

**Line Positions of Assigned Rovibrational  
Transitions of D<sup>13</sup>C<sup>15</sup>N**

**ADDENDUM 1 to:**

**Climbing the Bending Vibrational Ladder in D<sup>13</sup>C<sup>15</sup>N  
by Hot Gas Emission Spectroscopy**

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**D<sup>13</sup>C<sup>15</sup>N Table 1**

01 <sup>f</sup> 0-00 <sup>0e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
564.390689	-.3826	25	25
564.733889	.2912	26	26
565.088717	-.0805	27	27
565.456334	-.2815	28	28
565.836940	-.0544	29	29
566.229655	-.2198	30	30
566.635043	-.1528	31	31
567.052489	-.4055	32	32
567.482831	-.0754	33	33
567.924798	-.3671	34	34
568.379453	-.1497	35	35
568.845380	-.7695	36	36
569.324517	-.2170	37	37
569.815293	.0095	38	38
570.317435	-.2880	39	39
570.831804*	-.1728	40	40
571.357761	-.2060	41	41
571.895776*	.1614	42	42
572.444776	-.0627	43	43
573.005339	-.2184	44	44
573.577737	.0496	45	45
574.755503	-.3366	47	47
575.361722	.0334	48	48
575.978284	-.3172	49	49
576.606592	.1039	50	50
577.245297	.0393	51	51
577.894806	-.0117	52	52
578.556057*	.9818	53	53
579.225928	-.0073	54	54
579.906993	-.3099	55	55
580.599267	.1854	56	56
582.013764	.2827	58	58
582.736209	.3038	59	59
583.468515	.1694	60	60
584.962789	-.0837	62	62
585.724417	-.3392	63	63

The rms dev = 0.000259 for 32 lines

**D<sup>13</sup>C<sup>15</sup>N Table 2**

03 <sup>1e</sup> 0-02 <sup>2f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
544.746834*	.4633	4	4
544.708684*	1.0721	6	6
544.685170	-.4620	7	7
544.657195	-.0970	8	8
544.624748	.3020	9	9
544.585932	-.8462	10	10
544.495259	-.3516	12	12
544.440984	-.4026	13	13
544.380131	-.7703	14	14
544.313328	-.4433	15	15
544.239107	-.5058	16	16
544.157460	-.5851	17	17
544.068488	-.2076	18	18
543.969761*	1.4419	19	19
543.749626	-.7940	21	21
543.625815	-.6786	22	22
543.493305	.1491	23	23
543.349954	-.1919	24	24
543.196833	-.3953	25	25
543.034165	-.0281	26	26
542.859818*	1.0390	27	27
542.677010	-.0521	28	28
542.280541*	2.9520	30	30
542.061624	-.0924	31	31
541.835225	.2311	32	32
541.349392*	.5536	34	34

The rms dev = 0.000454 for 20 lines

**D<sup>13</sup>C<sup>15</sup>N Table 3**

03 <sup>1f</sup> 0-02 <sup>2e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
544.980373	.4048	4	4
545.078225	-.7226	5	5
545.195367	-.6977	6	6
545.329616	-.7932	7	7
545.480526	-.3910	8	8
545.647262*	.8905	9	9
545.824694	-.7132	10	10
546.016396	-.1207	11	11
546.217580	-.4783	12	12
546.428415	.1458	13	13
546.644286*	-.9938	14	14
546.866983	-.1496	15	15
547.091380	-.4210	16	16
547.316759	-.4508	17	17
547.540803	-.4522	18	18
547.761435	-.3888	19	19
547.976493	-.3151	20	20
548.183798	-.3233	21	21
548.381476	-.2324	22	22
548.568090*	.5320	23	23
548.739194	-.5189	24	24
548.895937	-.3485	25	25
549.034777	-.6964	26	26
549.155176	-.4059	27	27
549.254766	-.2830	28	28
549.331994	-.4782	29	29
549.384726*	1.9110	30	30
549.417147	.6067	31	31
549.400433	-.2804	33	33
549.354319	.1577	34	34
549.282087	.3930	35	35
549.183490	.0246	36	36
549.059351	-.4652	37	37
548.911226	-.0180	38	38

The rms dev = 0.000445 for 30 lines

**D<sup>13</sup>C<sup>15</sup>N Table 4**

02 <sup>2f</sup> 0-01 <sup>1e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
560.091354*	2.5945	2	2
560.132290*	3.9649	3	3
560.180353	-.7164	4	4
560.248347*	1.3624	5	5
560.325639	-.4211	6	6
560.415748*	2.5357	7	7
560.523501	-.1400	8	8
560.642265	.1492	9	9
560.773048	-.6413	10	10
560.918034	-.3074	11	11
561.076949*	.8995	12	12
561.246391	-.3980	13	13
561.429618	-.9156	14	14
561.626917	-.3378	15	15
561.836458	-.4642	16	16
562.058802	-.7013	17	17
562.294655	-.3089	18	18
562.543209	-.0586	19	19
562.804108	-.2683	20	20
563.077994	-.2558	21	21
563.364762	-.0842	22	22
563.664033	-.0885	23	23
563.973962*	2.0679	24	24
564.301103*	.5789	25	25
564.637777	.2225	26	26
564.986850	-.2197	27	27
565.349040	.0228	28	28
565.722857	-.4847	29	29
566.110001	.0138	30	30
566.508576	-.3191	31	31
566.919797	-.2087	32	32
567.342408	-.8495	33	33
567.779015	.4277	34	34
568.225979	.0489	35	35
568.685210	-.0094	36	36
569.156447	.0593	37	37
569.639455	.0900	38	38
570.134194	.1135	39	39
570.640521	.0593	40	40
571.158133	-.3015	41	41
571.687975	.0510	42	42
572.229129	.2760	43	43
572.780967	-.1765	44	44
573.344930	.2137	45	45
573.919512	.0213	46	46
574.505185	-.1995	47	47
575.102392	.0770	48	48

The rms dev = 0.000354 for 40 lines

**D<sup>13</sup>C<sup>15</sup>N Table 5**

02 <sup>2e</sup> 0-01 <sup>1f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
560.059365	-.6298	3	3
560.067552	-.3460	4	4
560.078210	-.3524	5	5
560.091354*	1.1564	6	6
560.115640*	5.2735	7	7
560.132290	-.5630	8	8
560.159911	-.8753	9	9
560.195183	.1150	10	10
560.236589	-.0852	11	11
560.287359*	.7169	12	12
560.345243	-.8078	13	13
560.415748	-.2541	14	14
560.497214	-.3812	15	15
560.592554	.6518	16	16
560.699364	-.5776	17	17
560.822393	-.2620	18	18
560.960800	-.0851	19	19
561.292322*	5.6426	21	21
561.681388	-.2187	23	23
561.905642	-.1295	24	24
562.147603	-.3103	25	25
562.407940	-.0966	26	26
562.685606	-.4556	27	27
562.981659	-.1800	28	28
563.294714	-.4512	29	29
563.625439	-.3568	30	30
563.973962	.5051	31	31
564.337696*	-.1597	32	32
564.718248	-.4405	33	33
565.115409	-.2383	34	34
565.528985	.5602	35	35
565.955821	-.8965	36	36
566.399241*	-.9889	37	37
566.858734	.0592	38	38
567.331514	-.2604	39	39
567.819126	-.1363	40	40
568.320691	-.1911	41	41
568.836317	-.0711	42	42
569.365387	-.1577	43	43
569.907521	-.6049	44	44
570.463846	-.0691	45	45
571.032778	.0737	46	46
571.613886	-.4069	47	47
572.208805	.3164	48	48
572.815312	.2071	49	49
573.433927	-.0350	50	50
574.064733	-.1529	51	51
574.707924	.2165	52	52

The rms dev = 0.000400 for 42 lines

**D<sup>13</sup>C<sup>15</sup>N Table 6**

01<sup>1e</sup>0-00<sup>0e</sup>0 EMISSION  
observed 10<sup>3</sup>(o-c) J' J''

452.308540	.2269	47	48
454.485449	.1902	46	47
456.665797	.4160	45	46
458.848513	-.1566	44	45
461.035473	.3591	43	44
463.225421	.7188	42	43
465.417626	.2039	41	42
467.613427	.1664	40	41
469.812320	.1160	39	40
472.014124	-.1134	38	39
474.219172	-.1740	37	38
476.427383	-.1305	36	37
478.638714	-.0092	35	36
480.852675	-.2827	34	35
483.070114	-.0847	33	34
485.290149	-.2785	32	33
487.513040	-.5843	31	32
489.739614	-.1549	30	31
491.968870	.0297	29	30
494.200643	-.1735	28	29
496.435496	-.1793	27	28
498.673394	.0005	26	27
500.913545	-.4022	25	26
503.157212	-.0999	24	25
505.403266	-.1963	23	24
507.652223	-.1496	22	23
509.903718	-.2980	21	22
512.158065	-.3004	20	21
514.415457	.0642	19	20
516.674759	-.3102	18	19
518.937239	-.1266	17	18
521.201735	-.5168	16	17
523.469525	-.1722	15	16
525.739290	-.3803	14	15
528.011841	-.2982	13	14
530.286693	-.3781	12	13
532.564345	-.0876	11	12
534.844377	.1873	10	11
537.126330	.0223	9	10
539.411711*	.9599	8	9
541.697601	.1170	7	8
543.986265	-.2047	6	7
546.277322	-.3488	5	6

**D<sup>13</sup>C<sup>15</sup>N Table 6 continued**

01<sup>1e</sup>0-00<sup>0e</sup>0 EMISSION  
observed 10<sup>3</sup>(o-c) J' J''

573.930315	-.1019	6	5
576.246233	-.4946	7	6
580.884518*	.3404	9	8
583.203967*	1.2554	10	9
585.527353	-.3967	11	10
587.851327	-.3839	12	11
590.176664	-.3923	13	12
592.503777	.0408	14	13
594.830877	-.8225	15	14
597.160331	-.5642	16	15
599.491250	-.0215	17	16
601.822352	-.4238	18	17
604.155313	-.0419	19	18
606.489214	.2587	20	19
608.823363	-.1593	21	20
611.159160	.1587	22	21
613.496200*	.8634	23	22
615.832665	.1929	24	23
618.170568	.2171	25	24
620.509465	.5493	26	25
622.848362	.2534	27	26
625.188017	.1461	28	27
627.528222	.0785	29	28
629.868820	-.0465	30	29
632.210071	.0912	31	30
634.551583*	.1609	32	31
636.893148	.0161	33	32
639.235183*	.1359	34	33
641.577220	.1151	35	34
643.919230	-.0118	36	35
646.261370	-.0240	37	36
648.603379	-.1179	38	37
650.945493	.0076	39	38
653.287163	-.1305	40	39
655.628886	.0308	41	40
657.970189	.0856	42	41
660.310916	-.0543	43	42
664.991404	.1156	45	44
667.330773	.1717	46	45
669.669121	-.1361	47	46
672.006945	-.2404	48	47
674.343697	-.6181	49	48
676.680736	.1613	50	49
679.015973	.0813	51	50
681.350188	-.0052	52	51
683.683775	.3688	53	52
693.003633	-.2485	57	56

The rms dev = 0.000276 for 84 lines



**D<sup>13</sup>C<sup>15</sup>N Table 7**  
 02<sup>0e</sup>0-00<sup>0e</sup>0 ZTGDCNFS.DAT  
 observed 10<sup>3</sup>(o-c) J' J''

1041.463461	.3597	32	33
1043.567753	.1160	31	32
1045.672487	-.0635	30	31
1047.777631	.0165	29	30
1049.882577	-.0402	28	29
1051.987397	.0235	27	28
1054.091880	.1449	26	27
1056.195734	.1285	25	26
1058.299069	.1149	24	25
1060.401946	.1148	23	24
1062.504517	.1336	22	23
1064.606980	.1133	21	22
1066.709765	.1076	20	21
1068.813362	.1039	19	20
1070.918416	.1168	18	19
1073.025671	.1373	17	18
1075.135983	.1566	16	17
1077.250248	.1106	15	16
1079.369631	.1303	14	15
1081.495127	.1273	13	14
1083.627864	.1219	12	13
1085.768972	.1382	11	12
1087.919494	.1385	10	11
1090.080483	.1414	9	10
1092.252876	.1136	8	9
1094.437625	.1151	7	8
1096.635519	.1320	6	7
1098.847222	.1223	5	6
1101.073404	.1521	4	5
1103.314488	.1458	3	4
1105.570894	.1322	2	3
1107.842940	.1460	1	2
1110.130783	.1693	0	1
1114.753946	.1732	1	0
1117.089084	.1638	2	1
1119.439649	.1781	3	2
1121.805198	.1400	4	3
1124.185344	.1375	5	4
1126.579487	.1528	6	5
1128.986892	.1385	7	6
1131.406818	.1432	8	7
1133.838323	.1114	9	8
1136.280497	.1087	10	9
1138.732262	.1110	11	10
1141.192504	.1221	12	11
1143.660045	.1282	13	12
1146.133686	.1196	14	13

**D<sup>13</sup>C<sup>15</sup>N Table 7 continued**  
 02<sup>0e</sup>0-00<sup>0e</sup>0 ZTGDCNFS.DAT  
 observed 10<sup>3</sup>(o-c) J' J''

1148.612274	.1343	15	14
1153.579582	.1424	17	16
1156.066173	.1672	18	17
1158.553329	.1086	19	18
1161.040404	.1568	20	19
1163.526509	.1361	21	20
1166.011127	.1150	22	21
1168.493840	.1346	23	22
1170.974258	.1438	24	23
1173.452143	.1338	25	24
1175.927378	.1208	26	25
1178.399916	.1093	27	26
1180.869782	.1103	28	27
1183.336980	.0623	29	28

The rms dev = 0.000135 for 60 lines

**D<sup>13</sup>C<sup>15</sup>N Table 8**  
02<sup>2e</sup>0-00<sup>0e</sup>0 ZTGDCNFS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1051.300899	.7722	35	36
1052.710489	.1572	34	35
1054.149936	-.0504	33	34
1055.619391	-.0346	32	33
1057.118999	.0161	31	32
1058.649114	.1287	30	31
1060.209919	.1714	29	30
1061.801616	.0524	28	29
1063.424720	.0240	27	28
1065.079357	-.0074	26	27
1066.765712	-.0207	25	26
1068.484002	.1088	24	25
1070.234278	.4264	23	24
1072.015647	.1344	22	23
1073.828751	.0851	21	22
1075.673064	.0885	20	21
1077.548001	.0270	19	20
1079.453199	.1387	18	19
1081.387580	.0744	17	18
1083.350452	-.0114	16	17
1085.340997	.0099	15	16
1087.358302	.2523	14	15
1089.400551	-.0186	13	14
1091.467710	.2742	12	13
1093.557785	.2523	11	12
1095.672197*	2.4323	10	11
1097.802799	-.2774	9	10
1099.959189*	2.7173	8	9
1102.128937	-.0890	7	8
1139.108186*	2.1980	8	7
1141.559551*	1.3954	9	8
1144.031687*	.8896	10	9
1146.520772	-.0778	11	10
1149.032236	.1604	12	11
1151.565444	-.0427	13	12
1154.121964	-.1513	14	13
1156.702856	-.1332	15	14
1159.309102	-.0049	16	15
1161.941369	-.0425	17	16
1164.600715	-.0518	18	17
1167.287932	-.0041	19	18
1170.003549	-.0162	20	19
1172.748215	.0429	21	20
1175.522170	.0287	22	21
1178.325770	.0442	23	22
1181.158985	-.0682	24	23
1184.022040	-.0963	25	24

**D<sup>13</sup>C<sup>15</sup>N Table 8 continued**  
02<sup>2e</sup>0-00<sup>0e</sup>0

observed	10 <sup>3</sup> (o-c)	J'	J''
1186.914981	.0943	26	25
1189.836894	-.2351	27	26
1192.788588	-.0298	28	27
1195.769171	.1202	29	28
1198.778139	.0562	30	29
1201.815368	.0298	31	30

The rms dev = 0.000171 for 47 lines

**D<sup>13</sup>C<sup>15</sup>N Table 9**  
02<sup>0e</sup>0-01<sup>1f</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
552.387216	-.2353	4	4
552.397142	-.1791	5	5
552.418551	-.2991	7	7
552.446382*	1.5933	11	11
552.337780	-.1896	17	17
552.287612	-.2819	18	18
552.225869	-.3003	19	19
552.151819	-.2223	20	20
552.064652	-.2281	21	21
551.963950	-.2357	22	22
551.849200	-.3862	23	23
551.720798	-.0344	24	24
551.577552	-.2340	25	25
551.419775	-.6322	26	26
551.247743	-.9961	27	27
551.062711	-.1817	28	28
550.864718*	1.6858	29	29
550.648848	-.5131	30	30
550.420906*	1.2050	31	31
550.180449*	1.0822	32	32

The rms dev = 0.000390 for 16 lines

**D<sup>13</sup>C<sup>15</sup>N Table 10**  
 02<sup>0e</sup>0-01<sup>1e</sup>0 Emission  
 observed 10<sup>3</sup>(o-c) J' J''

450.042096	-.2263	46	47
452.199631	-.4631	45	46
454.359544	.0342	44	45
456.520419	-.0186	43	44
458.682830	.0942	42	43
460.846087	-.1636	41	42
463.010722	-.0953	40	41
465.176017	-.2414	39	40
467.342091	-.2927	38	39
469.508610	-.3803	37	38
471.675566	-.2964	36	37
473.842431	-.3413	35	36
476.009401	-.0799	34	35
478.175502	-.2378	33	34
480.341307	.0130	32	33
482.505707	-.1778	31	32
484.668981	-.2752	30	31
486.830739	-.4210	29	30
488.991418	.0531	28	29
491.149377	-.2888	27	28
493.305610	-.2864	26	27
495.459664	-.2780	25	26
497.611287	-.4676	24	25
499.761045	-.3228	23	24
501.908666	-.2462	22	23
504.054356	-.2725	21	22
506.198493	-.3851	20	21
508.341973	-.1765	19	20
510.484774	-.2857	18	19
512.628190	-.1588	17	18
514.772548	-.3216	16	17
516.919258	-.3126	15	16
519.069122	-.3528	14	15
521.223039	-.6165	13	14
523.382555	-.6558	12	13
525.548870	-.3675	11	12
527.722444	-.3641	10	11
529.904807	-.1424	9	10
532.096325	-.2994	8	9
534.298370	-.3490	7	8
536.511624	-.4062	6	7
538.737172	-.0869	5	6
540.974659	-.3456	4	5
543.225108	-.6540	3	4
545.490335	.4158	2	3

**D<sup>13</sup>C<sup>15</sup>N Table 10 continued**  
 02<sup>0e</sup>0-01<sup>1e</sup>0 Emission  
 observed 10<sup>3</sup>(o-c) J' J''

561.724062	-.1533	4	3
564.096165	-.4613	5	4
566.479895*	1.1919	6	5
568.877147	.2341	7	6
571.283554	.2359	8	7
573.699195	-.2257	9	8
576.124002	-.2483	10	9
578.556057	-.7017	11	10
580.995552	-.2825	12	11
583.440044	-.2765	13	12
585.888759	-.2760	14	13
588.340548	-.2475	15	14
590.794259	-.1850	16	15
593.248768	-.1048	17	16
595.702873	-.1760	18	17
598.155839	-.1965	19	18
600.606659	-.3487	20	19
603.055767*	.5026	21	20
605.500833*	.6002	22	21
607.941454	-.0132	23	22
610.378555	-.0880	24	23
612.811460	-.0858	25	24
615.239930	-.1277	26	25
617.663941	-.2021	27	26
620.083818	-.0150	28	27
622.499119	-.0910	29	28
624.910364	-.0317	30	29
627.317505	-.0329	31	30
629.720799	-.0024	32	31
632.120379	.0196	33	32
634.516376	-.0109	34	33
636.908789	-.2674	35	34
639.298378	-.1552	36	35
641.684881	-.0927	37	36
644.068400	-.1230	38	37
646.449149	-.1655	39	38
648.827306	-.1626	40	39
651.203083	-.0103	41	40
653.576325	.0409	42	41
655.947107	-.0168	43	42
658.315534	-.1502	44	43
660.681555	-.4708	45	44
663.045956	-.2425	46	45
665.408001	-.2415	47	46

The rms dev = 0.000282 for 86 lines

**D<sup>13</sup>C<sup>15</sup>N Table 11**

02 <sup>2e</sup> 0-01 <sup>1e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
504.293637	.1111	26	27
506.029821	-.2483	25	26
507.800374*	3.6802	24	25
509.592508	-.8802	23	24
511.419990	-.0515	22	23
513.275643	-.7846	21	22
515.162346	.1497	20	21
517.076316	-.5493	19	20
519.019320	-.5008	18	19
520.989748	-.5728	17	18
522.986713	-.7938	16	17
525.009508	-.9122	15	16
527.057543	-.4808	14	15
529.129120	-.1055	13	14
531.222903	-.0015	12	13
533.337822	-.1144	11	12
535.472933	-.2843	10	11
537.627518	-.1663	9	10
539.799849	-.4848	8	9
541.990032	-.2032	7	8
544.196526	-.0163	6	7
546.419208*	.7077	5	6
548.656146*	.6946	4	5
550.906634	-.2044	3	4
567.044355*	1.1550	3	2
569.404164	-.4980	4	3
571.777953	.0853	5	4
576.568652	.2229	7	6
581.422808*	.6523	9	8
583.875290*	.6305	10	9
586.345257	-.2006	11	10
588.835379	-.1492	12	11
591.345627	-.2635	13	12
593.877325	-.2591	14	13
596.431582	-.0632	15	14
599.008740	-.3411	16	15
601.610747	-.0977	17	16
604.237693	-.1171	18	17
606.891005	.2536	19	18
609.570133	-.1928	20	19
612.277041	-.0225	21	20
615.011165	-.1969	22	21
617.772072*	1.4156	23	22
620.563530	-.0521	24	23
623.381721	.0479	25	24
626.227795	.1077	26	25

The rms dev = 0.000369 for 38 lines

**D<sup>13</sup>C<sup>15</sup>N Table 12**  
 $02^2f_0-01^1f_0$  Emission  
observed  $10^3(o-c)$  J' J''

460.258237	-.1723	43	44
462.466979	-.8083	42	43
464.679577	-.6650	41	42
466.895238	-.5171	40	41
469.114639	.3314	39	40
471.335563	-.3163	38	39
473.560364	-.0862	37	38
475.787514	-.4849	36	37
478.019274*	.7702	35	36
480.251721	-.2211	34	35
482.487005*	1.2861	33	34
484.727344	-.1828	32	33
486.969408	-.2169	31	32
489.214541	-.0192	30	31
491.462321	.0138	29	30
493.712567	-.2722	28	29
495.965964	-.1654	27	28
498.221717	-.4333	26	27
500.480895	.0214	25	26
502.742212	-.0582	24	25
504.997315*	8.9958	23	24
507.272403	-.5622	22	23
509.542142	-.0608	21	22
511.813647	-.3451	20	21
514.087989	-.3123	19	20
516.364803	-.2947	18	19
518.644037	-.3112	17	18
520.925560	-.4590	16	17
523.209633	-.4428	15	16
525.496282	-.2016	14	15
527.784945	-.2620	13	14
530.076001	-.2087	12	13
532.369230	-.2251	11	12
534.664340	-.5659	10	11
536.962132	-.3923	9	10
539.262395	.1231	8	9
541.563522	-.5873	7	8
543.866573*	1.4245	6	7
546.173977	.0809	5	6
548.481787	.0227	4	5
550.791663	.1020	3	4
553.101892*	1.3523	2	3
564.688938	.4793	2	1
569.332312*	1.9138	4	3
571.659059	-.3722	5	4
576.313874	-.3779	7	6
578.643446	-.3262	8	7

**D<sup>13</sup>C<sup>15</sup>N Table 12** continued

$02^2f_0-01^1f_0$	Emission	J'	J''
observed	$10^3(o-c)$		
583.306632	-.1594	10	9
585.639997	-.1951	11	10
587.974604	-.1832	12	11
590.310349	-.1774	13	12
592.647258	-.1009	14	13
594.985109	-.1241	15	14
597.324163	.0658	16	15
599.663818	-.0806	17	16
602.004559	-.0257	18	17
604.346099	-.0028	19	18
606.688317	-.0791	20	19
609.031491	.0778	21	20
611.375005	-.0928	22	21
613.719342	-.0529	23	22
616.064464	.2155	24	23
618.409613	.0110	25	24
620.755416	.0175	26	25
623.101950*	.3694	27	26
625.448249	.1586	28	27
627.794966	.0964	29	28
630.141842	-.0172	30	29
632.489188	.1880	31	30
634.836402	.1700	32	31
637.183669	.1741	33	32
639.530831	.1031	34	33
641.877995	.1253	35	34
644.225027	.1684	36	35
646.571901	.2688	37	36
648.918331	.2031	38	37
651.264551	.2686	39	38
653.610302	.2698	40	39
655.955294	-.0189	41	40
658.300337	.2768	42	41
660.644439	.2302	43	42
662.987416	-.2770	44	43
665.330054	-.3931	45	44
667.672509	.1044	46	45
670.013237	-.2612	47	46
672.352814	-.8467	48	47
674.693201	.3767	49	48
677.031288	.3676	50	49
679.367621	-.2592	51	50
681.704296	.6612	52	51
684.037935	-.1788	53	52
686.371182	-.0656	54	53
688.702205*	-.7602	55	54
691.033413	.2173	56	55

The rms dev = 0.000301 for 85 lines

**D<sup>13</sup>C<sup>15</sup>N Table 13**

03 <sup>1f</sup> 0-02 <sup>0e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
552.760078	-.1109	5	5
552.879836	-.7408	6	6
553.021749	-.1765	7	7
553.184221	-.4053	8	8
553.368245	-.8613	9	9
553.575746	-.0704	10	10
553.804917	-.2986	11	11
554.058779*	1.0269	12	12
554.332796*	1.0430	13	13
554.633531	-.2978	14	14
554.957664	-.3183	15	15
555.305808	-.6302	16	16
555.678801	-.3807	17	17
556.075637	-.3794	18	18
556.496104	-.4356	19	19
556.939798	-.3283	20	20
557.406314*	.3934	21	21
557.892447	-.3907	22	22
558.399101	-.4773	23	23
558.924587	-.0651	24	24
559.466421	.0082	25	25
560.022942	-.1608	26	26

The rms dev = 0.000409 for 18 lines

**D<sup>13</sup>C<sup>15</sup>N Table 14**

03<sup>1e</sup>0-02<sup>0e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

452.535912	-.3141	43	44
454.709637	-.0525	42	43
456.886226	-.0365	41	42
459.065868	-.1596	40	41
461.247818*	1.2644	39	40
463.435198	-.3431	38	39
465.625584	.0476	37	38
467.818873	-.3472	36	37
470.016341	-.4250	35	36
472.218244	-.1251	34	35
474.424154	-.0931	33	34
476.634426	-.2142	32	33
478.849785	-.0251	31	32
481.069769	-.2691	30	31
483.295166	-.4556	29	30
485.526362	-.5071	28	29
487.764052	-.0418	27	28
490.007373	-.2314	26	27
492.257384	-.3106	25	26
494.514189	-.4411	24	25
496.778278	-.3563	23	24
499.049573	-.2996	22	23
501.328120	-.3172	21	22
503.614116	-.2165	20	21
505.907186	-.2768	19	20
508.207319	-.3050	18	19
510.514148	-.3514	17	18
512.827202	-.4601	16	17
515.146181	-.4012	15	16
517.470247	-.3924	14	15
519.798943	-.1975	13	14
522.131000	-.3395	12	13
524.466170	-.2884	11	12
526.803354	-.3548	10	11
529.142081	-.2304	9	10
531.481187	-.3254	8	9
533.820201	-.3967	7	8
536.158863	-.0404	6	7
538.495969	.1456	5	6
540.830812	-.0017	4	5
543.162868	-.5278	3	4
545.490335*	2.8223	2	3
564.001871	-.0346	5	4
566.298473	-.0842	6	5
568.591543	-.3425	7	6
570.881959	-.2551	8	7
573.170046	.1087	9	8

**D<sup>13</sup>C<sup>15</sup>N Table 14 continued**

03<sup>1e</sup>0-02<sup>0e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

575.455284	-.2342	10	9
577.739435	-.0497	11	10
580.022304	-.1185	12	11
582.305161	.1961	13	12
584.587625	-.1543	14	13
586.871097	-.4544	15	14
589.156725	-.2393	16	15
591.444525	-.1538	17	16
593.735189	-.1217	18	17
596.029214	-.1968	19	18
598.327360	-.0873	20	19
600.629625	-.1668	21	20
602.936650	-.0612	22	21
605.248396	.0308	23	22
607.564667	-.1411	24	23
609.885975	-.0228	25	24
612.211742	-.0635	26	25
614.542020	-.0103	27	26
616.876287	-.1263	28	27
619.214608	-.0444	29	28
621.556304	-.1120	30	29
623.901453	.0976	31	30
626.249008	-.1067	32	31
628.599308	-.0321	33	32
630.951702	.0163	34	33
633.305744	-.0744	35	34
635.661225	-.1966	36	35
638.017987	-.2099	37	36
640.375794	-.0713	38	37
642.733603	-.5643	39	38
645.092431	-.4315	40	39
647.451600	-.1291	41	40
649.810559	-.0037	42	41
652.169021	-.1537	43	42
654.526986	-.4057	44	43
656.884794	-.2595	45	44
659.241791	-.2211	46	45
661.597639	-.4914	47	46

The rms dev = 0.000260 for 83 lines

**D<sup>13</sup>C<sup>15</sup>N Table 15**

03 <sup>3e</sup> 0-02 <sup>2e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
482.802859	-.7651	33	34
485.075213*	1.3137	32	33
487.350216	-.1729	31	32
489.622585*	2.2912	30	31
491.899216	-.4212	29	30
494.173990	-.3178	28	29
496.448698	.1796	27	28
498.721360	-.5423	26	27
500.994074	-.0332	25	26
503.265474	.6665	24	25
505.533395	-.3234	23	24
507.800374	-.2383	22	23
510.065091	-.2424	21	22
512.326787*	1.0259	20	21
514.587502	-.5785	19	20
516.845667	-.6065	18	19
519.102262	-.3784	17	18
521.357288	-.2510	16	17
523.611124	-.3047	15	16
525.864411	-.4473	14	15
528.118141	-.3073	13	14
530.372513	-.3580	12	13
532.628023	-.8063	11	12
534.886122	-.9135	10	11
537.147753	-.4388	9	10
539.411711*	1.2625	8	9
541.681816	-.1993	7	8
543.956185	.2845	6	7
576.472409	-.0914	7	6
578.844773	-.1209	8	7
581.222082	-.4354	9	8
583.604700	-.1088	10	9
585.991149	.0086	11	10
588.380632	-.1931	12	11
590.771425*	1.7029	13	12
593.167499	.2209	14	13
595.562385	-.1010	15	14
597.957781	-.1825	16	15
600.352770	-.1738	17	16
602.746596	-.1080	18	17
605.138473	-.1124	19	18
607.527839	-.1720	20	19
609.914656	.1567	21	20
612.297731	.0587	22	21
614.677327	.0678	23	22
617.053236	.1437	24	23
619.424986	-.1147	25	24

**D<sup>13</sup>C<sup>15</sup>N Table 15 continued**

03 <sup>3e</sup> 0-02 <sup>2e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
621.793492	.1933	26	25
624.157710	-.0617	27	26
626.518787	.1243	28	27
628.876359	.2025	29	28
633.581932	.1081	31	30
635.930403	-.0605	32	31
638.277094	.4745	33	32
640.620751	.2345	34	33
642.963127*	.7615	35	34
645.302495	.1347	36	35
647.640425	-.2508	37	36
649.976863	-.6038	38	37
652.312464	-.4037	39	38
654.646966	-.0270	40	39

The rms dev = 0.000347 for 55 lines



**D<sup>13</sup>C<sup>15</sup>N Table 16**

$03^{3f}0-02^{2f}0$ observed	Emission $10^3(\text{o-c})$	J'	J''
493.632554	-.8472	30	31
495.459664*	1.0939	29	30
497.321923	-.5375	28	29
499.216366	-.7840	27	28
501.143252	-.0645	26	27
503.099550	.2095	25	26
505.083018	-.5161	24	25
507.093427	-.7557	23	24
509.128659	-.9212	22	23
511.187654	-.4059	21	22
513.267770	-.2493	20	21
515.367937	-.0005	19	20
517.486098	-.2900	18	19
519.621863	-.1821	17	18
521.773347	-.3402	16	17
523.940122	-.0742	15	16
526.119738	-.8171	14	15
528.313112	-.7312	13	14
530.518637	-.5944	12	13
532.735266	-.7096	11	12
534.962800	-.6114	10	11
537.200262	-.6858	9	10
539.447572	-.4896	8	9
567.044355	.2527	3	2
569.391112	-.6852	4	3
571.745493*	1.4139	5	4
574.106636*	2.9576	6	5
576.479615	-.4522	7	6
578.858440	-.1472	8	7
581.245335	-.1324	9	8
583.640770	-.3092	10	9
586.045751	-.1059	11	10
588.460672	.3692	12	11
590.884473	-.5194	13	12
593.320477	-.1042	14	13
595.767741	-.0687	15	14
598.227338	-.1721	16	15
600.700692	.0811	17	16
603.187178*	-.9637	18	17
605.691110	-.1259	19	18
608.211743*	.6119	20	19
610.748907	-.2586	21	20
613.306447	-.3253	22	21
615.885319	-.1469	23	22
618.486828	.0027	24	23
621.112165	-.3036	25	24

**D<sup>13</sup>C<sup>15</sup>N Table 16 continued**

$03^{3f}0-02^{2f}0$ observed	Emission $10^3(\text{o-c})$	J'	J''
623.763738	-.2855	26	25
626.442881	-.2090	27	26
629.151161	-.0396	28	27
631.889103	-.6749	29	28

The rms dev = 0.000452 for 45 lines

**D<sup>13</sup>C<sup>15</sup>N Table 17**  
03<sup>1ε</sup>0-01<sup>1ε</sup>0 ZTGDCNFS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1043.445724	-.1705	27	28
1045.559159	-.1435	26	27
1047.676092	.0558	25	26
1049.796563	.2745	24	25
1051.920178	-.0984	23	24
1054.048282	.0406	22	23
1056.180546	.0980	21	22
1058.317124	-.0591	20	21
1060.458672	-.0827	19	20
1062.605499	.0096	18	19
1064.757775	.0456	17	18
1066.915772	-.0581	16	17
1069.080068	-.0887	15	16
1071.251047	-.0325	14	15
1073.428948	-.0228	13	14
1075.614095	-.1049	12	13
1077.807079	-.0503	11	12
1080.008063	-.0470	10	11
1082.217423	-.0542	9	10
1084.434689*	-.8573	8	9
1086.662506	-.1030	7	8
1088.898879	-.0502	6	7
1091.144608	-.1325	5	6
1093.400237	-.0054	4	5
1095.665544	-.0541	3	4
1109.468810	.0424	2	1
1111.804181	-.0887	3	2
1114.149457	.0038	4	3
1116.504092	-.0159	5	4
1118.867847	-.1390	6	5
1121.240743	-.0597	7	6
1123.622145	-.0949	8	7
1126.011884	-.0645	9	8
1128.409549	-.0031	10	9
1130.814586	-.0645	11	10
1133.226789	-.0346	12	11
1135.645532	-.1037	13	12
1138.070560	-.0798	14	13
1140.501326	-.0556	15	14
1142.937359	-.0455	16	15
1145.378261	.0076	17	16
1147.823546	.0672	18	17
1150.272698	.0572	19	18
1152.725388	.0752	20	19
1155.181010	-.0737	21	20
1160.100442	.0661	23	22

**D<sup>13</sup>C<sup>15</sup>N Table 17 continued**  
03<sup>1ε</sup>0-01<sup>1ε</sup>0 ZTGDCNFS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1162.563075	-.1019	24	23
1165.027584	-.0559	25	24
1167.492934	-.5298	26	25
1169.960747	.3750	27	26
1172.428550	.4385	28	27
1174.896124	-.3292	29	28

The rms dev = 0.000144 for 50 lines

**D<sup>13</sup>C<sup>15</sup>N Table 18**  
 03<sup>1f</sup>0-01<sup>1f</sup>0 ZTGDCNFS.DAT  
 observed      10<sup>3</sup>(o-c)    J'    J''

1047.123962	.2997	27	28
1049.026011	-.0293	26	27
1050.928353	-.0675	25	26
1052.830250*	2.2844	24	25
1054.740259	.1224	23	24
1056.652963	-.0045	22	23
1058.572825	.1009	21	22
1060.501061	.0269	20	21
1062.439368	-.0706	19	20
1064.389354	-.0261	18	19
1066.352189	-.0056	17	18
1068.329068	-.0415	16	17
1070.321178	-.0654	15	16
1072.329545	-.0641	14	15
1074.355073	-.0445	13	14
1076.398523	-.0602	12	13
1078.460637	-.0935	11	12
1080.542138	-.0607	10	11
1082.643435	-.1138	9	10
1084.765213	-.0553	8	9
1086.907689	-.0880	7	8
1089.071304	-.1274	6	7
1091.256459	-.0701	5	6
1093.463248	-.0639	4	5
1095.691961	-.0088	3	4
1097.941668*	-.9746	2	3
1109.527758	-.0989	2	1
1111.911235	.2731	3	2
1114.315745	-.0285	4	3
1116.741970	-.0943	5	4
1119.189540	-.0162	6	5
1121.657845	-.0745	7	6
1124.146696	-.0727	8	7
1126.655597	-.0625	9	8
1129.184003	-.0812	10	9
1131.731383	-.0845	11	10
1134.297164	.0031	12	11
1136.880378	-.0589	13	12
1139.480484	-.0003	14	13
1142.096424	.0232	15	14
1144.727209	.0213	16	15
1147.371770	.0248	17	16
1150.028841	-.0261	18	17
1152.697160	-.0791	19	18
1155.375406	-.0319	20	19
1158.061985	.0506	21	20
1160.755299	.1989	22	21

**D<sup>13</sup>C<sup>15</sup>N Table 18 continued**  
 03<sup>1f</sup>0-01<sup>1f</sup>0 ZTGDCNFS.DAT  
 observed      10<sup>3</sup>(o-c)    J'    J''

1163.453251	.0303	23	22
1166.154557	.0443	24	23
1168.857437	.2881	25	24
1171.558789	-.4993	26	25
1174.259246	.1326	27	26

The rms dev = 0.000121 for 50 lines

**D<sup>13</sup>C<sup>15</sup>N Table 19**

00 <sup>0</sup> mm wave for ground state			
observed	10 <sup>3</sup> (o-c)	J'	J''
138123.535000	-.3070	2	1
207182.160000	5.8737	3	2
276237.031000	1.0844	4	3
345286.887000	7.5991	5	4
414330.451000	2.4962	6	5
483366.498000	2.3088	7	6

The rms dev = 0.000000 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 20**

01 <sup>1e</sup> 0 mm wave rot. transitions			
observed	10 <sup>3</sup> (o-c)	J'	J''
138239.614000	9.8813	2	1
207356.209000	2.7842	3	2
276468.987000	9.5039	4	3
345576.702000	.7101	5	4
414678.015000	2.0883	6	5

The rms dev = 0.000000 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 21**

01 <sup>1f</sup> 0 mm wave rot. transitions			
observed	10 <sup>3</sup> (o-c)	J'	J''
138927.705000	9.4247	2	1
208388.282000	8.8247	3	2
277844.871000	2.9865	4	3
347296.198000	.0962	5	4
416740.926000	-.2791	6	5

The rms dev = 0.000000 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 22**

01 <sup>1f</sup> 0-01 <sup>1e</sup> 0 mm wave direct l-type doublets			
observed	10 <sup>3</sup> (o-c)	J'	J''
9628.610000	6.4150	7	7
12377.461000	2.7419	8	8
15468.768000	1.7723	9	9
18902.123000	1.2287	10	10
22677.071000	3.8682	11	11
26793.131000	-.4474	12	12
31249.744000	9.6583	13	13
36046.361000	.8318	14	14
41182.301000	5.4824	15	15
46657.000000	4.7085	16	16
52469.648000	1.1595	17	17
119855.054000	1.5243	26	26

The rms dev = 0.000000 for 11 lines

**D<sup>13</sup>C<sup>15</sup>N Table 23**

02 <sup>0</sup> mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
139068.348000	6.0812	2	1
208591.278000	4.8397	3	2
278100.670000	2.6044	4	3
347592.107000	8.8222	5	4
417061.014000	7.5307	6	5

The rms dev = 0.000000 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 24**

02 <sup>2e</sup> 0 mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
208554.958000	.3296	3	2
278081.782000	2.6027	4	3
347615.903000	5.7489	5	4

The rms dev = 0.000001 for 2 lines

**D<sup>13</sup>C<sup>15</sup>N Table 25**

02 <sup>2f</sup> 0 mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
208542.351000	.0422	3	2
278050.240000	4.9800	4	3
347552.784000	6.9700	5	4
417048.673000	.9580	6	5

The rms dev = 0.000001 for 4 lines

**D<sup>13</sup>C<sup>15</sup>N Table 26**

03 <sup>3</sup> 0 mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
278924.400000	6.2048	4	3
348654.344000	5.3405	5	4

The rms dev = 0.000000 for 2 lines

**D<sup>13</sup>C<sup>15</sup>N Table 27**

03 <sup>1e</sup> 0 mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
138841.704000	4.6748	2	1
208256.185000	5.7650	3	2
277663.032000	3.3272	4	3
347059.784000	2.3170	5	4

The rms dev = 0.000000 for 4 lines

**D<sup>13</sup>C<sup>15</sup>N Table 28**

03 <sup>1f</sup> 0 mm wave			
observed	10 <sup>3</sup> (o-c)	J'	J''
140252.039000	6.0471	2	1
210371.395000	6.1657	3	2
280482.701000	5.0347	4	3
350583.236000	3.6227	5	4

The rms dev = 0.000000 for 4 lines

**D<sup>13</sup>C<sup>15</sup>N Table 29**

03 <sup>1f</sup> 0-01 <sup>1e</sup> 0 run FS observed	10 <sup>3</sup> (o-c)	J'	J''
1104.861069	.0391	1	1
1104.928223	.0650	2	2
1105.028866	.1322	3	3
1105.162947	.3297	4	4
1105.329664	.0461	5	5
1105.529466	-.0276	6	6
1105.762111	.1595	7	7
1106.026721	.0836	8	8
1106.323285	.1444	9	9
1106.651172	.1895	10	10
1107.009990	.3731	11	11
1107.398687	.2641	12	12
1108.263997	.3381	14	14
1108.738196	-.2263	15	15
1110.319786*	.5393	18	18

The rms dev = 0.000207 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 30**

03 <sup>1e</sup> 0-01 <sup>1f</sup> 0 run FS observed	10 <sup>3</sup> (o-c)	J'	J''
1104.782857	.1166	7	7
1104.768169	.1032	8	8
1104.750568	-.0114	9	9
1104.729897	-.0635	10	10
1104.705876	.0084	11	11
1104.678406	.4686	12	12
1104.645901	.1048	13	13
1104.609470	.4116	14	14
1104.567267	-.0642	15	15
1104.520216	-.0091	16	16
1104.466696	-.6542	17	17
1104.271244*	.8971	20	20
1104.191465*	.7656	21	21
1104.105887*	2.3718	22	22
1104.008881	.3864	23	23
1103.905484	.1179	24	24

The rms dev = 0.000281 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 31**

03 <sup>3e</sup> 0-01 <sup>1e</sup> 0 runs HS, FS observed	10 <sup>3</sup> (o-c)	J'	J''
1056.145540*	.7741	32	33
1059.231531*	1.2960	30	31
1060.809320	.4666	29	30
1065.710952	.0291	26	27
1067.400283	.2048	25	26
1072.630633	-.3685	22	23
1074.428092	-.3815	21	22
1078.103168	.4770	19	20
1081.880669	.0376	17	18
1083.808028	.3489	16	17
1087.736288	.1402	14	15
1089.737108	.2803	13	14
1154.555849	.1402	14	13
1159.829608	.3541	16	15
1162.500748	-.4075	17	16
1165.196928	.0834	18	17
1167.916580	.0034	19	18
1176.222508	.1859	22	21
1179.040518	.1187	23	22
1181.883533	.0514	24	23
1184.751486	-.1960	25	24
1187.645331	.2466	26	25
1190.563674	-.0692	27	26
1196.476322	-.5817	29	28
1202.491919	.8789	31	30

The rms dev = 0.000335 for 22 lines

**D<sup>13</sup>C<sup>15</sup>N Table 32**03<sup>3f</sup>0-01<sup>1f</sup>0 runs HS, FS

observed	10 <sup>3</sup> (o-c)	J'	J''
1051.068370	.0136	32	33
1052.770466	.0404	31	32
1054.510388	-.0070	30	31
1056.287226	-.0985	29	30
1058.100144	.0840	28	29
1059.947334	.0750	27	28
1061.827460	.0321	26	27
1063.739208	.2477	25	26
1065.680268	.0814	24	25
1067.649472	.0689	23	24
1069.644884	-.0356	22	23
1071.664997	-.0843	21	22
1073.708433	.1343	20	21
1075.773142	.0783	19	20
1082.083116	.1239	16	17
1086.374041	-.0746	14	15
1088.542530	.5301	13	14
1092.917960	-.3420	11	12
1158.481110	.0394	16	15
1160.981893	.6696	17	16
1168.582551	-.1519	20	19
1171.153182*	1.1090	21	20
1173.746908	-.1440	22	21
1176.362670	.1831	23	22
1179.001961	-.2037	24	23
1181.667633	-.0560	25	24
1184.360629	-.0459	26	25
1187.082564	-.1464	27	26
1192.619975	.0875	29	28
1195.437574	-.1195	30	29
1198.289440	-.3608	31	30
1201.177146	.0844	32	31
1207.059394	.1164	34	33
1210.054818	.0661	35	34
1213.085500*	-.9381	36	35

The rms dev = 0.000200 for 32 lines

**D<sup>13</sup>C<sup>15</sup>N Table 33**  
 03<sup>1ε</sup>0-01<sup>1ε</sup>0 runs HS, FS  
 observed 10<sup>3</sup>(o-c) J' J''

1014.150442	.9339	41	42
1016.225414	.0968	40	41
1018.302605*	1.0985	39	40
1020.385175	.5282	38	39
1022.467761	-.3681	37	38
1024.554276	.1345	36	37
1026.643009	.3276	35	36
1028.733884	.1245	34	35
1030.827528	.1331	33	34
1032.923573	-.0467	32	33
1035.022604	.1196	31	32
1037.124110	.0594	30	31
1039.228446	.0424	29	30
1041.335762	.1190	28	29
1043.446037	.1425	27	28
1045.559414	.1115	26	27
1047.676154	.1179	25	26
1049.796417	.1283	24	25
1051.920467	.1903	23	24
1162.563233	.0561	24	23
1165.027664	.0240	25	24
1167.493490	.0259	26	25
1169.960498	.1260	27	26
1172.428183	.0719	28	27
1174.896485	.0312	29	28
1177.365240	.0493	30	29
1179.834205	.0680	31	30
1182.303224	.0970	32	31
1184.771979	-.0351	33	32
1187.240702	.0369	34	33
1189.709020	.0547	35	34
1192.176753	-.0584	36	35
1194.644094	-.0181	37	36
1197.110735	-.0509	38	37
1199.576986	.2258	39	38
1202.041176	-.7922	40	39
1204.505799	-.5516	41	40
1206.966472*	3.3804	42	41
1209.432379	-.0415	43	42
1037.124310	.2592	30	31
1039.227991	-.4121	29	30
1041.335468	-.1753	28	29
1043.445587	-.3075	27	28
1045.559211	-.0915	26	27
1047.676159	.1228	25	26
1049.796307	.0185	24	25
1051.920326	.0495	23	24

**D<sup>13</sup>C<sup>15</sup>N Table 33 continued**  
 03<sup>1ε</sup>0-01<sup>1ε</sup>0 runs HS, FS  
 observed 10<sup>3</sup>(o-c) J' J''

1054.048276	.0346	22	23
1056.180359	-.0889	21	22
1058.317138	-.0451	20	21
1060.458812	.0572	19	20
1062.605519	.0296	18	19
1064.757641	-.0883	17	18
1066.915824	-.0061	16	17
1069.080179	.0222	15	16
1071.251049	-.0305	14	15
1073.428915	-.0558	13	14
1075.614152	-.0479	12	13
1077.807070	-.0593	11	12
1080.008069	-.0410	10	11
1082.217583	.1057	9	10
1084.434748*	-.7983	8	9
1086.662576	-.0330	7	8
1088.898813	-.1162	6	7
1091.144696	-.0445	5	6
1093.400183	-.0594	4	5
1095.665491	-.1071	3	4
1097.941786*	.8535	2	3
1100.226535	.2052	1	2
1109.468684	-.0835	2	1
1111.804126	-.1437	3	2
1114.149379	-.0741	4	3
1116.504066	-.0419	5	4
1118.867941	-.0450	6	5
1121.240784	-.0187	7	6
1123.622213	-.0269	8	7
1126.011925	-.0235	9	8
1128.409473	-.0791	10	9
1130.814658	.0074	11	10
1133.226849	.0253	12	11
1135.645645	.0092	13	12
1138.070562	-.0778	14	13
1140.501419	.0373	15	14
1142.937427	.0224	16	15
1145.378234	-.0193	17	16
1147.823077*	-.4017	18	17
1150.272592	-.0487	19	18
1152.725259	-.0537	20	19
1155.181146	.0622	21	20
1160.100466	.0901	23	22
1162.563199	.0220	24	23
1165.027749	.1090	25	24
1167.493171	-.2928	26	25
1169.960408	.0360	27	26
1172.427949	-.1624	28	27

The rms dev = 0.000193 for 90 lines

**D<sup>13</sup>C<sup>15</sup>N Table 34** continued

D <sup>13</sup> C <sup>15</sup> N Table 34		03 <sup>1f</sup> 0-01 <sup>1f</sup> 0 run FS					
observed	10 <sup>3</sup> (o-c)	J'	J''	observed	10 <sup>3</sup> (o-c)	J'	J''
				1068.329100	-.0095	16	17
1021.863980	.5889	40	41	1070.321244	.0005	15	16
1023.853632	-.0164	39	40	1072.329555	-.0541	14	15
1025.836196	-.2445	38	39	1074.355065	-.0525	13	14
1027.811402	.1253	37	38	1076.398518	-.0652	12	13
1029.777889	.1180	36	37	1078.460757	.0264	11	12
1031.735457	-.2140	35	36	1080.542149	-.0497	10	11
1033.684395*	-.4947	34	35	1082.643517	-.0318	9	10
1035.625742	.2073	33	34	1084.765207	-.0613	8	9
1037.558234	.3050	32	33	1086.907715	-.0620	7	8
1039.482815	.1868	31	32	1089.071396	-.0354	6	7
1041.400548	.1216	30	31	1091.256443	-.0861	5	6
1043.312536	.1905	29	30	1093.463239	-.0729	4	5
1045.219818	.2001	28	29	1095.691815	-.1548	3	4
1047.123831	.1688	27	28	1097.941786*	-.8566	2	3
1049.026196	.1558	26	27	1100.215411	-.0115	1	2
1050.928648	.2271	25	26	1109.527858	.0010	2	1
1052.832722	.1871	24	25	1111.911190	.2281	3	2
1054.740362	.2252	23	24	1114.315751	-.0225	4	3
1171.559433	.1443	26	25	1116.742025	-.0393	5	4
1174.259252	.1383	27	26	1119.189547	-.0092	6	5
1176.955009	.1392	28	27	1121.657874	-.0455	7	6
1179.644999	.0914	29	28	1124.146760	-.0087	8	7
1182.327881	.1553	30	29	1126.655613	-.0465	9	8
1185.002083	.0795	31	30	1129.184043	-.0412	10	9
1187.666791	.1566	32	31	1131.731421	-.0465	11	10
1190.320805	.0667	33	32	1134.297129	-.0318	12	11
1192.963927	.2508	34	33	1136.880438	.0010	13	12
1195.594785	-.2520	35	34	1139.480492	.0076	14	13
1198.214524	-.1066	36	35	1142.096417	.0162	15	14
1200.822939	.4803	37	36	1144.727194	.0063	16	15
1203.418277	-.4114	38	37	1147.371095*	-.6501	17	16
1206.003720	.0965	39	38	1150.028864	-.0031	18	17
1041.399626	-.8004	30	31	1152.697270	.0308	19	18
1043.312032	-.3130	29	30	1155.375385	-.0529	20	19
1045.219333	-.2851	28	29	1158.061936	.0016	21	20
1047.124013	.3507	27	28	1160.755179	.0789	22	21
1049.025937	-.1033	26	27	1163.453440	.2193	23	22
1050.928642	.2214	25	26	1166.154841	.3283	24	23
1052.832458	-.0764	24	25	1168.857267	.1181	25	24
1054.740299	.1624	23	24	1171.559521	.2326	26	25
1056.653120	.1524	22	23	1174.259433	.3196	27	26
1058.572648	-.0760	21	22	1176.954922	.0526	28	27
1060.501129	.0949	20	21	1179.644994	.0865	29	28
1062.439403	-.0356	19	20	1182.327334	-.3914	30	29
1064.389350	-.0301	18	19	1185.003103*	1.0993	31	30
1066.352148	-.0466	17	18	1187.665998	-.6360	32	31

The rms dev = 0.000204 for 89 lines



**D<sup>13</sup>C<sup>15</sup>N Table 35**  
04<sup>2e</sup>0-03<sup>1f</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
552.521975*	2.2384	4	4
552.510545	-.3260	5	5
552.488677	-.7837	9	9
552.503625	-.3860	10	10
552.531888	-.0359	11	11
552.576773*	.7743	12	12
552.638816	-.1229	13	13
552.723027	-.2334	14	14
552.831068	-.1453	15	15
552.964440	-.2912	16	16
553.125799	.3897	17	17
553.314075	-.4360	18	18
553.533176	.1765	19	19
553.781834	.2549	20	20
554.058779*	1.9662	21	21
554.370657	-.1692	22	22
554.711870	-.1466	23	23
555.084066	-.3284	24	24
555.487793	-.1307	25	25
555.922450	.0085	26	26
556.387371	-.2606	27	27
556.882790	-.2012	28	28

The rms dev = 0.000305 for 18 lines

**D<sup>13</sup>C<sup>15</sup>N Table 36**  
04<sup>2f</sup>0-03<sup>1e</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
552.618702*	.8202	2	2
552.676259	-.1092	3	3
552.851927	.1021	5	5
552.964440*	4.3451	6	6
553.101892*	3.3258	7	7
553.261082	-.0187	8	8
553.436409	.0090	9	9
553.631498	.4318	10	10
553.844701	-.3312	11	11
554.078096	-.1130	12	12
554.332796*	2.3140	13	13
554.601738	.0300	14	14
554.891449	-.2631	15	15
555.200070	-.2151	16	16
555.526923	-.2578	17	17
555.872256	.1413	18	18
556.234328	-.4344	19	19
556.614737	-.0238	20	20
557.011690	-.0179	21	21
557.425225	.0601	22	22
557.854416	-.2425	23	23
558.299432	-.2538	24	24
558.759748	.0305	25	25
559.233902	-.3017	26	26
559.730759*	8.1788	27	27

The rms dev = 0.000217 for 20 lines

**D<sup>13</sup>C<sup>15</sup>N Table 37**

$04^{0e}0-03^{1f}0$ Emission observed	$10^3(o-c)$	J'	J''
544.961436	-.3796	2	2
544.950672	.1296	3	3
544.933880	-.2551	4	4
544.911189	-.2336	5	5
544.880428	-.5301	6	6
544.840539	-.5013	7	7
544.789756	.0072	8	8
544.725254	.2583	9	9
544.644719	.1230	10	10
544.545218*	1.1384	11	11
544.440984*	2.8065	12	12
544.288100	-.0614	13	13
544.124882	.1665	14	14
543.937064	.4257	15	15
543.722541	-.6390	16	16
543.483954	-.1174	17	17
543.225108*	5.5868	18	18
542.930257	.0713	19	19
542.616548	-.5735	20	20
542.280541*	1.1835	21	21
541.925164	-.5014	22	22
541.550432	-.3934	23	23
541.160241*	1.0076	24	24
540.753034	.0277	25	25
540.338557*	4.2647	26	26

The rms dev = 0.000346 for 18 lines

**D<sup>13</sup>C<sup>15</sup>N Table 38**

$04^{2f}0-03^{3e}0$ Emission observed	$10^3(o-c)$	J'	J''
537.347158	-.6193	3	3
537.387504*	3.8162	4	4
537.426229*	1.7538	5	5
537.480831*	.5590	6	6
537.539644	-.4469	7	7
537.612726*	5.8212	8	8
537.678078*	2.0324	9	9
537.758836	-.2046	10	10
537.843361	.3933	11	11
537.930686	-.4214	12	12
538.022861	.2359	13	13
538.116632	-.0072	14	14
538.212078	-.1504	15	15
538.303247*	5.1893	16	16
538.404486	.2072	17	17
538.495968*	2.7812	18	18
538.591048	.2213	19	19
538.679183	-.2983	20	20
538.764231*	.5485	21	21
538.842726	.3213	22	22
538.914684	.0486	23	23
538.979670	.2887	24	24
539.034324*	1.3514	25	25
539.081379*	1.2043	26	26
539.119777	.5676	27	27
539.144809	.1067	28	28
539.158253	-.0074	29	29

The rms dev = 0.000320 for 16 lines

**D<sup>13</sup>C<sup>15</sup>N Table 39**  
04<sup>0e</sup>0-02<sup>0e</sup>0 ZTGDCNGS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1035.966549	.5640	27	28
1038.111964	.3705	26	27
1040.261586	.5664	25	26
1042.414241	.2592	24	25
1044.570532	.4024	23	24
1046.727199*	1.8476	22	23
1048.890226	-.0368	21	22
1051.049951*	3.3243	20	21
1053.217677	.0940	19	20
1055.382593	-.1389	18	19
1057.548409	.0367	17	18
1059.714541	.2211	16	17
1061.880685	.0683	15	16
1064.047918	.3390	14	15
1066.216193	.3671	13	14
1068.386353	.0730	12	13
1070.560182	.0432	11	12
1072.735188*	3.6314	10	11
1074.923906	.0204	9	10
1077.116839	-.1266	8	9
1079.319485	-.1886	7	8
1081.533249	-.2903	6	7
1083.759766	-.1873	5	6
1085.999883	-.2429	4	5
1088.254957	-.1038	3	4
1090.525494	-.0458	2	3
1092.812110	-.0042	1	2
1095.117107*	2.0047	0	1
1099.770577	.1561	1	0
1102.122286	.0692	2	1
1104.489606	.2489	3	2
1106.871034	.0437	4	3
1109.266086	.0503	5	4
1111.673217	.0237	6	5
1114.090835	-.1264	7	6
1116.527600*	9.9326	8	7
1118.958281*	6.7695	9	8
1121.390764	.1352	10	9
1123.833164	-.0011	11	10
1126.277222	-.1409	12	11
1128.721629	-.0211	13	12
1131.164646	-.0729	14	13
1133.605745	.1591	15	14
1136.043532	-.0900	16	15
1138.478725	.1733	17	16
1140.910203	-.2155	18	17
1143.339700	.1690	19	18

**D<sup>13</sup>C<sup>15</sup>N Table 39 continued**  
04<sup>0e</sup>0-02<sup>0e</sup>0 ZTGDCNGS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1145.766336	-.0541	20	19
1148.195800*	4.1825	21	20
1150.615868	-.0173	22	21
1153.039680	-.1803	23	22
1155.464001	-.1587	24	23
1157.889232	-.0907	25	24
1160.315686	-.1085	26	25
1162.741978*	1.9435	27	26
1165.173604	-.3492	28	27

The rms dev = 0.000209 for 47 lines

**D<sup>13</sup>C<sup>15</sup>N Table 40**  
04<sup>2e</sup>0-02<sup>2e</sup>0 ZTGDCNGS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1042.262359	-.0611	26	27
1044.007174*	1.1336	25	26
1045.766468*	2.5476	24	25
1047.544921*	1.4606	23	24
1049.342431	.2439	22	23
1051.161452*	3.2977	21	22
1052.996770	.8361	20	21
1054.862061*	4.9824	19	20
1056.743009	.0029	18	19
1058.654771	-.1778	17	18
1060.596202*	2.3028	16	17
1062.560623	.0683	15	16
1064.556742*	1.4676	14	15
1066.578011	-.0433	13	14
1068.630949*	2.4179	12	13
1070.705840	-.1725	11	12
1072.809703	.1674	10	11
1074.937738	-.2035	9	10
1077.090124	.1649	8	9
1079.264390	.1058	7	8
1085.908258	-.7050	4	5
1088.160652	-.3459	3	4
1090.430414	.1151	2	3
1104.392726*	-.7278	3	2
1106.779201*	-.7912	4	3
1109.188181*	3.1436	5	4
1111.609033	-.5471	6	5
1114.055305	.5358	7	6
1116.525083*	3.2036	8	7
1119.012151	-.1162	9	8
1121.524397*	2.9119	10	9
1124.068771	.4475	11	10
1129.229648*	3.0859	13	12
1131.857477	-.2169	14	13
1134.511773	.1610	15	14
1137.194038	-.2856	16	15
1139.905113	-.1391	17	16
1142.643500	.0634	18	17
1145.408026	.4424	19	18
1148.195800	-.3319	20	19
1151.007145	-.1750	21	20
1153.839351	.1039	22	21

The rms dev = 0.000321 for 27 lines

**D<sup>13</sup>C<sup>15</sup>N Table 41**  
04<sup>2f</sup>0-02<sup>2f</sup>0 ZTGDCNGS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1037.819548	.0903	27	28
1039.806938	.5014	26	27
1041.797985	-.2142	25	26
1043.795524	.0738	24	25
1045.801945*	3.0399	23	24
1047.810011	.7263	22	23
1049.827457	.1473	21	22
1051.853721	.0269	20	21
1053.889001	-.1398	19	20
1055.934281	-.0553	18	19
1057.990045	.0987	17	18
1060.056572	-.0399	16	17
1062.130930*	4.0166	15	16
1064.222023*	3.5096	14	15
1066.328907	-.0120	13	14
1068.445781	.1610	12	13
1070.576254	.1418	11	12
1072.720982	.1472	10	11
1074.880068	-.1197	9	10
1077.054272	-.2593	8	9
1079.243903	-.2827	7	8
1081.449289	-.1417	6	7
1083.670046	-.4593	5	6
1085.908258	.6498	4	5
1088.160652	-.2450	3	4
1090.430414	-.0752	2	3
1104.392726	.8474	3	2
1106.776017	.5385	4	3
1109.175108	.2446	5	4
1111.589487	-.2996	6	5
1114.020073	.1124	7	6
1116.464934	-.1230	8	7
1118.924799	.0916	9	8
1121.398313	-.1895	10	9
1123.886783*	.7895	11	10
1126.386671	-.0202	12	11
1128.899758	-.3102	13	12
1131.425556	-.0027	14	13
1133.962363	-.1971	15	14
1136.510449	.0141	16	15
1139.068405	-.1069	17	16
1141.636031	-.0589	18	17
1144.212565	.1257	19	18
1146.796729	-.0768	20	19
1149.388109	-.3063	21	20

The rms dev = 0.000285 for 40 lines

**D<sup>13</sup>C<sup>15</sup>N Table 42**04<sup>0ε</sup>0-02<sup>0ε</sup>0 ZTGDCNFS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1055.383439	.7070	18	19
1057.548444	.0717	17	18
1059.714373	.0531	16	17
1061.880835	.2183	15	16
1064.047783	.2040	14	15
1066.215975	.1491	13	14
1068.386397	.1170	12	13
1070.560304	.1652	11	12
1072.738834	.0145	10	11
1074.924141	.2554	9	10
1077.117120	.1543	8	9
1079.319959	.2854	7	8
1081.533557	.0176	6	7
1083.760032	.0786	5	6
1086.001211*	1.0850	4	5
1088.254925	-.1358	3	4
1090.525948	.4081	2	3
1092.811660*	-.4542	1	2
1102.122502	.2852	2	1
1104.489429	.0719	3	2
1106.871051	.0607	4	3
1109.266130	.0943	5	4
1111.671758*	1.4352	6	5
1114.090796	-.1654	7	6
1116.521720*	4.0526	8	7
1118.951811	.2995	9	8
1121.390805	.1762	10	9
1123.833314	.1488	11	10
1126.277666	.3030	12	11
1128.721915	.2648	13	12
1131.165024	.3050	14	13
1133.605551	-.0348	15	14
1136.043712	.0899	16	15
1138.478712	.1603	17	16
1140.911025	.6064	18	17
1143.340907*	1.3760	19	18
1145.766724	.3338	20	19

The rms dev = 0.000254 for 32 lines

**D<sup>13</sup>C<sup>15</sup>N Table 43**04<sup>2ε</sup>0-02<sup>2ε</sup>0 ZTGDCNFS.DAT

observed	10 <sup>3</sup> (o-c)	J'	J''
1056.743469	.4629	18	19
1058.654756	-.1928	17	18
1060.593186	-.7131	16	17
1062.560287	-.2676	15	16
1064.555855	.5806	14	15
1066.578068	.0136	13	14
1068.628404	-.1270	12	13
1070.706131	.1184	11	12
1072.809592	.0564	10	11
1074.937683	-.2585	9	10
1077.089886	-.0730	8	9
1079.264840	.5558	7	8
1081.461293*	1.6416	6	7
1083.675104	.2143	5	6
1085.909217	.2539	4	5
1088.161173	.1750	3	4
1090.430426	.1271	2	3
1106.779752	-.2402	4	3
1109.184979	-.0583	5	4
1111.609719	.1388	6	5
1114.054613	-.1561	7	6
1116.517994*	3.8853	8	7
1119.009969*	2.2982	9	8
1121.527907	.5980	10	9
1124.068458	.1345	11	10
1126.634465*	2.0201	12	11
1129.232449	-.2849	13	12
1131.858046	.3520	14	13
1134.511650	.0380	15	14
1137.194092	-.2316	16	15
1139.905717	.4648	17	16
1145.408130	.5464	19	18

The rms dev = 0.000327 for 27 lines

**D<sup>13</sup>C<sup>15</sup>N Table 44**

04 <sup>2f</sup> 0-02 <sup>2f</sup> 0 ZTGDCNFS.DAT observed	10 <sup>3</sup> (o-c)	J'	J''
1060.056500	-.1119	16	17
1062.135294	.3473	15	16
1064.225807	.2743	14	15
1066.329304	.3849	13	14
1068.445612	-.0079	12	13
1070.577850*	1.7378	11	12
1072.720784	-.0507	10	11
1074.880078	-.1097	9	10
1077.055216	.6846	8	9
1079.243922	-.2637	7	8
1081.449507	.0762	6	7
1083.672123*	1.6176	5	6
1085.909217*	1.6088	4	5
1088.161173	.2759	3	4
1090.430426	-.0632	2	3
1106.775926	.4475	4	3
1109.174699	-.1644	5	4
1111.590020	.2333	6	5
1114.020009	.0484	7	6
1116.465632	.5749	8	7
1118.924788	.0806	9	8
1121.399213	.7104	10	9
1123.886153	.1595	11	10
1126.386952	.2607	12	11
1128.900391	.3227	13	12
1131.417898*	7.6607	14	13
1133.963788*	1.2278	15	14
1136.511011	.5761	16	15
1139.068359	-.1529	17	16
1141.636014	-.0759	18	17

The rms dev = 0.000327 for 25 lines

**D<sup>13</sup>C<sup>15</sup>N Table 45**

04 <sup>2ε</sup> 0-03 <sup>1ε</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
507.014770	-.5288	22	23
508.527771*	2.1834	21	22
510.092056	.1424	20	21
511.708771*	6.6792	19	20
516.825724	-.7666	16	17
522.386435*	1.4363	13	14
524.328263	-.5228	12	13
526.314082	-.6350	11	12
528.340727	.3843	10	11
530.403292	.2431	9	10
532.500856	.6898	8	9
534.627265*	1.8065	7	8
559.623621*	1.1065	3	2
562.018566*	2.6664	4	3
566.882981	-.3588	6	5
574.376110*	-.9446	9	8
576.937508	-.0080	10	9
579.534222	.7912	11	10
582.167306	.0137	12	11
584.841464	.0254	13	12
587.558136	.1872	14	13
590.319376*	.8197	15	14
593.125120	.5327	16	15
595.977862*	.9331	17	16
598.875837	-.1910	18	17
604.814419	.1764	20	19
607.852472	.1388	21	20

The rms dev = 0.000435 for 18 lines

**D<sup>13</sup>C<sup>15</sup>N Table 46**

04<sup>2f</sup>0-03<sup>1f</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

452.609485	.1850	42	43
456.970489	-.8248	40	41
461.364785	-.7781	38	39
463.576384	-.1948	37	38
465.798021	.2298	36	37
468.029454	-.3866	35	36
470.273298	.0146	34	35
472.527565*	-.9942	33	34
474.796010	.0464	32	33
477.075132	-.4898	31	32
479.367542	.0691	30	31
481.671115	-.1456	29	30
483.987707*	1.1692	28	29
486.312342	-.3367	27	28
488.649336	.4322	26	27
490.993962	-.3472	25	26
493.347356	-.5472	24	25
495.708865	.2242	23	24
500.447368	.0605	21	22
502.823277	.1040	20	21
505.202134	.0350	19	20
507.584334*	1.1350	18	19
509.965081	-.5829	17	18
512.348105	-.6605	16	17
514.731075	-.7811	15	16
517.114007	-.3579	14	15
519.496206	.4123	13	14
521.875921	.2115	12	13
524.253595	-.1436	11	12
526.629635	.0756	10	11
529.002875	-.0199	9	10
531.373082	-.4248	8	9
533.740921	-.2682	7	8
536.105674	-.0890	6	7
559.552725	.2447	3	2
564.192121*	1.1946	5	4
566.508576*	1.4224	6	5
568.815954	-.5725	7	6
571.121750	.3606	8	7
573.421843	.1321	9	8
575.717452	-.0260	10	9
578.007514*	1.1866	11	10
580.295340	-.0758	12	11
582.577477	-.2177	13	12
584.855887	.2387	14	13
587.129524	.0893	15	14
589.399446	.1787	16	15

**D<sup>13</sup>C<sup>15</sup>N Table 46 continued**

04<sup>2f</sup>0-03<sup>1f</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

591.665562	.1405	17	16
593.928134	-.1095	18	17
596.187972	-.1848	19	18
598.445836	.1674	20	19
600.700692	-.6814	21	20
602.955902	-.0535	22	21
605.210143	-.0429	23	22
607.464868	-.0475	24	23
609.721110	.0468	25	24
611.979693	.0964	26	25
614.241376	-.1316	27	26
616.507557	-.2259	28	27
618.779415	.0470	29	28
621.055563*	1.5684	30	29
623.341806	-.0234	31	30
625.634589	.5154	32	31
627.934539	.2328	33	32
630.243670	.8843	34	33
632.559968	.3870	35	34
634.884714	.1356	36	35
637.217517	.0203	37	36
639.558114	.2037	38	37
641.905380	.1036	39	38
644.258769	-.1957	40	39
646.618434	.1474	41	40
648.983305	.7837	42	41
651.350660	-.2792	43	42
653.722854	.0327	44	43
656.097585	.1120	45	44
660.852175	-.3165	47	46

The rms dev = 0.000341 for 70 lines

**D<sup>13</sup>C<sup>15</sup>N Table 48**

04 <sup>4f</sup> 0-03 <sup>3f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
497.797227*	1.4827	27	28
499.883263	-.5945	26	27
501.985291	-.3223	25	26
504.102275	-.2979	24	25
506.232574	-.9069	23	24
508.376709	-.5138	22	23
510.532640	-.1762	21	22
512.699165	-.2367	20	21
514.876467	.2340	19	20
517.062466	-.2011	18	19
519.257619	-.5370	17	18
521.461482*	-.7547	16	17
523.674907	.3844	15	16
525.894844	.1485	14	15
593.338826	.0928	14	13
598.203758	.0062	16	15
600.647346	.0248	17	16
603.098677	.0648	18	17
605.558116	.1455	19	18
608.026057	.2365	20	19
610.502878	.2023	21	20
612.989311	.1625	22	21
615.486273	.3120	23	22
617.992781*	1.1742	24	23
623.047832	.3099	26	25
625.595694	.2239	27	26
628.159250	-.1168	28	27
630.740697	-.0929	29	28

The rms dev = 0.000328 for 25 lines

**D<sup>13</sup>C<sup>15</sup>N Table 47**

04 <sup>4e</sup> 0-03 <sup>3e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
488.162425	-.8703	31	32
490.405019	.1543	30	31
492.639675	-.1907	29	30
494.868813	.1300	28	29
497.091490	-.3869	27	28
499.310165	.0033	26	27
501.523986	-.3875	25	26
503.735809	.3727	24	25
505.944760	.4351	23	24
508.151449	-.5824	22	23
510.359405	-.1295	21	22
512.567285	-.4889	20	21
516.990195	.2758	18	19
519.205306	-.0627	17	18
521.424222	-.4089	16	17
523.648672	.3969	15	16
525.876508	-.2839	14	15
593.330939	.1805	14	13
595.755460	.2299	15	14
598.185121	.0754	16	15
600.619908	.0848	17	16
603.055767*	3.3429	18	17
605.500833*	1.5417	19	18
607.949196	.1940	20	19
610.398395	.1074	21	20
612.849793	.3555	22	21
615.301712	.1421	23	22
617.754102	.3799	24	23
620.205107	.2440	25	24
622.654305	.3936	26	25
625.100052	.2909	27	26
627.541327	.0161	28	27
629.977631	.1317	29	28
632.407396	.0552	30	29
637.244483	-.1492	32	31
639.650655	-.1350	33	32
642.048247	.1902	34	33
644.436529	.2870	35	34
646.815655	.3179	36	35
649.184684*	-.8160	37	36

The rms dev = 0.000310 for 37 lines

**D<sup>13</sup>C<sup>15</sup>N Table 49**

04 <sup>40</sup> -03 <sup>30</sup> Emission e-e and f-f observed	10 <sup>3</sup> (o-c)	J'	J''
537.105523	-.1911	9	10
539.370017	.2478	8	9
541.640750	.1321	7	8
543.917408	-.8861	6	7
546.202946	.1192	5	6
569.428058	.0453	4	3
571.788285	-.1722	5	4
574.156413	.6861	6	5
576.529613	-.1763	7	6
578.910465	-.1426	8	7
581.298420	.2794	9	8
583.692324	-.0181	10	9
586.093225	.0634	11	10
588.500613	.0696	12	11
590.913311*	1.1157	13	12

The rms dev = 0.000333 for 13 lines



**D<sup>13</sup>C<sup>15</sup>N Table 50**

04<sup>0e</sup>0-03<sup>1f</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
544.961436	-.3796	2	2
544.950672	.1296	3	3
544.933880	-.2551	4	4
544.911189	-.2336	5	5
544.880428	-.5301	6	6
544.840539	-.5013	7	7
544.789756	.0072	8	8
544.725254	.2583	9	9
544.644719	.1230	10	10
544.545218*	1.1384	11	11
544.428874*	.6964	12	12
544.288100	-.0614	13	13
544.124882	.1665	14	14
543.937064	.4257	15	15

The rms dev = 0.000304 for 11 lines

**D<sup>13</sup>C<sup>15</sup>N Table 51**

04<sup>0e</sup>0-03<sup>1e</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
461.700688	-.5007	37	38
463.887295	-.0231	36	37
466.075242	-.1137	35	36
468.264863	-.2728	34	35
470.456257	-.2082	33	34
472.649344	.2249	32	33
474.843150	.3130	31	32
477.037153	-.1667	30	31
479.231993	-.2322	29	30
481.427335	.1691	28	29
483.621762	.0555	27	28
485.815046	-.3187	26	27
488.007152	-.4614	25	26
490.197879	-.0086	24	25
492.385505	-.0906	23	24
494.569778	-.3600	22	23
496.750728	-.2057	21	22
498.927612	.1559	20	21
501.099256	-.0219	19	20
503.265474	-.6526	18	19
505.426430*	1.5125	17	18
507.584334	-.6053	16	17
509.737310	-.3461	15	16
511.887068	.0751	14	15
514.034408	.1868	13	14
516.180845	-.1197	12	13
518.329191	.0413	11	12
520.481199	.2713	10	11
522.638477	-.1067	9	10
524.804348	-.0898	8	9
526.980382	-.3697	7	8
529.169506	-.1434	6	7
531.373082	.0276	5	6
533.592352	-.2922	4	5
535.830663*	.8399	3	4
538.085990	.2862	2	3

The rms dev = 0.000274 for 33 lines

**D<sup>13</sup>C<sup>15</sup>N Table 53**

05 <sup>5</sup> 0-04 <sup>4</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
521.323428	.3195	16	17
523.550362	-.0469	15	16
525.784789	.6162	14	15
528.023977	-.4565	13	14
532.524627	.0660	11	12
534.784400	-.0765	10	11
537.051431	.4438	9	10
541.603569	-.2870	7	8
571.845045	.2919	5	4
574.217148	-.0533	6	5
576.596090	-.0795	7	6
578.982029	.3971	8	7
581.373699	.1389	9	8
583.772023	.0990	10	9
586.176560	-.1310	11	10
588.587950	.1234	12	11
591.005134	-.1597	13	12
593.429105	.0517	14	13
595.859093	.0290	15	14
598.295162	-.1197	16	15
600.737757	.0965	17	16
603.187178*	1.0271	18	17
605.639621*	1.0801	19	18

The rms dev = 0.000253 for 21 lines

**D<sup>13</sup>C<sup>15</sup>N Table 52**

04 <sup>0e</sup> 0-03 <sup>1e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
556.840586	-.2118	5	4
559.265617	-.0946	6	5
564.153814*	.0366	8	7
566.612535	-.0545	9	8
569.078266	.1650	10	9
571.547972	.1087	11	10
574.019142	-.3291	12	11
576.490679	.0180	13	12
578.959483	.0792	14	13
581.422808*	1.1731	15	14
583.882835	-.2010	16	15
586.335409	-.1820	17	16
591.219278	.1766	19	18
593.649841	.0560	20	19
596.074035*	.7225	21	20
598.490158	.0920	22	21
600.900947*	.4157	23	22
603.305341	.0898	24	23
605.704829	.0401	25	24
608.099649*	-.0514	26	25
610.489970	-.5454	27	26
612.877898	.1735	28	27
615.261823	.0508	29	28
617.643120	.0665	30	29
620.021905*	-.0085	31	30
622.398573	-.0759	32	31
624.773566	.0552	33	32
627.146807	.0998	34	33
629.518399	-.0092	35	34
631.889103	.3539	36	35
634.257792	-.0419	37	36
636.626116	.3761	38	37
638.992111	-.4091	39	38
641.358159	-.0482	40	39
643.722898	.0819	41	40
646.086722	.3761	42	41
648.457661*	8.8780	43	42

The rms dev = 0.000206 for 30 lines

**D<sup>13</sup>C<sup>15</sup>N Table 54**

05 <sup>5f</sup> 0-04 <sup>4f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
490.906971*	2.3604	30	31
493.024707	-.4762	29	30
495.151867	-.1408	28	29
497.287671*	1.2769	27	28
499.435840	.5606	26	27
501.591092	.6952	25	26
508.103686	-.2152	22	23
510.289763	-.2446	21	22
512.483518	.3261	20	21
608.099648*	4.1996	20	19
610.571696	.0247	21	20
613.045967	.0304	22	21
615.526502	-.2661	23	22
618.014334	-.0033	24	23
623.010873	.2061	26	25
625.519866	-.2311	27	26
628.037438	-.1922	28	27
630.563590	-.2510	29	28
633.099474	.0465	30	29
635.645139	-.0872	31	30

The rms dev = 0.000300 for 16 lines

**D<sup>13</sup>C<sup>15</sup>N Table 55**

05 <sup>5e</sup> 0-04 <sup>4e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
492.838600*	1.5149	29	30
495.008600	.4839	28	29
497.180600	.5978	27	28
499.342600*	1.0839	26	27
501.553600*	3.6151	25	26
510.273598	-.4981	21	22
512.471800	-.4217	20	21
608.099648*	.9835	20	19
610.563980	.1371	21	20
613.034589	.2426	22	21
615.509578	-.3388	23	22
620.475017	.0830	25	24
622.963738	.1973	26	25
625.455207	-.3043	27	26
627.950468	.2718	28	27
630.446880	.0472	29	28
632.944182	-.3550	30	29
635.442477	.1802	31	30
637.938732	-.2375	32	31

The rms dev = 0.000331 for 15 lines

**D<sup>13</sup>C<sup>15</sup>N Table 56**

05 <sup>5f</sup> 0-04 <sup>4e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
560.180353	-.0390	5	5
560.223066*	2.9918	6	6
560.266277	-.0561	7	7
560.318695	-.4566	8	8
560.379678*	1.1689	9	9
560.448471*	4.0894	10	10
560.516622	-.1190	11	11
560.681303	.5196	13	13
560.773048	.6672	14	14
560.975565*	1.1162	16	16
561.084691	-.0806	17	17
561.323932	.4286	19	19
561.451302	-.3493	20	20
561.724063	-.5863	22	22
561.868852	-.1989	23	23
562.018180	-.1730	24	24

The rms dev = 0.000373 for 11 lines

**D<sup>13</sup>C<sup>15</sup>N Table 57**

05 <sup>5e</sup> 0-04 <sup>4f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
560.180353	-.0391	5	5
560.223066*	2.9914	6	6
560.266277	-.0577	7	7
560.318695	-.4613	8	8
560.379678*	1.1566	9	9
560.448471*	4.0607	10	10
560.516622	-.1803	11	11
560.681303	.2888	13	13
560.773048	.2526	14	14
560.975565	-.0704	16	16
561.084691*	1.9908	17	17
561.323932*	4.1336	19	19
561.458312	-.1459	20	20
561.595137	-.2463	21	21
561.738658	-.2609	22	22
561.882258*	6.9106	23	23
562.046195	-.0713	24	24
562.209189*	1.1912	25	25
562.381745	.0291	26	26
562.559020*	1.4992	27	27
562.745517*	1.5619	28	28
562.941273	-.4545	29	29
563.145321	.4788	30	30
563.357085	.2417	31	31

The rms dev = 0.000265 for 15 lines

**D<sup>13</sup>C<sup>15</sup>N Table 58**

05<sup>3e</sup>0-04<sup>2e</sup>0 Emission  
observed      10<sup>3</sup>(o-c)      J'      J''

481.805717	.0104	29	30
484.234003*	1.9052	28	29
486.667699	-.6365	27	28
489.103147*	1.6097	26	27
491.533552	-.5644	25	26
493.964952	.2271	24	25
496.392507	.4497	23	24
498.815360	.5103	22	23
501.231262	-.6207	21	22
503.642194	.1992	20	21
506.044822	.7189	19	20
508.436451	-.7869	18	19
510.823724*	3.1367	17	18
513.193447	-.1002	16	17
515.556578	.7996	15	16
517.906814	-.4396	14	15
520.248261	-.0340	13	14
522.580057	.4706	12	13
524.902305	.1467	11	12
527.216890	-.4548	10	11
529.526779	.0639	9	10
559.706800	-.0617	3	2
562.072024*	.9503	4	3
564.441903	.4098	5	4
566.817878	.6436	6	5
569.196912	-.2646	7	6
571.579700	-.2720	8	7
573.964187	.1220	9	8
576.347760	.0333	10	9
578.729423	.3151	11	10
581.106247	-.0607	12	11
583.477591	.1330	13	12
585.840200	-.6112	14	13
588.195313	.4852	15	14
590.538461	.2162	16	15
592.870021	-.1036	17	16
595.190098	.2252	18	17
597.497202	-.0268	19	18
599.792248	.0117	20	19
602.075549	.3530	21	20
606.606957	-.2136	23	22
608.857733	.0886	24	23
611.099301	.3836	25	24

**D<sup>13</sup>C<sup>15</sup>N Table 58 continued**

05<sup>3e</sup>0-04<sup>2e</sup>0 Emission  
observed      10<sup>3</sup>(o-c)      J'      J''

613.332094	.1561	26	25
615.557916	.2017	27	26
619.991538	-.3230	29	28
622.202634	.0785	30	29
624.411245	.5776	31	30
626.617502	-.0458	32	31
628.824491	-.1367	33	32
631.033102	-.3072	34	33
633.245610	.1611	35	34

The rms dev = 0.000372 for 47 lines

**D<sup>13</sup>C<sup>15</sup>N Table 59**

05<sup>3f</sup>0-04<sup>2e</sup>0 Emission  
observed      10<sup>3</sup>(o-c)      J'      J''

553.038685	-.2769	12	12
553.071302	-.5126	13	13
553.101892*	.6936	14	14
553.125799*	1.9096	15	15
553.152336	-.2662	16	16
553.205996	.0642	18	18
553.239673	-.4401	19	19
553.284178	.2029	20	20
553.341735	.2961	21	21
553.416072	-.4850	22	22
553.512787	-.5445	23	23
553.631498*	4.0414	24	24
553.781834*	4.7506	25	25
553.969677	.2882	26	26
554.186215	-.1162	27	27
554.439149	-.0904	28	28
554.729514	.0933	29	29
555.057674	-.0504	30	30
555.424494	-.1232	31	31
555.830327	.0718	32	32

The rms dev = 0.000296 for 16 lines

**D<sup>13</sup>C<sup>15</sup>N Table 60**

05 <sup>3f</sup> 0-04 <sup>2f</sup> 0 observed	Emission 10 <sup>3</sup> (o-c)	J'	J''
500.759939	-.4935	23	24
502.577634	.4366	22	23
504.448812*	2.5835	21	22
506.362991*	1.1896	20	21
512.374052*	-.9284	17	18
514.452456	.5439	16	17
516.559762	.1071	15	16
518.696613*	1.5889	14	15
520.854689	-.4164	13	14
523.031873*	5.3928	12	13
525.239582	.4302	11	12
527.457531*	1.1464	10	11
529.693750	-.2590	9	10
566.829596	.2596	6	5
569.221119	-.4082	7	6
571.624663	.5953	8	7
574.037269	-.7113	9	8
581.359704*	1.5179	12	11
583.836159*	1.1148	13	12
588.844507	-.0500	15	14
591.385412	-.0653	16	15
593.954199	-.2594	17	16
596.554047	-.7319	18	17
599.189678	-.2355	19	18
601.863785	.3298	20	19
604.578592	-.4191	21	20
607.340231	.1550	22	21
610.150339	.4498	23	22
613.009112*	2.1811	24	23
615.927142	.5368	25	24
618.897041*	-.4798	26	25

The rms dev = 0.000421 for 21 lines

**D<sup>13</sup>C<sup>15</sup>N Table 61**

05 <sup>1e</sup> 0-04 <sup>0e</sup> 0 observed	Emission 10 <sup>3</sup> (o-c)	J'	J''
491.253467	.0510	22	23
493.519898	-.1445	21	22
495.795659	.1947	20	21
498.080301	-.0554	19	20
500.375915	.5813	18	19
502.680913	.0154	17	18
504.997316	-.0608	16	17
507.324220	-.6460	15	16
509.663299	.1281	14	15
512.011849	.0819	13	14
514.369330	-.4535	12	13
516.735809	-.2053	11	12
519.108945	-.0139	10	11
521.486933	.0438	9	10
523.867511	-.4199	8	9
526.250652	.4993	7	8
528.632419*	.7720	6	7
531.010264	-.3372	5	6
533.385387	.0355	4	5
535.754509	.0899	3	4
552.100186	.3165	3	2
554.396199	-.1272	4	3
556.683255	-.4135	5	4
558.961586*	1.0690	6	5
565.758417*	2.1352	9	8
568.018400	.1615	10	9
570.274406	-.1518	11	10
572.530963	-.3319	12	11
574.790174	-.0320	13	12
577.052929	-.0019	14	13
579.321608	.6987	15	14
581.595493	.1812	16	15
586.166621	.1285	18	17
593.082713	.0604	21	20
595.403066	.0524	22	21
597.730205	.1999	23	22
600.062837	-.1490	24	23

The rms dev = 0.000282 for 33 lines

**D<sup>13</sup>C<sup>15</sup>N Table 62**

05 <sup>1e</sup> 0-04 <sup>2f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
537.470355*	1.4440	4	4
537.426229*	1.7410	5	5
537.366788	-.1361	6	6
537.298128	-.5841	7	7
537.218898	-.5217	8	8
537.126330*	2.2601	9	9
537.025929	.1729	10	10
536.641361	.6721	13	13
536.485860	.4158	14	14
536.316639	.4490	15	15
536.132838	.1552	16	16
535.935015	.2602	17	17
535.721643	-.6773	18	18
535.494643	-.7359	19	19
535.253636	-.3798	20	20
534.999145*	.7444	21	21

The rms dev = 0.000477 for 11 lines

**D<sup>13</sup>C<sup>15</sup>N Table 63**

05 <sup>1f</sup> 0-04 <sup>2f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
483.727102*	1.2598	25	26
485.701853	-.2904	24	25
487.666580	.1112	23	24
489.622584*	1.6912	22	23
491.568203	.2585	21	22
493.510364	-.1309	20	21
497.394037	-.4772	18	19
499.342063	-.2256	17	18
501.297909	-.0532	16	17
503.265474*	1.1236	15	16
505.243254	-.7753	14	15
507.239643	.3290	13	14
511.285036	.4036	11	12
513.338224	.2268	10	11
515.414064	.4004	9	10
517.512189	-.5544	8	9
519.634288*	1.8773	7	8
523.957660*	1.2870	5	6
526.159600	.1845	4	5
528.386965	.4928	3	4
575.548388*	-.8645	15	14
578.232239	.7114	16	15
580.922157	.3904	17	16
583.616627	-.3801	18	17
586.314065	-.0331	19	18
589.010432	.6626	20	19
591.700128	-.5991	21	20
594.383454	-.3173	22	21
597.056202	.2766	23	22
599.714745	.1790	24	23
602.357543	.0075	25	24
604.983509	.2863	26	25
607.590720	.1208	27	26
610.179255	.0436	28	27
612.748788	-.3417	29	28

The rms dev = 0.000379 for 28 lines

**D<sup>13</sup>C<sup>15</sup>N Table 64**

06 <sup>0e</sup> 0-05 <sup>1e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
460.799698	-.2958	34	35
463.002028	.6499	33	34
465.205330	.3252	32	33
467.409854	-.8895	31	32
469.617909	-.5217	30	31
471.827890	.0269	29	30
474.037747*	1.0423	28	29
476.250970	.0673	27	28
478.464041	.2107	26	27
480.677457	.3326	25	26
482.890786	.5342	24	25
485.102609	.0233	23	24
489.521484	-.3840	21	22
491.726933	-.1387	20	21
493.927403	-.6180	19	20
496.123937	.2436	18	19
498.312891	-.2044	17	18
500.495185	-.1691	16	17
502.669826	-.0084	15	16
504.837407*	1.1249	14	15
506.994943	-.0290	13	14
509.146453	-.3878	12	13
511.293971	.4021	11	12
513.438430	.8447	10	11
515.582373	.3913	9	10
517.730223	-.1184	8	9
519.886406	-.1087	7	8
522.054687	.3103	6	7
524.237695	.0869	5	6
526.438974	-.5471	4	5
567.201194	.1614	12	11
574.601169	-.8063	15	14
579.482354	.1429	17	16
581.906506	-.3044	18	17
584.322111	-.0751	19	18
586.729609	.2411	20	19
589.129571	.1537	21	20
591.523203	-.1593	22	21
593.912294	.1382	23	22
596.296773	.1214	24	23
601.056012	.3844	26	25
603.431263	-.0170	27	26
605.794235*	.7582	28	27
612.897783*	9.8956	31	30
615.249916*	6.5661	32	31

The rms dev = 0.000371 for 40 lines

**D<sup>13</sup>C<sup>15</sup>N Table 65**

06 <sup>2f</sup> 0-05 <sup>1f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
470.851051	-.2589	30	31
473.113372	.0158	29	30
475.392825	.8822	28	29
477.688128	-.1125	27	28
480.004323*	1.1657	26	27
482.336944	-.2976	25	26
489.454474*	1.3795	22	23
491.861378*	1.4242	21	22
494.281689	.0471	20	21
496.716149	.0877	19	20
499.160583	-.3390	18	19
501.614379	.5202	17	18
504.072804	.2689	16	17
506.534425	-.3023	15	16
528.604259*	1.1962	6	7
531.025273*	4.1671	5	6
556.971563*	4.2760	5	4
559.274947*	-.9603	6	5
563.844108	-.1622	8	7
570.617853*	1.1330	11	10
572.856901	-.6415	12	11
575.087260	.1853	13	12
577.309352*	1.0301	14	13
581.730670	.7187	16	15
583.932603	-.3007	17	16
586.132758	.0263	18	17
588.331133	-.1834	19	18
590.530703	-.0373	20	19
592.734209*	.9788	21	20
594.940906	-.1693	22	21
597.145934*	.5906	23	22
599.350451*	1.2176	24	23
601.556380*	1.9408	25	24
605.970433*	.9947	27	26

The rms dev = 0.000364 for 20 lines

**D<sup>13</sup>C<sup>15</sup>N Table 67**06<sup>60</sup>0-05<sup>50</sup> Emission e-e and f-f  
observed 10<sup>3</sup>(o-c) J' J''

505.722638	-.3885	23	24
510.117104	-.9146	21	22
514.537177	-.5106	19	20
516.757166	.3153	18	19
518.981471	-.7949	17	18
525.696459	.2305	14	15
527.946253	-.5900	13	14
530.203620	-.1730	12	13
532.466597	-.4911	11	12
574.291838	-.0178	6	5
576.675607	.3640	7	6
579.065090	.2718	8	7
581.460826	.2673	9	8
583.862342	-.0983	10	9
586.270162	-.2761	11	10
588.684573	.0472	12	11
591.104869	.1935	13	12
593.531260	.4011	14	13
595.963235	.1888	15	14
598.401213	.0063	16	15
600.845535	.2265	17	16
603.295689	.3704	18	17
605.751401	.1979	19	18
608.211743*	1.1837	20	19
610.680782	.3286	21	20
613.153824	.0787	22	21
615.633063	.2994	23	22
618.117705	.2369	24	23
620.607761	-.0558	25	24
623.101950*	1.8163	26	25

The rms dev = 0.000366 for 27 lines

**D<sup>13</sup>C<sup>15</sup>N Table 66**06<sup>2e</sup>0-05<sup>1e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

482.336944	-.2976	25	26
489.454474*	1.3795	22	23
491.861378*	1.4242	21	22
494.281689	.0471	20	21
496.716149	.0877	19	20
499.160583	-.3390	18	19
501.614379	.5202	17	18
504.072804	.2689	16	17
506.534425	-.3023	15	16
581.730670	.7187	16	15
583.932603	-.3007	17	16
586.132758	.0263	18	17
588.331133	-.1834	19	18
590.530703	-.0373	20	19
592.734209*	.9788	21	20
594.940906	-.1693	22	21

The rms dev = 0.000319 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 68**06<sup>6f</sup>0-05<sup>5f</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

623.101950	.1913	26	25
625.603097*	.8131	27	26
628.107957	.0531	28	27
630.619043*	.6226	29	28
633.133294	-.2937	30	29
638.176915	.3252	32	31
643.233900	.3550	34	33
645.766094	.3195	35	34

The rms dev = 0.000277 for 5 lines



**D<sup>13</sup>C<sup>15</sup>N Table 69**  
06<sup>6e</sup>0-05<sup>5e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

630.631075	-.0041	29	28
635.678488	-.0794	31	30
638.212043	-.0343	32	31
640.752686	.1764	33	32
643.300286	.0019	34	33
645.855786	-.1440	35	34
648.419682	-.4247	36	35
650.993465	-.1589	37	36

The rms dev = 0.000182 for 8 lines

**D<sup>13</sup>C<sup>15</sup>N Table 72**  
06<sup>4e</sup>0-05<sup>3e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

513.905901	.2475	16	17
522.847521	-.0771	12	13
527.375333*	4.4581	10	11
529.643528	-.1661	9	10
574.156413*	3.0188	9	8
576.568652*	4.6155	10	9
578.994232	-.1221	11	10
581.422808	-.0898	12	11
583.862342*	3.1315	13	12
586.303694	-.0406	14	13
588.757027	-.0425	15	14
591.219278	-.7217	16	15

The rms dev = 0.000283 for 8 lines

**D<sup>13</sup>C<sup>15</sup>N Table 70**  
06<sup>40</sup>-05<sup>30</sup> Emission e-e and f-f  
observed 10<sup>3</sup>(o-c) J' J''

529.643528*	3.4277	9	10
534.206286*	3.2179	7	8
538.804590	-.0131	5	6
562.198007*	1.4558	4	3
564.575302	.3391	5	4
566.960745	.3064	6	5
569.352923	.0171	7	6
574.156413*	2.0246	9	8

The rms dev = 0.000229 for 4 lines

**D<sup>13</sup>C<sup>15</sup>N Table 73**  
07<sup>1e</sup>0-06<sup>0e</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

490.644729	-.1954	19	20
492.926980	.2863	18	19
495.219032	-.2782	17	18
497.524210	.2407	16	17
504.522836*	2.3498	13	14
506.881173*	-.9473	12	13
509.257690	-.5163	11	12
511.648524*	.9511	10	11
514.051052*	2.7334	9	10
516.457835	-.0467	8	9
518.875787*	2.5953	7	8
521.291202	.3274	6	7
523.709640*	2.1646	5	6
526.119997	.3372	4	5
551.797211*	.6920	6	5
556.303119	-.5371	8	7
558.541400*	1.8310	9	8
560.781915	.4189	10	9
565.262340*	4.3308	12	11
567.521321*	2.2514	13	12
569.781657*	.8883	14	13
572.055307*	2.3015	15	14
574.335927	-.4188	16	15
576.630755	-.0116	17	16
578.936198	.4136	18	17
583.572963*	1.2643	20	19

The rms dev = 0.000346 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 71**  
06<sup>4f</sup>0-05<sup>3f</sup>0 Emission  
observed 10<sup>3</sup>(o-c) J' J''

574.156413*	1.0303	9	8
576.568652	-.6157	10	9
578.982030*	4.8527	11	10
581.409899	.1515	12	11
583.836159*	1.0119	13	12
588.702111	.0845	15	14
591.137577	.4766	16	15
593.572404	.4243	17	16
596.004550	-.3439	18	17
598.433935	.0926	19	18
600.856847	.2201	20	19
603.270801	-.1080	21	20
605.674278	-.0158	22	21

The rms dev = 0.000317 for 10 lines

**D<sup>13</sup>C<sup>15</sup>N Table 74**

07 <sup>3e</sup> 0-06 <sup>2e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
564.502741	-.1385	8	7
566.882981*	3.4424	9	8
569.259392*	2.1062	10	9
571.624740	-.0696	11	10
573.976094*	2.7755	12	11
576.302897*	1.5587	13	12
580.912324*	4.7181	15	14
583.182922*	4.9971	16	15
585.430885*	3.4644	17	16
589.860877*	6.3939	19	18
592.061953*	1.6968	20	19
594.238005	.5122	21	20
596.401550	.6542	22	21
598.551571	-.9855	23	22
602.827587*	2.3427	25	24
604.970918*	.1374	26	25

The rms dev = 0.000581 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 75**

07 <sup>5</sup> 0-06 <sup>4</sup> 0 Emission e-e and f-f observed	10 <sup>3</sup> (o-c)	J'	J''
567.096643	.0849	6	5
569.494573	.4553	7	6
574.308817	-.5240	9	8
576.726768	-.1271	10	9
579.150887	-.1038	11	10
581.581470	-.0829	12	11
584.018768	.2708	13	12
586.461774	.0435	14	13

The rms dev = 0.000273 for 8 lines

**D<sup>13</sup>C<sup>15</sup>N Table 76**

07 <sup>5f</sup> 0-06 <sup>4f</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
591.369147	.2756	16	15
593.832056	.2369	17	16
596.302976*	1.5739	18	17
601.261005	-.4017	20	19
603.752550	-.0330	21	20
606.252343	.3814	22	21
608.760404	.0595	23	22

The rms dev = 0.000272 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 77**

07 <sup>5e</sup> 0-06 <sup>4e</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
591.363794	-.6161	16	15
593.824743	.4054	17	16
596.288798	-.4464	18	17
598.760359*	1.7433	19	18
601.232192	.3942	20	19
606.186228	.1219	22	21
608.664559	-.3905	23	22

The rms dev = 0.000422 for 5 lines

**D<sup>13</sup>C<sup>15</sup>N Table 78**

07 <sup>7</sup> 0-06 <sup>6</sup> 0 Emission observed	10 <sup>3</sup> (o-c)	J'	J''
576.767822	.0946	7	6
579.160745	-.1488	8	7
581.559972	.0795	9	8
583.964719	.0164	10	9
586.375128	-.1747	11	10
588.791972	.3005	12	11
593.641811	.1867	14	13
596.074034*	1.1284	15	14
598.514106	-.2711	16	15
600.959263	.0184	17	16
603.409823	.0826	18	17
605.865235	-.6051	19	18
608.327656	.1366	20	19
610.794825	.0719	21	20
613.267420	-.0962	22	21
615.746008	.2240	23	22
618.229577	.0462	24	23
620.718744	.0124	25	24
623.213272	-.0886	26	25
625.713608	.2153	27	26
630.729555	-.0068	29	28
633.245610	-.0366	30	29
635.766270*	-.7594	31	30
638.293625	-.0575	32	31
640.823230*	2.3478	33	32
643.366096*	3.4102	34	33
645.910976*	6.0007	35	34
651.015646*	.6810	37	36
656.146681*	1.4301	39	38

The rms dev = 0.000189 for 22 lines

**D<sup>13</sup>C<sup>15</sup>N Table 79**

08<sup>4e</sup>0-07<sup>3e</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
555.120235	-.0624	4	3
557.518238	.5952	5	4
559.922166	-.2312	6	5
567.175115*	5.9944	9	8
569.615442	-.4566	10	9
572.055307*	3.5412	11	10
574.505070*	5.5329	12	11
576.971908	-.1873	13	12
579.444314	-.2926	14	13
584.451261*	1.3208	16	15
586.969846*	2.1935	17	16
589.486099	-.1950	18	17

The rms dev = 0.000334 for 6 lines

**D<sup>13</sup>C<sup>15</sup>N Table 81**

08<sup>60</sup>-07<sup>50</sup> Emission e-e and f-f

observed	10 <sup>3</sup> (o-c)	J'	J''
569.632131	-.2502	7	6
572.040879	-.1783	8	7
574.456206	.0565	9	8
576.877810	.1868	10	9
579.306202	.7620	11	10
581.739786	.2292	12	11
584.179543	-.3832	13	12
586.625983	-.5136	14	13
589.079041	-.1702	15	14
591.538467	.4583	16	15
594.002510	-.3119	17	16
596.473629	.0501	18	17
598.949417*	-.7832	19	18
601.430867*	1.7334	20	19
603.920479	-.2063	21	20
606.414627	.2750	22	21

The rms dev = 0.000342 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 80**

08<sup>4f</sup>0-07<sup>3f</sup>0 Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
555.120235	-.0508	4	3
557.518238	.6766	5	4
559.922166	.0961	6	5
567.175115	-.4965	9	8
569.604092	-.7463	10	9
572.040991*	2.7974	11	10
574.474928	.6521	12	11
576.912438*	1.1434	13	12
579.347926*	.9047	14	13
581.778984	.2233	15	14
584.203486	.1310	16	15
586.617414	.1768	17	16
589.016104	-.4427	18	17
591.396249*	1.0644	19	18
593.756265	.5636	20	19
596.091049*	2.7621	21	20
602.908755	.3503	24	23
607.298149*	3.1425	26	25
609.453381*	1.4224	27	26
611.582569	-.3101	28	27

The rms dev = 0.000441 for 13 lines

**D<sup>13</sup>C<sup>15</sup>N Table 82**

08<sup>80</sup>-07<sup>70</sup> Emission

observed	10 <sup>3</sup> (o-c)	J'	J''
579.269883	.2756	8	7
581.670941	-.3408	9	8
584.078291	-.1188	10	9
586.490636	-.3371	11	10
588.909545	.5914	12	11
593.761071	-.0205	14	13
596.195427	.2150	15	14
598.634753	.0776	16	15
601.079375	-.0882	17	16
603.529254	-.3031	18	17
605.985097	.1579	19	18
608.445296	-.2949	20	19
610.911339	-.1561	21	20
613.382811	.1763	22	21
615.858952	-.0404	23	22
618.340716	.1636	24	23
620.827137	-.1618	25	24
623.319338	.1210	26	25
625.817658*	1.3655	27	26
628.318988	.4758	28	27
630.825549	-.3146	29	28
633.339878*	1.5422	30	29
635.857477*	1.5587	31	30
638.379000	.3978	32	31
640.906172	-.2076	33	32
643.438942	-.3024	34	33
645.976786	-.4051	35	34
648.520463	.2471	36	35
651.068508	.1922	37	36

The rms dev = 0.000273 for 26 lines

**D<sup>13</sup>C<sup>15</sup>N Table 83**

09 <sup>90</sup> -08 <sup>80</sup> Emission observed	10 <sup>3</sup> (o-c)	J'	J''
581.794923	.0615	9	8
584.203503*	-.1445	10	9
586.617495	.0093	11	10
589.036418	.0570	12	11
591.460062	-.1969	13	12
593.888755	-.4104	14	13
596.323005	-.0614	15	14
601.206142	.3430	17	16
603.654518	-.0868	18	17
606.108791	.4367	19	18
608.567002	-.0338	20	19
611.030915	.2761	21	20
615.972525	-.0440	23	22
620.933411*	-.6611	25	24
625.914517	-.5703	27	26
628.413073	.1764	28	27
630.916417*	.8502	29	28
633.422925	-.1690	30	29
638.452605	-.1034	32	31
640.975173	.3813	33	32
646.033441	-.0652	35	34
648.568879*	1.2593	36	35
651.110385*	1.2371	37	36

The rms dev = 0.000254 for 18 lines

**D<sup>13</sup>C<sup>15</sup>N Table 85**

0 10 <sup>100</sup> -09 <sup>90</sup> Emission observed	10 <sup>3</sup> (o-c)	J'	J''
584.341518	.2103	10	9
586.755328	-.3383	11	10
589.174420	-.2330	12	11
594.026482	.0117	14	13
596.459295	.0124	15	14
598.896815	.1288	16	15
601.338914	.2400	17	16
603.784215*	1.0243	18	17
606.236554	.1771	19	18
608.691834	-.2477	20	19
616.086331	-.2365	23	22
618.561269	.7549	24	23
621.038378	-.6411	25	24
623.522600	.5156	26	25
626.011113*	1.4008	27	26
628.503340*	1.4336	28	27
633.500898*	.8833	30	29
638.516061	-.4015	32	31
641.030992	-.5937	33	32
643.551363	.0406	34	33
646.076285	.6007	35	34
651.138111*	-.2251	37	36

The rms dev = 0.000388 for 16 lines

**D<sup>13</sup>C<sup>15</sup>N Table 84**

09 <sup>70</sup> -08 <sup>60</sup> Emission observed	10 <sup>3</sup> (o-c)	J'	J''
574.601035	.4157	9	8
577.025975*	.7194	10	9
579.455726	-.1908	11	10
581.892514	-.0547	12	11
584.335123	-.0505	13	12
586.783420	-.2709	14	13
589.238321	.2434	15	14
591.700128*	1.8408	16	15
594.163007*	1.2635	17	16
596.635970	-.0059	18	17
599.113052	-.2962	19	18
601.596019	-.3108	20	19
604.084820	-.0398	21	20
606.579009	.1345	22	21
609.078822	.5152	23	22
611.583002	-.0842	24	23
614.093460	.3209	25	24
619.128422	-.3255	27	26

The rms dev = 0.000262 for 15 lines

**D<sup>13</sup>C<sup>15</sup>N Table 86**

0 10 <sup>80</sup> -09 <sup>70</sup> Emission observed	10 <sup>3</sup> (o-c)	J'	J''
579.600124	-.4106	11	10
584.485065*	1.7604	13	12
586.933741	.6330	14	13
589.387767	-.7148	15	14
591.849796	.4036	16	15
594.315722	-.0814	17	16
599.265545	.5705	19	18
601.747846	.1935	20	19
606.726453*	2.5188	22	21
609.226998	-.5195	23	22
611.733598*	2.3457	24	23
614.241376*	1.2549	25	24
616.753429	-.6367	26	25
619.273435	.4105	27	26
624.325844	.1297	29	28
626.859320	.0217	30	29

The rms dev = 0.000454 for 11 lines

**D<sup>13</sup>C<sup>15</sup>N Table 87**

0 11 <sup>11</sup> 0-0 10 <sup>10</sup> 0	Emission observed	10 <sup>3</sup> (o-c)	J'	J''
586.905453		-.2054	11	10
589.324520		.5209	12	11
594.172842		-.3877	14	13
596.604346		.2351	15	14
599.038872		-.2928	16	15
603.920479*		1.3072	18	17
606.368958*		-.3960	19	18
611.277178		.1625	21	20
618.670970*		1.0687	24	23
621.144155*		1.5538	25	24
626.100647		-.0325	27	26

The rms dev = 0.000301 for 6 lines

**D<sup>13</sup>C<sup>15</sup>N Table 88**

0 11 <sup>9</sup> 0-0 10 <sup>8</sup> 0	Emission observed	10 <sup>3</sup> (o-c)	J'	J''
577.308401*		1.5156	10	9
579.744325		.0234	11	10
582.184004		.0525	12	11
584.628848		.0080	13	12
589.534086		-.1345	15	14
596.933724*		2.8800	18	17
606.864691*		1.1136	22	21
609.359351		.2249	23	22
611.859373		-.1744	24	23
614.366142*		1.3375	25	24

The rms dev = 0.000131 for 5 lines

# MEASUREMENTS BEING FIT=2946  
 # CONSTANTS BEING FIT= 112  
 # BANDS BEING FIT= 89