-0.96	936	D-14		3.5D-15	
				13	L(I) =	1.06	816	D-14		3.3D-15	
				14	L(II) =	-4.31	765	D-14		3.2D-15	
BAND I				BAND II							
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)				
P(60)	2707 7607.5077	0.0246	903.2117 6484	P(60)	3014 3456.0742	0.0172	1005.4774 6515				
P(58)	2714 6404.4578	0.0154	905.5065 8408	P(58)	3021 2223.6949	0.0110	1007.7713 0607				
P(56)	2721 4396.1809	0.0097	907.7745 4384	P(56)	3028 0322.1201	0.0072	1010.0428 2503				
P(54)	2728 1588.8741	0.0064	910.0158 5084	P(54)	3034 7743.7465	0.0051	1012.2917 6841				
P(52)	2734 7988.4259	0.0049	912.2307 0148	P(52)	3041 4481.1364	0.0042	1014.5178 8812				
P(50)	2741 3600.4235	0.0043	914.4192 8214	P(50)	3048 0527.0251	0.0039	1016.7209 4183				
P(48)	2747 8430.1601	0.0040	916.5817 6938	P(48)	3054 5874.3277	0.0038	1018.9006 9322				
P(46)	2754 2482.6413	0.0038	918.7183 3017	P(46)	3061 0516.1462	0.0039	1021.0569 1219				
P(44)	2760 5762.5914	0.0037	920.8291 2210	P(44)	3067 4445.7759	0.0039	1023.1893 7509				
P(42)	2766 8274.4599	0.0036	922.9142 9359	P(42)	3073 7656.7119	0.0039	1025.2978 6496				
P(40)	2773 0022.4271	0.0036	924.9739 8407	P(40)	3080 0142.6555	0.0039	1027.3821 7169				
P(38)	2779 1010.4094	0.0036	927.0083 2419	P(38)	3086 1897.5199	0.0038	1029.4420 9223				
P(36)	2785 1242.0651	0.0035	929.0174 3596	P(36)	3092 2915.4360	0.0038	1031.4774 3083				
P(34)	2791 0720.7986	0.0035	931.0014 3295	P(34)	3098 3190.7583	0.0038	1033.4879 9917				
P(32)	2796 9449.7656	0.0035	932.9604 2043	P(32)	3104 2718.0700	0.0038	1035.4736 1655				
P(30)	2802 7431.8776	0.0035	934.8944 9550	P(30)	3110 1492.1877	0.0037	1037.4341 1009				
P(28)	2808 4669.8055	0.0035	936.8037 4726	P(28)	3115 9508.1671	0.0037	1039.3693 1486				
P(26)	2814 1165.9839	0.0035	938.6882 5692	P(26)	3121 6761.3064	0.0037	1041.2790 7402				
P(24)	2819 6922.6147	0.0036	940.5480 9793	P(24)	3127 3247.1518	0.0038	1043.1632 3901				
P(22)	2825 1941.6703	0.0036	942.3833 3608	P(22)	3132 8961.5006	0.0038	1045.0216 6964				
P(20)	2830 6224.8967	0.0036	944.1940 2961	P(20)	3138 3900.4054	0.0038	1046.8542 3425				
P(18)	2835 9773.8165	0.0036	945.9802 2931	P(18)	3143 8060.1774	0.0037	1048.6608 0978				
P(16)	2841 2589.7314	0.0035	947.7419 7860	P(16)	3149 1437.3897	0.0037	1050.4412 8194				
P(14)	2846 4673.7246	0.0035	949.4793 1361	P(14)	3154 4028.8804	0.0037	1052.1955 4524				
P(12)	2851 6026.6628	0.0035	951.1922 6324	P(12)	3159 5831.7547	0.0037	1053.9235 0313				
P(10)	2856 6649.1983	0.0035	952.8808 4927	P(10)	3164 6843.3878	0.0037	1055.6250 6805				
P(8)	2861 6541.7701	0.0035	954.5450 8632	P(8)	3169 7061.4264	0.0037	1057.3001 6151				
P(6)	2866 5704.6061	0.0036	956.1849 8202	P(6)	3174 6483.7910	0.0037	1058.9487 1415				
P(4)	2871 4137.7235	0.0036	957.8005 3691	P(4)	3179 5108.6771	0.0037	1060.5706 6576				
P(2)	2876 1840.9300	0.0036	959.3917 4460	P(2)	3184 2934.5560	0.0037	1062.1659 6536				
V(0)	2880 8813.8246	0.0036	960.9585 9171	V(0)	3188 9960.1764	0.0037	1063.7345 7121				
R(0)	2883 2026.2225	0.0036	961.7328 7396	R(0)	3191 3172.5743	0.0037	1064.5088 5347				
R(2)	2887 7902.4412	0.0036	963.2631 3990	R(2)	3195 8996.0672	0.0036	1066.0373 6066				
R(4)	2892 3046.4336	0.0036	964.7689 8140	R(4)	3200 4017.3872	0.0036	1067.5391 1025				
R(6)	2896 7457.0695	0.0035	966.2503 6076	R(6)	3204 8236.2544	0.0036	1069.0140 9289				
R(8)	2901 1133.0097	0.0035	967.7072 3331	R(8)	3209 1652.6660	0.0036	1070.4623 0849				
R(10)	2905 4072.7058	0.0035	969.1395 4739	R(10)	3213 4266.8953	0.0036	1071.8837 6618				
R(12)	2909 6274.3988	0.0034	970.5472 4435	R(12)	3217 6079.4907	0.0036	1073.2784 8423				
R(14)	2913 7736.1185	0.0034	971.9302 5845	R(14)	3221 7091.2743	0.0037	1074.6464 9008				
R(16)	2917 8455.6817	0.0033	973.2885 1688	R(16)	3225 7303.3400	0.0037	1075.9878 2021				
R(18)	2921 8430.6909	0.0033	974.6219 3965	R(18)	3229 6717.0518	0.0037	1077.3025 2013				
R(20)	2925 7658.5324	0.0032	975.9304 3960	R(20)	3233 5334.0411	0.0038	1078.5906 4423				
R(22)	2929 6136.3740	0.0032	977.2139 2224	R(22)	3237 3156.2043	0.0039	1079.8522 5580				
R(24)	2933 3861.1629	0.0032	978.4722 8575	R(24)	3241 0185.7000	0.0039	1081.0874 2682				
R(26)	2937 0829.6231	0.0031	979.7054 2084	R(26)	3244 6424.9456	0.0039	1082.2962 3794				
R(28)	2940 7038.2525	0.0031	980.9132 1071	R(28)	3248 1876.6140	0.0040	1083.4787 7831				
R(30)	2944 2483.3197	0.0031	982.0955 3089	R(30)	3251 6543.6298	0.0040	1084.6351 4549				
R(32)	2947 7160.8609	0.0031	983.2522 4916	R(32)	3255 0429.1653	0.0039	1085.7654 4528				
R(34)	2951 1066.6762	0.0031	984.3832 2542	R(34)	3258 3536.6360	0.0039	1086.8697 9163				
R(36)	2954 4196.3256	0.0032	985.4883 1157	R(36)	3261 5869.6965	0.0039	1087.9483 0644				
R(38)	2957 6545.1250	0.0033	986.5673 5137	R(38)	3264 7432.2354	0.0038	1089.0011 1941				
R(40)	2960 8108.1417	0.0033	987.6201 8028	R(40)	3267 8228.3702	0.0038	1090.0283 6790				
R(42)	2963 8880.1900	0.0034	988.6466 2533	R(42)	3270 8262.4421	0.0038	1091.0301 9670				
R(44)	2966 8855.8259	0.0035	989.6465 0491	R(44)	3273 7539.0104	0.0038	1092.0067 5790				
R(46)	2969 8029.3420	0.0035	990.6196 2866	R(46)	3276 6062.8469	0.0039	1092.9582 1067				
R(48)	2972 6394.7621	0.0036	991.5657 9723	R(48)	3279 3838.9297	0.0043	1093.8847 2107				
R(50)	2975 3945.8353	0.0045	992.4848 0211	R(50)	3282 0872.4368	0.0055	1094.7864 6180				
R(52)	2978 0676.0297	0.0070	993.3764 2542	R(52)	3284 7168.7402	0.0081	1095.6636 1206				
R(54)	2980 6578.5263	0.0117	994.2404 3971	R(54)	3287 2733.3987	0.0127	1096.5163 5728				
R(56)	2983 1646.2123	0.0193	995.0766 0771	R(56)	3289 7572.1515	0.0199	1097.3448 8889				
R(58)	2985 5871.6737	0.0307	995.8846 8212	R(58)	3292 1690.9108	0.0305	1098.1494 0411				

TABLE IV
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 636

$\begin{array}{c} 16 \quad 13 \quad 16 \\ \quad \quad \quad \text{O} \quad \text{C} \quad \text{O} \end{array}$							
NUMBER	SYMBOL	CONSTANTS (MHZ)				STD.DEV. (MHZ)	
15	V(001-I) =	2.738	379	258	341 D+07	4.5D-03	
16	V(001-II) =	3.050	865	923	183 D+07	4.6D-03	
17	B(001) =	1.161	016	490	148 D+04	1.1D-04	
18	B(I) =	1.168	344	168	872 D+04	1.2D-04	
19	B(II) =	1.171	936	491	647 D+04	1.2D-04	
20	D(001) =	3.984	584	753	D-03	1.4D-07	
21	D(I) =	3.604	500	429	D-03	1.5D-07	
22	D(II) =	4.747	234	294	D-03	1.5D-07	
23	H(001) =	0.495	934	D-09		7.2D-11	
24	H(I) =	6.338	964	D-09		7.6D-11	
25	H(II) =	8.203	342	D-09		7.8D-11	
26	L(001) =	-2.29	763	D-14		1.3D-14	
27	L(I) =	5.77	901	D-14		1.4D-14	
28	L(II) =	-7.93	174	D-14		1.5D-14	

BAND I				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2572 0428.2139	0.1461	857.9411 3653	P(60)	2872 9056.6508	0.2555	958.2981 7876
P(58)	2578 4672.4669	0.0893	860.0840 9414	P(58)	2879 9935.4314	0.1690	960.6624 4039
P(56)	2584 8281.2715	0.0506	862.2058 5547	P(56)	2887 0077.7355	0.1079	963.0021 3581
P(54)	2591 1259.2641	0.0254	864.3065 7519	P(54)	2893 9475.6922	0.0660	965.3170 0248
P(52)	2597 3610.8059	0.0104	866.3863 9875	P(52)	2900 8121.5973	0.0383	967.6067 8340
P(50)	2603 5339.9930	0.0046	868.4454 6280	P(50)	2907 6007.9210	0.0208	969.8712 2741
P(48)	2609 6450.6662	0.0060	870.4838 9544	P(48)	2914 3127.3153	0.0108	972.1100 8942
P(46)	2615 6946.4203	0.0071	872.5018 1658	P(46)	2920 9472.6220	0.0060	974.3231 3064
P(44)	2621 6830.6129	0.0069	874.4993 3824	P(44)	2927 5036.8795	0.0046	976.5101 1886
P(42)	2627 6106.3727	0.0062	876.4765 6475	P(42)	2933 9813.3301	0.0042	978.6708 2867
P(40)	2633 4776.6070	0.0055	878.4335 9311	P(40)	2940 3795.4270	0.0040	980.8050 4170
P(38)	2639 2844.0093	0.0050	880.3705 1317	P(38)	2946 6976.8409	0.0037	982.9125 4682
P(36)	2645 0311.0659	0.0048	882.2874 0784	P(36)	2952 9351.4664	0.0036	984.9931 4037
P(34)	2650 7180.0624	0.0047	884.1843 5338	P(34)	2959 0913.4284	0.0035	987.0466 2638
P(32)	2656 3453.0895	0.0047	886.0614 1951	P(32)	2965 1657.0881	0.0034	989.0728 1677
P(30)	2661 9132.0488	0.0046	887.9186 6968	P(30)	2971 1577.0489	0.0034	991.0715 3152
P(28)	2667 4218.6576	0.0045	889.7561 6117	P(28)	2977 0668.1613	0.0035	993.0425 9887
P(26)	2672 8714.4542	0.0044	891.5739 4527	P(26)	2982 8925.5288	0.0037	994.9858 5548
P(24)	2678 2620.8016	0.0045	893.3720 6747	P(24)	2988 6344.5126	0.0039	996.9011 4661
P(22)	2683 5938.8924	0.0046	895.1505 6754	P(22)	2994 2920.7360	0.0043	998.7883 2629
P(20)	2688 8669.7518	0.0048	896.9094 7969	P(20)	2999 8650.0890	0.0046	1000.6472 5741
P(18)	2694 0814.2416	0.0049	898.6488 3264	P(18)	3005 3528.7321	0.0048	1002.4778 1190
P(16)	2699 2373.0626	0.0051	900.3686 4979	P(16)	3010 7553.1003	0.0050	1004.2798 7085
P(14)	2704 3346.7581	0.0051	902.0689 4925	P(14)	3016 0719.9062	0.0050	1006.0533 2460
P(12)	2709 3735.7157	0.0051	903.7497 4396	P(12)	3021 3026.1432	0.0050	1007.7980 7286
P(10)	2714 3540.1700	0.0051	905.4110 4173	P(10)	3026 4469.0880	0.0050	1009.5140 2480
P(8)	2719 2760.2041	0.0050	907.0528 4534	P(8)	3031 5046.3034	0.0049	1011.2010 9911
P(6)	2724 1395.7513	0.0049	908.6751 5257	P(6)	3036 4755.6398	0.0048	1012.8592 2409
P(4)	2728 9446.5964	0.0048	910.2779 5624	P(4)	3041 3595.2374	0.0048	1014.4883 3771
P(2)	2733 6912.3769	0.0046	911.8612 4425	P(2)	3046 1563.5271	0.0047	1016.0883 8762
V(0)	2738 3792.5834	0.0045	913.4249 9962	V(0)	3050 8659.2318	0.0046	1017.6593 3124
R(0)	2740 7012.8973	0.0044	914.1995 4592	R(0)	3053 1879.5457	0.0046	1018.4338 7754
R(2)	2745 3013.4681	0.0042	915.7339 5979	R(2)	3057 7664.6183	0.0045	1019.9611 0317
R(4)	2749 8426.5523	0.0041	917.2487 7723	R(4)	3062 2575.1933	0.0044	1021.4591 5870
R(6)	2754 3251.1293	0.0039	918.7439 6418	R(6)	3066 6611.0178	0.0042	1022.9280 3569
R(8)	2758 7486.0315	0.0038	920.2194 8169	R(8)	3070 9772.1308	0.0041	1024.3677 3546
R(10)	2763 1129.9444	0.0037	921.6752 8592	R(10)	3075 2058.8624	0.0041	1025.7782 6899
R(12)	2767 4181.4046	0.0037	923.1113 2806	R(12)	3079 3471.8321	0.0040	1027.1596 5697
R(14)	2771 6638.7995	0.0037	924.5275 5431	R(14)	3083 4011.9476	0.0040	1028.5119 2966
R(16)	2775 8500.3648	0.0037	925.9239 0583	R(16)	3087 3680.4026	0.0040	1029.8351 2689
R(18)	2779 9764.1836	0.0037	927.3003 1866	R(18)	3091 2478.6741	0.0040	1031.1292 9793
R(20)	2784 0428.1832	0.0037	928.6567 2369	R(20)	3095 0408.5204	0.0040	1032.3945 0141
R(22)	2788 0490.1338	0.0037	929.9930 4651	R(22)	3098 7471.9774	0.0040	1033.6308 0526
R(24)	2791 9947.6446	0.0036	931.3092 0741	R(24)	3102 3671.3557	0.0039	1034.8382 8655
R(26)	2795 8798.1618	0.0036	932.6051 2117	R(26)	3105 9009.2365	0.0039	1036.0170 3137
R(28)	2799 7038.9645	0.0036	933.8806 9704	R(28)	3109 3488.4681	0.0040	1037.1671 3474
R(30)	2803 4667.1610	0.0036	935.1358 3858	R(30)	3112 7112.1611	0.0040	1038.2887 0042
R(32)	2807 1679.6853	0.0036	936.3704 4349	R(32)	3115 9883.6840	0.0040	1039.3818 4075
R(34)	2810 8073.2921	0.0037	937.5844 0354	R(34)	3119 1806.6581	0.0041	1040.4466 7655
R(36)	2814 3844.5522	0.0037	938.7776 0434	R(36)	3122 2884.9526	0.0041	1041.4833 3687
R(38)	2817 9899.8473	0.0037	939.9499 2520	R(38)	3125 3122.6789	0.0043	1042.4919 5885
R(40)	2821 3505.3647	0.0038	941.1012 3893	R(40)	3128 2524.1847	0.0047	1043.4726 8752
R(42)	2824 7387.0908	0.0039	942.2314 1167	R(42)	3131 1094.0483	0.0054	1044.4256 7559
R(44)	2828 0630.8053	0.0047	943.3403 0262	R(44)	3133 8837.0719	0.0071	1045.3510 8324
R(46)	2831 3232.0738	0.0075	944.4277 6388	R(46)	3136 5758.2755	0.0112	1046.2490 7794
R(48)	2834 5186.2410	0.0138	945.4936 4017	R(48)	3139 1862.8900	0.0193	1047.1198 3415
R(50)	2837 6488.4223	0.0251	946.5377 6855	R(50)	3141 7156.3502	0.0332	1047.9635 3316
R(52)	2840 7133.4961	0.0432	947.5599 7818	R(52)	3144 1644.2875	0.0555	1048.7803 6283
R(54)	2843 7116.0949	0.0708	948.5600 9002	R(54)	3146 5332.5230	0.0892	1049.5705 1732
R(56)	2846 6430.5956	0.1112	949.5379 1651	R(56)	3148 8227.0596	0.1386	1050.3341 9685
R(58)	2849 5071.1098	0.1688	950.4932 6124	R(58)	3151 0334.0742	0.2089	1051.0716 0749

TABLE V
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 628

		16 12 18 Q C Q					
NUMBER	SYMBOL	CONSTANTS (MHZ)				STD.DEV. (MHZ)	
29	V(001-I) =	2.896	801	233	901 D+07	1.0D-02	
30	V(001-II) =	3.215	835	064	653 D+07	2.3D-02	
31	B(001) =	1.095	102	264	016 D+04	2.8D-04	
32	B(I) =	1.104	772	438	281 D+04	3.0D-04	
33	B(II) =	1.103	600	443	963 D+04	2.8D-04	
34	D(001) =	3.550	909	355	D-03	5.2D-07	
35	D(I) =	3.064	795	497	D-03	5.5D-07	
36	D(II) =	4.096	110	317	D-03	6.3D-07	
37	H(001) =	0.074	060	D-09		4.0D-10	
38	H(I) =	2.945	673	D-09		4.2D-10	
39	H(II) =	4.419	934	D-09		6.2D-10	
40	L(001) =	5.56	243	D-14		1.1D-13	
41	L(I) =	7.69	066	D-14		1.1D-13	
42	L(II) =	64.89	108	D-14		2.1D-13	

BAND I				BAND I			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2729 6371.2432	2.7312	910.5089 3759	R(0)	2898 9914.3701	0.0104	966.9994 5567
P(59)	2733 0160.6851	2.2947	911.6360 3206	R(1)	2901 1622.9105	0.0106	967.7235 7464
P(58)	2736 3739.9515	1.9182	912.7561 1582	R(2)	2903 3137.8634	0.0108	968.4412 3622
P(57)	2739 7109.7225	1.5948	913.8692 1156	R(3)	2905 4459.1202	0.0108	969.1524 3679
P(56)	2743 0270.6628	1.3182	914.9753 4147	R(4)	2907 5586.5606	0.0108	969.8571 7235
P(55)	2746 3223.4212	1.0828	916.0745 2717	R(5)	2909 6520.0529	0.0107	970.5554 3848
P(54)	2749 5968.6313	0.8834	917.1667 8981	R(6)	2911 7259.4532	0.0105	971.2472 3042
P(53)	2752 8506.9114	0.7153	918.2521 5000	R(7)	2913 7804.6065	0.0103	971.9325 4296
P(52)	2756 0838.8646	0.5746	919.3306 2788	R(8)	2915 8155.3456	0.0100	972.6113 7055
P(51)	2759 2965.0793	0.4575	920.4022 4305	R(9)	2917 8311.4918	0.0096	973.2837 0722
P(50)	2762 4886.1287	0.3606	921.4670 1465	R(10)	2919 8272.8546	0.0093	973.9495 4661
P(49)	2765 6602.5715	0.2812	922.5249 6130	R(11)	2921 8039.2319	0.0089	974.6088 8199
P(48)	2768 8114.9518	0.2165	923.5761 0116	R(12)	2923 7610.4096	0.0084	975.2617 0620
P(47)	2771 9423.7991	0.1644	924.6204 5190	R(13)	2925 6986.1619	0.0080	975.9080 1173
P(46)	2775 0529.6287	0.1229	925.6580 3069	R(14)	2927 6166.2511	0.0075	976.5477 9064
P(45)	2778 1432.9417	0.0901	926.6888 5425	R(15)	2929 5150.4278	0.0071	977.1810 3461
P(44)	2781 2134.2250	0.0647	927.7129 3883	R(16)	2931 3938.4306	0.0066	977.8077 3493
P(43)	2784 2633.9515	0.0453	928.7303 0020	R(17)	2933 2529.9861	0.0062	978.4278 8247
P(42)	2787 2932.5802	0.0308	929.7409 5366	R(18)	2935 0924.8091	0.0057	979.0414 6772
P(41)	2790 3030.5565	0.0203	930.7449 1409	R(19)	2936 9122.6024	0.0053	979.6484 8076
P(40)	2793 2928.3119	0.0130	931.7421 9586	R(20)	2938 7123.0568	0.0050	980.2489 1129
P(39)	2796 2626.2643	0.0084	932.7328 1292	R(21)	2940 4925.8509	0.0047	980.8427 4858
P(38)	2799 2124.8184	0.0059	933.7167 7877	R(22)	2942 2530.6513	0.0044	981.4299 8152
P(37)	2802 1424.3652	0.0050	934.6941 0645	R(23)	2943 9937.1125	0.0043	982.0105 9856
P(36)	2805 0525.2826	0.0048	935.6648 0857	R(24)	2945 7144.8766	0.0041	982.5845 8779
P(35)	2807 9427.9351	0.0047	936.6288 9729	R(25)	2947 4153.5738	0.0041	983.1519 3686
P(34)	2810 8132.6743	0.0045	937.5863 8432	R(26)	2949 0962.8216	0.0040	983.7126 3301
P(33)	2813 6639.8385	0.0044	938.5372 8096	R(27)	2950 7572.2255	0.0040	984.2666 6309
P(32)	2816 4949.7533	0.0043	939.4815 9808	R(28)	2952 3981.3785	0.0039	984.8140 1352
P(31)	2819 3062.7312	0.0042	940.4193 4608	R(29)	2954 0189.8609	0.0039	985.3546 7029
P(30)	2822 0979.0720	0.0041	941.3505 3498	R(30)	2955 6197.2409	0.0039	985.8886 1901
P(29)	2824 8699.0627	0.0041	942.2751 7434	R(31)	2957 2003.0737	0.0040	986.4158 4485
P(28)	2827 6222.9778	0.0041	943.1932 7332	R(32)	2958 7606.9022	0.0042	986.9363 3254
P(27)	2830 3551.0789	0.0041	944.1048 4065	R(33)	2960 3008.2564	0.0044	987.4500 6642
P(26)	2833 0683.6152	0.0041	945.0098 8464	R(34)	2961 8206.6535	0.0047	987.9570 3038
P(25)	2835 7620.8235	0.0040	945.9084 1320	R(35)	2963 3201.5979	0.0049	988.4572 0788
P(24)	2838 4362.9282	0.0040	946.8004 3379	R(36)	2964 7992.5812	0.0052	988.9505 8198
P(23)	2841 0910.1411	0.0040	947.6859 5350	R(37)	2966 2579.0817	0.0058	989.4371 3526
P(22)	2843 7262.6619	0.0039	948.5649 7897	R(38)	2967 6960.5648	0.0074	989.9168 4990
P(21)	2846 3420.6781	0.0039	949.4375 1647	R(39)	2969 1136.4828	0.0109	990.3897 0763
P(20)	2848 9384.3647	0.0040	950.3035 7184	R(40)	2970 5106.2746	0.0168	990.8556 8972
P(19)	2851 5153.8849	0.0040	951.1631 5050	R(41)	2971 8869.3657	0.0256	991.3147 7703
P(18)	2854 0729.3895	0.0039	952.0162 5751	R(42)	2973 2425.1684	0.0381	991.7669 4994
P(17)	2856 6111.0174	0.0039	952.8628 9749	R(43)	2974 5773.0814	0.0549	992.2121 8839
P(16)	2859 1298.8955	0.0039	953.7030 7466	R(44)	2975 8912.4896	0.0772	992.6504 7187
P(15)	2861 6293.1385	0.0039	954.5367 9287	R(45)	2977 1842.7644	0.1060	993.0817 7941
P(14)	2864 1093.8494	0.0039	955.3640 5553	R(46)	2978 4563.2633	0.1428	993.5060 8958
P(13)	2866 5701.1190	0.0040	956.1848 6570	R(47)	2979 7073.3299	0.1892	993.9233 8048
P(12)	2869 0115.0266	0.0041	956.9992 2600	R(48)	2980 9372.2936	0.2469	994.3336 2975
P(11)	2871 4335.6392	0.0044	957.8071 3867	R(49)	2982 1459.4700	0.3181	994.7368 1456
P(10)	2873 8363.0123	0.0047	958.6086 0557	R(50)	2983 3334.1601	0.4052	995.1329 1159
P(9)	2876 2197.1895	0.0052	959.4036 2814	R(51)	2984 4995.6509	0.5108	995.5218 9705
P(8)	2878 5838.2025	0.0057	960.1922 0745	R(52)	2985 6443.2145	0.6381	995.9037 4667
P(7)	2880 9286.0713	0.0063	960.9743 4417	R(53)	2986 7676.1087	0.7903	996.2784 3569
P(6)	2883 2540.8044	0.0069	961.7500 3857	R(54)	2987 8693.5765	0.9714	996.6459 3886
P(5)	2885 5602.3982	0.0075	962.5192 9054	R(55)	2988 9494.8460	1.1856	997.0062 3042
P(4)	2887 8470.8376	0.0081	963.2820 9957	R(56)	2990 0079.1304	1.4377	997.3592 8415
P(3)	2890 1146.0958	0.0087	964.0384 6476	R(57)	2991 0445.6275	1.7331	997.7050 7327
P(2)	2892 3628.1341	0.0093	964.7883 8484	R(58)	2992 0593.5203	2.0776	998.0435 7054
P(1)	2894 5916.9025	0.0097	965.5318 5813	R(59)	2993 0521.9760	2.4777	998.3747 4817
V(0)	2896 8012.3390	0.0101	966.2688 8256				

TABLE V
CONTINUED

BAND II				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	3054 3244.7021	15.2104	1018.8129 7835	R(0)	3218 0252.6776	0.0228	1073.4176 8677
P(59)	3057 4756.3872	12.8533	1019.8640 9502	R(1)	3220 1984.6620	0.0222	1074.1425 8774
P(58)	3060 6123.1746	10.8119	1020.9103 7843	R(2)	3222 3546.5277	0.0213	1074.8618 1416
P(57)	3063 7344.4579	9.0504	1021.9518 0834	R(3)	3224 4938.2155	0.0201	1075.5753 6406
P(56)	3066 8419.6268	7.5364	1022.9883 6440	R(4)	3226 6159.6795	0.0186	1076.2832 3590
P(55)	3069 9348.0678	6.2405	1024.0200 2614	R(5)	3228 7210.8868	0.0169	1076.9854 2859
P(54)	3073 0129.1655	5.1363	1025.0467 7304	R(6)	3230 8091.8175	0.0150	1077.6819 4147
P(53)	3076 0762.3030	4.1999	1026.0685 8452	R(7)	3232 8802.4647	0.0131	1078.3727 7430
P(52)	3079 1246.8631	3.4099	1027.0854 3999	R(8)	3234 9342.8347	0.0112	1079.0579 2729
P(51)	3082 1582.2290	2.7471	1028.0973 1888	R(9)	3236 9712.9467	0.0094	1079.7374 0109
P(50)	3085 1767.7849	2.1943	1029.1042 0064	R(10)	3238 9912.8328	0.0078	1080.4111 9676
P(49)	3088 1802.9170	1.7363	1030.1060 6481	R(11)	3240 9942.5380	0.0065	1081.0793 1581
P(48)	3091 1687.0141	1.3596	1031.1028 9099	R(12)	3242 9802.1204	0.0056	1081.7417 6018
P(47)	3094 1419.4680	1.0521	1032.0946 5890	R(13)	3244 9491.6508	0.0051	1082.3985 3222
P(46)	3097 0999.6746	0.8032	1033.0813 4838	R(14)	3246 9011.2129	0.0050	1083.0496 3472
P(45)	3100 0427.0340	0.6039	1034.0629 3943	R(15)	3248 8360.9032	0.0051	1083.6950 7091
P(44)	3102 9700.9514	0.4459	1035.0394 1221	R(16)	3250 7540.8306	0.0052	1084.3348 4443
P(43)	3105 8820.8376	0.3222	1036.0107 4706	R(17)	3252 6551.1172	0.0052	1084.9689 5933
P(42)	3108 7786.1094	0.2268	1036.9769 2453	R(18)	3254 5391.8971	0.0052	1085.5974 2010
P(41)	3111 6596.1900	0.1545	1037.9379 2538	R(19)	3256 4063.3174	0.0051	1086.2202 3164
P(40)	3114 5250.5098	0.1008	1038.8937 3060	R(20)	3258 2565.5374	0.0050	1086.8373 9927
P(39)	3117 3748.5064	0.0620	1039.8443 2145	R(21)	3260 0898.7287	0.0049	1087.4489 2871
P(38)	3120 2089.6253	0.0350	1040.7896 7942	R(22)	3261 9063.0753	0.0050	1088.0548 2609
P(37)	3123 0273.3202	0.0177	1041.7297 8628	R(23)	3263 7058.7733	0.0051	1088.6550 9797
P(36)	3125 8299.0533	0.0093	1042.6646 2411	R(24)	3265 4886.0308	0.0053	1089.2497 5127
P(35)	3128 6166.2956	0.0090	1043.5941 7526	R(25)	3267 2545.0679	0.0055	1089.8387 9334
P(34)	3131 3874.5277	0.0104	1044.5184 2240	R(26)	3269 0036.1164	0.0056	1090.4222 3192
P(33)	3134 1423.2391	0.0107	1045.4373 4850	R(27)	3270 7359.4198	0.0057	1091.0000 7512
P(32)	3136 8811.9297	0.0101	1046.3509 3688	R(28)	3272 4515.2331	0.0061	1091.5723 3145
P(31)	3139 6040.1090	0.0088	1047.2591 7118	R(29)	3274 1503.8227	0.0068	1092.1390 0980
P(30)	3142 3107.2971	0.0075	1048.1620 3539	R(30)	3275 8325.4660	0.0079	1092.7001 1943
P(29)	3145 0013.0245	0.0065	1049.0595 1385	R(31)	3277 4980.4516	0.0093	1093.2556 6995
P(28)	3147 6756.8324	0.0058	1049.9515 9126	R(32)	3279 1469.0786	0.0106	1093.8056 7134
P(27)	3150 3338.2731	0.0055	1050.8382 5268	R(33)	3280 7791.6570	0.0114	1094.3501 3395
P(26)	3152 9756.9100	0.0054	1051.7194 8355	R(34)	3282 3948.5069	0.0113	1094.8890 6845
P(25)	3155 6012.3177	0.0053	1052.5952 6968	R(35)	3283 9939.9585	0.0101	1095.4224 8586
P(24)	3158 2104.0824	0.0052	1053.4655 9727	R(36)	3285 5766.3518	0.0106	1095.9503 9752
P(23)	3160 8031.8019	0.0050	1054.3304 5290	R(37)	3287 1428.0366	0.0187	1096.4728 1509
P(22)	3163 3795.0859	0.0049	1055.1898 2355	R(38)	3288 6925.3717	0.0360	1096.9897 5055
P(21)	3165 9393.5558	0.0048	1056.0436 9660	R(39)	3290 2258.7249	0.0634	1097.5012 1615
P(20)	3168 4826.8453	0.0048	1056.8920 5981	R(40)	3291 7428.4725	0.1029	1098.0072 2447
P(19)	3171 0094.5998	0.0050	1057.7349 0138	R(41)	3293 2434.9992	0.1577	1098.5077 8832
P(18)	3173 5196.4775	0.0052	1058.5722 0989	R(42)	3294 7278.6976	0.2316	1099.0029 2080
P(17)	3176 0132.1485	0.0056	1059.4039 7435	R(43)	3296 1959.9675	0.3291	1099.4926 3525
P(16)	3178 4901.2955	0.0060	1060.2301 8416	R(44)	3297 6479.2160	0.4554	1099.9769 4525
P(15)	3180 9503.6138	0.0065	1061.0508 2917	R(45)	3299 0836.8567	0.6169	1100.4558 6459
P(14)	3183 3938.8112	0.0071	1061.8658 9961	R(46)	3300 5033.3092	0.8207	1100.9294 0728
P(13)	3185 8206.6080	0.0079	1062.6753 8618	R(47)	3301 9068.9988	1.0750	1101.3975 8749
P(12)	3188 2306.7374	0.0090	1063.4792 7997	R(48)	3303 2944.3560	1.3893	1101.8604 1958
P(11)	3190 6238.9453	0.0102	1064.2775 7250	R(49)	3304 6659.8155	1.7743	1102.3179 1807
P(10)	3193 0002.9904	0.0116	1065.0702 5572	R(50)	3306 0215.8163	2.2423	1102.7700 9758
P(9)	3195 3598.6444	0.0132	1065.8573 2201	R(51)	3307 3612.8006	2.8069	1103.2169 7288
P(8)	3197 7025.6917	0.0148	1066.6387 6420	R(52)	3308 6851.2130	3.4839	1103.6585 5878
P(7)	3200 0283.9296	0.0164	1067.4145 7551	R(53)	3309 9931.5003	4.2906	1104.0948 7020
P(6)	3202 3373.1687	0.0180	1068.1847 4962	R(54)	3311 2854.1107	5.2465	1104.5259 2209
P(5)	3204 6293.2322	0.0195	1068.9492 8064	R(55)	3312 5619.4927	6.3736	1104.9517 2939
P(4)	3206 9043.9565	0.0208	1069.7081 6312	R(56)	3313 8228.0944	7.6959	1105.3723 0708
P(3)	3209 1625.1911	0.0218	1070.4613 9203	R(57)	3315 0680.3629	9.2405	1105.7876 7005
P(2)	3211 4036.7984	0.0226	1071.2089 6273	R(58)	3316 2976.7434	11.0373	1106.1978 3315
P(1)	3213 6278.6540	0.0230	1071.9508 7123	R(59)	3317 5117.6781	13.1190	1106.6028 1114
V(0)	3215 8350.6465	0.0231	1072.6871 1365				

cies agree very well with the four-frequency measurements, the $P_{II}(50)$ prediction differs from that of P_{II} by 16 kHz, largely because of the differences noted above in the predictions for the I band of 626. The other line, $R_{II}(26)$ of 838, shows a difference of just 10 kHz, but this arises in a different way. There are three measurements of this line: that of P_{II} (measurement 738), a comparison to $P_{II}(10)$ of 626, and two of ours (150 and 796), both of them comparisons to $P_{II}(24)$ of 626. These measurements all disagree with the predicted values by 9–10 kHz; two of the measurements (783 and 796) are on one side, and one (150) on the other. Because of this straddle, it seems unlikely that the line is subject to perturbation in the energy levels. A more probable explanation of the frequency offset errors in these measurements may be the “instrumental”

frequency shifts [4] due to nonzero power slope setting of the grating for the regular band line being measured. Indeed, it was only in retrospect that we realized that the $P_{II}(21)$ transition of the dominant 002 sequence band [10] of 626 lies within 11.6 GHz of $P_{II}(24)$. Thus, when we optimized the grating setting for maximum power output (as we generally did), “instrumental” frequency errors could have been easily introduced, which would depend on the relative strength or absence of the sequence band line. All of the measurements have been downweighted, that of P_{II} less than ours, so that the predicted frequency is largely determined by the measurements of other lines in the same band and by the fitting process. But it is clear that one should examine sequence and hot bands [10]–[14] closely for possible interference before relying on any CO_2

TABLE VI
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 828

				18 12 18 O C O							
NUMBER		SYMBOL		CONSTANTS (MHZ)				STD.DEV. (MHZ)			
43	V(001-I)	=		2.898	859	706	882 D+07	3.6D-03			
44	V(001-II)	=		3.248	919	295	228 D+07	3.9D-03			
45	B(001)	=		1.031	555	954	654 D+04	3.7D-05			
46	B(I)	=		1.041	489	423	454 D+04	3.4D-05			
47	B(II)	=		1.038	852	773	874 D+04	3.6D-05			
48	D(001)	=		3.150	554	563	D-03	5.9D-08			
49	D(I)	=		2.768	029	928	D-03	5.4D-08			
50	D(II)	=		3.518	236	015	D-03	5.8D-08			
51	H(001)	=		0.267	825	D-09		3.9D-11			
52	H(I)	=		2.501	922	D-09		3.5D-11			
53	H(II)	=		4.744	762	D-09		3.7D-11			
54	L(001)	=		0.52	648	D-14		9.2D-15			
55	L(I)	=		-0.28	458	D-14		7.8D-15			
56	L(II)	=		-3.21	944	D-14		8.3D-15			

BAND I				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2738 4653.4520	0.0476	913.4537 1510	P(60)	3099 1695.4754	0.0052	1033.7716 8599
P(58)	2744 9958.7473	0.0308	915.6320 6528	P(58)	3104 9479.9052	0.0041	1035.6991 6710
P(56)	2751 4420.9601	0.0193	917.7822 9325	P(56)	3110 6752.5492	0.0039	1037.6095 7686
P(54)	2757 8044.1062	0.0117	919.9045 3296	P(54)	3116 3509.5006	0.0038	1039.5027 8498
P(52)	2764 0832.0154	0.0071	921.9989 1218	P(52)	3121 9746.9218	0.0038	1041.3786 6343
P(50)	2770 2788.3340	0.0047	924.0655 5251	P(50)	3127 5461.0484	0.0038	1043.2370 8665
P(48)	2776 3916.5272	0.0038	926.1045 6955	P(48)	3133 0648.1932	0.0038	1045.0779 3166
P(46)	2782 4219.8818	0.0036	928.1160 7295	P(46)	3138 5304.7512	0.0038	1046.9010 7818
P(44)	2788 3701.5085	0.0036	930.1001 6644	P(44)	3143 9427.2028	0.0038	1048.7064 0885
P(42)	2794 2364.3439	0.0035	932.0569 4801	P(42)	3149 3012.1187	0.0038	1050.4938 0924
P(40)	2800 0211.1532	0.0035	933.9865 0987	P(40)	3154 6056.1633	0.0038	1052.2631 6812
P(38)	2805 7244.5316	0.0035	935.8889 3859	P(38)	3159 8556.0987	0.0037	1054.0143 7746
P(36)	2811 3466.9070	0.0036	937.7643 1517	P(36)	3165 0508.7885	0.0037	1055.7473 3266
P(34)	2816 8880.5416	0.0036	939.6127 1506	P(34)	3170 1911.2012	0.0037	1057.4619 3259
P(32)	2822 3487.5337	0.0036	941.4342 0825	P(32)	3175 2760.4139	0.0037	1059.1580 7975
P(30)	2827 7289.8196	0.0036	943.2288 5933	P(30)	3180 3053.6153	0.0037	1060.8356 8037
P(28)	2833 0289.1753	0.0036	944.9967 2755	P(28)	3185 2788.1092	0.0037	1062.4946 4452
P(26)	2838 2487.2180	0.0036	946.7378 6683	P(26)	3190 1961.3173	0.0037	1064.1348 8618
P(24)	2843 3885.4075	0.0035	948.4523 2589	P(24)	3195 0570.7820	0.0037	1065.7563 2339
P(22)	2848 4485.0477	0.0035	950.1401 4821	P(22)	3199 8614.1691	0.0037	1067.3588 7829
P(20)	2853 4287.2879	0.0035	951.8013 7213	P(20)	3204 6089.2707	0.0037	1068.9424 7722
P(18)	2858 3293.1241	0.0035	953.4360 3087	P(18)	3209 2994.0069	0.0037	1070.5070 5081
P(16)	2863 1503.3996	0.0035	955.0441 5256	P(16)	3213 9326.4282	0.0037	1072.0525 3403
P(14)	2867 8918.8066	0.0036	956.6257 6030	P(14)	3218 5084.7176	0.0037	1073.5788 6627
P(12)	2872 5539.8870	0.0036	958.1808 7215	P(12)	3223 0267.1923	0.0037	1075.0859 9140
P(10)	2877 1367.0327	0.0036	959.7095 0119	P(10)	3227 4872.3053	0.0038	1076.5738 5781
P(8)	2881 6400.4870	0.0036	961.2116 5553	P(8)	3231 8898.6464	0.0038	1078.0424 1848
P(6)	2886 0640.3445	0.0036	962.6873 3834	P(6)	3236 2344.9440	0.0038	1079.4916 3097
P(4)	2890 4086.5522	0.0036	964.1365 4783	P(4)	3240 5210.0656	0.0039	1080.9214 5753
P(2)	2894 6738.9096	0.0036	965.5592 7733	P(2)	3244 7493.0190	0.0039	1082.3318 6503
V(0)	2898 8597.0688	0.0036	966.9555 1523	V(0)	3248 9192.9523	0.0039	1083.7228 2508
R(0)	2900 9228.1753	0.0035	967.6436 9487	R(0)	3250 9824.0588	0.0039	1084.4110 0472
R(2)	2904 9894.0639	0.0035	969.0001 6290	R(2)	3255 0648.1734	0.0039	1085.7727 5061
R(4)	2908 9764.2422	0.0034	970.3300 8890	R(4)	3259 0887.7557	0.0039	1087.1149 9859
R(6)	2912 8837.8481	0.0034	971.6334 4410	R(6)	3263 0542.4476	0.0039	1088.4377 3674
R(8)	2916 7113.8724	0.0033	972.9101 9484	R(8)	3266 9612.0317	0.0039	1089.7409 5778
R(10)	2920 4591.1584	0.0033	974.1603 0254	R(10)	3270 8096.4309	0.0039	1091.0246 5916
R(12)	2924 1268.4016	0.0032	975.3837 2368	R(12)	3274 5995.7070	0.0039	1092.2888 4294
R(14)	2927 7144.1495	0.0032	976.5804 0982	R(14)	3278 3310.0604	0.0039	1093.5335 1579
R(16)	2931 2216.8003	0.0032	977.7503 0752	R(16)	3282 0039.8288	0.0039	1094.7586 8899
R(18)	2934 6484.6028	0.0032	978.8933 5838	R(18)	3285 6185.4856	0.0039	1095.9643 7832
R(20)	2937 9945.6557	0.0031	980.0094 9896	R(20)	3289 1747.6385	0.0040	1097.1506 0405
R(22)	2941 2597.9062	0.0031	981.0986 6080	R(22)	3292 6727.0276	0.0040	1098.3173 9088
R(24)	2944 4439.1493	0.0031	982.1607 7034	R(24)	3296 1124.5237	0.0040	1099.4647 6785
R(26)	2947 5467.0268	0.0031	983.1957 4893	R(26)	3299 4941.1261	0.0040	1100.5927 6828
R(28)	2950 5679.0262	0.0032	984.2035 1276	R(28)	3302 8177.9601	0.0040	1101.7014 2973
R(30)	2953 5072.4789	0.0032	985.1839 7280	R(30)	3306 0836.2746	0.0040	1102.7907 9384
R(32)	2956 3644.5594	0.0032	986.1370 3482	R(32)	3309 2917.4396	0.0040	1103.8609 0632
R(34)	2959 1392.2837	0.0033	987.0625 9928	R(34)	3312 4422.9433	0.0041	1104.9118 1680
R(36)	2961 8312.5075	0.0034	987.9605 6129	R(36)	3315 5354.3890	0.0041	1105.9435 7877
R(38)	2964 4401.9249	0.0035	988.8308 1058	R(38)	3318 5713.4920	0.0042	1106.9562 4945
R(40)	2966 9657.0662	0.0038	989.6732 3141	R(40)	3321 5502.0763	0.0044	1107.9498 8966
R(42)	2969 4074.2966	0.0045	990.4877 0255	R(42)	3324 4722.0714	0.0051	1108.9245 6379
R(44)	2971 7649.8141	0.0063	991.2740 9717	R(44)	3327 3375.5084	0.0069	1109.8803 3957
R(46)	2974 0379.6472	0.0100	992.0322 8279	R(46)	3330 1464.5166	0.0104	1110.8172 8802
R(48)	2976 2259.6531	0.0162	992.7621 2122	R(48)	3332 8991.3192	0.0163	1111.7354 8333
R(50)	2978 3285.5157	0.0260	993.4634 6851	R(50)	3335 5958.2301	0.0252	1112.6350 0265
R(52)	2980 3452.7430	0.0404	994.1361 7480	R(52)	3338 2367.6494	0.0382	1113.5159 2605
R(54)	2982 2756.6650	0.0610	994.7800 8433	R(54)	3340 8222.0593	0.0564	1114.3783 3634
R(56)	2984 1192.4311	0.0898	995.3950 3529	R(56)	3343 3524.0201	0.0812	1115.2223 1891
R(58)	2985 8755.0078	0.1292	995.9808 5979	R(58)	3345 8276.1658	0.1145	1116.0479 6161

TABLE VII
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 838

		18 13 18 O C O					
NUMBER	SYMBOL	CONSTANTS (MHZ)				STD.DEV. (MHZ)	
57	V(001-I) =	2.783	855	114	188 D+07	3.8D-03	
58	V(001-II) =	3.078	588	436	561 D+07	4.1D-03	
59	B(001) =	1.031	909	579	289 D+04	4.3D-05	
60	B(I) =	1.040	347	357	162 D+04	4.5D-05	
61	B(II) =	1.039	898	242	205 D+04	4.2D-05	
62	D(001) =	3.148	155	581	D-03	7.2D-08	
63	D(I) =	2.717	913	129	D-03	7.5D-08	
64	D(II) =	3.657	050	669	D-03	6.7D-08	
65	H(001) =	0.317	872	D-09		3.9D-11	
66	H(I) =	3.111	016	D-09		4.2D-11	
67	H(II) =	5.173	276	D-09		3.6D-11	
68	L(001) =	-0.13	805	D-14		6.7D-15	
69	L(I) =	0.34	339	D-14		7.5D-15	
70	L(II) =	-1.95	866	D-14		6.0D-15	
BAND I				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2628 8254.3691	0.1107	876.8817 7830	P(60)	2926 4508.5336	0.0293	976.1589 3104
P(58)	2635 0100.2532	0.0715	878.9447 3493	P(58)	2932 3720.0883	0.0169	978.1340 1591
P(56)	2641 1213.9553	0.0444	880.9832 6861	P(56)	2938 2386.9924	0.0092	980.0909 3319
P(54)	2647 1600.1418	0.0263	882.9975 3498	P(54)	2944 0503.8821	0.0051	982.0295 0396
P(52)	2653 1263.2613	0.0148	884.9876 8242	P(52)	2949 8065.5045	0.0038	983.9495 5301
P(50)	2659 0207.5479	0.0083	886.9538 5218	P(50)	2955 5066.7231	0.0036	985.8509 0900
P(48)	2664 8437.0249	0.0053	888.8961 7847	P(48)	2961 1502.5235	0.0035	987.7334 0467
P(46)	2670 5955.5086	0.0046	890.8147 8856	P(46)	2966 7368.0181	0.0035	989.5968 7699
P(44)	2676 2766.6111	0.0045	892.7098 0296	P(44)	2972 2658.4516	0.0036	991.4411 6733
P(42)	2681 8873.7438	0.0046	894.5813 3546	P(42)	2977 7369.2056	0.0037	993.2661 2164
P(40)	2687 4280.1203	0.0048	896.4294 9324	P(40)	2983 1495.8037	0.0040	995.0715 9062
P(38)	2692 8988.7594	0.0050	898.2543 7701	P(38)	2988 5033.9156	0.0043	996.8574 2980
P(36)	2698 3002.4878	0.0051	900.0560 8106	P(36)	2993 7979.3620	0.0045	998.6234 9979
P(34)	2703 6323.9427	0.0052	901.8346 9334	P(34)	2999 0328.1180	0.0047	1000.3696 6634
P(32)	2708 8955.5742	0.0052	903.5902 9560	P(32)	3004 2076.3181	0.0048	1002.0958 0049
P(30)	2714 0899.6478	0.0051	905.3229 6339	P(30)	3009 3220.2591	0.0049	1003.8017 7873
P(28)	2719 2158.2464	0.0049	907.0327 6620	P(28)	3014 3756.4042	0.0049	1005.4874 8308
P(26)	2724 2733.2727	0.0048	908.7197 6748	P(26)	3019 3681.3863	0.0048	1007.1528 0123
P(24)	2729 2626.4506	0.0046	910.3840 2476	P(24)	3024 2992.0111	0.0047	1008.7976 2663
P(22)	2734 1839.3276	0.0044	912.0255 8964	P(22)	3029 1685.2604	0.0046	1010.4218 5859
P(20)	2739 0373.2761	0.0042	913.6445 0790	P(20)	3033 9758.2945	0.0044	1012.0254 0240
P(18)	2743 8229.4949	0.0041	915.2408 1953	P(18)	3038 7208.4549	0.0043	1013.6081 6939
P(16)	2748 5409.0108	0.0039	916.8145 5878	P(16)	3043 4033.2670	0.0042	1015.1700 7699
P(14)	2753 1912.6797	0.0038	918.3657 5421	P(14)	3048 0230.4418	0.0041	1016.7110 4887
P(12)	2757 7741.1880	0.0038	919.8944 2870	P(12)	3052 5797.8781	0.0040	1018.2310 1494
P(10)	2762 2895.0531	0.0037	921.4005 9952	P(10)	3057 0733.6641	0.0040	1019.7299 1142
P(8)	2766 7374.6251	0.0037	922.8842 7833	P(8)	3061 5036.0793	0.0040	1021.2076 8092
P(6)	2771 1180.0865	0.0038	924.3454 7124	P(6)	3065 8703.5950	0.0040	1022.6642 7246
P(4)	2775 4311.4538	0.0038	925.7841 7879	P(4)	3070 1734.8761	0.0041	1024.0996 4150
P(2)	2779 6768.5773	0.0038	927.2003 9599	P(2)	3074 4128.7817	0.0041	1025.5137 4997
V(0)	2783 8551.1419	0.0038	928.5941 1233	V(0)	3078 5884.3656	0.0041	1026.9065 6633
R(0)	2785 9189.3209	0.0038	929.2825 2788	R(0)	3080 6522.5446	0.0041	1027.5949 8188
R(2)	2789 9959.0945	0.0038	930.6424 6114	R(2)	3084 7319.2989	0.0040	1028.9558 1512
R(4)	2794 0052.7980	0.0037	931.9798 4314	R(4)	3088 7476.2204	0.0040	1030.2953 0584
R(6)	2797 9469.5379	0.0037	933.2946 4405	R(6)	3092 6993.0464	0.0039	1031.6134 4527
R(8)	2801 8208.2548	0.0036	934.5868 2856	R(8)	3096 5869.7090	0.0039	1032.9102 3115
R(10)	2805 6267.7235	0.0036	935.8563 5578	R(10)	3100 4106.3345	0.0039	1034.1856 6769
R(12)	2809 3646.5527	0.0036	937.1031 7932	R(12)	3104 1703.2428	0.0039	1035.4397 6556
R(14)	2813 0343.1839	0.0036	938.3272 4718	R(14)	3107 8660.9460	0.0039	1036.6725 4184
R(16)	2816 6355.8909	0.0037	939.5285 0178	R(16)	3111 4980.1471	0.0039	1037.8840 1999
R(18)	2820 1682.7789	0.0037	940.7068 7992	R(18)	3115 0661.7389	0.0039	1039.0742 2978
R(20)	2823 6321.7838	0.0037	941.8623 1275	R(20)	3118 5706.8021	0.0040	1040.2432 0726
R(22)	2827 0270.6704	0.0037	942.9947 2572	R(22)	3122 0116.6032	0.0040	1041.3909 9467
R(24)	2830 3527.0319	0.0037	944.1040 3853	R(24)	3125 3892.5924	0.0040	1042.5176 4040
R(26)	2833 6088.2880	0.0037	945.1901 6513	R(26)	3128 7036.4017	0.0040	1043.6231 9888
R(28)	2836 7951.6837	0.0037	946.2530 1360	R(28)	3131 9549.8415	0.0040	1044.7077 3049
R(30)	2839 9114.2873	0.0037	947.2924 8617	R(30)	3135 1434.8987	0.0040	1045.7713 0151
R(32)	2842 9572.9890	0.0037	948.3084 7909	R(32)	3138 2693.7329	0.0039	1046.8139 8399
R(34)	2845 9324.4986	0.0037	949.3008 8263	R(34)	3141 3328.6739	0.0039	1047.8358 5563
R(36)	2848 8365.3438	0.0038	950.2695 8096	R(36)	3144 3342.2180	0.0039	1048.8369 9969
R(38)	2851 6691.8679	0.0038	951.2144 5210	R(38)	3147 2737.0241	0.0038	1049.8175 0489
R(40)	2854 4300.2272	0.0038	952.1353 6783	R(40)	3150 1515.9106	0.0038	1050.7774 6521
R(42)	2857 1186.3889	0.0039	953.0321 9366	R(42)	3152 9681.8507	0.0039	1051.7169 7984
R(44)	2859 7346.1285	0.0039	953.9047 8864	R(44)	3155 7237.9690	0.0039	1052.6361 5301
R(46)	2862 2775.0267	0.0040	954.7530 0539	R(46)	3158 4187.5362	0.0041	1053.5350 9381
R(48)	2864 7468.4669	0.0052	955.5766 8989	R(48)	3161 0533.9655	0.0045	1054.4139 1609
R(50)	2867 1421.6320	0.0090	956.3756 8147	R(50)	3163 6280.8072	0.0061	1055.2727 3829
R(52)	2869 4629.5011	0.0166	957.1498 1266	R(52)	3166 1431.7443	0.0100	1056.1116 8325
R(54)	2871 7086.8467	0.0292	957.8989 0907	R(54)	3168 5990.5869	0.0172	1056.9308 7806
R(56)	2873 8788.2305	0.0486	958.6227 8932	R(56)	3170 9961.2676	0.0288	1057.7304 5390
R(58)	2875 9728.0006	0.0773	959.3212 6487	R(58)	3173 3347.8356	0.0462	1058.5105 4584

TABLE VIII
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 646

		16 14 16			
		O C O			
NUMBER	SYMBOL	CONSTANTS (MHZ)			
		STD.DEV. (MHZ)			
71	V(001-I) =	2.596	591	761	827 D+07
72	V(001-II) =	2.946	000	239	110 D+07
73	B(001) =	1.161	366	771	367 D+04
74	B(I) =	1.167	472	474	237 D+04
75	B(II) =	1.172	705	299	921 D+04
76	D(001) =	3.979	815	697	D-03
77	D(I) =	3.776	614	494	D-03
78	D(II) =	4.821	389	232	D-03
79	H(001) =	-0.922	033	D-09	
80	H(I) =	2.658	350	D-09	
81	H(II) =	11.449	041	D-09	
82	L(001) =	37.29	216	D-14	
83	L(I) =	41.84	717	D-14	
84	L(II) =	45.06	891	D-14	
BAND I					
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)
P(60)	2434 9337.5625	1.0707	812.2064 7527	P(60)	2766 5459.5295
P(58)	2441 0368.8707	0.6772	814.2422 6058	P(58)	2773 7264.0710
P(56)	2447 0894.8065	0.4100	816.2611 8848	P(56)	2780 8303.6083
P(54)	2453 0917.6246	0.2378	818.2633 3418	P(54)	2787 8570.5221
P(52)	2459 0439.4169	0.1379	820.2487 6746	P(52)	2794 8057.2612
P(50)	2464 9462.1194	0.0923	822.2175 5290	P(50)	2801 6756.3611
P(48)	2470 7987.5190	0.0790	824.1697 5009	P(48)	2808 4660.4634
P(46)	2476 6017.2592	0.0755	826.1054 1387	P(46)	2815 1762.3327
P(44)	2482 3552.8462	0.0722	828.0245 9447	P(44)	2821 8054.8734
P(42)	2488 0595.6546	0.0676	829.9273 3775	P(42)	2828 3531.1460
P(40)	2493 7146.9321	0.0624	831.8136 8532	P(40)	2834 8184.3816
P(38)	2499 3207.8048	0.0570	833.6836 7475	P(38)	2841 2007.9961
P(36)	2504 8779.2812	0.0514	835.5373 3967	P(36)	2847 4995.6042
P(34)	2510 3862.2568	0.0453	837.3747 0997	P(34)	2853 7141.0312
P(32)	2515 8457.5180	0.0389	839.1958 1186	P(32)	2859 8438.3257
P(30)	2521 2565.7453	0.0322	841.0006 6805	P(30)	2865 8881.7700
P(28)	2526 6187.5174	0.0257	842.7892 9784	P(28)	2871 8465.8912
P(26)	2531 9323.3137	0.0197	844.5617 1722	P(26)	2877 7185.4704
P(24)	2537 1973.5173	0.0148	846.3179 3897	P(24)	2883 5035.5520
P(22)	2542 4138.4181	0.0114	848.0579 7276	P(22)	2889 2011.4519
P(20)	2547 5818.2143	0.0096	849.7818 2521	P(20)	2894 8108.7652
P(18)	2552 7013.0155	0.0090	851.4894 9996	P(18)	2900 3323.3734
P(16)	2557 7722.8440	0.0088	853.1809 9777	P(16)	2905 7651.4505
P(14)	2562 7947.6370	0.0087	854.8563 1653	P(14)	2911 1089.4690
P(12)	2567 7687.2477	0.0086	856.5154 5136	P(12)	2916 3634.2047
P(10)	2572 6941.4471	0.0089	858.1583 9460	P(10)	2921 5282.7418
P(8)	2577 5709.9249	0.0096	859.7851 3592	P(8)	2926 6032.4761
P(6)	2582 3992.2904	0.0107	861.3956 6227	P(6)	2931 5881.1188
P(4)	2587 1788.0735	0.0117	862.9899 5799	P(4)	2936 4826.6991
P(2)	2591 9096.7253	0.0125	864.5680 0475	P(2)	2941 2867.5662
V(0)	2596 5917.6183	0.0128	866.1297 8163	V(0)	2946 0002.3911
R(0)	2598 9144.9378	0.0128	866.9045 6161	R(0)	2948 3229.7106
R(2)	2603 5232.8452	0.0123	868.4418 8873	R(2)	2952 9003.6861
R(4)	2608 0831.0836	0.0113	869.9628 8224	R(4)	2957 3869.7091
R(6)	2612 5938.7519	0.0101	871.4675 1210	R(6)	2961 7827.5803
R(8)	2617 0554.8709	0.0089	872.9557 4563	R(8)	2966 0877.4220
R(10)	2621 4678.3819	0.0082	874.4275 4754	R(10)	2970 3019.6766
R(12)	2625 8308.1471	0.0079	875.8828 7985	R(12)	2974 4255.1041
R(14)	2630 1442.9480	0.0079	877.3217 0194	R(14)	2978 4584.7800
R(16)	2634 4081.4848	0.0080	878.7439 7043	R(16)	2982 4010.0913
R(18)	2638 6222.3752	0.0079	880.1496 3923	R(18)	2986 2532.7332
R(20)	2642 7864.1533	0.0083	881.5386 5943	R(20)	2990 0154.7042
R(22)	2646 9005.2678	0.0099	882.9109 7929	R(22)	2993 6878.3016
R(24)	2650 9644.0807	0.0135	884.2665 4418	R(24)	2997 2706.1154
R(26)	2654 9778.8656	0.0186	885.6052 9650	R(26)	3000 7641.0223
R(28)	2658 9407.8053	0.0249	886.9271 7564	R(28)	3004 1686.1791
R(30)	2662 8528.9901	0.0318	888.2321 1790	R(30)	3007 4845.0148
R(32)	2666 7140.4154	0.0387	889.5200 5642	R(32)	3010 7121.2231
R(34)	2670 5239.9791	0.0452	890.7909 2107	R(34)	3013 8518.7535
R(36)	2674 2825.4789	0.0514	892.0446 3839	R(36)	3016 9041.8019
R(38)	2677 9894.6097	0.0587	893.2811 3150	R(38)	3019 8694.8011
R(40)	2681 6444.9602	0.0707	894.5003 1996	R(40)	3022 7482.4096
R(42)	2685 2474.0097	0.0941	895.7021 1969	R(42)	3025 5409.5012
R(44)	2688 7979.1248	0.1369	896.8864 4285	R(44)	3028 2481.1520
R(46)	2692 2957.5553	0.2076	898.0531 9770	R(46)	3030 8702.6288
R(48)	2695 7406.4307	0.3157	899.2022 8849	R(48)	3033 4079.3751
R(50)	2699 1322.7556	0.4740	900.3336 1532	R(50)	3035 8616.9973
R(52)	2702 4703.4056	0.6993	901.4470 7395	R(52)	3038 2321.2499
R(54)	2705 7545.1223	1.0137	902.5425 5570	R(54)	3040 5198.0199
R(56)	2708 9844.5086	1.4453	903.6199 4726	R(56)	3042 7253.3104
R(58)	2712 1598.0232	2.0293	904.6791 3049	R(58)	3044 8493.2235
BAND II					
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)
P(60)	2766 5459.5295	4.1144	922.8203 9762	P(60)	2766 5459.5295
P(58)	2773 7264.0710	2.9602	925.2155 3931	P(58)	2773 7264.0710
P(56)	2780 8303.6083	2.0915	927.5851 6321	P(56)	2780 8303.6083
P(54)	2787 8570.5221	1.4473	929.9290 1516	P(54)	2787 8570.5221
P(52)	2794 8057.2612	0.9777	932.2468 4329	P(52)	2794 8057.2612
P(50)	2801 6756.3611	0.6420	934.5383 9860	P(50)	2801 6756.3611
P(48)	2808 4660.4634	0.4074	936.8034 3564	P(48)	2808 4660.4634
P(46)	2815 1762.3327	0.2478	939.0417 1307	P(46)	2815 1762.3327
P(44)	2821 8054.8734	0.1428	941.2529 9421	P(44)	2821 8054.8734
P(42)	2828 3531.1460	0.0764	943.4370 4757	P(42)	2828 3531.1460
P(40)	2834 8184.3816	0.0368	945.5936 4737	P(40)	2834 8184.3816
P(38)	2841 2007.9961	0.0152	947.7225 7400	P(38)	2841 2007.9961
P(36)	2847 4995.6042	0.0059	949.8236 1445	P(36)	2847 4995.6042
P(34)	2853 7141.0312	0.0049	951.8965 6276	P(34)	2853 7141.0312
P(32)	2859 8438.3257	0.0051	953.9412 2042	P(32)	2859 8438.3257
P(30)	2865 8881.7700	0.0049	955.9573 9670	P(30)	2865 8881.7700
P(28)	2871 8465.8912	0.0048	957.9449 0905	P(28)	2871 8465.8912
P(26)	2877 7185.4704	0.0048	959.9035 8338	P(26)	2877 7185.4704
P(24)	2883 5035.5520	0.0048	961.8332 5439	P(24)	2883 5035.5520
P(22)	2889 2011.4519	0.0046	963.7337 6584	P(22)	2889 2011.4519
P(20)	2894 8108.7652	0.0044	965.6049 7080	P(20)	2894 8108.7652
P(18)	2900 3323.3734	0.0042	967.4467 3188	P(18)	2900 3323.3734
P(16)	2905 7651.4505	0.0041	969.2589 2147	P(16)	2905 7651.4505
P(14)	2911 1089.4690	0.0040	971.0414 2189	P(14)	2911 1089.4690
P(12)	2916 3634.2047	0.0041	972.7941 2562	P(12)	2916 3634.2047
P(10)	2921 5282.7418	0.0042	974.5169 3537	P(10)	2921 5282.7418
P(8)	2926 6032.4761	0.0043	976.2097 6429	P(8)	2926 6032.4761
P(6)	2931 5881.1188	0.0045	977.8725 3603	P(6)	2931 5881.1188
P(4)	2936 4826.6991	0.0047	979.5051 8485	P(4)	2936 4826.6991
P(2)	2941 2867.5662	0.0048	981.1076 5569	P(2)	2941 2867.5662
V(0)	2946 0002.3911	0.0049	982.6799 0421	V(0)	2946 0002.3911
R(0)	2948 3229.7106	0.0048	983.4546 8419	R(0)	2948 3229.7106
R(2)	2952 9003.6861	0.0047	984.9815 3967	R(2)	2952 9003.6861
R(4)	2957 3869.7091	0.0044	986.4781 0910	R(4)	2957 3869.7091
R(6)	2961 7827.5803	0.0041	987.9443 8586	R(6)	2961 7827.5803
R(8)	2966 0877.4220	0.0038	989.3803 7401	R(8)	2966 0877.4220
R(10)	2970 3019.6766	0.0037	990.7860 8831	R(10)	2970 3019.6766
R(12)	2974 4255.1041	0.0037	992.1615 5412	R(12)	2974 4255.1041
R(14)	2978 4584.7800	0.0039	993.5068 0730	R(14)	2978 4584.7800
R(16)	2982 4010.0913	0.0040	994.8218 9413	R(16)	2982 4010.0913
R(18)	2986 2532.7332	0.0042	996.1068 7115	R(18)	2986 2532.7332
R(20)	2990 0154.7042	0.0044	997.3618 0502	R(20)	2990 0154.7042
R(22)	2993 6878.3016	0.0045	998.5867 7237	R(22)	2993 6878.3016
R(24)	2997 2706.1154	0.0047	999.7818 5960	R(24)	2997 2706.1154
R(26)	3000 7641.0223	0.0049	1000.9		

TABLE IX
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 848

				$\begin{array}{c} 18 \quad 14 \quad 18 \\ \text{O} \quad \text{C} \quad \text{O} \end{array}$			
NUMBER	SYMBOL	CONSTANTS (MHZ)				STD.DEV. (MHZ)	
85	V(001-I) =	2.665	794	012	522	D+07	5.1D-01
86	V(001-II) =	2.945	628	336	884	D+07	4.3D-03
87	B(001) =	1.032	222	210	875	D+04	1.5D-04
88	B(I) =	1.039	139	637	214	D+04	2.8D-03
89	B(II) =	1.041	017	017	924	D+04	1.4D-04
90	D(001) =	3.145	791	088		D-03	3.1D-07
91	D(I) =	2.762	860	020		D-03	4.9D-06
92	D(II) =	3.717	259	657		D-03	2.9D-07
93	H(001) =	0.074	897			D-09	2.5D-10
94	H(I) =	-3.624	392			D-09	3.3D-09
95	H(II) =	4.503	216			D-09	2.2D-10
96	L(001) =	9.77	438			D-14	6.6D-14
97	L(I) =	176.77	976			D-14	7.3D-13
98	L(II) =	7.33	773			D-14	5.7D-14
BAND I				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2516 3563.1916	24.9722	839.3661 1880	P(60)	2790 5884.6278	0.1963	930.8401 1566
P(58)	2522 1736.2103	16.1045	841.3065 6183	P(58)	2796 6918.2463	0.1219	932.8759 7803
P(56)	2527 9300.5125	9.9374	843.2267 0027	P(56)	2802 7353.5817	0.0718	934.8918 8383
P(54)	2533 6261.8905	5.7850	845.1267 2732	P(54)	2808 7184.5030	0.0394	936.8876 2854
P(52)	2539 2625.5971	3.1031	847.0068 1820	P(52)	2814 6405.0223	0.0198	938.8630 1243
P(50)	2544 8396.4026	1.4677	848.8671 3203	P(50)	2820 5009.2992	0.0093	940.8178 4069
P(48)	2550 3578.6456	0.5603	850.7078 1352	P(48)	2826 2991.6460	0.0056	942.7519 2360
P(46)	2555 8176.2776	0.1907	852.5289 9449	P(46)	2832 0346.5324	0.0052	944.6650 7668
P(44)	2561 2192.9029	0.1915	854.3307 9517	P(44)	2837 7068.5896	0.0050	946.5571 2085
P(42)	2566 5631.8132	0.1816	856.1133 2535	P(42)	2843 3152.6154	0.0047	948.4278 8258
P(40)	2571 8496.0177	0.1304	857.8766 8540	P(40)	2848 8593.5779	0.0045	950.2771 9403
P(38)	2577 0788.2691	0.1036	859.6209 6715	P(38)	2854 3386.6201	0.0045	952.1048 9318
P(36)	2582 2511.0860	0.1289	861.3462 5461	P(36)	2859 7527.0634	0.0045	953.9108 2398
P(34)	2587 3666.7717	0.1595	863.0526 2462	P(34)	2865 1010.4118	0.0046	955.6948 3645
P(32)	2592 4257.4305	0.1718	864.7401 4735	P(32)	2870 3832.3553	0.0047	957.4567 8683
P(30)	2597 4284.9803	0.1655	866.4088 8679	P(30)	2875 5988.7736	0.0047	959.1965 3768
P(28)	2602 3751.1638	0.1484	868.0589 0106	P(28)	2880 7475.7389	0.0047	960.9139 5798
P(26)	2607 2657.5569	0.1306	869.6902 4274	P(26)	2885 8289.5197	0.0047	962.6089 2326
P(24)	2612 1005.5759	0.1194	871.3029 5906	P(24)	2890 8426.5831	0.0046	964.2813 1568
P(22)	2616 8796.4821	0.1155	872.8970 9210	P(22)	2895 7883.5981	0.0046	965.9310 2412
P(20)	2621 6031.3862	0.1159	874.4726 7890	P(20)	2900 6657.4375	0.0045	967.5579 4429
P(18)	2626 2711.2509	0.1210	876.0297 5159	P(18)	2905 4745.1809	0.0043	969.1619 7875
P(16)	2630 8836.8926	0.1375	877.5683 3738	P(16)	2910 2144.1167	0.0042	970.7430 3706
P(14)	2635 4408.9825	0.1719	879.0884 5867	P(14)	2914 8851.7437	0.0042	972.3010 3579
P(12)	2639 9428.0471	0.2234	880.5901 3303	P(12)	2919 4865.7733	0.0042	973.8358 9861
P(10)	2644 3894.4684	0.2855	882.0733 7319	P(10)	2924 0184.1309	0.0042	975.3475 5631
P(8)	2648 7808.4833	0.3503	883.5381 8705	P(8)	2928 4804.9574	0.0043	976.8359 4687
P(6)	2653 1170.1836	0.4107	884.9845 7768	P(6)	2932 8726.6103	0.0044	978.3010 1551
P(4)	2657 3979.5153	0.4603	886.4125 4328	P(4)	2937 1947.6644	0.0044	979.7427 1469
P(2)	2661 6236.2781	0.4944	887.8220 7717	P(2)	2941 4466.9132	0.0044	981.1610 0416
V(0)	2665 7940.1252	0.5095	889.2131 6777	V(0)	2945 6283.3688	0.0043	982.5558 5098
R(0)	2667 8584.5569	0.5096	889.9017 9189	R(0)	2947 6927.8005	0.0043	983.2444 7510
R(2)	2671 9458.0588	0.4944	891.2651 8516	R(2)	2951 7688.6939	0.0042	984.6041 1215
R(4)	2675 9777.1350	0.4603	892.6100 8477	R(4)	2955 7745.2842	0.0041	985.9402 5618
R(6)	2679 9540.9244	0.4107	893.9364 6202	R(6)	2959 7097.3511	0.0040	987.2528 9984
R(8)	2683 8748.4193	0.3503	895.2442 8327	R(8)	2963 5744.8935	0.0040	988.5420 4309
R(10)	2687 7398.4657	0.2855	896.5335 1005	R(10)	2967 3688.1283	0.0041	989.8076 9317
R(12)	2691 5489.7640	0.2234	897.8040 9899	R(12)	2971 0927.4901	0.0041	991.0498 6457
R(14)	2695 3020.8692	0.1719	899.0560 0191	R(14)	2974 7463.6304	0.0043	992.2685 7903
R(16)	2698 9990.1917	0.1375	900.2891 6577	R(16)	2978 3297.4158	0.0044	993.4638 6545
R(18)	2702 6395.9971	0.1211	901.5035 3273	R(18)	2981 8429.9272	0.0046	994.6357 5989
R(20)	2706 2236.4068	0.1160	902.6990 4011	R(20)	2985 2862.4581	0.0049	995.7843 0549
R(22)	2709 7509.3968	0.1156	903.8756 2041	R(22)	2988 6596.5128	0.0051	996.9095 5243
R(24)	2713 2212.7973	0.1195	905.0332 0124	R(24)	2991 9633.8045	0.0052	998.0115 5787
R(26)	2716 6344.2906	0.1307	906.1717 0531	R(26)	2995 1976.2534	0.0053	999.0903 8584
R(28)	2719 9901.4088	0.1485	907.2910 5029	R(28)	2998 3625.9839	0.0055	1000.1461 0721
R(30)	2723 2881.5295	0.1656	908.3911 4870	R(30)	3001 4585.3228	0.0058	1001.1787 9960
R(32)	2726 5281.8713	0.1720	909.4719 0777	R(32)	3004 4856.7961	0.0063	1002.1885 4726
R(34)	2729 7099.4864	0.1597	910.5332 2917	R(34)	3007 4443.1264	0.0068	1003.1754 4101
R(36)	2732 8331.2527	0.1290	911.5750 0876	R(36)	3010 3347.2301	0.0069	1004.1395 7812
R(38)	2735 8973.8628	0.1037	912.5971 3621	R(38)	3013 1572.2138	0.0063	1005.0810 6224
R(40)	2738 9023.8112	0.1307	913.5994 9460	R(40)	3015 9121.3714	0.0078	1006.0000 0322
R(42)	2741 8477.3784	0.1828	914.5819 5985	R(42)	3018 5998.1806	0.0173	1006.8965 1708
R(44)	2744 7330.6123	0.1953	915.5444 0013	R(44)	3021 2206.2990	0.0371	1007.7707 2581
R(46)	2747 5579.3060	0.1998	916.4866 7512	R(46)	3023 7749.5608	0.0703	1008.6227 5731
R(48)	2750 3218.9719	0.5659	917.4086 3514	R(48)	3026 2631.9724	0.1219	1009.4527 4522
R(50)	2753 0244.8124	1.4700	918.3101 2014	R(50)	3028 6857.7089	0.1988	1010.2608 2881
R(52)	2755 6651.6845	3.1024	919.1909 5858	R(52)	3031 0431.1097	0.3096	1011.0471 5282
R(54)	2758 2434.0616	5.7807	920.0509 6611	R(54)	3033 3356.6741	0.4650	1011.8118 6733
R(56)	2760 7585.9881	9.9284	920.8899 4407	R(56)	3035 5639.0573	0.6783	1012.5551 2763
R(58)	2763 2101.0296	16.0893	921.7076 7783	R(58)	3037 7283.0656	0.9658	1013.2770 9404

TABLE X
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 638

16 13 18 O C O											
NUMBER		SYMBOL		CONSTANTS (MHZ)				STD.DEV. (MHZ)			
99	V(001-I)	=		2.769	166	220	212 D+07	4.9D-02			
100	V(001-II)	=		3.061	096	273	608 D+07	9.9D-02			
101	B(001)	=		1.095	417	207	032 D+04	5.1D-04			
102	B(I)	=		1.103	309	137	756 D+04	8.1D-04			
103	B(II)	=		1.104	838	028	891 D+04	8.8D-04			
104	D(001)	=		3.553	496	537	D-03	1.7D-06			
105	D(I)	=		3.099	388	259	D-03	2.8D-06			
106	D(II)	=		4.206	493	331	D-03	2.5D-06			
107	H(001)	=		5.818	906		D-09	2.2D-09			
108	H(I)	=		6.110	893		D-09	3.8D-09			
109	H(II)	=		17.600	347		D-09	3.0D-09			
110	L(001)	=		-201.16	254		D-14	1.0D-12			
111	L(I)	=		7.84	555		D-14	1.8D-12			
112	L(II)	=		-507.39	778		D-14	1.2D-12			
BAND I				BAND I							
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2608 4932.6048	98.3718	870.0996 9426	R(0)	2771 3570.5320	0.0489	924.4252 0792	R(0)	2771 3570.5320	0.0489	924.4252 0792
P(59)	2611 6598.0182	84.2242	871.1559 3876	R(1)	2773 5320.9363	0.0484	925.1507 2331	R(1)	2773 5320.9363	0.0484	925.1507 2331
P(58)	2614 8086.3664	71.8523	872.2062 7700	R(2)	2775 6913.3186	0.0469	925.8709 6766	R(2)	2775 6913.3186	0.0469	925.8709 6766
P(57)	2617 9398.6843	61.0659	873.2507 4350	R(3)	2777 8347.5719	0.0445	926.5859 3739	R(3)	2777 8347.5719	0.0445	926.5859 3739
P(56)	2621 0535.9568	51.6916	874.2893 7111	R(4)	2779 9623.5784	0.0414	927.2956 2858	R(4)	2779 9623.5784	0.0414	927.2956 2858
P(55)	2624 1499.1212	43.5718	875.3221 9110	R(5)	2782 0741.2091	0.0376	928.0000 3692	R(5)	2782 0741.2091	0.0376	928.0000 3692
P(54)	2627 2289.0702	36.5633	876.3492 3325	R(6)	2784 1700.3243	0.0333	928.6991 5775	R(6)	2784 1700.3243	0.0333	928.6991 5775
P(53)	2630 2906.6539	30.5366	877.3705 2591	R(7)	2786 2500.7734	0.0287	929.3929 8605	R(7)	2786 2500.7734	0.0287	929.3929 8605
P(52)	2633 3352.6819	25.3746	878.3860 9609	R(8)	2788 3142.3950	0.0239	930.0815 1643	R(8)	2788 3142.3950	0.0239	930.0815 1643
P(51)	2636 3627.9259	20.9716	879.3959 6952	R(9)	2790 3625.0166	0.0192	930.7647 4314	R(9)	2790 3625.0166	0.0192	930.7647 4314
P(50)	2639 3733.1212	17.2329	880.4001 7075	R(10)	2792 3948.4550	0.0148	931.4426 6007	R(10)	2792 3948.4550	0.0148	931.4426 6007
P(49)	2642 3668.9688	14.0733	881.3987 2314	R(11)	2794 4112.5159	0.0109	932.1152 6075	R(11)	2794 4112.5159	0.0109	932.1152 6075
P(48)	2645 3436.1373	11.4166	882.3916 4900	R(12)	2796 4116.9943	0.0078	932.7825 3832	R(12)	2796 4116.9943	0.0078	932.7825 3832
P(47)	2648 3035.2642	9.1949	883.3789 6960	R(13)	2798 3961.6742	0.0059	933.4444 8559	R(13)	2798 3961.6742	0.0059	933.4444 8559
P(46)	2651 2466.9580	7.3480	884.3607 0523	R(14)	2800 3646.3284	0.0053	934.1010 9498	R(14)	2800 3646.3284	0.0053	934.1010 9498
P(45)	2654 1731.7991	5.8222	885.3368 7526	R(15)	2802 3170.7189	0.0055	934.7523 5854	R(15)	2802 3170.7189	0.0055	934.7523 5854
P(44)	2657 0830.3416	4.5705	886.3074 9816	R(16)	2804 2534.5966	0.0058	935.3982 6798	R(16)	2804 2534.5966	0.0058	935.3982 6798
P(43)	2659 9763.1145	3.5512	887.2725 9158	R(17)	2806 1737.7013	0.0057	936.0388 1460	R(17)	2806 1737.7013	0.0057	936.0388 1460
P(42)	2662 8530.6229	2.7280	888.2321 7237	R(18)	2808 0779.7615	0.0054	936.6739 8936	R(18)	2808 0779.7615	0.0054	936.6739 8936
P(41)	2665 7133.3489	2.0692	889.1862 5661	R(19)	2809 9660.4946	0.0049	937.3037 8283	R(19)	2809 9660.4946	0.0049	937.3037 8283
P(40)	2668 5571.7531	1.5471	890.1348 5967	R(20)	2811 8379.6066	0.0045	937.9281 8519	R(20)	2811 8379.6066	0.0045	937.9281 8519
P(39)	2671 3846.2752	1.1381	891.0779 9621	R(21)	2813 6936.7919	0.0044	938.5471 8626	R(21)	2813 6936.7919	0.0044	938.5471 8626
P(38)	2674 1957.3353	0.8216	892.0156 8024	R(22)	2815 5331.7334	0.0046	939.1607 7546	R(22)	2815 5331.7334	0.0046	939.1607 7546
P(37)	2676 9905.3343	0.5802	892.9479 2514	R(23)	2817 3564.1022	0.0050	939.7689 4183	R(23)	2817 3564.1022	0.0050	939.7689 4183
P(36)	2679 7690.6549	0.3991	893.8747 4367	R(24)	2819 1633.5576	0.0054	940.3716 7398	R(24)	2819 1633.5576	0.0054	940.3716 7398
P(35)	2682 5313.6624	0.2658	894.7961 4802	R(25)	2820 9539.7466	0.0056	940.9689 6015	R(25)	2820 9539.7466	0.0056	940.9689 6015
P(34)	2685 2774.7054	0.1701	895.7121 4982	R(26)	2822 7282.3040	0.0058	941.5607 8816	R(26)	2822 7282.3040	0.0058	941.5607 8816
P(33)	2688 0074.1161	0.1031	896.6227 6014	R(27)	2824 4860.8519	0.0062	942.1471 4541	R(27)	2824 4860.8519	0.0062	942.1471 4541
P(32)	2690 7212.2113	0.0581	897.5279 8956	R(28)	2826 2274.9998	0.0069	942.7280 1885	R(28)	2826 2274.9998	0.0069	942.7280 1885
P(31)	2693 4189.2925	0.0293	898.4278 4813	R(29)	2827 9524.3435	0.0078	943.3033 9503	R(29)	2827 9524.3435	0.0078	943.3033 9503
P(30)	2696 1005.6468	0.0127	899.3223 4542	R(30)	2829 6608.4660	0.0097	943.8732 6001	R(30)	2829 6608.4660	0.0097	943.8732 6001
P(29)	2698 7661.5470	0.0066	900.2114 9054	R(31)	2831 3526.9357	0.0148	944.4375 9942	R(31)	2831 3526.9357	0.0148	944.4375 9942
P(28)	2701 4157.2519	0.0071	901.0952 9213	R(32)	2833 0279.3072	0.0268	944.9963 9838	R(32)	2833 0279.3072	0.0268	944.9963 9838
P(27)	2704 0493.0072	0.0075	901.9737 5837	R(33)	2834 6865.1200	0.0490	945.5496 4155	R(33)	2834 6865.1200	0.0490	945.5496 4155
P(26)	2706 6669.0452	0.0071	902.8468 9701	R(34)	2836 3283.8986	0.0853	946.0973 1305	R(34)	2836 3283.8986	0.0853	946.0973 1305
P(25)	2709 2685.5857	0.0064	903.7147 1539	R(35)	2837 9535.1515	0.1405	946.6393 9649	R(35)	2837 9535.1515	0.1405	946.6393 9649
P(24)	2711 8542.8354	0.0059	904.5772 2040	R(36)	2839 5618.3707	0.2211	947.1758 7494	R(36)	2839 5618.3707	0.2211	947.1758 7494
P(23)	2714 4240.9891	0.0057	905.4344 1854	R(37)	2841 1533.0311	0.3349	947.7067 3087	R(37)	2841 1533.0311	0.3349	947.7067 3087
P(22)	2716 9780.2293	0.0057	906.2863 1589	R(38)	2842 7278.5901	0.4914	948.2319 4619	R(38)	2842 7278.5901	0.4914	948.2319 4619
P(21)	2719 5160.7266	0.0056	907.1329 1815	R(39)	2844 2854.4862	0.7021	948.7515 0215	R(39)	2844 2854.4862	0.7021	948.7515 0215
P(20)	2722 0382.6396	0.0055	907.9742 3061	R(40)	2845 8260.1385	0.9808	949.2653 7940	R(40)	2845 8260.1385	0.9808	949.2653 7940
P(19)	2724 5446.1155	0.0054	908.8102 5818	R(41)	2847 3494.9459	1.3437	949.7735 5787	R(41)	2847 3494.9459	1.3437	949.7735 5787
P(18)	2727 0351.2897	0.0054	909.6410 0537	R(42)	2848 8558.2859	1.8099	950.2760 1681	R(42)	2848 8558.2859	1.8099	950.2760 1681
P(17)	2729 5098.2865	0.0055	910.4664 7633	R(43)	2850 3449.5139	2.4017	950.7727 3471	R(43)	2850 3449.5139	2.4017	950.7727 3471
P(16)	2731 9687.2184	0.0056	911.2866 7481	R(44)	2851 8167.9616	3.1450	951.2636 8928	R(44)	2851 8167.9616	3.1450	951.2636 8928
P(15)	2734 4118.1871	0.0057	912.1016 0421	R(45)	2853 2712.9361	4.0697	951.7488 5741	R(45)	2853 2712.9361	4.0697	951.7488 5741
P(14)	2736 8391.2828	0.0059	912.9112 6753	R(46)	2854 7083.7186	5.2100	952.2282 1511	R(46)	2854 7083.7186	5.2100	952.2282 1511
P(13)	2739 2506.5846	0.0066	913.7156 6741	R(47)	2856 1279.5630	6.6054	952.7017 3751	R(47)	2856 1279.5630	6.6054	952.7017 3751
P(12)	2741 6464.1606	0.0081	914.5148 0613	R(48)	2857 5299.6945	8.3004	953.1693 9876	R(48)	2857 5299.6945	8.3004	953.1693 9876
P(11)	2744 0264.0678	0.0105	915.3086 8558	R(49)	2858 9143.3078	10.3459	953.6311 7200	R(49)	2858 9143.3078	10.3459	953.6311 7200
P(10)	2746 3906.3522	0.0136</									

TABLE X
CONTINUED

BAND II				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	2896 3467.3195	86.8068	966.1172 7702	R(0)	3063 2871.0660	0.0992	1021.8025 9205
P(59)	2899 5949.0536	73.6194	967.2007 5105	R(1)	3065 4590.8968	0.0972	1022.5270 8762
P(58)	2902 8278.6677	62.1727	968.2791 5090	R(2)	3067 6122.1589	0.0937	1023.2452 9321
P(57)	2906 0454.6740	52.2716	969.3524 2694	R(3)	3069 7464.7984	0.0888	1023.9572 0703
P(56)	2909 2475.6481	43.7390	970.4205 3166	R(4)	3071 8618.7769	0.0825	1024.6628 2780
P(55)	2912 4340.2262	36.4145	971.4834 1958	R(5)	3073 9584.0718	0.0752	1025.3621 5477
P(54)	2915 6047.1010	30.1535	972.5410 4708	R(6)	3076 0360.6761	0.0670	1026.0551 8769
P(53)	2918 7595.0185	24.8251	973.5933 7234	R(7)	3078 0948.5983	0.0582	1026.7419 2685
P(52)	2921 8982.7755	20.3120	974.6403 5521	R(8)	3080 1347.8624	0.0493	1027.4223 7306
P(51)	2925 0209.2160	16.5089	975.6819 5715	R(9)	3082 1558.5081	0.0403	1028.0965 2763
P(50)	2928 1273.2288	13.3216	976.7181 4108	R(10)	3084 1580.5901	0.0318	1028.7643 9240
P(49)	2931 2173.7450	10.6662	977.7488 7135	R(11)	3086 1414.1789	0.0239	1029.4259 6971
P(48)	2934 2909.7356	8.4680	978.7741 1364	R(12)	3088 1059.3601	0.0169	1030.0812 6242
P(47)	2937 3480.2089	6.6610	979.7938 3484	R(13)	3090 0516.2344	0.0113	1030.7302 7389
P(46)	2940 3884.2089	5.1870	980.8080 0315	R(14)	3091 9784.9179	0.0074	1031.3730 0799
P(45)	2943 4120.8131	3.9946	981.8165 8770	R(15)	3093 8865.5416	0.0059	1032.0094 6908
P(44)	2946 4189.1307	3.0391	982.8195 5881	R(16)	3095 7758.2517	0.0061	1032.6396 6206
P(43)	2949 4088.3007	2.2814	983.8168 8777	R(17)	3097 6463.2092	0.0068	1033.2635 9228
P(42)	2952 3817.4909	1.6877	984.8085 4681	R(18)	3099 4980.5901	0.0072	1033.8812 6562
P(41)	2955 3375.8957	1.2287	985.7945 0907	R(19)	3101 3310.5852	0.0073	1034.4926 8845
P(40)	2958 2762.7353	0.8797	986.7747 4853	R(20)	3103 1453.4002	0.0075	1035.0978 6761
P(39)	2961 1977.2545	0.6192	987.7492 3999	R(21)	3104 9409.2555	0.0080	1035.6968 1047
P(38)	2964 1018.7210	0.4293	988.7179 5904	R(22)	3106 7178.3862	0.0087	1036.2895 2488
P(37)	2966 9886.4250	0.2950	989.6808 8200	R(23)	3108 4761.0423	0.0095	1036.8760 1915
P(36)	2969 8579.6778	0.2032	990.6379 8589	R(24)	3110 2157.4886	0.0102	1037.4563 0214
P(35)	2972 7097.8114	0.1430	991.5892 4843	R(25)	3111 9368.0045	0.0107	1038.0303 8316
P(34)	2975 5440.1771	0.1043	992.5346 4799	R(26)	3113 6392.8845	0.0115	1038.5982 7203
P(33)	2978 3606.1454	0.0790	993.4741 6356	R(27)	3115 3232.4380	0.0135	1039.1599 7907
P(32)	2981 1595.1050	0.0608	994.4077 7476	R(28)	3116 9886.9894	0.0180	1039.7155 1511
P(31)	2983 9406.4623	0.0463	995.3354 6178	R(29)	3118 6356.8784	0.0254	1040.2648 9147
P(30)	2986 7039.6411	0.0342	996.2572 0541	R(30)	3120 2642.4602	0.0363	1040.8081 2000
P(29)	2989 4494.0818	0.0242	997.1729 8698	R(31)	3121 8744.1055	0.0520	1041.3452 1308
P(28)	2992 1769.2416	0.0166	998.0827 8838	R(32)	3123 4662.2009	0.0748	1041.8761 8359
P(27)	2994 8864.5933	0.0118	998.9865 9203	R(33)	3125 0397.1494	0.1084	1042.4010 4497
P(26)	2997 5779.6258	0.0099	999.8843 8087	R(34)	3126 5949.3704	0.1581	1042.9198 1122
P(25)	3000 2513.8436	0.0096	1000.7761 3839	R(35)	3128 1319.3005	0.2308	1043.4324 9691
P(24)	3002 9066.7664	0.0096	1001.6618 4856	R(36)	3129 6507.3936	0.3348	1043.9391 1716
P(23)	3005 5437.9293	0.0092	1002.5414 9587	R(37)	3131 1514.1219	0.4804	1044.4396 8773
P(22)	3008 1626.8822	0.0086	1003.4150 6530	R(38)	3132 6339.9758	0.6798	1044.9342 2499
P(21)	3010 7633.1902	0.0082	1004.2825 4236	R(39)	3134 0985.4654	0.9478	1045.4227 4594
P(20)	3013 3456.4332	0.0081	1005.1439 1303	R(40)	3135 5451.1207	1.3018	1045.9052 6826
P(19)	3015 9096.2061	0.0083	1005.9991 6380	R(41)	3136 9737.4926	1.7624	1046.3818 1033
P(18)	3018 4552.1183	0.0085	1006.8482 8163	R(42)	3138 3845.1539	2.3539	1046.8523 9126
P(17)	3020 9823.7944	0.0084	1007.6912 5401	R(43)	3139 7774.7001	3.1045	1047.3170 3091
P(16)	3023 4910.8735	0.0081	1008.5280 6889	R(44)	3141 1526.7506	4.0470	1047.7757 4994
P(15)	3025 9813.0098	0.0081	1009.3587 1475	R(45)	3142 5101.9501	5.2193	1048.2285 6985
P(14)	3028 4529.8723	0.0097	1010.1831 8054	R(46)	3143 8500.9695	6.6649	1048.6755 1303
P(13)	3030 9061.1448	0.0134	1011.0014 5571	R(47)	3145 1724.5076	8.4334	1049.1166 0278
P(12)	3033 3406.5264	0.0191	1011.8135 3022	R(48)	3146 4773.2927	10.5813	1049.5518 6340
P(11)	3035 7565.7308	0.0261	1012.6193 9454	R(49)	3147 7648.0840	13.1728	1049.9813 2021
P(10)	3038 1538.4873	0.0341	1013.4190 3962	R(50)	3149 0349.6734	16.2804	1050.4049 9963
P(9)	3040 5324.5400	0.0428	1014.2124 5694	R(51)	3150 2878.8878	19.9855	1050.8229 2923
P(8)	3042 8923.6485	0.0518	1014.9996 3847	R(52)	3151 5236.5905	24.3797	1051.2351 3783
P(7)	3045 2335.5874	0.0607	1015.7805 7669	R(53)	3152 7423.6840	29.5654	1051.6416 5551
P(6)	3047 5560.1470	0.0693	1016.5552 6461	R(54)	3153 9441.1120	35.6568	1052.0425 1376
P(5)	3049 8597.1328	0.0773	1017.3236 9574	R(55)	3155 1289.8621	42.7811	1052.4377 4552
P(4)	3052 1446.3659	0.0844	1018.0858 6412	R(56)	3156 2970.9683	51.0791	1052.8273 8528
P(3)	3054 4107.6828	0.0904	1018.8417 6429	R(57)	3157 4485.5139	60.7073	1053.2114 6918
P(2)	3056 6580.9357	0.0949	1019.5913 9131	R(58)	3158 5834.6344	71.8380	1053.5900 3509
P(1)	3058 8865.9923	0.0980	1020.3347 4079	R(59)	3159 7019.5211	84.6613	1053.9631 2275
V(0)	3061 0962.7361	0.0994	1021.0718 0882				

frequencies as secondary standards at the best levels of precision given in Tables III–XI. We must also point out that a similar effect could influence the measurements of $P_1(50)$ of 636, discussed above, because the hot band line $P(18)$ of this species is about 5.2 GHz from that line [12].

The size of these disagreements with P_{II} suggests that one should be somewhat cautious in interpreting the standard deviations given in Tables III–XI. This is particularly true for frequencies outside the domain of measurement, which are demarcated as in *I* by horizontal lines drawn in the appropriate tables. A related caution is in order for some of the large values of L that can be seen in the species 628, 646, 848, and 638: these should be considered as quantities to be used in fitting the data, but not as constants characteristic of the molecules themselves, even

though in several cases they are more than three times the stated standard deviations. It is for these species that the remarks of Bailly and Schwartz [6] are especially relevant.

In general, it will be seen that the quality of measurements of the species 626, 636, 828, and 838 is similar. These were just the species for which intense, easily separable lines were available. In particular, attention is called to the remarkable consistency found among the measurements in file 16, and to a lesser extent, file 17: the lines of the *I* band of 828 (file 16) were extremely strong, and the measurements were among the latest we made. Lower consistency is seen with the other species. The mixed species 628 and 638 and the species 727 presented problems because of the fact that levels of both odd and even J were present. This made it difficult, particularly in the *R*

TABLE XI
MOLECULAR CONSTANTS AND FREQUENCIES CALCULATED FOR 727

				17 12 17 O C O							
NUMBER		SYMBOL	=	CONSTANTS (MHZ)				STD.DEV. (MHZ)			
113		V(001-I)	=	2.894	953	245	732 D+07	1.0D-02			
114		V(001-II)	=	3.214	846	174	949 D+07	6.1D-03			
115		B(001)	=	1.092	153	560	997 D+04	1.2D-04			
116		B(I)	=	1.101	834	696	644 D+04	1.5D-04			
117		B(II)	=	1.100	609	965	843 D+04	1.1D-04			
118		D(001)	=	3.530	964	947	D-03	2.1D-07			
119		D(I)	=	3.049	684	815	D-03	3.1D-07			
120		D(II)	=	4.069	984	195	D-03	1.9D-07			
121		H(001)	=	-0.086	853	D-09		1.5D-10			
122		H(I)	=	3.143	802	D-09		3.0D-10			
123		H(II)	=	5.840	864	D-09		1.4D-10			
124		L(001)	=	10.84	024	D-14		3.8D-14			
125		L(I)	=	-1.29	247	D-14		1.0D-13			
126		L(II)	=	6.45	892	D-14		3.3D-14			
BAND I				BAND I							
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)				
P(60)	2728 1083.6929	7.6946	909.9989 9981	R(0)	2897 1375.5144	0.0104	966.3810 6601				
P(59)	2731 4822.5368	6.5234	911.1244 0650	R(1)	2899 3024.8621	0.0103	967.1032 1052				
P(58)	2734 8351.3738	5.5069	912.2428 0812	R(2)	2901 4480.4042	0.0100	967.8188 9037				
P(57)	2738 1670.8532	4.6277	913.3542 2632	R(3)	2903 5742.0327	0.0096	968.5281 0195				
P(56)	2741 4781.6111	3.8702	914.4586 8232	R(4)	2905 6809.6283	0.0090	969.2308 4130				
P(55)	2744 7684.2700	3.2200	915.5561 9688	R(5)	2907 7683.0600	0.0084	969.9271 0404				
P(54)	2748 0379.4394	2.6644	916.6467 9034	R(6)	2909 8362.1852	0.0077	970.6168 8540				
P(53)	2751 2867.7152	2.1917	917.7304 8257	R(7)	2911 8846.8498	0.0070	971.3001 8027				
P(52)	2754 5149.6802	1.7914	918.8072 9302	R(8)	2913 9136.8882	0.0063	971.9769 8310				
P(51)	2757 7225.9038	1.4542	919.8772 4067	R(9)	2915 9232.1228	0.0057	972.6472 8797				
P(50)	2760 9096.9421	1.1718	920.9403 4407	R(10)	2917 9132.3648	0.0051	973.3110 8859				
P(49)	2764 0763.3380	0.9366	921.9966 2134	R(11)	2919 8837.4136	0.0046	973.9683 7827				
P(48)	2767 2225.6209	0.7420	923.0460 9014	R(12)	2921 8347.0567	0.0042	974.6191 4992				
P(47)	2770 3484.3071	0.5821	924.0887 6767	R(13)	2923 7661.0702	0.0040	975.2633 9606				
P(46)	2773 4539.8997	0.4519	925.1246 7074	R(14)	2925 6779.2184	0.0038	975.9011 0884				
P(45)	2776 5392.8885	0.3466	926.1538 1567	R(15)	2927 5701.2537	0.0037	976.5322 8000				
P(44)	2779 6043.7501	0.2623	927.1762 1836	R(16)	2929 4426.9168	0.0037	977.1569 0089				
P(43)	2782 6492.9481	0.1955	928.1918 9428	R(17)	2931 2955.9368	0.0036	977.7749 6246				
P(42)	2785 6740.9328	0.1433	929.2008 5844	R(18)	2933 1288.0305	0.0036	978.3864 5529				
P(41)	2788 6788.1415	0.1029	930.2031 2544	R(19)	2934 9422.9032	0.0035	978.9913 6953				
P(40)	2791 6634.9985	0.0723	931.1987 0943	R(20)	2936 7360.2482	0.0035	979.5896 9496				
P(39)	2794 6281.9151	0.0495	932.1876 2412	R(21)	2938 5099.7467	0.0034	980.1814 2093				
P(38)	2797 5729.2897	0.0330	933.1698 8280	R(22)	2940 2641.0680	0.0034	980.7665 3643				
P(37)	2800 4977.5075	0.0214	934.1454 9833	R(23)	2941 9983.8693	0.0034	981.3450 3001				
P(36)	2803 4026.9412	0.0136	935.1144 8314	R(24)	2943 7127.7959	0.0035	981.9168 8985				
P(35)	2806 2877.9504	0.0088	936.0768 4922	R(25)	2945 4072.4807	0.0035	982.4821 0369				
P(34)	2809 1530.8823	0.0063	937.0326 0815	R(26)	2947 0817.5447	0.0035	983.0406 5891				
P(33)	2811 9986.0709	0.0052	937.9817 7107	R(27)	2948 7362.5966	0.0036	983.5925 4243				
P(32)	2814 8243.8379	0.0047	938.9243 4872	R(28)	2950 3707.2326	0.0037	984.1377 4080				
P(31)	2817 6304.4921	0.0044	939.8603 5139	R(29)	2951 9851.0371	0.0038	984.6762 4016				
P(30)	2820 4168.3301	0.0042	940.7897 8898	R(30)	2953 5793.5817	0.0040	985.2080 2620				
P(29)	2823 1835.6355	0.0040	941.7126 7095	R(31)	2955 1534.4257	0.0043	985.7330 8424				
P(28)	2825 9306.6799	0.0040	942.6290 0636	R(32)	2956 7073.1163	0.0046	986.2513 9917				
P(27)	2828 6581.7220	0.0039	943.5388 0384	R(33)	2958 2409.1878	0.0050	986.7629 5545				
P(26)	2831 3661.0086	0.0039	944.4420 7161	R(34)	2959 7542.1621	0.0059	987.2677 3714				
P(25)	2834 0544.7738	0.0039	945.3388 1749	R(35)	2961 2471.5487	0.0082	987.7657 2787				
P(24)	2836 7233.2396	0.0039	946.2290 4889	R(36)	2962 7196.8443	0.0128	988.2569 1086				
P(23)	2839 3726.6158	0.0039	947.1127 7279	R(37)	2964 1717.5329	0.0206	988.7412 6890				
P(22)	2842 0025.0999	0.0039	947.9899 9579	R(38)	2965 6033.0860	0.0322	989.2187 8435				
P(21)	2844 6128.8772	0.0039	948.8607 2408	R(39)	2967 0142.9621	0.0489	989.6894 3916				
P(20)	2847 2038.1213	0.0040	949.7249 6344	R(40)	2968 4046.6072	0.0718	990.1532 1483				
P(19)	2849 7752.9932	0.0041	950.5827 1923	R(41)	2969 7743.4542	0.1026	990.6100 9247				
P(18)	2852 3273.6422	0.0042	951.4339 9646	R(42)	2971 1232.9234	0.1431	991.0600 5273				
P(17)	2854 8600.2058	0.0043	952.2787 9968	R(43)	2972 4514.4219	0.1957	991.5030 7584				
P(16)	2857 3732.8091	0.0043	953.1171 3309	R(44)	2973 7587.3442	0.2628	991.9391 4159				
P(15)	2859 8671.5658	0.0044	953.9490 0047	R(45)	2975 0451.0716	0.3476	992.3682 2934				
P(14)	2862 3416.5773	0.0045	954.7744 0521	R(46)	2976 3104.9725	0.4534	992.7903 1804				
P(13)	2864 7967.9336	0.0046	955.5933 5030	R(47)	2977 5548.4022	0.5844	993.2053 8618				
P(12)	2867 2325.7126	0.0048	956.4058 3835	R(48)	2978 7780.7031	0.7450	993.6134 1182				
P(11)	2869 6489.9806	0.0051	957.2118 7157	R(49)	2979 9801.2044	0.9406	994.0143 7258				
P(10)	2872 0460.7920	0.0055	958.0114 5178	R(50)	2981 1609.2224	1.1769	994.4082 4567				
P(9)	2874 4238.1899	0.0060	958.8045 8040	R(51)	2982 3204.0601	1.4606	994.7950 0782				
P(8)	2876 7822.2052	0.0066	959.5912 5847	R(52)	2983 4585.0076	1.7992	995.1746 3537				
P(7)	2879 1212.8575	0.0073	960.3714 8665	R(53)	2984 5751.3418	2.2012	995.5471 0418				
P(6)	2881 4410.1546	0.0079	961.1452 6519	R(54)	2985 6702.3264	2.6758	995.9123 8971				
P(5)	2883 7414.0928	0.0086	961.9125 9397	R(55)	2986 7437.2121	3.2337	996.2704 6696				
P(4)	2886 0224.6567	0.0091	962.6734 7248	R(56)	2987 7955.2367	3.8863	996.6213 1049				
P(3)	2888 2841.8194	0.0096	963.4278 9982	R(57)	2988 8255.6246	4.6466	996.9648 9445				
P(2)	2890 5265.5424	0.0100	964.1758 7471	R(58)	2989 8337.5873	5.5289	997.3011 9252				
P(1)	2892 7495.7756	0.0103	964.9173 9547	R(59)	2990 8200.3233	6.5490	997.6301 7799				
V(0)	2894 9532.4573	0.0104	965.6524 6005								

TABLE XI
CONTINUED

BAND II				BAND II			
LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)	LINE	FREQUENCY (MHZ)	STD.DEV. (MHZ)	VAC.WAVE NO. (CM-1)
P(60)	3053 8359.5142	0.4634	1018.6500 2602	R(0)	3217 0304.8066	0.0060	1073.0858 6151
P(59)	3056 9761.4634	0.3777	1019.6974 8230	R(1)	3219 1978.6530	0.0059	1073.8088 2320
P(58)	3060 1020.0398	0.3054	1020.7401 5617	R(2)	3221 3483.2169	0.0058	1074.5261 3824
P(57)	3063 2134.5330	0.2448	1021.7780 2395	R(3)	3223 4818.4395	0.0056	1075.2378 0466
P(56)	3066 3104.2389	0.1942	1022.8110 6214	R(4)	3225 5984.2747	0.0054	1075.9438 2093
P(55)	3069 3928.4602	0.1524	1023.8392 4749	R(5)	3227 6980.6896	0.0052	1076.6441 8594
P(54)	3072 4606.5061	0.1182	1024.8625 5695	R(6)	3229 7807.6639	0.0051	1077.3388 9903
P(53)	3075 5137.6927	0.0904	1025.8809 6772	R(7)	3231 8465.1904	0.0049	1078.0279 5994
P(52)	3078 5521.3436	0.0680	1026.8944 5722	R(8)	3233 8953.2747	0.0047	1078.7113 6887
P(51)	3081 5756.7892	0.0503	1027.9030 0313	R(9)	3235 9271.9352	0.0046	1079.3891 2643
P(50)	3084 5843.3680	0.0366	1028.9065 8337	R(10)	3237 9421.2029	0.0045	1080.0612 3366
P(49)	3087 5780.4257	0.0261	1029.9051 7612	R(11)	3239 9401.1219	0.0045	1080.7276 9202
P(48)	3090 5567.3161	0.0184	1030.8987 5984	R(12)	3241 9211.7486	0.0044	1081.3885 0340
P(47)	3093 5203.4011	0.0131	1031.8873 1323	R(13)	3243 8853.1525	0.0044	1082.0436 7011
P(46)	3096 4688.0508	0.0098	1032.8708 1527	R(14)	3245 8325.4153	0.0044	1082.6931 9488
P(45)	3099 4020.6437	0.0080	1033.8492 4526	R(15)	3247 7628.6314	0.0044	1083.3370 8086
P(44)	3102 3200.5669	0.0071	1034.8225 8272	R(16)	3249 6762.9079	0.0044	1083.9753 3162
P(43)	3105 2227.2163	0.0066	1035.7908 0753	R(17)	3251 5728.3640	0.0045	1084.6079 5114
P(42)	3108 1099.9967	0.0063	1036.7538 9982	R(18)	3253 4525.1314	0.0045	1085.2349 4381
P(41)	3110 9818.3221	0.0059	1037.7118 4004	R(19)	3255 3153.3541	0.0044	1085.8563 1444
P(40)	3113 8381.6157	0.0056	1038.6646 0896	R(20)	3257 1613.1883	0.0044	1086.4720 6823
P(39)	3116 6789.3101	0.0052	1039.6121 8765	R(21)	3258 9904.8024	0.0044	1087.0822 1080
P(38)	3119 5040.8476	0.0049	1040.5545 5750	R(22)	3260 8028.3769	0.0044	1087.6867 4817
P(37)	3122 3135.6800	0.0047	1041.4917 0024	R(23)	3262 5984.1040	0.0043	1088.2856 8676
P(36)	3125 1073.2694	0.0045	1042.4235 9791	R(24)	3264 3772.1880	0.0043	1088.8790 3338
P(35)	3127 8853.0875	0.0044	1043.3502 3290	R(25)	3266 1392.8451	0.0043	1089.4667 9523
P(34)	3130 6474.6165	0.0044	1044.2715 8793	R(26)	3267 8846.3029	0.0043	1090.0489 7991
P(33)	3133 3937.3489	0.0044	1045.1876 4608	R(27)	3269 6132.8008	0.0043	1090.6255 9542
P(32)	3136 1240.7875	0.0043	1046.0983 9076	R(28)	3271 3252.5895	0.0044	1091.1966 5010
P(31)	3138 8384.4458	0.0043	1047.0038 0574	R(29)	3273 0205.9314	0.0044	1091.7621 5272
P(30)	3141 5367.8482	0.0043	1047.9038 7516	R(30)	3274 6993.0998	0.0045	1092.3221 1238
P(29)	3144 2190.5298	0.0042	1048.7985 8351	R(31)	3276 3614.3794	0.0046	1092.8765 3859
P(28)	3146 8852.0367	0.0042	1049.6879 1566	R(32)	3278 0070.0659	0.0048	1093.4254 4121
P(27)	3149 5351.9262	0.0042	1050.5718 5682	R(33)	3279 6360.4658	0.0050	1093.9688 3046
P(26)	3152 1689.7667	0.0042	1051.4503 9262	R(34)	3281 2485.8964	0.0052	1094.5067 1692
P(25)	3154 7865.1382	0.0042	1052.3235 0902	R(35)	3282 8446.6858	0.0054	1095.0391 1155
P(24)	3157 3877.6318	0.0042	1053.1911 9241	R(36)	3284 4243.1725	0.0056	1095.5660 2563
P(23)	3159 9726.8505	0.0042	1054.0534 2954	R(37)	3285 9875.7055	0.0059	1096.0874 7080
P(22)	3162 5412.4088	0.0042	1054.9102 0754	R(38)	3287 5344.6439	0.0061	1096.6034 5905
P(21)	3165 0933.9330	0.0042	1055.7615 1395	R(39)	3289 0650.3571	0.0065	1097.1140 0268
P(20)	3167 6291.0614	0.0043	1056.6073 3671	R(40)	3290 5793.2244	0.0071	1097.6191 1437
P(19)	3170 1483.4440	0.0043	1057.4476 6414	R(41)	3292 0773.6349	0.0083	1098.1188 0707
P(18)	3172 6510.7431	0.0043	1058.2824 8498	R(42)	3293 5591.9873	0.0105	1098.6130 9411
P(17)	3175 1372.6330	0.0043	1059.1117 8836	R(43)	3295 0248.6901	0.0142	1099.1019 8909
P(16)	3177 6068.8002	0.0044	1059.9355 6383	R(44)	3296 4744.1609	0.0196	1099.5855 0595
P(15)	3180 0598.9435	0.0044	1060.7538 0134	R(45)	3297 9078.8267	0.0271	1100.0636 5893
P(14)	3182 4962.7742	0.0045	1061.5664 9125	R(46)	3299 3253.1235	0.0372	1100.5364 6258
P(13)	3184 9160.0159	0.0045	1062.3736 2435	R(47)	3300 7267.4961	0.0502	1101.0039 3173
P(12)	3187 3190.4045	0.0046	1063.1751 9184	R(48)	3302 1122.3983	0.0668	1101.4660 8152
P(11)	3189 7053.6889	0.0048	1063.9711 8532	R(49)	3303 4818.2921	0.0876	1101.9229 2736
P(10)	3192 0749.6301	0.0049	1064.7615 9684	R(50)	3304 8355.6482	0.1135	1102.3744 8496
P(9)	3194 4278.0022	0.0051	1065.5464 1886	R(51)	3306 1734.9456	0.1452	1102.8207 7028
P(8)	3196 7638.5917	0.0053	1066.3256 4425	R(52)	3307 4956.6710	0.1838	1103.2617 9957
P(7)	3199 0831.1981	0.0055	1067.0992 6632	R(53)	3308 8021.3193	0.2304	1103.6975 8933
P(6)	3201 3855.6333	0.0056	1067.8672 7881	R(54)	3310 0929.3931	0.2863	1104.1281 5632
P(5)	3203 6711.7224	0.0058	1068.6296 7588	R(55)	3311 3681.4023	0.3529	1104.5535 1756
P(4)	3205 9399.3031	0.0059	1069.3864 5211	R(56)	3312 6277.8646	0.4317	1104.9736 9032
P(3)	3208 1918.2262	0.0060	1070.1376 0253	R(57)	3313 8719.3043	0.5246	1105.3886 9208
P(2)	3210 4268.3552	0.0061	1070.8831 2259	R(58)	3315 1006.2533	0.6335	1105.7985 4058
P(1)	3212 6449.5665	0.0061	1071.6230 0816	R(59)	3316 3139.2500	0.7606	1106.2032 5379
V(0)	3214 8461.7495	0.0061	1072.3572 5555				

branches, to ensure single line oscillation by separating the individual lines with the relatively low-resolution line-selecting grating mirror. The gains in these lasers were also smaller. With the mixed species, there was also the problem that the highest purity attainable is 50 percent; the unmixed species are always present, and they make the line-selection process even more difficult.

The species 727 should show a hyperfine splitting due to the quadrupole moment of ^{17}O (spin 5/2). The analogous splitting has been observed in $^{17}\text{O}^{12}\text{C}^{32}\text{S}$ [15]. Assuming that the coupling constant eqQ for ^{17}O in CO_2 is roughly equal to that in OCS , we expect that the hyperfine structure for CO_2 will be spread over some 500 kHz. It will be very complicated for high J values since in odd-numbered transitions, there will be 21 hyperfine levels for both the upper and the lower rotational states, while in even-numbered transitions, there will be 15. But this

structure was not resolvable in our apparatus because of broadening effects, principally due to transit time and pressure. The result is then that a transition will lock at the frequency that is approximately the center of gravity of the complex, but that will be influenced to some extent by the details of the hyperfine interaction. We have made no attempt to predict just what this influence would be in the face of the many uncertainties involved; but we have no doubt that it contributed to the inaccuracies in the species 727.

The species 646 presented a different difficulty. Because the P branch of the I band extended to longer wavelengths than any other species, the only comparisons available were between successive members of this branch (file 7). The high beat frequencies generated in this way had relatively low signal-to-noise ratios in our apparatus. Also, the II band in this species is very weak. The reader

TABLE XII

[illegible]

TABLE XII
CONTINUED

33	-1.120D-08	-6.585D-09	-3.902D-11	-6.774D-11	-2.138D-10	4.119D-13	4.799D-13	6.106D-13	-2.212D-16	-2.616D-16
	-3.001D-16	3.412D-20	4.124D-20	4.415D-20	-1.078D-08	2.150D-08	-4.829D-10	-3.991D-10	-4.667D-10	8.638D-13
	8.156D-13	9.030D-13	-4.006D-16	-4.021D-16	-4.559D-16	6.119D-20	6.457D-20	7.731D-20	1.157D-06	1.176D-06
	6.061D-08	6.305D-08	7.761D-08							
34	-1.158D-11	1.355D-13	4.666D-13	5.622D-13	7.230D-13	-6.386D-16	-8.916D-16	-9.425D-16	2.547D-19	4.199D-19
	3.819D-19	-2.722D-23	-5.915D-23	-4.509D-23	-3.454D-11	-5.359D-11	9.712D-13	7.311D-13	9.209D-13	-1.746D-15
	-1.534D-15	-1.783D-15	8.159D-19	7.555D-19	8.903D-19	-1.260D-22	-1.208D-22	-1.482D-22	-2.864D-09	5.362D-09
	-1.439D-10	-1.512D-10	-1.095D-10	2.753D-13						
35	-1.341D-11	4.063D-12	3.585D-13	4.095D-13	6.095D-13	-5.173D-16	-6.879D-16	-8.246D-16	2.014D-19	3.198D-19
	3.335D-19	-1.997D-23	-4.364D-23	-3.891D-23	-2.717D-11	-4.362D-11	8.762D-13	6.873D-13	8.338D-13	-1.516D-15
	-1.363D-15	-1.546D-15	6.986D-19	6.616D-19	7.635D-19	-1.067D-22	-1.046D-22	-1.266D-22	-3.872D-09	5.319D-09
	-1.437D-10	-1.599D-10	-1.095D-10	2.785D-13	3.031D-13					
36	-2.213D-11	5.733D-12	2.621D-13	3.398D-13	5.388D-13	-1.475D-16	-3.744D-16	-5.297D-16	-3.036D-20	1.226D-19
	1.575D-19	2.288D-23	-7.552D-24	-8.169D-24	-2.948D-11	-4.111D-11	6.368D-13	4.424D-13	5.588D-13	-1.276D-15
	-1.076D-15	-1.209D-15	6.047D-19	5.295D-19	5.961D-19	-9.478D-23	-8.421D-23	-9.741D-23	-2.113D-09	-5.507D-09
	-1.036D-10	-1.094D-10	-1.670D-10	2.016D-13	2.051D-13	4.023D-13				
37	1.457D-14	-2.042D-15	-3.067D-16	-3.390D-16	-4.915D-16	3.486D-19	4.807D-19	5.889D-19	-1.026D-22	-2.018D-22
	-2.124D-22	3.189D-27	2.417D-26	2.010D-26	2.430D-14	2.932D-14	-5.217D-16	-3.704D-16	-4.734D-16	9.322D-19
	7.887D-19	9.079D-19	-4.315D-22	-3.822D-22	-4.466D-22	6.711D-26	6.086D-26	7.474D-26	2.128D-22	-3.884D-12
	1.052D-13	1.111D-13	7.989D-14	-2.086D-16	-2.123D-16	-1.537D-16	1.625D-19			
38	1.188D-14	-4.746D-15	-2.414D-16	-2.542D-16	-4.143D-16	2.813D-19	3.667D-19	5.123D-19	-7.619D-23	-1.459D-22
	-1.834D-22	4.293D-28	1.584D-26	1.707D-26	1.789D-14	2.074D-14	-4.572D-16	-3.422D-16	-4.197D-16	7.616D-19
	6.561D-19	7.393D-19	-3.458D-22	-3.101D-22	-3.570D-22	5.342D-26	4.883D-26	5.977D-26	2.927D-12	-3.741D-12
	1.021D-13	1.157D-13	7.771D-14	-2.058D-16	-2.288D-16	1.526D-16	1.615D-19	1.783D-19		
39	2.418D-14	-4.211D-15	-1.321D-16	-1.745D-16	-3.155D-16	-1.418D-19	1.354D-20	1.408D-19	1.897D-22	7.463D-23
	3.721D-23	-4.955D-26	-2.505D-26	-2.215D-26	2.578D-14	2.195D-14	-2.193D-16	-8.304D-17	-1.387D-16	5.648D-19
	3.924D-19	4.386D-19	-2.824D-22	-2.007D-22	-2.174D-22	4.738D-26	3.315D-26	3.592D-26	1.488D-12	7.140D-12
	7.067D-14	7.532D-14	1.476D-13	-1.450D-16	-1.489D-16	-3.838D-16	1.144D-19	1.148D-19	3.871D-19	
40	-4.225D-18	1.231D-18	6.466D-20	6.287D-20	1.111D-19	-7.390D-23	-9.063D-23	-1.369D-22	1.786D-26	3.439D-26
	4.762D-26	6.746D-31	-3.299D-30	-4.050D-30	-4.437D-18	-5.260D-18	8.247D-20	5.224D-20	6.839D-20	-1.583D-22
	-1.293D-22	-1.437D-22	7.296D-26	6.221D-26	7.045D-26	-1.141D-29	-9.851D-30	-1.202D-29	-5.440D-16	9.823D-16
	-2.672D-17	-2.833D-17	-2.026D-17	5.436D-20	5.548D-20	4.012D-20	-4.326D-23	-4.311D-23	-3.062D-23	1.172D-26
41	-2.851D-18	1.809D-18	5.146D-20	4.711D-20	9.330D-20	-6.340D-23	-7.086D-23	-1.215D-22	1.541D-26	2.538D-26
	4.308D-26	4.931D-31	-2.141D-30	-3.889D-30	-2.714D-18	-2.999D-18	6.965D-20	4.830D-20	5.951D-20	-1.176D-22
	-9.757D-23	-1.058D-22	5.220D-26	4.458D-26	4.995D-26	-8.098D-30	-6.922D-30	-8.599D-30	-7.653D-16	9.258D-16
	-2.543D-17	-2.927D-17	-1.931D-17	5.272D-20	5.964D-20	3.920D-20	-4.230D-23	-4.763D-23	-3.027D-23	1.150D-26
	1.298D-26									
42	-7.290D-18	1.141D-18	1.366D-20	2.150D-20	5.504D-20	8.738D-23	5.136D-23	1.836D-23	-8.008D-26	-5.155D-26
	-4.030D-26	1.869D-29	1.233D-29	1.113D-29	-6.674D-18	-4.133D-18	-5.350D-21	-3.832D-20	-3.104D-20	-6.579D-23
	-1.765D-23	-1.871D-23	4.023D-26	1.475D-26	1.253D-26	-7.860D-30	-3.086D-30	-2.415D-30	-3.565D-16	-2.777D-15
	-1.653D-17	-1.776D-17	-4.562D-17	3.544D-20	3.666D-20	1.252D-19	-2.878D-23	-2.910D-23	-1.313D-22	7.870D-27
	7.839D-27	4.580D-26								
43	1.254D-05	1.003D-05	6.808D-09	1.119D-08	6.587D-09	-2.572D-11	-2.824D-11	-2.380D-11	1.391D-14	1.413D-14
	1.225D-14	-2.413D-18	-2.319D-18	-2.025D-18	1.117D-05	1.053D-05	-4.006D-10	-5.475D-10	1.967D-09	7.805D-12
	9.303D-12	4.557D-12	-3.498D-15	-4.771D-15	-1.640D-15	2.850D-19	5.362D-19	-1.237D-19	1.263D-05	1.001D-05
	-1.224D-08	-7.881D-09	-7.445D-09	-1.372D-11	-1.419D-11	-2.648D-11	1.386D-14	1.085D-14	2.671D-14	-3.534D-18
	-2.192D-18	-7.905D-18	1.273D-05							
44	9.177D-06	1.289D-05	-2.640D-09	-2.312D-09	-6.827D-09	2.644D-11	2.676D-11	3.016D-11	-1.557D-14	-1.567D-14
	-1.643D-14	2.732D-18	2.703D-18	2.719D-18	8.320D-06	1.317D-05	2.616D-10	5.045D-09	1.512D-09	3.663D-11
	3.449D-11	4.047D-11	-1.692D-14	-1.724D-14	-2.120D-14	2.386D-18	2.587D-18	3.510D-18	1.012D-05	1.357D-05
	5.828D-08	5.707D-08	5.284D-08	-7.121D-11	-6.324D-11	-5.560D-11	4.327D-14	3.611D-14	2.784D-14	-9.600D-18
	-7.645D-18	-4.695D-18	9.138D-06	1.526D-05						
45	-4.375D-08	3.773D-09	4.272D-11	-1.384D-10	1.022D-10	4.090D-14	2.895D-13	-6.420D-14	-1.567D-17	-1.409D-16
	3.949D-17	1.209D-21	2.197D-20	-7.707D-21	-3.034D-09	-1.175D-10	-5.738D-11	2.936D-11	-7.159D-11	1.296D-13
	-1.552D-14	1.554D-13	-1.062D-16	-2.939D-17	-1.163D-16	2.568D-20	1.294D-20	2.622D-20	-5.340D-08	-1.929D-08
	2.558D-10	9.879D-11	1.404D-10	-5.254D-14	1.049D-13	8.820D-14	-1.633D-16	-2.113D-16	-1.788D-16	8.139D-20
	8.109D-20	5.901D-20	-3.751D-08	6.543D-09	1.346D-09					
46	-3.834D-08	3.265D-09	1.049D-10	-5.724D-11	1.614D-10	-5.040D-14	1.744D-13	-1.463D-13	2.980D-17	-8.482D-17
	7.835D-17	-6.325D-21	1.292D-20	-1.385D-20	-2.761D-09	-7.908D-10	-3.202D-11	4.328D-11	-4.197D-11	8.802D-14
	-4.144D-14	1.032D-13	-8.553D-17	-1.618D-17	-8.849D-17	2.193D-20	1.032D-20	2.097D-20	-4.741D-08	-1.710D-08
	2.077D-10	7.148D-11	1.171D-10	-6.749D-15	1.264D-13	8.426D-14	-1.730D-16	-2.122D-16	-1.511D-16	7.937D-20
	7.860D-20	4.729D-20	-3.002D-08	4.902D-09	1.219D-09	1.127D-09				
47	-4.307D-08	3.271D-09	3.619D-13	-1.749D-10	3.994D-11	1.266D-13	3.698D-13	4.385D-14	-5.870D-17	-1.818D-16
	-1.189D-17	7.837D-21	2.826D-20	-1.238D-22	-3.312D-09	2.714D-09	-1.131D-10	-1.771D-11	-1.253D-10	2.283D-13
	8.095D-14	2.597D-13	-1.497D-16	-7.519D-17	-1.677D-16	3.196D-20	1.997D-20	3.483D-20	-4.925D-08	-1.724D-08
	4.389D-10	2.824D-10	3.075D-10	-3.283D-13	-1.488D-13	-1.388D-13	2.330D-17	-4.889D-17	-4.428D-17	3.635D-20
	4.350D-20	3.131D-20	-3.782D-08	1.446D-08	1.310D-09	1.179D-09	1.326D-09			
48	1.991D-11	-1.614D-11	1.969D-13	4.647D-13	1.009D-13	1.627D-16	-2.840D-16	3.013D-16	-1.693D-19	8.209D-20
	-2.290D-19	3.934D-23	-5.794D-24	4.649D-23	-4.290D-11	-2.221D-11	1.937D-13	-6.486D-15	1.723D-13	-4.914D-16
	-1.909D-16	-4.713D-16	3.013D-19	1.500D-19	2.811D-19	-5.925D-23	-3.406D-23	-5.189D-23	3.775D-11	3.710D-11
	-1.753D-13	6.110D-14	1.729D-15	6.157D-16	2.811D-16	5.023D-16	-2.096D-19	-2.400D-20	-3.518D-19	-1.859D-23
	-5.422D-23	6.688D-23	1.844D-11	9.218D-13	-1.765D-12	-1.582D-12	-1.739D-12	3.507D-15		
49	1.526D-11	-1.409D-11	1.095D-13	3.549D-13	1.984D-14	2.931D-16	-1.213D-16	4.145D-16	-2.370D-19	-1.152D-21
	-2.850D-19	5.082D-23	8.006D-24	5.558D-23	-4.193D-11	-1.919D-11	1.530D-13	-2.843D-14	1.283D-13	-4.101D-16
	-1.310D-16	-3.753D-16	2.617D-19	1.187D-19	2.304D-19	-5.273D-23	-2.855D-23	-4.297D-23	3.273D-11	3.442D-11
	-9.312D-14	1.162D-13	4.387D-14	5.091D-16	2.164D-16	4.759D-16	-1.690D-19	-5.177D-21	-3.694D-19	-2.123D-23
	-5.339D-23	9.841D-23	9.574D-12	4.461D-12	-1.579D-12	-1.542D-12	3.161D-15	2.921D-15		
50	1.878D-11	-1.507D-11	2.511D-13	5.021D-13	1.798D-13	4.439D-17	-3.792D-16	1.543D-16	-1.086D-19	1.310D-19
	-1.575D-19	2.972D-23	-1.340D-23	3.565D-23	-4.108D-11	-2.420D-11	2.411D-13	3.714D-14	2.178D-13	-5.706D-16
	-2.757D-16	-5.560D-16	3.331D-19	1.880D-19	3.215D-19	-6.337D-23	-3.956D-23	-5.872D-23	3.219D-11	3.387D-11
	-3.652D-13	-1.375D-13	-1.728D-13	8.921D-16	5.457D-16	7.188D-16	-4.100D-19	-2.050D-19	-4.796D-19	3.340D-23
	-9.037D-24	1.127D-22	1.888D-11	-8.039D-12	-1.663D-12	-1.479D-12	-1.703D-12	3.364D-15	3.014D-15	3.314D-15

TABLE XII
CONTINUED

51	-2.579D-15	1.052D-14	-1.312D-16	-2.644D-16	-7.893D-17	-1.370D-19	1.054D-19	-2.057D-19	1.390D-22	-5.572D-24
	1.650D-22	-3.243D-26	-5.262D-27	-3.460D-26	3.052D-14	1.426D-14	-8.033D-17	4.234D-17	-5.429D-17	2.379D-19
	5.475D-20	1.990D-19	-1.524D-22	-5.920D-23	-1.240D-22	3.103D-26	1.518D-26	2.353D-26	-1.171D-14	-2.143D-14
	7.849D-17	-3.969D-17	-2.326D-17	-4.493D-19	-2.606D-19	-3.890D-19	2.447D-22	1.236D-22	3.320D-22	-2.741D-26
	1.838D-28	-9.078D-26	-5.152D-15	-3.366D-16	9.591D-16	8.540D-16	9.634D-16	-2.224D-18	-1.998D-18	-2.167D-18
	1.544D-21									
52	-1.194D-15	9.043D-15	-8.673D-17	-2.092D-16	-3.988D-17	-1.952D-19	2.950D-20	-2.523D-19	1.681D-22	3.298D-23
	1.869D-22	-3.720D-26	-1.161D-26	-3.802D-26	2.897D-14	1.213D-14	-6.536D-17	4.605D-17	-3.908D-17	2.014D-19
	3.141D-20	1.572D-19	-1.340D-22	-4.614D-23	-1.014D-22	2.797D-26	1.281D-26	1.954D-26	-1.005D-14	-1.965D-14
	4.208D-17	-6.258D-17	-3.701D-17	-3.902D-19	-2.250D-19	-3.726D-19	2.181D-22	1.110D-22	3.337D-22	-2.458D-26
	2.526D-28	-9.397D-26	-7.227D-16	-2.206D-15	8.410D-16	7.711D-16	8.378D-16	-1.960D-18	-1.807D-18	-1.901D-18
	1.354D-21	1.219D-21								
53	-2.328D-15	9.673D-15	-1.481D-16	-2.688D-16	-1.068D-16	-7.877D-20	1.429D-19	-1.352D-19	1.054D-22	-2.746D-23
	1.270D-22	-2.652D-26	-1.504D-27	-2.832D-26	2.814D-14	1.425D-14	-9.095D-17	2.740D-17	-6.557D-17	2.529D-19
	8.043D-20	2.184D-19	-1.558D-22	-6.928D-23	-1.324D-22	3.094D-26	1.635D-26	2.489D-26	-9.396D-15	-1.933D-14
	1.442D-16	3.458D-17	3.978D-17	-5.243D-19	-3.402D-19	-4.397D-19	3.027D-22	1.806D-22	3.545D-22	-4.435D-26
	-1.576D-26	-9.364D-26	-5.418D-15	3.191D-15	8.774D-16	7.761D-16	9.089D-16	-2.063D-18	-1.846D-18	-2.049D-18
	1.450D-21	1.267D-21	1.377D-21							
54	-5.021D-19	-2.066D-18	2.554D-20	4.712D-20	1.553D-20	3.051D-23	-1.152D-23	4.319D-23	-3.091D-26	-4.646D-27
	-3.533D-26	7.295D-30	2.176D-30	7.550D-30	-6.141D-18	-2.751D-18	1.322D-21	-2.229D-20	-5.938D-21	-2.948D-23
	6.031D-24	-1.750D-23	2.252D-26	4.198D-27	1.436D-26	-5.005D-30	-1.832D-30	-3.056D-30	1.028D-18	4.192D-18
	-1.139D-20	7.998D-21	8.715D-21	9.066D-23	5.677D-23	7.753D-23	-5.851D-26	-3.456D-26	-7.348D-26	9.657D-30
	3.664D-30	2.126D-29	6.378D-19	-4.674D-20	-1.829D-19	-1.618D-19	-1.976D-19	4.683D-22	4.187D-22	4.629D-22
	-3.494D-25	-3.046D-25	-3.311D-25	8.399D-29						
55	-5.706D-19	-1.735D-18	1.759D-20	3.732D-20	8.998D-21	3.842D-23	-1.478D-25	4.846D-23	-3.427D-26	-1.006D-26
	-3.723D-26	7.756D-30	3.015D-30	7.763D-30	-5.665D-18	-2.298D-18	6.542D-22	-2.055D-20	-6.225D-21	-2.470D-23
	7.799D-24	-1.258D-23	1.973D-26	2.735D-27	1.135D-26	-4.492D-30	-1.516D-30	-2.496D-30	8.790D-19	3.794D-18
	-6.668D-21	1.035D-20	8.963D-21	7.976D-23	5.039D-23	7.431D-23	-5.260D-26	-3.168D-26	-7.194D-26	8.789D-30
	3.484D-30	2.106D-29	-1.614D-19	2.712D-19	-1.557D-19	-1.422D-19	-1.585D-19	3.993D-22	3.666D-22	3.930D-22
	-2.959D-25	-2.646D-25	-2.796D-25	7.066D-29	6.095D-29					
56	-4.428D-19	-1.846D-18	2.631D-20	4.517D-20	1.812D-20	2.060D-23	-1.645D-23	3.123D-23	-2.428D-26	-1.039D-27
	-2.806D-26	5.999D-30	1.463D-30	6.224D-30	-5.449D-18	-2.585D-18	2.801D-21	-1.886D-20	-2.832D-21	-2.988D-23
	2.142D-24	-1.943D-23	2.173D-26	5.361D-27	1.484D-26	-4.711D-30	-1.895D-30	-3.094D-30	7.524D-19	3.690D-18
	-1.876D-20	-1.428D-21	6.607D-22	9.345D-23	6.209D-23	7.766D-23	-6.104D-26	-3.850D-26	-7.034D-26	1.084D-29
	5.135D-30	1.990D-29	6.697D-19	-4.925D-19	-1.618D-19	-1.425D-19	-1.697D-19	4.181D-22	3.727D-22	4.185D-22
	-3.142D-25	-2.732D-25	-3.000D-25	7.592D-29	6.377D-29	6.895D-29				
57	1.126D-05	9.419D-06	-2.592D-09	-1.884D-09	-4.075D-10	-2.596D-11	-2.562D-11	-2.756D-11	1.446D-14	1.339D-14
	1.440D-14	-2.443D-18	-2.102D-18	-2.284D-18	1.207D-05	9.962D-06	4.103D-08	4.222D-08	4.279D-08	-4.760D-11
	-5.479D-11	-5.280D-11	2.030D-14	2.715D-14	2.485D-14	-2.835D-18	-4.542D-18	-4.036D-18	1.070D-05	8.716D-06
	-3.819D-08	-3.661D-08	-3.428D-08	2.524D-11	2.226D-11	1.259D-11	-1.223D-14	-1.101D-14	1.097D-15	2.549D-18
	2.442D-18	-1.988D-18	1.112D-05	7.716D-06	-1.660D-08	-1.412D-08	-1.967D-08	-8.531D-12	-1.153D-11	-4.659D-12
	9.166D-15	9.973D-15	7.065D-15	-2.188D-18	-2.174D-18	-1.763D-18	1.460D-05			
58	1.046D-05	1.313D-05	-8.904D-09	-9.872D-09	-8.113D-09	9.815D-12	1.286D-11	7.128D-12	-7.999D-15	-9.892D-15
	-6.417D-15	1.691D-18	2.026D-18	1.427D-18	1.014D-05	1.344D-05	8.142D-08	8.797D-08	8.277D-08	-5.339D-11
	-6.238D-11	-5.132D-11	2.381D-14	2.892D-14	2.203D-14	-4.028D-18	-5.050D-18	-3.745D-18	1.059D-05	1.242D-05
	1.669D-08	1.435D-08	1.200D-08	-3.248D-11	-2.412D-11	-4.965D-11	1.483D-14	8.002D-15	1.171D-14	-2.046D-18
	-3.270D-19	-2.060D-18	1.036D-05	1.313D-05	1.458D-09	6.641D-10	3.025D-09	-1.968D-11	-1.674D-11	-2.034D-11
	1.136D-14	9.351D-15	1.106D-14	-2.103D-18	-1.688D-18	-1.950D-18	1.060D-05	1.667D-05		
59	-1.545D-09	-9.803D-10	1.485D-11	2.928D-12	1.413D-11	-1.192D-13	-1.260D-13	-1.139D-13	7.648D-17	9.854D-17
	7.565D-17	-1.094D-20	-1.751D-20	-1.137D-20	-2.054D-09	-9.386D-09	-1.327D-09	-1.458D-09	-1.423D-09	1.669D-12
	1.895D-12	1.828D-12	-7.654D-16	-9.140D-16	-8.616D-16	1.142D-19	1.455D-19	1.343D-19	-5.324D-09	2.976D-09
	-1.771D-10	-1.840D-10	-1.189D-10	3.047D-13	2.774D-13	1.497D-13	-2.847D-16	-2.429D-16	-1.391D-16	8.092D-20
	6.712D-20	3.786D-20	-7.251D-10	-4.886D-09	5.466D-11	5.128D-11	2.930D-11	-3.720D-14	-4.322D-14	1.145D-15
	-4.723D-17	-3.633D-17	-6.055D-17	1.940D-20	1.618D-20	1.966D-20	-1.237D-08	-2.350D-08	1.366D-09	
60	-1.476D-09	-3.191D-09	5.907D-11	6.826D-11	5.904D-11	-1.432D-13	-1.899D-13	-1.379D-13	7.474D-17	1.191D-16
	7.384D-17	-8.313D-21	-1.861D-20	-8.831D-21	-3.059D-08	-1.526D-08	-1.089D-09	-1.262D-09	-1.178D-09	1.386D-12
	1.645D-12	1.512D-12	-6.458D-16	-7.954D-16	-7.147D-16	9.733D-20	1.262D-19	1.109D-19	-5.228D-09	4.858D-09
	-2.740D-10	-2.601D-10	-1.918D-10	5.044D-13	4.344D-13	3.178D-13	-4.013D-16	-3.300D-16	-2.488D-16	1.015D-19
	8.080D-20	6.240D-20	-1.391D-09	-7.424D-09	-1.039D-11	-4.848D-12	-4.290D-11	1.255D-13	1.039D-13	1.660D-13
	-1.429D-16	-1.231D-16	-1.523D-16	3.671D-20	3.172D-20	3.547D-20	3.156D-09	-2.484D-08	1.843D-09	2.007D-09
61	-2.140D-09	-2.174D-10	2.675D-11	1.458D-11	3.646D-11	-1.151D-13	-1.242D-13	-1.221D-13	5.899D-17	8.240D-17
	6.126D-17	-5.833D-21	-1.251D-20	-6.152D-21	-3.200D-08	-2.033D-08	-5.132D-10	-6.512D-10	-6.159D-10	6.802D-13
	8.652D-13	8.224D-13	-3.016D-16	-4.077D-16	-3.761D-16	4.080D-20	6.197D-20	5.431D-20	-7.488D-09	3.220D-09
	-2.630D-10	-2.713D-10	-1.958D-10	4.636D-13	4.301D-13	2.824D-13	-4.014D-16	-3.507D-16	-2.272D-16	1.089D-19
	9.191D-20	5.646D-20	-1.145D-09	-6.438D-09	7.450D-11	7.035D-11	3.907D-11	-4.401D-14	-4.835D-14	6.073D-15
	-5.287D-17	-4.304D-17	-6.977D-17	2.121D-20	1.813D-20	2.170D-20	-8.300D-09	-7.452D-09	1.735D-09	1.765D-09
	1.785D-09									
62	2.423D-12	4.757D-12	-2.039D-14	-1.289D-14	-3.359D-14	1.017D-16	1.233D-16	1.503D-16	-6.700D-20	-1.045D-19
	-1.109D-19	1.118D-23	2.284D-23	2.212D-23	-7.157D-11	-4.074D-11	5.722D-12	5.795D-12	6.001D-12	-6.498D-15
	-6.926D-15	-7.210D-15	2.911D-18	3.264D-18	3.423D-18	-4.400D-22	-5.198D-22	-5.563D-22	2.751D-12	8.141D-12
	-1.467D-14	-8.657D-15	9.126D-15	-9.636D-17	-8.081D-17	-1.475D-16	2.006D-19	1.687D-19	2.369D-19	-7.357D-23
	-6.124D-23	-8.234D-23	2.150D-12	5.699D-12	-7.784D-14	-6.989D-14	-6.851D-14	5.006D-17	4.730D-17	2.760D-17
	4.810D-20	4.209D-20	5.556D-20	-2.210D-23	-1.943D-23	-2.131D-23	2.384D-11	4.470D-11	-2.295D-12	-2.151D-12
	-1.884D-12	5.135D-15								
63	1.956D-12	8.376D-12	-7.508D-14	-9.928D-14	-8.753D-14	1.197D-16	2.009D-16	1.684D-16	-5.733D-20	-1.292D-19
	-1.032D-19	6.311D-24	2.405D-23	1.814D-23	-6.573D-11	-3.704D-11	5.975D-12	6.110D-12	-6.761D-12	-6.783D-15
	-7.294D-15	-7.496D-15	3.064D-18	3.450D-18	3.573D-18	-4.684D-22	-5.516D-22	-5.836D-22	1.704D-12	5.747D-12
	9.844D-14	7.428D-14	9.290D-14	-3.454D-16	-2.713D-16	-3.674D-16	3.477D-19	2.756D-19	3.912D-19	-9.980D-23
	-7.793D-23	-1.199D-22	2.961D-12	9.055D-12	2.301D-14	1.894D-14	3.959D-14	-1.921D-16	-1.743D-16	-2.143D-16
	1.917D-19	1.735D-19	1.921D-19	-4.871D-23	-4.349D-23	-4.547D-23	5.533D-13	5.034D-11	-2.363D-12	-2.484D-12
	-1.950D-12	5.160D-15	5.697D-15							
64	4.087D-12	4.826D-12	-2.661D-14	-1.775D-14	-5.370D-14	7.772D-17	1.035D-16	1.431D-16	-3.269D-20	-7.407D-20
	-8.185D-20	2.062D-24	1.453D-23	1.325D-23	-5.713D-11	-2.405D-11	4.873D-12	4.979D-12	5.205D-12	-5.335D-15
	-5.754D-15	-6.113D-15	2.325D-18	2.651D-18	2.867D-18	-4.145D-22	-4.145D-22	-4.621D-22	6.721D-12	8.469D-12
	1.115D-13	1.204D-13	1.223D-13	-3.353D-16	-3.091D-16	-3.536D-16	3.797D-19	3.314D-19	3.831D-19	-1.177D-22
	-9.931D-23	-1.165D-22	3.625D-12	8.896D-12	-1.095D-13	-9.815D-14	-8.548D-14	5.232D-17	4.	

TABLE XII
CONTINUED

65	1.962D-16	9.517D-16	-1.054D-17	-1.215D-17	-9.331D-18	-1.279D-20	-2.123D-20	-3.364D-20	1.675D-23	3.254D-23
	3.864D-23	-4.034D-27	-9.242D-27	-9.714D-27	4.662D-14	3.158D-14	-3.077D-15	-3.065D-15	-3.194D-15	3.614D-18
	3.777D-18	3.955D-18	-1.653D-21	-1.808D-21	-1.909D-21	2.552D-25	2.917D-25	3.146D-25	1.850D-15	-1.620D-15
	1.104D-16	1.067D-16	7.859D-17	-1.232D-19	-1.136D-19	-4.991D-20	1.768D-23	1.527D-23	-4.137D-23	8.604D-27
	8.004D-27	2.422D-26	-8.954D-17	2.826D-15	1.891D-17	1.430D-17	2.722D-17	-2.439D-20	-1.876D-20	-2.870D-20
	-1.301D-23	-1.308D-23	-1.130D-23	7.283D-27	6.668D-27	6.487D-27	-1.384D-14	-1.911D-14	1.050D-15	9.483D-16
	8.059D-16	-2.709D-18	-2.681D-18	-2.382D-18	1.506D-21					
66	3.275D-16	-7.389D-16	1.296D-17	2.620D-17	1.399D-17	-1.695D-20	-5.387D-20	-3.904D-20	9.819D-24	4.260D-23
	3.395D-23	-1.284D-27	-9.607D-27	-7.732D-27	4.746D-14	3.165D-14	-3.392D-15	-3.400D-15	-3.515D-15	4.002D-18
	4.198D-18	4.355D-18	-1.858D-21	-2.026D-21	-2.120D-21	2.926D-25	3.301D-25	3.530D-25	2.313D-15	-5.435D-16
	6.094D-17	7.110D-17	4.129D-17	-8.584D-21	-2.606D-20	5.583D-20	-5.271D-23	-3.604D-23	-1.200D-22	2.178D-26
	1.653D-26	4.434D-26	-5.918D-16	1.350D-15	-2.738D-17	-2.690D-17	-2.226D-17	8.997D-20	8.671D-20	8.542D-20
	-8.246D-23	-7.701D-23	-7.729D-23	2.046D-26	1.863D-26	1.844D-26	-4.795D-16	-2.265D-14	1.101D-15	1.157D-15
	8.456D-16	-2.788D-18	-3.090D-18	-2.459D-18	1.525D-21	1.767D-21				
67	-7.485D-16	1.056D-15	-1.271D-17	-1.549D-17	-4.528D-18	9.241D-21	-1.142D-21	-2.115D-20	-6.763D-24	1.156D-23
	1.898D-23	1.802D-27	-4.046D-27	-4.325D-27	4.008D-14	2.382D-14	-2.758D-15	-2.769D-15	-2.915D-15	3.125D-18
	3.302D-18	3.532D-18	-1.390D-21	-1.545D-21	-1.684D-21	2.090D-25	2.445D-25	2.752D-25	-1.892D-16	-1.691D-15
	5.320D-17	4.701D-17	2.590D-17	-9.046D-21	-2.929D-21	5.336D-20	-7.298D-23	-6.776D-23	-1.208D-22	3.183D-26
	2.812D-26	4.414D-26	-9.770D-16	1.509D-15	3.710D-17	2.969D-17	3.850D-17	-2.691D-20	-1.729D-20	-2.302D-20
	-2.380D-23	-2.541D-23	-2.423D-23	1.092D-26	1.035D-26	1.005D-26	-1.194D-14	-9.607D-15	9.979D-16	9.131D-16
	8.599D-16	-2.471D-18	-2.458D-18	-2.323D-18	1.339D-21	1.364D-21	1.275D-21			
68	-1.595D-19	-3.437D-19	3.049D-21	3.087D-21	3.703D-21	2.486D-25	1.360D-24	2.460D-24	-2.481D-27	-4.646D-27
	-5.427D-27	7.895D-31	1.527D-30	1.599D-30	-8.022D-18	-5.778D-18	4.877D-19	4.800D-19	5.016D-19	-5.888D-22
	-6.062D-22	-6.357D-22	2.746D-25	2.946D-25	3.111D-25	-4.321D-29	-4.810D-29	-5.184D-29	-5.910D-19	6.401D-20
	-2.679D-20	-2.627D-20	-2.058D-20	3.593D-23	3.311D-23	2.164D-23	-1.493D-26	-1.297D-26	-3.302D-27	1.711D-30
	1.277D-30	-1.365D-30	-8.378D-20	-8.794D-20	-5.237D-22	1.088D-22	-3.075D-21	3.030D-24	2.087D-24	5.242D-24
	1.178D-27	1.283D-27	3.728D-28	-7.675D-31	-7.101D-31	-6.075D-31	2.405D-18	2.937D-18	-1.623D-19	-1.432D-19
	-1.195D-19	4.450D-22	4.351D-22	3.835D-22	-2.562D-25	-2.558D-25	-2.233D-25	4.488D-29		
69	-1.369D-19	-7.053D-20	-5.384D-22	-2.722D-21	-1.299D-23	6.794D-25	6.229D-24	3.392D-24	-1.233D-27	-6.128D-27
	-4.741D-27	3.167D-31	1.568D-30	1.294D-30	-8.666D-18	-5.954D-18	5.579D-19	5.510D-19	5.729D-19	-6.798D-22
	-6.984D-22	-7.290D-22	3.248D-25	3.441D-25	3.624D-25	-5.269D-29	-5.712D-29	-6.147D-29	-6.015D-19	-7.139D-20
	-1.836D-20	-1.992D-20	-1.395D-20	1.628D-23	1.776D-23	3.100D-24	-2.325D-27	-3.543D-27	1.084D-26	-8.008D-31
	-4.304D-31	-5.043D-30	3.382D-20	-6.169D-19	5.973D-21	5.915D-21	4.048D-21	-1.443D-23	-1.409D-23	-1.235D-23
	1.214D-26	1.141D-26	1.085D-26	-2.897D-30	-2.648D-30	-2.546D-30	-2.099D-19	3.588D-18	-1.724D-19	-1.844D-19
	-1.271D-19	4.635D-22	5.214D-22	4.013D-22	-2.616D-25	-3.087D-25	-2.296D-25	4.503D-29	5.555D-29	
70	2.538D-22	-3.953D-19	4.025D-21	4.293D-21	3.488D-21	-4.773D-24	-3.340D-24	-7.791D-25	2.330D-27	-3.289D-28
	-1.435D-27	-3.623D-31	5.091D-31	5.658D-31	-6.960D-18	-4.574D-18	4.445D-19	4.419D-19	4.667D-19	-5.166D-22
	-5.389D-22	-5.779D-22	2.337D-25	2.552D-25	2.788D-25	-3.572D-29	-4.082D-29	-4.604D-29	-2.605D-19	5.474D-20
	-1.823D-20	-1.718D-20	-1.247D-20	1.785D-23	1.532D-23	4.572D-24	1.816D-28	1.013D-27	1.066D-26	-2.268D-30
	-2.198D-30	-5.011D-30	7.222D-20	-7.150D-19	-3.805D-21	-2.581D-21	-5.288D-21	3.644D-24	1.811D-24	4.549D-24
	3.186D-27	3.638D-27	2.698D-27	-1.463D-30	-1.421D-30	-1.278D-30	2.120D-18	1.330D-18	-1.528D-19	-1.368D-19
	-1.279D-19	4.037D-22	3.973D-22	3.737D-22	-2.262D-25	-2.275D-25	-2.119D-25	3.876D-29	3.923D-29	3.611D-29
71	1.308D-05	8.036D-06	3.907D-10	1.855D-10	4.508D-09	-3.938D-11	-3.489D-11	-4.497D-11	2.279D-14	2.002D-14
	2.537D-14	-4.146D-18	-3.690D-18	-4.519D-18	1.344D-05	1.171D-05	-2.962D-07	-3.328D-07	-3.024D-07	4.094D-10
	5.242D-10	4.389D-10	-1.986D-13	-2.962D-13	-2.285D-13	2.583D-17	4.937D-17	3.484D-17	1.263D-05	6.201D-06
	-2.263D-08	-2.246D-08	-2.302D-08	-1.308D-11	-7.763D-12	-2.161D-11	3.084D-15	-2.541D-15	1.927D-14	1.283D-18
	3.002D-18	-5.872D-18	1.305D-05	5.874D-06	-1.727D-08	-1.326D-08	-1.969D-08	-3.608D-11	-3.861D-11	-3.085D-11
	2.414D-14	2.442D-14	2.066D-14	-4.728D-18	-4.570D-18	-3.983D-18	1.065D-05	7.447D-06	4.998D-08	3.774D-08
	3.025D-08	-1.391D-10	-1.338D-10	-1.135D-10	7.364D-14	7.420D-14	6.224D-14	-1.176D-17	-1.194D-17	-1.006D-17
72	1.644D-04									
	9.891D-06	9.489D-06	4.512D-09	3.048D-09	4.834D-09	-1.598D-11	-1.229D-11	-1.489D-11	1.044D-14	7.574D-15
	9.122D-15	-2.020D-18	-1.365D-18	-1.667D-18	9.678D-06	9.314D-06	5.861D-08	6.257D-08	6.741D-08	-6.004D-11
	-7.150D-11	-8.048D-11	1.972D-14	2.767D-14	3.352D-14	-1.746D-18	-3.406D-18	-4.637D-18	9.646D-06	9.251D-06
	-8.760D-09	-9.128D-09	-6.465D-09	4.272D-13	6.928D-13	-7.789D-12	4.055D-15	3.344D-15	1.301D-14	-1.223D-18
	-9.041D-19	-4.377D-18	1.005D-05	9.018D-06	2.632D-09	3.662D-09	1.282D-09	-1.450D-11	-1.589D-11	-1.244D-11
	1.128D-14	1.159D-14	9.816D-15	-2.416D-18	-2.372D-18	-2.063D-18	1.036D-05	9.433D-06	-1.144D-08	-1.113D-08
	-1.020D-08	3.376D-11	3.617D-11	3.516D-11	-1.685D-14	-1.878D-14	-1.885D-14	2.434D-18	2.790D-18	2.918D-18
	1.081D-05	2.358D-05								
73	-2.927D-08	-1.891D-08	9.221D-11	1.542D-10	7.197D-11	-5.408D-14	-2.082D-13	4.874D-15	5.795D-17	1.348D-16
	2.071D-17	-1.000D-20	-2.118D-20	-3.553D-21	-2.326D-08	-3.628D-08	1.052D-09	9.643D-10	1.150D-09	-2.036D-12
	-2.059D-12	-2.422D-12	9.587D-16	1.040D-15	1.266D-15	-1.366D-19	-1.596D-19	-2.060D-19	-3.254D-08	3.570D-09
	-5.952D-10	-5.145D-10	-4.726D-10	1.169D-12	8.989D-13	1.009D-12	-5.095D-16	-3.058D-16	-5.136D-16	6.610D-20
	1.529D-20	1.058D-19	-3.328D-08	-1.702D-08	-1.356D-10	-1.327D-10	-1.728D-10	7.270D-13	6.656D-13	7.209D-13
	-3.541D-16	-3.198D-16	-3.344D-16	5.675D-20	5.063D-20	5.141D-20	6.613D-09	-3.164D-08	-3.993D-10	-2.622D-10
	-3.520D-10	7.137D-13	5.621D-13	6.542D-13	-4.354D-16	-3.774D-16	-4.279D-16	7.418D-20	6.582D-20	7.657D-20
	-3.328D-07	-6.888D-08	1.948D-08							
74	-2.329D-08	-1.072D-08	4.278D-11	1.104D-10	1.488D-11	1.712D-14	-1.421D-13	6.899D-14	8.198D-18	9.278D-17
	-1.640D-17	1.194D-23	-1.380D-20	2.785D-21	-1.544D-08	-1.091D-08	-3.743D-10	-6.278D-10	-3.585D-10	-3.764D-13
	9.091D-14	-5.048D-13	3.685D-16	7.625D-17	4.676D-16	-8.832D-20	-2.771D-20	-1.056D-19	-2.337D-08	1.080D-08
	-4.112D-10	-3.338D-10	-3.202D-10	8.751D-13	6.445D-13	7.949D-13	-3.714D-16	-2.014D-16	-4.428D-16	4.434D-20
	2.094D-21	1.030D-19	-2.836D-08	-5.354D-09	-1.801D-10	-1.786D-10	-1.980D-10	7.198D-13	6.699D-13	6.970D-13
	-3.641D-16	-3.352D-16	-3.382D-16	6.148D-20	5.591D-20	5.499D-20	3.119D-10	-2.436D-08	-2.086D-10	-1.056D-10
	-2.529D-10	3.691D-14	-1.308D-13	6.949D-14	-7.035D-17	8.748D-18	-8.993D-17	1.775D-20	6.559D-21	2.230D-20
	6.226D-07	-8.049D-08	1.808D-08	2.716D-08						
75	-3.409D-08	-2.274D-08	1.072D-10	1.584D-10	8.311D-11	-7.682D-14	-2.155D-13	-5.422D-15	8.369D-17	1.491D-16
	3.625D-17	-1.655D-20	-2.489D-20	-7.650D-21	-3.399D-08	-4.350D-08	1.694D-09	1.641D-09	1.880D-09	-2.604D-12
	-2.730D-12	-3.183D-12	1.119D-15	1.269D-15	1.549D-15	-1.466D-19	-1.837D-19	-2.401D-19	-3.796D-08	1.279D-10
	-5.911D-10	-5.162D-10	-4.633D-10	1.173D-12	9.003D-13	9.934D-13	-4.848D-16	-2.777D-16	-4.687D-16	5.447D-20
	3.379D-21	8.778D-20	-3.714D-08	-1.993D-08	-8.341D-11	-8.372D-11	-1.216D-10	6.944D-13	6.313D-13	6.879D-13
	-3.282D-16	-2.927D-16	-3.092D-16	4.973D-20	4.371D-20	4.501D-20	-6.063D-09	-3.704D-08	-4.901D-10	-3.414D-10
	-4.368D-10	1.047D-12	9.084D-13	1.017D-12	-5.913D-16	-5.468D-16	-6.124D-16	9.481D-20	8.900D-20	1.034D-19
	-3.390D-07	5.376D-08	1.982D-08	1.826D-08	2.158D-08					
76	-3.161D-11	5.166D-11	-5.581D-13	-8.856D-13	-4.939D-13	9.121D-16	1.404D-15	6.823D-16	-5.497D-19	-7.607D-19
	-3.790D-19	9.855D-23	1.237D-22	6.232D-23	1.055D-10	9.323D-11	-6.994D-12	-6.907D-12	-7.898D-12	8.126D-15
	8.575D-15	1.036D-14	-3.219D-18	-3.669D-18	-4.778D-18	4.118D-22	5.199D-			

TABLE XII
CONTINUED

77	-4.036D-11	4.052D-11	-4.837D-13	-8.270D-13	-4.044D-13	8.168D-16	1.330D-15	5.861D-16	-4.779D-19	-7.064D-19
	-3.174D-19	8.308D-23	1.128D-22	5.047D-23	9.838D-11	6.547D-11	-5.737D-12	-5.466D-12	-6.522D-12	6.961D-15
	6.937D-15	8.865D-15	-3.018D-18	-3.151D-18	-4.333D-18	4.404D-22	4.835D-22	7.191D-22	-4.409D-11	-1.819D-11
	1.440D-12	1.082D-12	1.005D-12	-1.889D-15	-1.284D-15	-1.117D-15	5.231D-19	2.012D-19	1.099D-19	2.578D-23
	7.969D-23	7.950D-23	-2.270D-11	5.218D-11	1.532D-12	1.336D-12	1.576D-12	-2.222D-15	-1.920D-15	-2.164D-15
	9.157D-19	7.791D-19	8.568D-19	-1.188D-22	-9.958D-23	-1.073D-22	-5.194D-11	4.892D-11	1.081D-12	6.942D-13
	9.144D-13	-3.252D-15	-2.930D-15	-3.266D-15	1.706D-18	1.632D-18	1.828D-18	-2.585D-22	-2.555D-22	-2.922D-22
	-1.149D-09	9.741D-11	-4.313D-11	-6.291D-11	-4.459D-11	1.220D-13	1.765D-13			
78	-2.868D-11	5.825D-11	-5.902D-13	-9.271D-13	-5.095D-13	9.757D-16	1.479D-15	7.082D-16	-6.152D-19	-8.244D-19
	-4.185D-19	1.149D-22	1.378D-22	7.301D-23	1.204D-10	1.037D-10	-7.918D-12	-7.888D-12	-8.968D-12	8.823D-15
	9.424D-15	1.136D-14	-3.336D-18	-3.881D-18	-5.071D-18	4.012D-22	5.281D-22	7.667D-22	-2.939D-11	-2.602D-12
	1.624D-12	1.255D-12	1.145D-12	-2.182D-15	-1.513D-15	-1.293D-15	5.670D-19	2.015D-19	5.172D-20	4.582D-23
	1.072D-22	1.291D-22	-1.278D-11	7.137D-11	1.472D-12	1.270D-12	1.531D-12	-2.263D-15	-1.932D-15	-2.208D-15
	8.799D-19	7.304D-19	8.227D-19	-9.987D-23	-8.002D-23	-9.022D-23	-5.349D-11	7.606D-11	1.420D-12	9.968D-13
	1.214D-12	-4.381D-15	-4.106D-15	-4.462D-15	2.237D-18	2.203D-18	2.445D-18	-3.286D-22	-3.304D-22	-3.822D-22
	6.841D-10	-2.201D-10	-4.833D-11	-4.356D-11	-5.396D-11	1.400D-13	1.323D-13	1.630D-13		
79	4.052D-14	-3.691D-14	5.598D-16	8.512D-16	5.039D-16	-9.040D-19	-1.319D-18	-7.115D-19	5.312D-22	7.067D-22
	3.884D-22	-9.582D-26	-1.165D-25	-6.535D-26	-7.393D-14	-5.378D-14	5.111D-15	5.061D-15	5.902D-15	-5.566D-18
	-5.893D-18	-7.405D-18	2.050D-21	2.364D-21	3.296D-21	-2.389D-25	-3.137D-25	-5.005D-25	4.318D-14	9.614D-15
	-1.227D-15	-9.154D-16	-8.449D-16	1.565D-18	1.058D-18	8.434D-19	-3.979D-22	-1.409D-22	4.637D-23	-3.615D-26
	-7.475D-26	-1.192D-25	2.795D-14	-4.956D-14	-1.283D-15	-1.093D-15	-1.329D-15	1.788D-18	1.507D-18	1.754D-18
	-6.943D-22	-5.697D-22	-6.546D-22	8.041D-26	6.370D-26	7.341D-26	4.495D-14	-5.029D-14	-9.751D-16	-6.619D-16
	-8.648D-16	2.909D-18	2.663D-18	3.020D-18	-1.466D-21	-1.407D-21	-1.639D-21	2.126D-25	2.740D-25	2.547D-25
	-5.059D-13	-5.219D-14	3.946D-14	3.573D-14	4.121D-14	-1.208D-16	-1.143D-16	-1.320D-16	1.184D-19	
80	4.294D-14	-2.997D-14	4.913D-16	7.794D-16	4.288D-16	-8.127D-19	-1.224D-18	-6.250D-19	4.687D-22	6.472D-22
	3.352D-22	-8.297D-26	-1.053D-25	-5.523D-26	-6.885D-14	-4.045D-14	4.480D-15	4.347D-15	5.172D-15	-5.097D-18
	-5.223D-18	-6.697D-18	2.058D-21	2.251D-21	3.139D-21	-2.747D-25	-3.271D-25	-5.013D-25	4.732D-14	1.598D-14
	-1.103D-15	-8.006D-16	-7.437D-16	1.367D-18	8.928D-19	7.053D-19	-3.188D-22	-8.484D-23	7.221D-23	-4.478D-26
	-7.863D-26	-1.121D-25	2.969D-14	-4.028D-14	-1.293D-15	-1.111D-15	-1.326D-15	1.761D-18	1.496D-18	1.718D-18
	-7.013D-22	-5.832D-22	-6.577D-22	6.569D-26	6.953D-26	7.773D-26	4.434D-14	-3.925D-14	-8.765D-16	-5.709D-16
	-7.866D-16	2.562D-18	2.298D-18	2.662D-18	-1.296D-21	-1.224D-21	-1.445D-21	1.894D-25	1.833D-25	2.255D-25
	5.890D-13	-5.891D-14	3.660D-14	4.831D-14	3.812D-14	-1.113D-16	-1.458D-16	-1.215D-16	1.090D-19	1.285D-19
81	4.265D-14	-4.346D-14	6.207D-16	9.450D-16	5.458D-16	-1.011D-18	-1.471D-18	-7.754D-19	6.165D-22	8.073D-22
	4.450D-22	-1.151D-25	-1.364D-25	-7.857D-26	-8.662D-14	-6.546D-14	5.896D-15	5.880D-15	6.802D-15	-6.178D-18
	-6.608D-18	-8.260D-18	2.156D-21	2.536D-21	3.540D-21	-2.311D-25	-3.189D-25	-5.151D-25	4.727D-14	9.021D-15
	-1.273D-15	-9.240D-16	-8.552D-16	1.595D-18	1.032D-18	8.074D-19	-3.058D-22	-2.725D-23	1.743D-22	-8.214D-26
	-1.208D-25	-1.704D-25	2.859D-14	-5.407D-14	-1.438D-15	-1.226D-15	-1.474D-15	2.020D-18	1.703D-18	1.961D-18
	-7.686D-22	-6.276D-22	-7.163D-22	8.364D-26	6.518D-26	7.540D-26	4.708D-14	-6.294D-14	-1.141D-15	-7.913D-16
	-1.066D-15	3.339D-18	3.072D-18	3.562D-18	-1.638D-21	-1.575D-21	-1.889D-21	2.305D-25	2.248D-25	2.881D-25
	-5.519D-13	2.287D-13	4.441D-14	4.010D-14	5.008D-14	-1.379D-16	-1.304D-16	-1.618D-16	1.358D-19	1.250D-19
	1.675D-19									
82	-1.210D-17	9.685D-18	-1.667D-19	-2.455D-19	-1.514D-19	2.765D-22	3.866D-22	2.234D-22	-1.628D-25	-2.085D-25
	-1.232D-25	2.963D-29	3.481D-29	2.112D-29	1.756D-17	1.241D-17	-1.266D-18	-1.254D-18	-1.481D-18	1.334D-21
	1.414D-21	1.823D-21	-4.647D-25	-5.401D-25	-7.905D-25	4.960D-29	6.751D-29	1.170D-28	-1.286D-17	-2.657D-18
	3.275D-19	2.420D-19	2.219D-19	-4.030D-22	-2.667D-22	-1.986D-22	9.302D-26	2.600D-26	-3.860D-26	1.312D-29
	2.250D-29	3.998D-29	-8.941D-18	1.338D-17	3.503D-19	2.956D-19	3.630D-19	-4.713D-22	-3.917D-22	-4.638D-22
	1.780D-25	1.428D-25	1.686D-25	-1.956D-29	-1.488D-29	-1.800D-29	-1.272D-17	1.420D-17	2.548D-19	1.700D-19
	2.378D-19	-7.396D-22	-6.651D-22	-7.885D-22	3.658D-25	3.427D-25	4.218D-25	-5.184D-29	-4.894D-29	-6.476D-29
	1.372D-16	1.051D-17	-1.162D-17	-1.054D-17	-1.220D-17	3.695D-20	3.501D-20	4.059D-20	-3.733D-23	-3.439D-23
	-4.302D-23	1.203D-26								
83	-1.166D-17	7.884D-18	-1.424D-19	-2.157D-19	-1.269D-19	2.405D-22	3.432D-22	1.914D-22	-1.400D-25	-1.834D-25
	-1.044D-25	2.516D-29	3.033D-29	1.765D-29	1.583D-17	9.697D-18	-1.104D-18	-1.079D-18	-1.287D-18	1.213D-21
	1.259D-21	1.629D-21	-4.613D-25	-5.172D-25	-7.391D-25	5.666D-29	7.114D-29	1.142D-28	-1.265D-17	-3.639D-18
	2.869D-19	2.086D-19	1.919D-19	-3.462D-22	-2.240D-22	-1.651D-22	7.537D-26	1.619D-26	-3.825D-26	1.336D-29
	2.147D-29	3.552D-29	-8.560D-18	1.094D-17	3.301D-19	2.805D-19	3.399D-19	-4.385D-22	-3.669D-22	-4.298D-22
	1.692D-25	1.374D-25	1.596D-25	-1.951D-29	-1.523D-29	-1.786D-29	-1.198D-17	1.117D-17	2.244D-19	1.453D-19
	2.093D-19	-6.439D-22	-5.710D-22	-6.837D-22	3.201D-25	2.969D-25	3.664D-25	-4.578D-29	-4.305D-29	-5.649D-29
	-7.892D-17	1.122D-17	-1.029D-17	-1.231D-17	-1.078D-17	3.256D-20	3.895D-20	3.573D-20	-3.286D-23	-3.609D-23
	-3.785D-23	1.059D-26	1.056D-26							
84	-1.369D-17	1.202D-17	-1.953D-19	-2.892D-19	-1.733D-19	3.262D-22	4.570D-22	2.573D-22	-1.986D-25	-2.521D-25
	-1.483D-25	3.726D-29	4.307D-29	2.652D-29	2.171D-17	1.685D-17	-1.532D-18	-1.527D-18	-1.784D-18	1.556D-21
	1.644D-21	2.125D-21	-5.113D-25	-6.060D-25	-8.832D-25	4.926D-29	7.101D-29	1.242D-28	-1.518D-17	-2.817D-18
	3.571D-19	2.550D-19	2.353D-19	-4.300D-22	-2.690D-22	-1.952D-22	6.806D-26	-8.953D-27	-8.085D-26	2.824D-29
	3.803D-29	5.790D-29	-9.880D-18	1.528D-17	4.203D-19	3.556D-19	4.307D-19	-5.711D-22	-4.756D-22	-5.554D-22
	2.123D-25	1.699D-25	1.983D-25	-2.196D-29	-1.645D-29	-1.990D-29	-1.409D-17	1.865D-17	3.137D-19	2.136D-19
	3.086D-19	-8.879D-22	-8.010D-22	-9.738D-22	4.262D-25	3.992D-25	5.084D-25	-5.840D-29	-5.488D-29	-7.648D-29
	1.579D-16	-7.785D-17	-1.376D-17	-1.246D-17	-1.564D-17	4.435D-20	4.197D-20	5.238D-20	-4.499D-23	-4.142D-23
	-5.578D-23	1.455D-26	1.280D-26	1.895D-26						
85	1.084D-05	5.827D-06	1.561D-08	1.752D-08	1.871D-08	-6.879D-11	-7.019D-11	-6.577D-11	4.438D-14	4.264D-14
	3.932D-14	-8.486D-18	-7.701D-18	-7.054D-18	1.215D-05	2.986D-06	2.472D-07	2.728D-07	2.596D-07	-3.421D-10
	-4.276D-10	-3.889D-10	1.348D-13	2.026D-13	1.742D-13	-1.399D-17	-2.944D-17	-2.397D-17	9.482D-06	5.541D-06
	-9.763D-08	-9.173D-08	-8.157D-08	1.020D-10	8.425D-11	5.891D-11	-4.211D-14	-3.049D-14	-2.697D-15	6.150D-18
	3.771D-18	-5.958D-18	1.083D-05	2.801D-06	-2.322D-08	-1.741D-08	-3.148D-08	3.028D-12	-7.137D-12	1.114D-11
	1.127D-14	1.529D-14	7.339D-15	-3.814D-18	-4.170D-18	-2.992D-18	1.449D-05	5.927D-06	-5.192D-08	-4.519D-08
	3.897D-08	1.241D-10	1.277D-10	1.145D-10	-6.797D-14	-7.348D-14	-6.813D-14	1.045D-17	1.151D-17	1.114D-17
	-5.021D-05	1.373D-05	1.057D-07	-2.600D-07	1.281D-07	-2.833D-10	-1.409D-10	-3.120D-10	1.795D-13	1.888D-13
	2.013D-13	-4.091D-17	-4.916D-17	-4.781D-17	2.596D-01					
86	9.715D-06	9.541D-06	2.610D-09	1.430D-09	2.728D-09	-1.065D-11	-7.946D-12	-9.838D-12	7.310D-15	5.260D-15
	6.428D-15	-1.456D-18	-9.948D-19	-1.228D-18	9.891D-06	9.388D-06	2.251D-08	2.423D-08	2.527D-08	-2.701D-11
	-3.184D-11	-3.431D-11	1.091D-14	1.436D-14	1.625D-14	-1.371D-18	-2.104D-18	-2.576D-18	9.560D-06	9.360D-06
	-4.750D-09	-5.128D-09	-3.530D-09	-1.436D-12	-1.206D-12	-6.203D-12	4.114D-15	3.624D-15	9.407D-15	-1.170D-18
	-9.518D-19	-3.068D-18	9.828D-06	9.257D-06	2.495D-09	3.049D-09	1.700D-09	-1.038D-11	-1.124D-11	-9.140D-12
	8.040D-15	8.218D-15	7.087D-15	-1.722D-18	-1.686D-18	-1.482D-18	1.005D-05	9.377D-06	-6.675D-09	-6.976D-09
	-7.299D-09	1.481D-11	1.660D-11	1.743D-11	-7.224D-15	-8.576D-15	-9.362D-15	9.988D-19	1.274D-18	1.457D-18

TABLE XII
CONTINUED

87	-2.337D-08	-1.813D-08	1.387D-10	2.021D-10	1.132D-10	-2.235D-13	-3.658D-13	-1.474D-13	1.756D-16	2.390D-16
	1.251D-16	-3.456D-20	-4.221D-20	-2.504D-20	-1.030D-08	-4.415D-08	5.455D-10	4.297D-10	4.938D-10	-1.624D-12
	-1.562D-12	-1.679D-12	8.865D-16	9.134D-16	9.654D-16	-1.434D-19	-1.560D-19	-1.637D-19	-2.657D-08	2.709D-09
	-6.031D-10	-5.127D-10	-4.690D-10	1.049D-12	7.751D-13	8.432D-13	-3.823D-16	-1.885D-16	-3.327D-16	2.979D-20
	-1.521D-20	4.939D-20	-2.683D-08	-1.858D-08	-1.913D-10	-1.713D-10	-2.276D-10	6.865D-13	6.022D-13	6.806D-13
	-2.932D-16	-2.504D-16	-2.778D-16	4.000D-20	3.344D-20	3.656D-20	1.075D-08	-3.486D-08	-4.163D-10	-2.985D-10
	-4.218D-10	5.550D-13	4.216D-13	5.768D-13	-3.583D-16	-3.123D-16	-4.002D-16	6.254D-20	5.774D-20	7.470D-20
	-1.070D-07	1.534D-08	2.544D-09	2.159D-09	2.611D-09	-3.795D-12	-3.441D-12	-3.932D-12	2.587D-15	2.363D-15
	2.786D-15	-6.569D-19	-5.832D-19	-7.441D-19	1.148D-06	-1.252D-07	2.212D-08			
88	-1.742D-08	-2.251D-08	2.064D-10	3.001D-10	1.672D-10	-4.173D-13	-5.959D-13	-2.907D-13	3.054D-16	3.763D-16
	2.144D-16	-6.053D-20	-6.712D-20	-4.167D-20	-1.573D-08	-6.893D-08	2.842D-09	2.949D-09	2.911D-09	-4.598D-12
	-5.250D-12	-5.020D-12	2.245D-15	2.867D-15	2.629D-15	-3.192D-19	-4.736D-19	-4.197D-19	-2.184D-08	4.489D-09
	-8.383D-10	-7.080D-10	-6.307D-10	1.269D-12	9.225D-13	8.945D-13	-4.001D-16	-1.706D-16	-2.163D-16	1.092D-20
	-3.853D-20	-5.899D-21	-2.206D-08	-2.721D-08	-3.730D-10	-3.240D-10	-4.190D-10	8.772D-13	7.466D-13	8.698D-13
	-3.363D-16	-2.737D-16	-3.194D-16	3.844D-20	2.962D-20	3.545D-20	2.911D-08	-3.386D-08	-8.470D-10	-6.700D-10
	-7.497D-10	1.673D-12	1.565D-12	1.623D-12	-2.905D-16	-9.212D-16	-9.582D-16	1.460D-19	1.515D-19	-1.122D-19
	-5.300D-07	3.255D-08	2.614D-09	2.024D-09	2.778D-09	-4.285D-12	-7.999D-12	-4.446D-12	2.625D-15	5.665D-15
	2.769D-15	-5.954D-19	-1.222D-18	-6.526D-19	1.306D-03	-1.469D-07	2.901D-08	7.654D-06		
89	-2.902D-08	-2.000D-08	1.232D-10	1.728D-10	9.577D-11	-1.809D-13	-3.066D-13	-1.025D-13	1.583D-16	2.132D-16
	1.063D-16	-3.259D-20	-3.864D-20	-2.268D-20	-1.750D-08	-4.814D-08	8.521D-10	7.566D-10	8.363D-10	-1.888D-12
	-1.880D-12	-2.026D-12	9.707D-16	1.032D-15	1.105D-15	-1.510D-19	-1.707D-19	-1.831D-19	-3.235D-08	3.828D-10
	-5.533D-10	-4.755D-10	-4.298D-10	1.014D-12	7.510D-13	8.286D-13	-3.622D-16	-1.709D-16	-3.277D-16	2.453D-20
	-2.046D-20	4.817D-20	-3.172D-08	-1.851D-08	-1.191D-10	-1.095D-10	-1.527D-10	6.394D-13	5.649D-13	6.305D-13
	-2.749D-16	-2.357D-16	-2.586D-16	3.689D-20	3.083D-20	3.346D-20	7.772D-09	-3.763D-08	-4.477D-10	-3.295D-10
	-4.545D-10	6.958D-13	5.769D-13	7.382D-13	-4.191D-16	-3.843D-16	-4.777D-16	6.967D-20	6.702D-20	8.523D-20
	-1.142D-07	1.777D-08	2.565D-09	2.129D-09	2.686D-09	-4.005D-12	-3.577D-12	-4.236D-12	2.756D-15	2.486D-15
	3.028D-15	-7.023D-19	-6.176D-19	-8.114D-19	1.092D-06	-6.840D-08	2.092D-08	2.747D-08	2.030D-08	
90	-2.815D-11	3.882D-11	-5.014D-13	-7.487D-13	-4.413D-13	9.497D-16	1.303D-15	7.423D-16	-6.039D-19	7.395D-19
	-4.495D-19	-1.146D-22	1.269D-22	8.143D-23	7.069D-11	1.001D-10	-5.389D-12	-5.312D-12	-5.828D-12	6.642D-15
	6.974D-15	7.881D-15	-2.872D-18	-3.229D-18	-3.775D-18	4.082D-22	4.966D-22	6.084D-22	-2.804D-11	-2.979D-12
	1.240D-12	9.571D-13	8.746D-13	-1.509D-15	-1.007D-15	-8.009D-16	2.980D-19	3.657D-20	-1.418D-19	6.717D-23
	1.070D-22	1.513D-22	-1.738D-11	5.281D-11	1.137D-12	9.661D-13	1.186D-12	-1.589D-15	-1.317D-15	-1.559D-15
	5.594D-19	4.395D-19	5.273D-19	-5.159D-23	-3.651D-23	-4.746D-23	-4.636D-11	5.697D-11	1.131D-12	8.617D-13
	1.065D-12	-3.058D-15	-2.930D-15	-3.258D-15	1.571D-18	1.603D-18	1.811D-18	-2.310D-22	-2.470D-22	-2.881D-22
	1.409D-10	-6.728D-11	-3.346D-12	-2.228D-12	-3.910D-12	1.058D-14	9.344D-15	1.175D-14	-8.336D-18	-7.449D-18
	-9.579D-18	2.221D-21	1.934D-21	2.682D-21	-3.210D-09	2.277D-10	-4.035D-11	-6.208D-11	-3.790D-11	9.507D-14
91	-4.374D-11	4.042D-11	-5.881D-13	-8.906D-13	-4.982D-13	1.263D-15	1.677D-15	9.692D-16	-8.164D-19	-9.661D-19
	-5.969D-19	1.578D-22	1.691D-22	1.100D-22	7.258D-11	1.238D-10	-8.439D-12	-8.658D-12	-9.060D-12	1.060D-14
	1.187D-14	1.236D-14	-4.754D-18	-5.899D-18	-6.078D-18	6.637D-22	9.420D-22	9.741D-22	-4.367D-11	-1.067D-11
	1.517D-12	1.168D-12	1.045D-12	-1.656D-15	-1.058D-15	-6.981D-16	2.047D-19	-9.053D-20	-4.375D-19	1.224D-22
	1.622D-22	2.632D-22	-3.030D-11	5.984D-11	1.487D-12	1.265D-12	1.538D-12	-1.892D-15	-1.545D-15	-1.847D-15
	6.199D-19	4.689D-19	5.817D-19	-4.707D-23	-2.860D-23	-4.339D-23	-7.349D-11	5.047D-11	1.771D-12	1.437D-12
	1.597D-12	-4.561D-15	-4.490D-15	-4.723D-15	2.293D-18	2.404D-18	2.561D-18	-3.343D-22	-3.679D-22	-4.014D-22
	1.474D-10	-9.010D-11	-2.927D-12	-5.643D-12	-3.592D-12	1.005D-14	2.411D-14	1.114D-14	-7.384D-18	-1.716D-17
	-8.397D-18	1.853D-21	3.748D-21	2.211D-21	-2.045D-06	2.671D-10	-5.268D-11	-1.316D-08	-4.961D-11	1.351D-13
	2.428D-11									
92	-2.089D-11	3.893D-11	-4.397D-13	-6.674D-13	-3.763D-13	8.234D-16	1.153D-15	6.189D-16	-5.396D-19	-6.662D-19
	-3.898D-19	1.044D-22	1.155D-22	7.240D-23	7.450D-11	9.819D-11	-5.385D-12	-5.334D-12	-5.843D-12	6.514D-15
	6.880D-15	7.778D-15	-2.781D-18	-3.153D-18	-3.696D-18	3.901D-22	4.806D-22	5.919D-22	-2.149D-11	-1.283D-12
	1.111D-12	8.505D-13	7.779D-13	-1.378D-15	-9.074D-16	-7.425D-16	2.384D-19	-8.925D-21	-1.419D-19	7.747D-23
	1.155D-22	1.450D-22	-1.059D-11	4.903D-11	1.039D-12	8.887D-13	1.077D-12	-1.518D-15	-1.270D-15	-1.475D-15
	5.386D-19	4.284D-19	5.017D-19	-4.949D-23	-3.572D-23	-4.471D-23	4.008D-11	5.808D-11	1.114D-12	8.560D-13
	1.065D-12	-3.027D-15	-2.916D-15	-3.257D-15	1.534D-18	1.574D-18	1.790D-18	-2.225D-22	-2.395D-22	-2.818D-22
	1.421D-10	-6.586D-11	-3.232D-12	-2.124D-12	-3.829D-12	1.033D-14	9.083D-15	1.156D-14	-8.148D-18	-7.257D-18
	-9.427D-18	2.172D-21	1.886D-21	2.640D-21	-2.974D-09	1.331D-10	-3.726D-11	-5.741D-11	-3.590D-11	8.768D-14
	1.247D-13	8.261D-14								
93	2.732D-14	-2.292D-14	3.968D-16	5.775D-16	3.527D-16	-7.211D-19	-9.661D-19	-5.769D-19	4.489D-22	5.412D-22
	3.420D-22	-8.540D-26	-9.344D-26	-6.234D-26	-4.449D-14	-5.628D-14	3.600D-15	3.581D-15	3.956D-15	-4.177D-18
	-4.432D-18	-5.101D-18	1.735D-21	1.984D-21	2.392D-21	-2.374D-25	-2.977D-25	-3.812D-25	2.941D-14	5.090D-15
	-7.476D-16	-5.444D-16	-5.011D-16	8.397D-19	5.142D-19	3.542D-19	-8.468D-23	6.807D-23	2.303D-22	-7.308D-26
	-9.125D-26	-1.388D-25	2.019D-14	-3.136D-14	-8.351D-16	-7.027D-16	-8.593D-16	1.088D-18	8.899D-19	1.060D-18
	-3.706D-22	-2.846D-22	-3.473D-22	3.086D-26	2.025D-26	2.827D-26	3.095D-14	-3.775D-14	-7.685D-16	-6.003D-16
	-7.833D-16	2.002D-18	1.936D-18	2.250D-18	-9.763D-22	-1.007D-21	-1.201D-21	1.358D-25	1.481D-25	1.850D-25
	-7.480D-14	4.741D-14	1.941D-15	1.227D-15	2.358D-15	-7.116D-18	-6.290D-18	-8.011D-18	5.769D-21	5.150D-21
	6.715D-21	-1.556D-24	-1.351D-24	-1.902D-24	2.798D-12	-1.546D-13	2.854D-14	4.828D-14	2.677D-14	-7.447D-17
	-1.116D-16	-6.861D-17	6.181D-20							
94	3.790D-14	-2.260D-14	4.411D-16	6.566D-16	3.768D-16	-9.071D-19	-1.190D-18	-7.096D-19	5.759D-22	6.779D-22
	4.304D-22	-1.113D-25	-1.191D-25	-7.973D-26	-4.390D-14	-6.583D-14	5.180D-15	5.308D-15	5.637D-15	-6.257D-18
	-6.981D-18	-7.459D-18	2.757D-21	3.408D-21	3.638D-21	-3.818D-25	-5.401D-25	-5.843D-25	4.052D-14	1.100D-14
	-8.897D-16	-6.458D-16	-5.822D-16	8.798D-19	5.009D-19	2.523D-19	-2.567D-25	1.682D-22	4.291D-22	-1.121D-25
	-1.288D-25	-2.098D-25	2.890D-14	-3.384D-14	-1.060D-15	-8.963D-16	-1.083D-15	1.273D-18	1.031D-18	1.233D-18
	-4.079D-22	-3.034D-22	-3.799D-22	2.832D-26	1.572D-26	2.587D-26	4.631D-14	-3.310D-14	-1.126D-15	-9.264D-16
	-1.096D-15	2.789D-18	2.756D-18	3.037D-18	-1.344D-21	-1.420D-21	-1.595D-21	1.872D-25	2.099D-25	2.438D-25
	-7.727D-14	5.839D-14	1.721D-15	4.980D-15	2.180D-15	-7.160D-18	-1.873D-17	-7.604D-18	5.216D-21	1.322D-20
	6.017D-21	-1.349D-24	-2.882D-24	-1.634D-24	1.234D-09	-1.794D-13	3.641D-14	8.407D-12	3.424D-14	-1.001D-16
	-1.616D-16	-9.240D-17	8.590D-20	1.103D-17						
95	2.300D-14	-2.194D-14	3.456D-16	5.133D-16	3.009D-16	-6.146D-19	-8.452D-19	-4.777D-19	3.890D-22	4.773D-22
	2.895D-22	-7.494D-26	-8.294D-26	-5.364D-26	-4.431D-14	-5.258D-14	3.392D-15	3.382D-15	3.735D-15	-3.886D-18
	-4.137D-18	-4.768D-18	1.599D-21	1.838D-21	2.223D-21	-2.166D-25	-2.739D-25	-3.527D-25	2.570D-14	4.621D-15
	-6.504D-16	-4.639D-16	-4.309D-16	7.435D-19	4.441D-19	3.201D-19	-5.367D-23	8.717D-23	2.100D-22	-7.530D-26
	-9.198D-26	-1.265D-25	1.603D-14	-2.774D-14	-7.692D-16	-6.519D-16	-7.853D-16	1.036D-18	8.581D-19	1.001D-18
	-3.611D-22	-2.832D-22	-3.344D-22	3.148D-26	2.187D-26	2.824D-26	2.619D-14	-3.656D-14	-7.194D-16	-5.631D-16
	-7.421D-16	1.874D-18	1.814D-18	2.121D-18	-9.033D-22	-9.333D-22	-1.122D-21	1.240D-25	1.357D-25	1.715D-25
	-7.196D-14	4.378D-14	1.802D-15	1.132D-15	2.210D-15	-6.655D-18	-5.872D-18	-7.529D-18		

TABLE XII
CONTINUED

96	-6.610D-18	4.987D-18	-9.597D-20	-1.366D-19	-8.578D-20	1.749D-22	2.289D-22	1.418D-22	-1.087D-25	-1.286D-25
	-8.420D-26	2.078D-29	2.238D-29	1.546D-29	9.381D-18	1.166D-17	-7.933D-19	-7.928D-19	-8.788D-19	8.970D-22
	9.583D-22	1.113D-21	-3.642D-25	-4.214D-25	-5.164D-25	4.860D-29	6.228D-29	8.173D-29	-7.168D-18	-1.194D-18
	1.618D-19	1.156D-19	1.060D-19	-1.744D-22	-1.022D-22	-6.259D-23	8.901D-27	-2.373D-26	-6.589D-26	1.890D-29
	2.231D-29	3.534D-29	-5.114D-18	6.874D-18	1.889D-19	1.578D-19	1.940D-19	-2.396D-22	-1.936D-22	-2.335D-22
	7.905D-26	5.910D-26	7.415D-26	-5.881D-30	-3.449D-30	-5.423D-30	-6.957D-18	8.834D-18	1.702D-19	1.342D-19
	1.811D-19	-4.351D-22	-4.223D-22	-5.038D-22	2.066D-25	2.144D-25	2.641D-25	-2.777D-29	-3.067D-29	-4.005D-29
	1.474D-17	-1.097D-17	-4.127D-19	-2.551D-19	-5.111D-19	1.600D-21	1.413D-21	1.814D-21	-1.312D-24	-1.170D-24
	-1.537D-24	3.559D-28	3.087D-28	4.380D-28	-7.651D-16	3.467D-17	-6.840D-18	-1.234D-17	-6.425D-18	1.887D-20
	2.936D-20	1.213D-20	-1.623D-23	-2.308D-23	-1.448D-23	4.362D-27				
97	-8.782D-18	4.800D-18	-1.036D-19	-1.513D-19	-8.921D-20	2.103D-22	2.722D-22	1.668D-22	-1.330D-25	-1.550D-25
	-1.010D-25	2.572D-29	2.733D-29	1.879D-29	9.124D-18	1.307D-17	-1.077D-18	-1.102D-18	-1.182D-18	1.276D-21
	1.420D-21	1.543D-21	-5.551D-25	-6.838D-25	-7.482D-25	7.632D-29	1.076D-28	1.201D-28	-9.496D-18	-2.489D-18
	1.874D-19	1.332D-19	1.201D-19	-1.781D-22	-9.579D-23	-3.950D-23	-1.002D-26	-4.535D-26	-1.061D-25	2.702D-29
	3.004D-29	4.935D-29	-6.889D-18	7.187D-18	2.345D-19	1.972D-19	2.390D-19	-2.767D-22	-2.221D-22	-2.679D-22
	8.679D-26	6.327D-26	8.085D-26	-5.482D-30	-2.664D-30	-5.031D-30	-9.885D-18	7.831D-18	2.373D-19	1.975D-19
	2.412D-19	-5.773D-22	-5.708D-22	-6.480D-22	2.722D-25	2.883D-25	3.354D-25	-3.683D-29	-4.170D-29	-5.062D-29
	-4.228D-17	-1.273D-17	-3.922D-19	-1.234D-18	-4.968D-19	1.580D-21	4.403D-21	1.781D-21	-1.250D-24	-3.114D-24
	-1.452D-24	3.305D-28	6.841D-28	4.030D-28	-2.508D-13	3.950D-17	-8.401D-18	-1.770D-15	-7.908D-18	2.399D-20
	3.493D-18	1.213D-20	-2.106D-23	-2.421D-23	-1.879D-23	5.737D-27	5.369D-25			
98	-5.576D-18	4.555D-18	-8.191D-20	-1.189D-19	-7.210D-20	1.456D-22	1.955D-22	1.156D-22	-9.140D-26	-1.102D-25
	-6.953D-26	1.760D-29	1.925D-29	1.291D-29	8.863D-18	1.041D-17	-7.100D-19	-7.102D-19	-7.876D-19	7.958D-22
	8.511D-22	9.907D-22	-3.209D-25	-3.721D-25	-4.577D-25	4.250D-29	5.471D-29	7.219D-29	-6.251D-18	-1.136D-18
	1.370D-19	9.567D-20	8.873D-20	-1.507D-22	-8.617D-23	-5.601D-23	4.494D-27	-2.473D-26	-5.652D-26	1.802D-29
	2.109D-29	3.066D-29	-4.137D-18	5.849D-18	1.701D-19	1.430D-19	1.734D-19	-2.226D-22	-1.824D-22	-2.152D-22
	7.591D-26	5.835D-26	7.042D-26	-6.177D-30	-4.023D-30	-5.569D-30	-5.735D-18	8.118D-18	1.518D-19	1.194D-19
	1.630D-19	-3.871D-22	-3.753D-22	-4.509D-22	1.820D-25	1.887D-25	2.346D-25	-2.418D-29	-2.673D-29	-3.534D-29
	1.350D-17	-9.633D-18	-3.675D-19	-2.270D-19	-4.576D-19	1.431D-21	1.264D-21	1.628D-21	-1.176D-24	-1.047D-24
	-1.382D-24	3.189D-28	2.764D-28	3.938D-28	-6.567D-16	2.188D-17	-5.904D-18	-1.063D-17	-5.649D-18	1.626D-20
	2.525D-20	1.521D-20	-1.395D-23	-1.982D-23	-1.260D-23	3.743D-27	4.922D-27	3.246D-27		
99	1.127D-05	4.474D-06	-4.703D-09	-4.511D-09	-2.717D-09	-2.294D-11	-2.119D-11	-2.438D-11	1.335D-14	1.124D-14
	1.324D-14	-2.385D-18	-1.834D-18	-2.217D-18	1.285D-05	1.038D-05	3.830D-08	4.253D-08	4.057D-08	-4.782D-11
	-5.817D-11	-5.253D-11	2.128D-14	2.937D-14	2.504D-14	-3.036D-18	-4.912D-18	-4.016D-18	1.079D-05	8.604D-06
	-3.137D-08	-3.036D-08	-2.919D-08	1.235D-11	1.120D-11	3.394D-12	-2.815D-15	-3.216D-15	7.621D-15	3.515D-19
	6.861D-19	-3.485D-18	1.114D-05	7.877D-06	-1.559D-08	-1.339D-08	-1.792D-08	-1.287D-11	-1.526D-11	-9.820D-12
	1.280D-14	1.317D-14	1.084D-14	-2.997D-18	-2.883D-18	-2.537D-18	1.421D-05	1.073D-05	-3.857D-08	-2.839D-08
	-3.548D-08	4.780D-11	1.355D-11	4.451D-11	-2.329D-14	-1.526D-14	-2.182D-14	3.757D-18	2.186D-18	3.513D-18
	1.054D-05	1.045D-05	1.288D-09	7.408D-09	-5.151D-11	-4.951D-11	-5.242D-11	4.362D-14	4.267D-14	4.267D-14
	4.641D-14	-1.236D-17	-1.156D-17	-1.390D-17	1.475D-05	1.014D-05	1.318D-08	3.366D-08	1.034D-08	-4.870D-11
	-8.014D-11	-4.266D-11	3.317D-14	5.125D-14	2.835D-14	-7.513D-18	-1.098D-17	-6.232D-18	2.362D-03	
100	9.226D-06	1.211D-05	-1.371D-08	-1.807D-08	1.396D-08	9.262D-12	1.600D-11	9.796D-12	-4.809D-15	-8.558D-15
	-5.342D-15	9.394D-19	1.602D-18	1.083D-18	-7.670D-06	9.931D-06	1.676D-07	1.678D-07	1.501D-07	-2.306D-10
	-2.409D-10	-1.969D-10	1.296D-13	1.388D-13	1.082D-13	-2.368D-17	-2.566D-17	-1.941D-17	8.951D-06	1.170D-05
	1.558D-09	-2.591D-09	2.400D-10	-1.262D-11	-7.095D-12	-1.248D-11	5.434D-15	7.673D-15	7.232D-15	-1.161D-19
	2.648D-19	-1.136D-18	9.315D-06	1.188D-05	1.209D-08	9.617D-09	1.188D-08	-2.602D-11	-2.278D-11	-2.487D-11
	1.329D-14	1.160D-14	1.220D-14	-2.040D-15	-1.763D-18	-1.801D-18	9.108D-06	1.335D-05	-3.515D-08	-6.008D-08
	-1.814D-08	1.096D-10	1.776D-10	7.380D-11	-6.598D-14	-1.157D-13	-4.305D-14	1.203D-17	2.284D-17	7.571D-18
	1.628D-06	9.305D-06	7.775D-09	-2.593D-09	-2.791D-09	8.497D-11	7.869D-11	1.132D-10	-1.007D-13	-8.637D-14
	-1.294D-13	3.242D-17	2.683D-17	4.247D-17	9.369D-06	9.356D-06	2.052D-09	2.024D-08	-3.221D-09	7.760D-11
	5.789D-11	8.112D-11	-6.847D-14	-6.010D-14	-6.670D-14	1.706D-17	1.568D-17	1.571D-17	-4.671D-04	9.880D-03
101	-1.296D-09	-1.375D-08	2.882D-10	4.067D-10	2.889D-10	-2.576D-13	-5.045D-13	-2.392D-13	5.830D-17	2.080D-16
	4.474D-17	6.401D-21	-2.006D-20	8.595D-21	-1.052D-07	-5.890D-08	1.820D-09	1.443D-09	1.833D-09	-2.020D-12
	-1.711D-12	-2.243D-12	8.626D-16	8.074D-16	1.066D-15	-1.281D-19	-1.338D-19	-1.779D-19	-5.281D-09	1.646D-08
	-8.009D-10	-6.784D-10	-5.842D-10	1.548D-12	1.256D-12	1.172D-12	-9.743D-16	-7.538D-16	-7.658D-16	1.939D-19
	1.392D-19	1.694D-19	-4.880D-09	-1.992D-08	-3.584D-10	-3.047D-10	-4.282D-10	9.762D-13	8.714D-13	1.025D-12
	-6.253D-16	-5.599D-16	-6.138D-16	1.207D-19	1.071D-19	1.121D-19	8.778D-08	-2.170D-08	1.338D-09	2.313D-09
	1.482D-09	-1.095D-13	-1.698D-12	-3.799D-13	-2.656D-16	6.564D-16	-1.547D-16	6.768D-20	-1.111D-19	4.838D-20
	-6.666D-08	-1.756D-10	6.536D-10	4.344D-10	7.271D-10	-2.258D-12	-2.180D-12	-2.383D-12	1.730D-15	1.686D-15
	1.902D-15	-4.608D-19	-4.307D-19	-5.350D-19	2.708D-08	-4.284D-09	4.762D-10	7.385D-10	4.880D-10	-1.390D-12
	-1.587D-12	-1.326D-12	8.308D-16	8.943D-16	7.711D-16	-1.747D-19	-1.832D-19	-1.573D-19	8.128D-06	-1.252D-05
	2.598D-07									
102	-1.197D-09	-1.506D-08	3.171D-10	4.517D-10	3.157D-10	-2.648D-13	-5.388D-13	-2.396D-13	5.177D-17	2.139D-16
	3.290D-17	8.976D-21	-1.900D-20	1.232D-20	-1.198D-07	-6.718D-08	2.558D-09	2.156D-09	2.601D-09	-2.884D-12
	-2.591D-12	-3.195D-12	1.252D-15	1.230D-15	1.521D-15	-1.873D-19	-2.023D-19	-2.520D-19	-5.026D-09	1.865D-08
	-8.687D-10	-7.300D-10	-6.320D-10	1.675D-12	1.353D-12	1.272D-12	-1.031D-15	-7.915D-16	-8.159D-16	1.991D-19
	1.405D-19	1.776D-19	-5.349D-09	-2.116D-09	-4.156D-10	-3.546D-10	-4.890D-10	1.104D-12	9.871D-13	1.151D-12
	-6.917D-16	-6.201D-16	-6.761D-16	1.313D-19	1.166D-19	1.216D-19	1.007D-07	-1.989D-08	1.112D-09	2.204D-09
	1.303D-09	4.957D-13	-1.253D-12	2.163D-13	-6.005D-16	4.059D-16	-4.595D-16	1.239D-19	-7.049D-20	9.924D-20
	-9.031D-08	3.403D-09	8.329D-10	5.216D-10	9.483D-10	-2.929D-12	-2.783D-12	-3.126D-12	2.241D-15	2.160D-15
	2.486D-15	-5.941D-19	-5.509D-19	-6.951D-19	4.486D-08	-2.920D-09	6.284D-10	1.050D-09	6.551D-10	-1.900D-12
	-2.302D-12	-1.825D-12	1.162D-15	1.332D-15	1.081D-15	-2.467D-19	-2.745D-19	-2.218D-19	3.086D-05	-1.747D-05
	3.454D-07	6.539D-07								
103	-1.361D-08	-2.626D-08	2.932D-10	4.016D-10	2.813D-10	-3.063D-13	-5.631D-13	-2.482D-13	9.909D-17	2.570D-16
	5.940D-17	1.318D-22	-2.747D-20	7.307D-21	-1.522D-07	-1.051D-07	3.250D-09	2.741D-09	3.092D-09	-4.437D-12
	-4.096D-12	-4.416D-12	2.209D-15	2.195D-15	2.274D-15	-3.693D-19	-3.878D-19	-3.926D-19	-2.204D-08	1.289D-08
	-1.087D-09	-9.579D-10	-7.969D-10	2.005D-12	1.630D-12	1.490D-12	-1.220D-15	-9.198D-16	-9.295D-16	2.402D-19
	1.630D-19	2.035D-19	-1.608D-08	-3.534D-08	-3.303D-10	-2.824D-10	-4.285D-10	1.108D-12	9.854D-13	1.180D-12
	-7.237D-16	-6.428D-16	-7.165D-16	1.430D-19	1.255D-19	1.335D-19	8.969D-08	-5.895D-08	1.340D-09	2.255D-09
	1.517D-09	7.539D-13	-4.734D-13	3.384D-13	-8.988D-16	-2.960D-16	-6.384D-16	1.892D-19	8.571D-20	1.386D-19
	-1.434D-07	1.442D-10	1.207D-09	7.477D-10	1.260D-09	-2.649D-12	-2.451D-12	-2.671D-12	1.693D-15	1.662D-15
	1.768D-15	-4.020D-19	-3.879D-19	-4.447D-19	7.192D-08	-4.358D-09	9.702D-10	1.510D-09	9.678D-10	-1.613D-12
	-2.063D-12	-1.515D-12	8.029D-16	9.624D-16	7.321D-16	-1.537D-19	-1.764D-19	-1.367D-19	3.072D-06	7.147D-05
	1.516D-07	1.853D-07	7.708D-07							

TABLE XII
CONTINUED

104	1.412D-12	3.233D-11	-4.091D-13	-6.166D-13	-4.139D-13	2.469D-16	6.697D-16	2.759D-16	-1.226D-20	-2.745D-19
	-5.149D-20	-2.028D-23	2.946D-23	-7.769D-24	6.428D-12	1.095D-11	5.176D-12	5.710D-12	5.455D-12	-5.595D-15
	-6.519D-15	-6.150D-15	2.578D-18	3.067D-18	2.938D-18	-4.078D-22	-4.900D-22	-4.863D-22	-6.163D-13	-7.913D-12
	8.615D-13	6.577D-13	6.555D-13	-1.925D-15	-1.489D-15	-1.710D-15	1.236D-18	9.164D-19	1.272D-18	-2.495D-22
	-1.695D-22	-3.231D-22	9.353D-12	3.302D-11	6.159D-13	5.386D-13	6.835D-13	-1.631D-15	-1.485D-15	-1.658D-15
	1.027D-18	9.349D-19	9.886D-19	-2.005D-22	-1.802D-22	-1.835D-22	-1.366D-10	7.974D-11	-2.146D-12	-3.756D-12
	-1.852D-12	3.623D-15	6.850D-15	3.406D-15	-1.582D-18	-3.659D-18	-1.537D-18	2.196D-22	6.427D-22	2.189D-22
	-4.540D-11	3.883D-11	-6.854D-13	-1.208D-12	-3.669D-13	-6.314D-16	8.804D-17	-1.014D-15	3.053D-19	-6.521D-20
	4.836D-19	-1.233D-23	4.756D-23	-3.981D-23	9.351D-11	2.140D-11	-6.908D-13	1.643D-13	-4.945D-13	-1.041D-15
	-2.368D-15	-1.153D-15	8.353D-19	1.561D-18	8.040D-19	-1.955D-22	-3.277D-22	-1.722D-22	-3.531D-08	4.251D-08
	-8.215D-10	-1.187D-09	-4.363D-10	2.773D-12						
105	1.138D-12	3.673D-11	-4.551D-13	-6.956D-13	-4.522D-13	2.468D-16	7.258D-16	2.595D-16	3.714D-21	-2.867D-19
	-2.626D-20	-2.561D-23	2.824D-23	-1.459D-23	2.640D-11	2.339D-11	4.542D-12	5.148D-12	4.798D-12	-4.772D-15
	-5.748D-15	-5.244D-15	2.195D-18	2.683D-18	2.491D-18	-3.487D-22	-4.264D-22	-4.125D-22	-1.730D-12	-1.114D-11
	9.723D-13	7.359D-13	7.295D-13	-2.141D-15	-1.646D-15	-1.886D-15	1.328D-18	9.709D-19	1.368D-18	-2.571D-22
	-1.691D-22	-3.429D-22	1.043D-11	3.642D-11	7.380D-13	6.475D-13	8.100D-13	-1.899D-15	-1.730D-15	-1.918D-15
	1.170D-18	1.065D-18	1.122D-18	-2.247D-22	-2.020D-22	-2.052D-22	-1.602D-10	8.512D-11	-2.846D-12	-3.688D-12
	-1.565D-12	2.777D-15	6.429D-15	2.631D-15	-1.087D-18	-3.415D-18	-1.088D-18	1.321D-22	6.047D-22	1.412D-22
	-1.587D-11	3.610D-11	-9.960D-13	-1.433D-12	-7.125D-13	2.598D-16	9.411D-16	-5.299D-17	-3.810D-19	-7.274D-19
	-2.877D-19	1.711D-22	2.174D-22	1.782D-22	7.615D-11	2.054D-11	-9.721D-13	-2.760D-13	-7.816D-13	-3.940D-16
	-1.529D-15	-5.300D-16	4.342D-19	1.062D-18	4.311D-19	-1.101D-22	-2.244D-22	-9.570D-23	-1.082D-07	5.962D-08
	-1.120D-09	-2.260D-09	-5.569D-10	4.027D-12	7.634D-12					
106	3.935D-11	7.885D-11	-4.580D-13	-6.673D-13	-4.022D-13	4.364D-16	9.556D-16	3.236D-16	-1.711D-19	-5.024D-19
	-1.323D-19	5.001D-24	6.741D-23	5.266D-24	1.290D-10	1.334D-10	3.676D-12	4.737D-12	4.579D-12	-1.357D-15
	-2.720D-15	-2.931D-15	-1.570D-19	4.417D-19	8.300D-19	1.251D-22	3.351D-23	-8.297D-23	4.758D-11	2.906D-12
	1.710D-12	1.452D-12	1.263D-12	-3.339D-15	-2.589D-15	-2.719D-15	1.978D-18	1.374D-18	1.834D-18	-2.836D-22
	-2.256D-22	-4.540D-22	4.554D-11	8.370D-11	6.637D-13	5.925D-13	8.099D-13	-2.324D-15	-2.097D-15	-3.404D-15
	1.501D-18	1.343D-18	1.461D-18	-3.028D-22	-2.667D-22	-2.796D-22	-1.500D-10	2.466D-10	-2.853D-12	4.434D-12
	-2.278D-12	2.667D-15	5.187D-15	2.594D-15	-5.023D-19	-1.863D-18	-7.125D-19	-1.698D-23	2.262D-22	4.732D-23
	1.373D-10	5.159D-11	-2.358D-12	-2.486D-12	-1.858D-12	-5.234D-16	1.891D-16	-1.325D-15	1.139D-18	5.555D-19
	1.662D-18	-3.539D-22	-2.103D-22	-4.888D-22	1.150D-11	2.628D-11	-2.287D-12	-1.830D-12	-1.995D-12	-1.095D-15
	-2.230D-15	-1.296D-15	1.344D-18	2.065D-18	1.308D-18	-3.424D-22	-4.816D-22	-3.060D-22	-1.822D-08	-1.935D-07
	-4.923D-10	-6.824D-10	-2.182D-09	1.575D-12	2.233D-12	6.393D-12				
107	-1.371D-15	-1.669D-14	1.993D-16	3.204D-16	1.944D-16	-7.946D-20	-3.260D-19	-9.548D-20	-1.912D-23	1.355D-22
	9.785D-24	1.475D-26	-1.516D-26	5.232D-27	3.044D-14	1.577D-14	-4.557D-15	-4.774D-15	-4.742D-15	5.237D-18
	5.698D-18	5.666D-18	-2.511D-21	-2.766D-21	-2.806D-21	4.152D-25	4.573D-25	4.803D-25	2.075D-15	6.101D-15
	-3.730D-16	-2.564D-16	-2.826D-16	9.278D-19	6.887D-19	8.849D-19	-5.963D-22	-4.226D-22	-6.976D-22	1.181D-25
	7.478D-26	1.863D-25	-6.552D-15	-1.373D-14	-3.708D-16	-3.310D-16	-3.952D-16	9.663D-19	8.888D-19	9.634D-19
	-6.056D-22	-5.548D-22	-5.757D-22	1.184D-25	1.069D-25	1.075D-25	9.136D-14	-5.632D-14	1.251D-15	2.335D-15
	9.384D-16	-2.699D-18	-5.014D-18	-2.403D-18	1.286D-21	2.840D-21	1.187D-21	-1.899D-25	-5.161D-25	-1.787D-25
	4.588D-14	-2.836D-14	2.863D-16	7.067D-16	5.500D-17	1.083D-18	5.817D-19	1.328D-18	-6.294D-22	-3.808D-22
	-7.382D-22	1.046D-25	6.196D-26	1.218D-25	-8.351D-14	-1.544D-14	2.771D-16	-4.403D-16	1.417D-16	1.262D-18
	2.325D-18	1.300D-18	-8.769D-22	-1.452D-21	-8.224D-22	1.947D-25	2.994D-25	1.702D-25	5.431D-11	-5.532D-11
	1.049D-12	1.606D-12	5.344D-13	-3.675D-15	-5.576D-15	-2.052D-15	4.996D-15			
108	-1.349D-15	-2.055D-14	2.256D-16	3.738D-16	2.112D-16	-6.440D-20	-3.574D-19	-6.428D-20	-3.639D-23	1.424D-22
	-1.466D-23	1.941D-26	-1.431D-26	1.066D-26	2.126D-14	9.873D-15	-4.521D-15	-4.791D-15	-4.703D-15	5.120D-18
	5.641D-18	5.529D-18	-2.459D-21	-2.730D-21	-2.736D-21	4.092D-25	4.514D-25	4.702D-25	3.307D-15	8.774D-15
	-4.356D-16	-2.926D-16	-3.195D-16	1.060D-18	7.739D-19	9.992D-19	-6.426D-22	-4.395D-22	-7.645D-22	1.181D-25
	6.846D-26	2.022D-25	-7.783D-15	-1.590D-14	-4.758D-16	-4.265D-16	-5.003D-16	1.193D-18	1.099D-18	1.181D-18
	-7.272D-22	-6.665D-22	-6.878D-22	1.395D-25	1.260D-25	1.263D-25	1.116D-13	-6.611D-14	1.027D-15	2.345D-15
	6.997D-16	-2.193D-18	-4.944D-18	-1.910D-18	9.796D-22	2.810D-21	9.023D-22	-1.333D-25	-5.160D-25	-1.282D-25
	2.933D-14	-2.834D-14	5.140D-16	9.120D-16	2.898D-16	5.987D-19	8.489D-20	8.110D-19	-2.411D-22	9.861D-24
	-2.985D-22	-4.462D-27	-4.140D-26	-9.835D-27	-7.932D-14	-1.572D-14	4.869D-16	-1.808D-16	3.462D-16	9.420D-19
	1.957D-18	9.957D-19	-6.849D-22	-1.237D-21	-6.435D-22	1.543D-25	2.547D-25	1.337D-25	1.490D-10	-7.932D-11
	1.471D-12	2.973D-12	7.095D-13	-5.423D-15	-1.043D-14	-2.976D-15	7.625D-18	1.437D-17		
109	-4.166D-14	-7.005D-14	2.692D-16	4.198D-16	1.792D-16	-2.948D-19	-6.983D-19	-1.406D-19	1.655D-22	4.287D-22
	1.116D-22	-1.507D-26	-6.556D-26	-1.374D-26	-8.814D-14	-9.672D-14	-4.923D-15	-5.795D-15	-5.843D-15	2.888D-18
	4.069D-18	4.608D-18	-5.291D-22	-1.073D-21	-1.648D-21	-1.874D-26	6.899D-26	2.222D-25	-4.574D-24	-2.407D-15
	-1.219D-15	-1.015D-15	-8.626D-16	2.388D-18	1.768D-18	1.942D-18	-1.338D-21	-8.354D-22	-1.317D-21	2.440D-25
	1.123D-25	3.403D-25	-4.648D-14	-6.665D-14	-5.393D-16	-4.971D-16	-6.360D-16	1.947D-18	1.765D-18	1.981D-18
	-1.252D-21	-1.117D-21	-1.207D-21	2.545D-25	2.231D-25	2.338D-25	1.120D-13	-2.734D-13	2.459D-15	3.613D-15
	1.538D-15	-2.814D-18	-4.601D-18	-2.297D-18	7.247D-22	1.649D-21	7.331D-22	-3.174D-26	-1.892D-25	-6.506D-26
	-1.162D-13	-5.209D-14	2.023D-15	2.280D-15	1.519D-15	1.785D-18	1.006D-18	2.525D-18	-2.047D-21	-1.430D-21
	-2.531D-21	5.879D-25	4.276D-25	7.189D-25	-4.052D-14	-2.430D-14	1.985D-15	1.389D-15	1.717D-15	1.874D-18
	3.107D-18	1.980D-18	-1.706D-21	-2.456D-21	-1.612D-21	4.032D-25	5.463D-25	3.556D-25	3.109D-11	2.073D-10
	6.341D-13	9.546D-13	2.459D-12	-2.148D-15	-3.243D-15	-7.404D-15	2.902D-18	4.421D-18	8.794D-18	
110	9.753D-19	4.337D-18	-4.415D-20	-7.146D-20	-4.144D-20	1.761D-23	7.386D-23	1.809D-23	2.422D-27	-3.249D-26
	-2.403D-27	-2.732D-30	3.928D-30	-8.651D-31	-7.701D-18	-3.080D-18	1.004D-18	1.036D-18	1.043D-18	-1.170D-21
	-1.234D-21	-1.260D-21	5.802D-25	6.084D-25	6.409D-25	-1.000D-28	-1.030D-28	-1.132D-28	1.804D-19	-1.248D-18
	8.700D-20	5.988D-20	6.510D-20	-2.130D-22	-1.554D-22	-2.026D-22	1.301D-25	8.824D-26	1.555D-25	-2.427D-29
	-1.390D-29	-4.118D-29	2.128D-18	3.472D-18	8.565D-20	7.684D-20	9.098D-20	-2.293D-22	-2.107D-22	-2.275D-22
	1.417D-25	1.294D-25	1.342D-25	-2.741D-29	-2.466D-29	-2.484D-29	-2.370D-17	1.560D-17	-2.428D-19	-5.156D-19
	-1.598D-19	5.464D-22	1.126D-21	4.654D-22	-2.600D-25	-6.532D-25	-2.319D-25	3.819D-29	1.220D-28	3.490D-29
	-4.914D-18	5.662D-18	-1.017D-19	-1.694D-19	-5.880D-20	-1.649D-22	-8.253D-23	-1.987D-22	7.801D-26	3.868D-26
	8.162D-26	-5.821D-30	-1.343D-31	-2.502D-30	1.449D-17	3.210D-18	-8.808D-20	4.674D-20	-6.129D-20	-2.349D-22
	-4.446D-22	-2.401D-22	1.607D-25	2.771D-25	1.487D-25	-3.496D-29	-5.644D-29	-3.005D-29	-2.700D-14	2.440D-14
	-4.608D-16	-7.371D-16	-2.304D-16	1.654D-18	2.591D-18	9.195D-19	-2.287D-21	-3.578D-21	-1.331D-21	1.059D-24
111	1.058D-18	5.737D-18	-5.023D-20	-8.657D-20	-4.317D-20	9.220D-24	8.092D-23	2.728D-24	8.704D-27	-3.425D-26
	6.845D-27	-4.209D-30	3.726D-30	-2.641D-30	-5.642D-18	-1.658D-18	1.053D-18	1.100D-18	1.093D-18	-1.202D-21
	-1.283D-21	-1.290D-21	5.973D-25	6.294D-25	6.562D-25	-1.041D-28	-1.067D-28	-1.168D-28	-2.686D-19	-2.184D-18
	1.016D-19	6.554D-20	7.167D-20	-2.458D-22	-1.726D-22	-2.319D-22	1.363D-25	8.486D-26	1.719D-25	-2.189D-29
	-9.517D-30	-4.536D-29	2.660D-18	4.068D-18	1.228D-19	1.110D-19	1.272D-19	-3.082D-22	-2.840D-22	-3.019D-22
	1.835D-25	1.678D-25	1.723D-25	-3.465D-29	-3.119D-29	-3.123D-29	-3.069D-17	2.026D-		

TABLE XII
CONTINUED

112	1.490D-17	2.379D-17	-7.331D-20	-1.179D-19	-3.515D-20	9.720D-23	2.213D-22	3.230D-23	-6.710D-26	-1.480D-25
	-4.229D-26	8.760D-30	2.419D-29	7.202D-30	3.126D-17	3.165D-17	1.564D-18	1.845D-18	1.869D-18	-8.439D-22
	-1.213D-21	-1.418D-21	1.054D-25	2.719D-25	4.815D-25	1.961D-29	-6.966D-30	-6.193D-29	1.581D-17	8.219D-19
	3.635D-19	2.990D-19	2.468D-19	-7.019D-22	-5.008D-22	-5.580D-22	3.688D-25	2.063D-25	3.682D-25	-6.160D-29
	-1.944D-29	-9.593D-29	1.630D-17	2.146D-17	1.757D-19	1.635D-19	2.028D-19	-6.324D-22	-5.719D-22	-6.374D-22
	4.010D-25	3.560D-25	3.848D-25	-8.114D-29	-7.068D-29	-7.436D-29	-3.256D-17	1.011D-16	-7.632D-19	-1.085D-18
	-3.886D-19	8.355D-22	1.284D-21	5.765D-22	-1.973D-25	-4.017D-25	-1.602D-25	4.892D-30	3.494D-29	9.900D-30
	4.416D-17	1.585D-17	-6.998D-19	-7.674D-19	-5.501D-19	-5.514D-22	-3.109D-22	-7.547D-22	6.503D-25	4.544D-25
	7.728D-25	-1.892D-28	-1.377D-28	-2.209D-28	9.029D-18	6.856D-18	-6.897D-19	-5.359D-19	-6.131D-19	-5.280D-22
	-8.682D-22	-5.488D-22	4.764D-25	6.861D-25	4.437D-25	-1.100D-28	-1.501D-28	-9.568D-29	-1.616D-14	-7.377D-14
	-2.794D-16	-4.451D-16	-9.329D-16	9.801D-19	1.543D-18	2.880D-18	-1.354D-21	-2.130D-21	-3.506D-21	6.304D-25
	1.003D-24	1.433D-24								
113	1.311D-05	1.003D-05	5.369D-09	1.233D-08	4.487D-09	-2.494D-11	-3.086D-11	-2.204D-11	1.390D-14	1.571D-14
	1.176D-14	-2.470D-18	-2.618D-18	-2.006D-18	1.127D-05	1.063D-05	-1.021D-09	-1.888D-09	1.703D-09	7.669D-12
	1.067D-11	3.923D-12	-2.923D-15	-5.044D-15	-9.066D-16	1.082D-19	5.040D-19	-2.953D-19	1.338D-05	1.017D-05
	-1.225D-08	-5.886D-09	-7.135D-09	-1.748D-11	-1.940D-11	-2.985D-11	1.970D-14	1.653D-14	3.111D-14	-5.594D-18
	-3.984D-18	-9.291D-18	1.273D-05	9.243D-06	-4.397D-08	-3.774D-08	-4.290D-08	1.933D-11	1.364D-11	1.785D-11
	-1.229D-15	5.765D-16	-9.603D-16	-8.841D-19	-1.001D-18	-7.945D-19	1.127D-05	1.036D-05	-3.394D-09	-3.449D-09
	-4.450D-09	3.870D-12	3.676D-12	6.428D-12	-2.675D-16	-3.280D-16	-1.781D-15	-1.277D-19	-6.368D-20	1.423D-19
	1.310D-05	1.005D-05	-2.737D-08	-2.218D-08	-3.155D-08	-4.132D-11	-4.883D-11	-4.004D-11	5.000D-14	5.127D-14
	5.406D-14	-1.494D-17	-1.409D-17	-1.728D-17	1.124D-05	9.828D-06	-1.972D-08	-1.175D-08	-2.544D-08	-3.876D-11
	-5.762D-11	-3.077D-11	3.543D-14	4.794D-14	3.029D-14	-8.564D-18	-1.110D-17	-7.268D-18	1.313D-05	9.111D-06
	-3.512D-09	-3.310D-09	-1.628D-08	4.206D-12	3.848D-12	4.337D-11	-3.019D-15	-2.963D-15	-4.447D-14	1.285D-18
	1.341D-18	1.552D-17	1.089D-04							
114	1.025D-05	1.278D-05	5.569D-11	3.807D-09	-4.532D-09	1.503D-11	1.064D-11	2.082D-11	-9.574D-15	-7.341D-15
	-1.193D-14	1.806D-18	1.401D-18	2.083D-18	8.515D-06	1.285D-05	6.009D-09	7.771D-09	7.374D-09	2.401D-11
	2.551D-11	2.635D-11	-9.736D-15	-1.156D-14	-1.268D-14	1.055D-18	1.450D-18	1.853D-18	1.108D-05	1.397D-05
	3.442D-08	3.691D-08	3.482D-08	-4.755D-11	-4.546D-11	-4.330D-11	3.257D-14	2.884D-14	2.498D-14	-7.964D-18
	-6.705D-18	-4.810D-18	1.006D-05	1.407D-05	-1.593D-08	-1.480D-08	-1.354D-08	2.487D-11	2.455D-11	2.189D-11
	-1.251D-14	-1.230D-14	-1.101D-14	2.221D-18	2.126D-18	1.930D-18	8.539D-06	1.289D-05	-2.689D-09	-3.001D-09
	-3.998D-09	7.046D-12	7.266D-12	9.783D-12	1.074D-15	1.027D-15	-1.032D-16	-5.216D-19	-4.759D-19	-3.646D-19
	6.593D-06	9.180D-06	-9.250D-09	1.587D-09	-1.338D-08	2.416D-11	8.211D-12	2.811D-12	-1.253D-14	-3.992D-15
	-1.456D-14	3.208D-18	1.520D-18	3.741D-18	4.362D-06	9.337D-06	-9.275D-09	-1.199D-08	-1.144D-08	1.853D-11
	1.594D-11	1.869D-11	-7.739D-15	-4.362D-15	-6.869D-15	1.576D-18	7.269D-19	1.268D-18	8.596D-06	1.174D-05
	-3.546D-09	-3.019D-09	-1.494D-08	1.145D-11	1.116D-11	4.661D-11	-2.423D-15	-1.674D-15	-3.658D-14	8.190D-19
	4.427D-19	1.171D-17	1.070D-05	3.670D-05						
115	-3.629D-08	-3.269D-09	7.822D-11	-1.768D-11	3.819D-11	2.760D-13	3.952D-13	2.925D-13	-1.831D-16	-2.351D-16
	-1.758D-16	3.356D-20	4.073D-20	3.013D-20	-1.819D-08	3.136D-09	-2.342D-10	-1.825D-10	-2.547D-10	3.950D-13
	3.431D-13	4.635D-13	-2.006D-16	-1.852D-16	-2.548D-16	3.415D-20	3.344D-20	4.684D-20	-2.918D-08	1.608D-09
	8.721D-10	7.834D-10	7.804D-10	-8.270D-13	-6.908D-13	-6.058D-13	3.699D-16	2.985D-16	1.808D-16	-5.844D-20
	-4.650D-20	-4.491D-21	-2.660D-08	2.792D-08	6.045D-10	5.502D-10	6.794D-10	-3.284D-13	-2.708D-13	-3.934D-13
	3.619D-17	2.298D-17	6.118D-17	1.458D-20	1.291D-20	9.567D-21	-3.049D-08	1.812D-09	8.520D-12	-3.367D-11
	-2.256D-12	-9.212D-14	-3.850D-14	-8.363D-14	6.285D-17	4.081D-17	6.404D-17	-1.097D-20	-7.894D-21	-1.190D-20
	-2.831D-08	-6.678D-09	-2.678D-10	-2.204D-10	-2.457D-10	1.419D-12	1.397D-12	1.467D-12	-1.196D-15	-1.146D-15
	-1.316D-15	3.270D-19	2.980D-19	3.820D-19	-6.131D-08	-3.932D-09	-3.403D-10	-5.564D-10	-2.791D-10	1.178D-12
	1.532D-12	1.069D-12	-8.042D-16	-1.019D-15	-7.212D-16	1.806D-19	2.228D-19	-1.578D-19	-2.903D-08	3.482D-09
	-2.773D-10	-3.168D-10	-3.162D-10	3.190D-13	3.901D-13	4.567D-13	-1.461D-16	-1.957D-16	-3.001D-16	3.385D-20
	4.930D-20	9.036D-20	-6.363D-08	-2.008D-07	1.367D-08					
116	-2.659D-08	-4.512D-09	1.228D-10	7.303D-11	6.581D-11	2.256D-13	2.833D-13	2.691D-13	-1.573D-16	-1.802D-16
	-1.641D-16	2.890D-20	3.161D-20	2.784D-20	-1.845D-08	3.329D-09	-2.323D-10	-1.991D-10	-2.465D-10	3.745D-13
	3.556D-13	4.322D-13	-1.832D-16	-1.857D-16	-2.329D-16	2.987D-20	3.218D-20	4.223D-20	-1.584D-08	6.534D-09
	8.878D-10	8.403D-10	8.205D-10	-8.887D-13	-7.885D-13	-6.962D-13	4.631D-16	3.962D-16	2.753D-16	-9.207D-20
	-7.710D-20	-3.294D-20	-1.920D-08	2.944D-08	3.870D-10	3.960D-10	4.813D-10	-6.545D-14	-3.862D-14	-1.628D-13
	-7.497D-17	-7.462D-17	-3.315D-17	2.983D-20	2.617D-20	2.210D-20	-2.854D-08	7.568D-10	-2.804D-11	-5.518D-11
	-4.870D-11	-6.704D-14	-3.652D-14	-4.100D-14	5.952D-17	4.764D-17	5.027D-17	-1.154D-20	-9.785D-21	-1.055D-20
	-2.658D-08	-6.464D-09	-2.011D-10	-1.489D-10	-1.845D-10	9.959D-13	9.600D-13	1.014D-12	-8.082D-16	-7.674D-16
	-8.708D-16	2.192D-19	1.989D-19	2.500D-19	-5.503D-08	-3.840D-09	-2.481D-10	-4.093D-10	-2.028D-10	8.163D-13
	1.068D-12	7.338D-13	-5.351D-16	-6.851D-16	-4.737D-16	1.186D-19	1.479D-19	1.021D-19	-2.695D-08	-1.310D-09
	-2.167D-10	-2.419D-10	-2.771D-10	1.850D-13	2.265D-13	3.517D-13	-6.258D-17	-8.687D-17	-2.151D-16	1.422D-20
	2.059D-20	6.114D-20	7.188D-07	-2.028D-07	1.395D-08	2.116D-08				
117	-3.258D-08	-5.458D-09	1.144D-10	4.172D-11	5.423D-11	2.402D-13	3.245D-13	2.901D-13	-1.677D-16	-2.014D-16
	-1.780D-16	3.161D-20	3.568D-20	3.103D-20	-2.132D-08	1.134D-09	-2.237D-10	-1.915D-10	-2.434D-10	3.541D-13
	3.295D-13	4.158D-13	-1.722D-16	-1.697D-16	-2.218D-16	2.832D-20	2.959D-20	4.019D-20	-2.346D-08	6.874D-09
	8.802D-10	8.154D-10	8.238D-10	-8.481D-13	-7.409D-13	-6.826D-13	4.090D-16	3.497D-16	2.448D-16	-7.358D-20
	-6.296D-20	-2.084D-20	-2.360D-08	2.816D-08	4.895D-10	4.499D-10	5.624D-10	-1.503D-13	-1.136D-13	-2.158D-13
	-5.875D-17	-6.010D-17	-3.072D-17	3.192D-20	2.780D-20	2.571D-20	-3.006D-08	-1.688D-10	1.628D-11	-1.159D-11
	1.342D-12	-8.288D-14	-5.084D-14	-6.932D-14	5.587D-17	4.382D-17	5.408D-17	-9.874D-21	-8.267D-21	-1.023D-20
	-3.014D-08	-6.588D-09	-1.990D-10	-1.519D-10	-1.798D-10	1.166D-12	1.134D-12	1.203D-12	-9.782D-16	-9.303D-16
	-1.074D-15	2.674D-19	2.425D-19	3.117D-19	-5.850D-08	-3.957D-09	-2.668D-10	-4.539D-10	-2.138D-10	9.781D-13
	1.283D-12	8.849D-13	-6.641D-16	-8.483D-16	-5.939D-16	1.490D-19	1.851D-19	1.296D-19	-2.909D-08	1.709D-09
	-1.789D-10	-2.064D-10	-1.957D-10	1.739D-13	2.183D-13	2.107D-13	-6.292D-17	-8.946D-17	-8.257D-17	1.383D-20
	2.104D-20	1.657D-20	-5.538D-08	-5.521D-08	1.219D-08	1.247D-08	1.188D-08			
118	2.253D-11	-2.838D-12	1.057D-13	2.790D-13	1.455D-13	-1.722D-16	-4.484D-16	-2.017D-16	8.719D-20	2.318D-19
	9.316D-20	-1.309D-23	-3.711D-23	-1.307D-23	-1.185D-11	-1.820D-11	4.009D-13	2.737D-13	4.076D-13	-7.525D-16
	-6.004D-16	-8.118D-16	3.772D-19	3.158D-19	4.254D-19	-6.230D-23	-5.418D-23	-7.252D-23	2.053D-11	6.678D-12
	-9.047D-13	-7.501D-13	-7.946D-13	1.354D-15	1.084D-15	1.188D-15	-6.794D-19	-5.136D-19	-6.146D-19	1.063D-22
	7.191D-23	1.100D-22	1.022D-11	-2.305D-11	-7.182D-13	-6.540D-13	-7.979D-13	9.715D-16	8.872D-16	1.013D-15
	-4.074D-19	-3.767D-19	-4.029D-19	4.894D-23	4.706D-23	4.650D-23	1.441D-11	-1.481D-11	-6.547D-14	4.801D-14
	-4.558D-14	1.310D-16	-2.198D-17	1.094D-16	-8.939D-20	-2.116D-20	-8.658D-20	1.561D-23	5.303D-24	1.620D-23
	-1.099D-11	6.167D-13	8.315D-13	7.156D-13	8.378D-13	-2.335D-15	-2.234D-15	-2.472D-15	1.879D-18	1.765D-18
	2.115D-18	-5.019D-22	-4.512D-22	-6.008D-22	6.037D-11	9.444D-14	8.601D-13	1.139D-12	8.153D-13	-1.857D-15
	-2.260D-15	-1.753D-15	1.228D-18	1.462D-18	1.139D-18	-2.723D-22	-3.176D-22	-2.450D-22	1.140D-11	-1.639D-11
	6.731D-13	7.700D-13	7.921D-13	-9.884D-16	-1.169D-15	-1.461D-15	5.335D-19	6.712D-19	1.117D-18	-1.281D-22
	-1.733D-22	-3.526D-22	1.215D-10	3.573D-10	-2.300D-11					

TABLE XII
CONTINUED

119	7.429D-12	1.837D-12	8.104D-14	1.602D-13	1.741D-13	-1.856D-16	-3.305D-16	-2.920D-16	8.844D-20	1.694D-19
	1.311D-19	-1.165D-23	-2.569D-23	-1.729D-23	-9.342D-12	-1.769D-11	4.539D-13	3.595D-13	4.528D-13	-7.647D-16
	-6.767D-16	-8.124D-16	3.614D-19	3.353D-19	4.093D-19	-5.664D-23	-5.445D-23	-6.860D-23	-4.402D-12	-4.107D-12
	-1.068D-12	-9.939D-13	-9.924D-13	1.646D-15	1.441D-15	1.484D-15	-9.909D-19	-8.285D-19	-8.653D-19	2.069D-22
	1.646D-22	1.770D-22	7.878D-13	-3.010D-11	-2.650D-13	-2.425D-13	-4.110D-13	3.695D-16	3.359D-16	5.137D-16
	-1.450D-19	-1.373D-19	-1.913D-19	1.163D-23	1.324D-23	1.719D-23	1.437D-11	-1.081D-11	3.062D-14	1.152D-13
	8.197D-14	7.813D-17	-2.788D-17	7.188D-18	-8.981D-20	-4.262D-20	-5.924D-20	1.879D-23	1.116D-23	1.436D-23
	-4.967D-12	1.752D-12	5.908D-13	4.666D-13	5.993D-13	-1.432D-15	-1.303D-15	-1.485D-15	1.089D-18	9.915D-19
	1.187D-18	-2.857D-22	-2.520D-22	-3.295D-22	5.133D-11	5.850D-13	5.732D-13	7.378D-13	5.500D-13	-1.084D-15
	-1.277D-15	-1.015D-15	6.719D-19	7.723D-19	6.153D-19	-1.456D-22	-1.640D-22	-1.293D-22	1.049D-11	-7.174D-12
	5.822D-13	6.492D-13	7.247D-13	-7.173D-16	-8.326D-16	-1.161D-15	3.473D-19	4.239D-19	8.101D-19	-8.156D-23
	-1.036D-22	-2.392D-22	-1.885D-09	3.755D-10	-2.457D-11	-4.331D-11	-2.178D-11	4.438D-14	9.886D-14	
120	1.672D-11	1.634D-12	5.567D-14	1.912D-13	1.347D-13	-1.059D-16	-3.243D-16	-2.019D-16	5.261D-20	1.668D-19
	9.415D-20	-7.822D-24	-2.671D-23	-1.372D-23	-6.216D-12	-1.403D-11	3.773D-13	2.841D-13	3.818D-13	-6.704D-16
	-5.628D-16	-7.128D-16	3.225D-19	2.807D-19	3.585D-19	-5.157D-23	-4.620D-23	-5.941D-23	1.143D-11	-2.546D-12
	-9.141D-13	-7.993D-13	-8.715D-13	1.397D-15	1.177D-15	1.344D-15	-7.558D-19	-6.121D-19	-7.488D-19	1.351D-22
	1.032D-22	1.449D-22	5.741D-12	-2.332D-11	-5.210D-13	-4.805D-13	-6.017D-13	6.702D-16	6.218D-16	7.180D-22
	-2.478D-19	-2.377D-19	-2.503D-19	1.979D-23	2.217D-23	1.958D-23	1.336D-11	-1.076D-11	-8.971D-14	-1.144D-15
	-6.152D-14	1.146D-16	-1.225D-18	8.316D-17	-7.495D-20	-2.376D-20	-6.620D-20	1.329D-23	5.465D-24	1.269D-23
	-6.671D-12	9.914D-14	6.786D-13	5.683D-13	6.862D-13	-1.850D-15	-1.738D-15	-1.962D-15	1.473D-18	1.365D-18
	1.661D-18	-3.913D-22	-3.485D-22	-4.695D-22	5.330D-11	-1.592D-13	6.976D-13	9.175D-13	6.654D-13	-1.470D-15
	-1.777D-15	-1.393D-15	9.636D-19	1.138D-18	8.967D-19	-2.129D-22	-2.461D-22	-1.920D-22	1.133D-11	-1.395D-11
	4.901D-13	5.659D-13	5.564D-13	-7.355D-16	-8.691D-16	-9.855D-16	3.903D-19	4.869D-19	6.875D-19	-9.303D-23
	-1.234D-22	-2.051D-22	1.023D-10	9.449D-11	-1.993D-11	-1.982D-11	-1.956D-11	3.766D-14	3.842D-14	3.665D-14
121	-9.846D-15	3.602D-15	-5.964D-17	-1.670D-16	-7.273D-17	4.329D-20	2.220D-19	5.264D-20	-1.451D-23	-1.111D-22
	-1.696D-23	9.845D-28	1.751D-26	1.254D-27	1.073D-14	1.124D-14	-2.091D-16	-1.297D-16	-2.080D-16	4.023D-19
	3.017D-19	4.237D-19	-2.038D-22	-1.606D-22	-2.212D-22	3.405D-26	2.786D-26	3.729D-26	-1.068D-14	-4.958D-15
	4.374D-16	3.436D-16	3.797D-16	-7.300D-19	-5.673D-19	-6.647D-19	3.648D-22	2.648D-22	3.681D-22	-5.296D-26
	-3.217D-26	-7.066D-26	-2.549D-15	1.092D-14	4.375D-16	4.029D-16	4.704D-16	-6.740D-19	-6.254D-19	-6.776D-19
	3.099D-22	2.899D-22	2.953D-22	-4.266D-26	-4.072D-26	-3.882D-26	-5.040D-15	9.406D-15	3.447D-17	-3.655D-17
	2.611D-17	-5.141D-20	4.599D-20	-4.271D-20	3.564D-23	-8.530D-24	3.535D-23	-6.094D-27	6.369D-28	-6.577D-27
	1.112D-14	2.011D-15	-4.999D-16	-4.413D-16	-5.046D-16	1.314D-18	1.267D-18	1.400D-18	1.028D-21	-6.928D-22
	-1.195D-21	2.794D-25	2.521D-25	3.386D-25	-2.850D-14	1.417D-15	-5.082D-16	-6.572D-16	4.881D-16	1.038D-18
	1.253D-18	9.900D-19	-6.845D-22	-8.102D-22	-6.421D-22	1.515D-25	1.758D-25	1.377D-25	-3.117D-15	1.084D-14
	-4.200D-16	-4.780D-16	-4.894D-16	6.482D-19	7.581D-19	9.450D-19	-3.618D-22	-4.475D-22	-7.440D-22	8.686D-26
	1.154D-25	2.372D-25	-1.036D-13	-2.450D-13	1.538D-14	1.493D-14	1.347D-14	-3.117D-17	-3.064D-17	-2.679D-17
122	2.153D-15	-9.819D-16	-9.500D-17	-1.181D-16	-1.697D-16	1.543D-19	2.159D-19	2.478D-19	-6.367D-23	-1.037D-22
	-1.041D-22	7.165D-27	1.479D-26	1.292D-26	8.372D-15	1.185D-14	-3.151D-16	-2.565D-16	-3.090D-16	4.868D-19
	4.380D-19	5.067D-19	-2.193D-22	-2.067D-22	-2.448D-22	3.329D-26	3.247D-26	4.031D-26	1.225D-14	5.699D-15
	7.060D-16	6.806D-16	6.623D-16	-1.174D-18	-1.054D-18	-1.062D-18	7.712D-22	6.597D-22	6.656D-22	-1.742D-25
	-1.423D-25	-1.435D-25	3.480D-15	2.135D-14	1.945D-17	1.315D-17	1.346D-16	-1.179D-19	-1.006D-19	-2.432D-19
	7.355D-23	6.632D-23	1.162D-22	-1.002D-26	-9.718D-27	-1.477D-26	-7.982D-15	5.881D-15	-7.668D-17	-1.285D-16
	-1.221D-16	4.750D-21	6.655D-20	6.851D-20	4.080D-23	1.279D-23	1.086D-23	-1.052D-26	-5.705D-27	-5.772D-27
	8.492D-16	-1.038D-16	-2.623D-16	-1.889D-16	-2.673D-16	5.436D-19	4.619D-19	5.462D-19	-3.880D-22	-3.374D-22
	-4.035D-22	9.992D-26	8.555D-26	1.090D-25	-2.573D-14	4.367D-16	-2.339D-16	-2.868D-16	-2.281D-16	3.755D-19
	4.092D-19	3.468D-19	-2.131D-22	-2.215D-22	-1.908D-22	4.471D-26	4.534D-26	3.896D-26	-4.525D-15	3.278D-15
	-4.040D-16	-4.382D-16	-4.981D-16	4.620D-19	5.149D-19	7.344D-19	-2.132D-22	-2.418D-22	-4.783D-22	4.800D-26
	5.387D-26	1.324D-25	1.938D-12	-2.687D-13	1.739D-14	3.694D-14	1.534D-14	-3.263D-17	-9.066D-17	-2.811D-17
	2.323D-20	8.848D-20								
123	-6.243D-15	6.630D-16	-3.535D-17	-1.186D-16	-7.432D-17	5.173D-21	1.466D-19	5.883D-20	7.528D-24	-6.938D-23
	-1.891D-23	-2.592D-27	1.061D-26	1.712D-27	6.911D-15	8.322D-15	-1.890D-16	-1.312D-16	-1.858D-16	3.435D-19
	2.701D-19	3.517D-19	-1.662D-22	-1.344D-22	-1.740D-22	2.689D-26	2.221D-26	2.823D-26	-5.052D-15	9.583D-16
	4.377D-16	3.692D-16	4.243D-16	-7.530D-19	-6.235D-19	-7.639D-19	4.133D-22	3.280D-22	4.564D-22	-7.168D-26
	-5.267D-26	-9.407D-26	5.866D-17	1.109D-14	3.076D-16	2.873D-16	3.436D-16	-4.799D-19	-4.534D-19	-4.913D-19
	2.087D-22	2.014D-22	2.001D-22	-2.447D-26	-2.512D-26	-2.223D-26	-4.405D-15	6.609D-15	5.252D-17	-2.691D-18
	3.882D-17	-3.846D-20	3.558D-20	-2.345D-20	-2.474D-23	-8.773D-24	2.060D-23	-4.354D-27	8.293D-28	-4.060D-27
	7.855D-15	2.368D-15	-3.918D-16	-3.391D-16	-3.959D-16	9.853D-19	9.334D-19	1.052D-18	-7.802D-22	-7.267D-22
	-8.900D-22	2.057D-25	1.838D-25	2.505D-25	-2.332D-14	1.607D-15	-3.940D-16	-5.014D-16	-3.811D-16	7.751D-19
	9.233D-19	7.438D-19	-5.069D-22	-5.914D-22	-4.785D-22	1.117D-25	1.278D-25	1.022D-25	-3.139D-15	9.388D-15
	-3.003D-16	-3.447D-16	-3.323D-16	4.899D-19	5.691D-19	6.332D-19	-2.730D-22	-3.321D-22	-4.609D-22	6.484D-26
	8.373D-26	1.395D-25	-8.632D-14	-6.653D-14	1.296D-14	1.257D-14	1.270D-14	-2.627D-17	-2.581D-17	-2.552D-17
	1.970D-20	1.947D-20	1.871D-20							
124	1.492D-18	-9.728D-19	1.188D-20	3.410D-20	1.367D-20	-2.904D-24	-4.106D-23	-3.936D-24	-6.477D-28	2.043D-26
	-3.613D-28	4.494D-31	-3.218D-30	3.916D-31	-2.766D-18	-2.597D-18	3.971D-20	2.271D-20	3.877D-20	-7.861D-23
	-5.689D-23	-8.166D-23	3.989D-26	3.041D-26	4.246D-26	-6.661D-30	-5.277D-30	-7.079D-30	1.768D-18	1.127D-18
	-8.482D-20	-6.546D-20	-7.302D-20	1.510D-22	1.163D-22	1.396D-22	-7.670D-26	-5.475D-26	-8.058D-26	1.113D-29
	6.437D-30	1.613D-29	5.549D-20	-2.192D-18	-9.167D-20	-8.484D-20	-9.857D-20	1.538D-22	1.433D-22	1.542D-22
	-7.545D-26	-7.044D-26	-7.166D-26	1.135D-29	1.066D-29	1.029D-29	5.809D-19	-2.218D-18	-4.149D-21	1.090D-20
	-2.756D-21	6.308D-24	-1.453D-23	4.705D-24	-5.161D-27	4.386D-27	-5.104D-27	8.936D-31	-5.755D-31	9.821D-31
	-2.831D-18	-6.957D-19	1.037D-19	9.199D-20	1.050D-19	-2.610D-22	-2.516D-22	-2.793D-22	2.074D-25	1.958D-25
	2.372D-25	-5.487D-29	-4.951D-29	-6.700D-29	5.164D-18	-4.674D-19	1.043D-19	1.330D-19	1.011D-19	-2.047D-22
	-2.459D-22	-1.968D-22	1.344D-25	1.583D-25	1.270D-25	-2.967D-29	-3.430D-29	-2.717D-29	1.370D-19	-2.381D-18
	9.110D-20	1.030D-19	1.074D-19	-1.421D-22	-1.649D-22	-2.120D-22	8.038D-26	9.848D-26	1.707D-25	-1.934D-29
	-2.542D-29	-5.490D-29	2.668D-17	5.695D-17	-3.471D-18	-3.318D-18	-3.012D-18	7.352D-21	7.070D-21	6.265D-21
	-5.744D-24	-5.504D-24	-4.779D-24	1.448D-27						
125	-2.418D-18	5.746D-19	3.623D-20	3.056D-20	6.153D-20	-5.822D-23	-5.850D-23	-9.091D-23	2.383D-26	2.705D-26
	3.818D-26	-2.752D-30	-3.675D-30	-4.801D-30	-2.410D-18	-3.121D-18	8.787D-20	7.516D-20	8.552D-20	-1.207D-22
	-1.139D-22	-1.246D-22	5.025D-26	5.006D-26	5.686D-26	-7.145D-30	-7.419D-30	-9.194D-30	-6.220D-18	-2.581D-18
	-2.003D-19	-2.029D-19	-1.894D-19	3.436D-22	3.190D-22	3.063D-22	-2.450D-25	-2.153D-25	-2.016D-25	5.960D-29
	5.005D-29	4.486D-29	-1.656D-18	-6.510D-18	5.038D-20	4.961D-20	1.079D-20	-2.670D-23	-3.053D-23	2.082D-23
	-4.368D-27	-1.056D-27	-2.188D-26	2.565D-30	1.812D-30	4.492D-30	1.956D-18	-1.095D-18	4.230D-20	5.283D-20
	5.821D-20	-1.780D-23	-2.896D-23	-4.057D-23	-6.488D-27	-1.322D-27	4.825D-27	2.507D-30	1.493D-30	6.235D-31
	1.558D-18	3.167D-20	1.542D-20	-1.842D-21	1.641D-20	-7.670D-25	2.123D-23	1.095D-23	-1.375D-	

TABLE XII
CONTINUED

126	7.573D-19	-3.543D-19	7.462D-21	2.437D-20	1.448D-20	4.372D-24	-2.542D-23	-5.755D-24	-5.003D-27	1.160D-26
	2.549D-28	1.164D-30	-1.744D-30	2.631D-31	-1.877D-18	-1.915D-18	3.331D-20	2.106D-20	3.184D-20	-6.341D-23
	-4.746D-23	-6.336D-23	3.075D-26	2.363D-26	3.107D-26	-4.984D-30	-3.898D-30	-4.948D-30	6.457D-19	-1.031D-19
	-8.196D-20	-6.804D-20	-7.958D-20	1.509D-22	1.238D-22	1.558D-22	-8.396D-26	-6.562D-26	-9.638D-26	1.449D-29
	1.030D-29	2.049D-29	-4.410D-19	-2.172D-18	-6.309D-20	-5.921D-20	-7.068D-20	1.108D-22	1.049D-22	1.130D-22
	-5.300D-26	-5.067D-26	-5.070D-26	7.358D-30	7.209D-30	6.672D-30	4.538D-19	-1.591D-18	-8.120D-21	3.412D-21
	-5.826D-21	2.991D-24	-1.273D-23	3.565D-25	-2.461D-27	4.770D-27	-1.721D-27	4.573D-31	-6.744D-31	4.020D-31
	-2.048D-18	-7.507D-19	7.900D-20	6.910D-20	8.004D-20	-1.876D-22	-1.778D-22	-2.015D-22	1.474D-25	1.373D-25
	1.696D-25	-3.866D-29	-3.455D-29	-4.759D-29	3.952D-18	-4.923D-19	7.850D-20	9.792D-20	7.676D-20	-1.465D-22
	-1.728D-22	-1.419D-22	9.532D-26	1.102D-25	9.084D-26	-2.094D-29	-2.378D-29	-1.934D-29	1.594D-19	-2.057D-18
	6.438D-20	7.321D-20	7.234D-20	-1.077D-22	-1.238D-22	-1.442D-22	6.133D-26	7.368D-26	1.099D-25	-1.461D-29
	-1.863D-29	-3.397D-29	2.170D-17	1.653D-17	-2.836D-18	-2.709D-18	-2.763D-18	6.017D-21	5.779D-21	5.801D-21
	-4.682D-24	-4.476D-24	-4.406D-24	1.171D-27	1.093D-27	1.069D-27				

will observe (File 3) that measurements are lacking in the range $R(24)$ – $R(48)$ of the I band of 646. Unfortunately, the radioactive material was discarded after our earlier measurements, so that these lines could not be included in our subsequent remeasurements program. This is an important cause for the large uncertainties in this branch. As for 848, the sample available to us was small and not very pure.

In our previous work [1], we came to the conclusion that for a truly satisfactory fit, we would have had to take into account the off-diagonal matrix elements in the Fermi resonance of vibrational levels I and II. This was a conclusion also reached by Bailly and Rossetti [16] on the basis of measurements in the 4.5 μm region. Although there is no doubt that this is ultimately the proper way to proceed, the need for it at the present level of precision is no longer evident from our data, except perhaps in the II band of 628 (file 20). But if this is the cause of the apparent systematic trend in this band, it is puzzling to observe that a corresponding trend does not appear in the I band of this species nor in any of the other species.

CONCLUSIONS

The frequencies predicted in Tables III–XI show, for the most accurate lines, standard deviations that are an order of magnitude smaller than those in *I*, and are principally limited by the uncertainty in the single absolute frequency measurement. We believe that these standard deviations are reasonable estimates of the uncertainties in their respective frequencies, and that our molecular constants and predicted frequencies are the best currently available for the CO_2 isotopic species, and are as good as any that can be extracted from the available data. In our opinion, they are suitable (with appropriate care about sequence and hot bands [10]–[14]) for use as secondary standards at the indicated level of precision. Higher precision (by perhaps two orders of magnitude) in the CO_2 comparisons could be attained by application of techniques developed in [4], but for more precise absolute frequencies, this would need to be accompanied by a similarly precise comparison with the Cs standard.

Note Added in Proof: It should be pointed out that the large uncertainties in extrapolations in the species 628, 646, 848, and 638, due to the presence of large values of *L* (probably artifacts), may be reduced by the omission of

the *L*'s; however, this must be accompanied by corresponding changes in the other constants, as determined by the variance-covariance matrix. This matrix could also be useful in case a better comparison of a CO_2 frequency with the Cs standard should become available, for many of our frequency predictions could then be improved with a corresponding reduction in the uncertainties.

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K. L. Soohoo, photograph and biography not available at the time of publication.

C. Freed, photograph and biography not available at the time of publication.
