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NEW ATLAS OF IR SOLAR SPECTRA

by

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ABSTRACT

This report summarizes the work accomplished on the ground-based high resolution solar spectral atlas in the 2.5 to 15 μm region. Over 4500 absorption lines have been marked on the spectra and the corresponding line positions (in cm^{-1}) tabulated. The associated absorbing telluric or solar species for more than 90% of these lines have been identified and only a fraction of the unidentified lines have peak absorptions greater than a few percent. The atlas includes spectra at $\sim 0.06 \text{ cm}^{-1}$ resolution obtained between 1976 and 1978 from Denver (1.6 km) and the nearby Mount Evans (4.3 km) at both high sun and low sun from 775 to 1300 cm^{-1} and from 1925 to 2175 cm^{-1} . The high resolution and the low sun spectra greatly enhance the sensitivity limits for identification of trace constituents.

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I. INTRODUCTION

Many molecules known or predicted to be present in the earth's atmosphere have strong infrared absorption bands. In 1939 Adel¹ determined that the absorption at 7.8 μm present in infrared solar spectra obtained from the ground is due to the presence of N_2O in the earth's atmosphere. This was the first detection using infrared techniques of a molecule in the earth's atmosphere not known to be present from other measurements. Since that time infrared spectral techniques, particularly the analysis of infrared solar spectra obtained under various conditions, have played a major role in the detection and quantification of many minor atmospheric constituents. Under high resolution the infrared solar spectrum as observed from the ground contains thousands of lines of telluric origin. Most of these are due to H_2O , CO_2 , O_3 , CH_4 , CO and N_2O superimposed on the Fraunhofer spectrum. Any attempt to observe a molecule of atmospheric interest such as CF_2Cl_2 , ClO , NO , ClONO_2 , etc. must start by insuring that the particular feature in question is indeed attributable to the molecule of interest and not to one of the other known atmospheric constituents nor to solar lines. (The solar lines are extremely important, for example, in the NO region².) Most investigators start by comparing their spectra with one of the available atlases. For the middle infrared this has long been the Migeotte et al.³ Jungfraujoch grating spectrometer Atlas, published in 1956 and 1957. More recently, a grille spectrometer atlas was generated by Lado-Bordowsky⁴ and published in 1975. With the improvements that have been made in infrared detectors and computers it is now possible to obtain infrared solar spectra at much higher spectral resolution than the earlier work and in much less time (many spectra in one day at various solar zenith angles versus several months for the Migeotte atlas).

It was in view of these advances and the current interest in remote measurement of many pollutants as well as natural trace constituents, that we undertook the analysis of new, high resolution solar spectra in the 2.5 to 15 μm region, the results of which are presented in the present solar atlas. These spectra, collected from Denver (elevation 1.6 km) and nearby Mt. Evans (elevation 4.3 km) in connection with ongoing NASA sponsored research programs at the University of Denver, are ideally suited for publication in a solar atlas as a consequence of the high altitude and typically low humidity of these sites, which tend to minimize the degree to which absorption by trace constituents is obscured by strong absorption bands of H_2O and CO_2 .

In this atlas we present spectra covering the regions 775 - 1300 cm^{-1} and 1925 - 2175 cm^{-1} . The region from 1310 - 1900 cm^{-1} is dominated in ground-based solar spectra by numerous very strong H_2O absorption bands (as well as bands of CH_4 , O_3 , N_2O , HNO_3 , NO_2 and CO_2), and is essentially totally absorbed even in the present high altitude data.

II. RESULTS

A. Description of the Atlas

The solar spectra presented here were obtained with a Michelson-type Fourier spectrometer manufactured by EDCOM Corporation, Irvine, California, having an apodized FWHM resolution $\sim 0.06 \text{ cm}^{-1}$. Details of the equipment have been discussed previously by Bradford et al.⁵ Solar radiation was fed into the interferometer using a heliostat. A system of fore-optics using four flat mirrors was used to insure alignment of the solar beam with the instrument axis. Wavenumber calibration was performed using accurately known positions of CO_2 and N_2O absorption lines.

The atlas consists of two volumes: the first volume contains tables of line positions and identifications and the second contains the spectra. (In this report, the spectra and the corresponding tables are presented in the appendices.) The analyzed spectra are shown in Frames 1 - 21 and 47 - 56. (Frames 22 - 46 represent the nearly totally absorbed region 1300 - 1925 cm^{-1} mentioned above. A gap has been left in the numbering of the frames in the event that new data, possibly balloon flight data, become available under proposed additional work on this atlas.) Each frame shows signal amplitude as a function of wavenumber over a 25 cm^{-1} interval for two different zenith angles, one at high sun and one at low sun. Each frame has a 2.5 cm^{-1} overlap at both the high and low wavenumber ends to assist the user in aligning adjacent spectral regions. The positions of the observed spectral lines are indicated by vertical marks which are numbered consecutively in each frame, and every tenth mark is labeled. Each frame is numbered independently. In some cases the absorption feature marked cannot be clearly seen in the spectra, but its existence has been established from several additional spectra taken at different zenith angles. Occasionally such a feature can be seen more clearly in the corresponding high sun scan, and therefore is marked on both the high and low sun scans.

For each frame there is a corresponding table of line positions and molecular identifications. In those cases in which there are multiple molecular identifications, the sequence in which the molecular species are listed represents the relative importance of these species in producing that line as it appears in the low sun scan. The criterion for the inclusion of a given species in such cases of multiple identification for a single (blended) observed line is somewhat subjective. All species having

absorption lines sufficiently near the observed line to contribute to it are included if their contribution to the observed total absorption is estimated to be visibly discernable. However, because of the large variations in the abundance of atmospheric water vapor, we have included H₂O lines in the identifications which are considerably less intense than implied by this criterion. Species identifications which are considered dubious are marked with question marks, while lines which are believed to be too strong or too broad to be attributable solely to the indicated species are denoted by "+?". Absorption features with which we have been unable to associate a molecular (or atomic) species are denoted by a question mark in the identification column.

There are several absorption lines in the region between 800 and 925 cm⁻¹ which, judging from their lack of growth with increasing airmass, appear to be solar rather than telluric in origin. Where possible, a tentative atomic identification has been made for these lines. All such identifications, however, are considered dubious and accordingly bear question marks. Lines which appear very likely to be solar in origin but cannot be associated with an atomic species are simply marked "solar" or "solar?" if appropriate (e.g., lines on the wings of atmospheric lines, whose lack of growth with airmass is difficult to judge).

Line identification procedures are discussed in a separate section below, but it is appropriate to mention here that in performing the species identifications a number of discrepancies in line positions between our spectra and the AFGL atmospheric line parameters tapes⁶ have been observed, particularly with regard to H₂O lines. Cases where this discrepancy exceeds 0.1 cm⁻¹ are denoted with an asterisk on the species identification (e.g. "H₂O*").

The tabulated line positions were accurately determined using a special line-finding computer program which tests the spectra for changes in slope over intervals of consecutive data points and records the position of every change exceeding a specified criterion. For well resolved lines, line positions determined with this program have an estimated accuracy of $\pm 0.005 \text{ cm}^{-1}$ with reference to standard calibration lines of CO_2 and N_2O .

In these spectra there are numerous regions characterized by saturated absorption. In these regions the following convention applies: if a region of 100% absorption is narrower than 0.25 cm^{-1} , then the estimated line center is marked and the corresponding tabulated line position is given to only two decimal places; whereas, if a region of 100% absorption is wider than 0.25 cm^{-1} , then the end points of that region are marked and the corresponding tabulated line positions are joined by a curly bracket.

B. Line Identifications

The results of Biémont and Grevesse⁷ were used for the identification of solar atomic lines, while solar CO lines were identified on the basis of unpublished calculations by A. Goldman and R. D. Blatherwick of line positions and intensities for the $\Delta v = 1$ vibrational-rotational transitions. These calculations were performed using the Dunham coefficients of Todd et al.,⁸ and the dipole moment matrix elements of Young and Eachus⁹. Atmospheric molecular absorption lines were identified with the aid of the AFGL atmospheric absorption line parameters compilation⁶ and several other sources (references 10-18) including laboratory spectra recorded at the University of Denver¹⁰. In the case of the ν_4 band of CH_4 , inadequacies in the existing references prompted the preparation (in collaboration with personnel at NASA Ames Research Center) of a new atlas of methane spectra in the $1120 - 1800 \text{ cm}^{-1}$ region¹¹. Table I lists the references other than

the AFGL compilation⁶ which were used for identification of atmospheric molecular absorption features, and the wavenumber intervals over which those references were used.

During the atlas work in the 775 to 950 cm^{-1} regions, absorption lines belonging to the ν_2 band of atmospheric NH_3 were identified for the first time. The results are presented and discussed in Murcray et al.¹⁹ It is with reference to the sunset spectra of that work, in which the NH_3 lines are much more prominent than in the spectra displayed here, that the present NH_3 line identifications were made. More recently, the ν_3 vibration-rotation band of CF_4 has been identified²⁰ near 1283 cm^{-1} in atlas-related work with balloon data at higher resolution. (This band cannot be clearly isolated on the present ground based spectra because of strong absorption by other overlapping species, but it is still present as background to the present spectra.) The same balloon data were also used for a new analysis of the O_3 ν_1 region¹³.

III. SUMMARY

High resolution, ground-based infrared solar spectra covering the frequency intervals 775 - 1300 cm^{-1} (7.69-12.90 μm) and 1925 - 2175 cm^{-1} (4.60 - 5.19 μm) have been analyzed and the results presented in a new solar atlas. More than 4500 spectral features in these data have been identified as being genuine telluric or solar absorption lines. The corresponding frequencies (in cm^{-1}) have been tabulated, as have the atomic or molecular species responsible for producing over 90% of these absorption lines. Only a fraction of the unidentified lines have peak absorptions greater than a few percent.

During the course of this work, it became evident that for many of the trace species (e.g., HNO_3 , NH_3 , CF_4 , OCS , CF_2Cl_2 , CFCl_3) and less frequently even for the more common species (e.g., H_2O , O_3 , CH_4 , CO_2 , N_2O) existing references are often inadequate for the identification of these species in high resolution solar spectra. Consequently, laboratory spectra of many of these molecules were taken at the University of Denver in conjunction with this (and other) projects and are being published separately¹⁰.

Under proposed further work on this atlas, we anticipate extending the present work to new spectral regions with higher resolution ($\sim 0.02 \text{ cm}^{-1}$) data as well as with data of the same resolution as in the present spectra.

IV. ACKNOWLEDGMENTS

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V. REFERENCES

1. A. Adel, "Note on the Atmospheric Oxides of Nitrogen," *Astrophys. J.* 90, 627 (1939).
2. D. G. Murcray, A. Goldman, W. J. Williams, F. H. Murcray, J. Van Allen and S. C. Schmidt, "Observations of the Solar Spectrum in the 1800-2100 cm^{-1} Region and the Search for NO Lines," Proceedings of the Third Conference on CIAP, Feb. 1974, p. 246-253; F. J. Murcray, A. Goldman, D. G. Murcray, G. R. Cook, J. W. Van Allen and R. D. Blatherwick, "Identification of Isolated NO Lines in Balloon-Borne Infrared Solar Spectra," *Geophys. Res. Lett.*, in press, 1980.
3. M. Migeotte, L. Neven and J. Swensson, The Solar Spectrum from 2.8 to 23.7 microns: Part I, *Mém. Soc. Roy. Sci. Liège Spec. Vol. 1* (1956); Part II, *Mém. Soc. Roy. Sci. Liège, Spec. Vol. 2* (1957).
4. O. Lado-Bordowsky, "Absorption et emission en infrarouge de la basse atmosphere", Université Pierre et Marie Curie, Laboratoire de Spectroscopie Moleculaire, Paris, France (1975).
5. C. M. Bradford, F. H. Murcray, J. W. Van Allen, J. N. Brooks, D. G. Murcray and A. Goldman, "Ground Level Detection and Feasibility for Monitoring of Several Trace Atmospheric Constituents by High Resolution Infrared Spectroscopy," *Geophys. Res. Lett.* 3, 387-390 (1976).
6. R. A. McClatchey, W. S. Benedict, S. A. Clough, D. E. Burch, R. F. Calfee, K. Fox, L. S. Rothman and J. S. Garing, "AFCRL Atmospheric Absorption Line Parameters Compilation," AFCRL-TR-73-0096, Environmental Research Papers, No. 434, Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Bedford Mass. 01730, 26 Jan. (1973); L. S. Rothman and R. A. McClatchey, "Updating of the AFCRL Line Parameters

- Compilation," Appl. Opt. 15, 2616-2617 (1976); L. S. Rothman, S. A. Clough, R. A. McClatchey, L. G. Young, D. E. Snider and A. Goldman, "AFGL Trace Gas Compilation," Appl. Opt. 17, 507 (1978); L. S. Rothman "Update of the AFGL Atmospheric Absorption Line Parameters Compilation," Appl. Opt. 17, 3517-3518 (1978).
7. E. Biémont and N. Grevesse, "Infrared Wavelengths and Transition Probabilities for Atoms, $3 \leq Z \leq 20$," Atomic Data Nucl. Data Tables 12, 217-310 (1973).
 8. T. R. Todd, C. M. Clayton, W. B. Telfair, T. K. McCubbin, Jr. and J. Pliva, "Infrared Emission of $^{12}\text{C}^{16}\text{O}$, $^{13}\text{C}^{16}\text{O}$, and $^{12}\text{C}^{18}\text{O}$," J. Mol. Spectrosc. 62, 201-227 (1976).
 9. Lee A. Young and W. James Eachus, "Dipole Moment Function and Vibration-Rotation Matrix Elements for CO," J. Chem. Phys. 44, 4195-4206 (1966).
 10. David G. Murcray and Aaron Goldman, Eds., "Atlas of High Resolution Infrared Laboratory Spectra of Atmospheric Interest," CRC Handbook, in press (1980).
 11. R. D. Blatherwick, A. Goldman, B. L. Lutz, P. M. Silvaggio, and R. W. Boese, "Infrared Methane Spectra Between 1120 cm^{-1} and 1800 cm^{-1} : A New Atlas," Appl. Opt. 18, 3798-3804 (1979).
 12. J.-M. Flaud, C. Camy-Peyret, J.-Y. Mandin and G. Guelachvili, " H_2^{16}O Hot Bands in the $6.3 \text{ }\mu\text{m}$ Region," Molec. Phys. 34, 413-426 (1977); C. Camy-Peyret and J.-M. Flaud, "Line Positions and Intensities in the ν_2 Band of H_2^{16}O ," Molec. Phys. 32, 523-537 (1976).
 13. A. Barbe, C. Secroun, P. Jouve, A. Goldman and D. G. Murcray, "High Resolution Infrared Atmospheric Spectra of Ozone in the $10 \text{ }\mu\text{m}$ Region:

- Analysis of ν_1 and ν_3 Bands and Assignment of the $(\nu_1+\nu_2)-\nu_2$ Band, "J. Mol. Spectrosc.", to be published, 1980.
14. J.-M. Flaud, C. Camy-Peyret, A. Barbe, C. Secroun and P. Jouve, "Line Positions and Intensities for the $2\nu_3$, $\nu_1+\nu_3$, and $2\nu_1$ Bands of Ozone," J. Mol. Spectrosc. 80, 185-199 (1980).
 15. W. B. Olson, A. G. Maki and W. J. Lafferty, "Tables of N_2O Absorption Lines for the Calibration of Tunable Infrared Lasers from 522 cm^{-1} to 657 cm^{-1} and from 1115 cm^{-1} to 1340 cm^{-1} ," to be published, 1980.
 16. J. B. Curtis, "Vibration - Rotation Bands of NH_3 in the Region 670 cm^{-1} - 1860 cm^{-1} ," Ph.D. Thesis, Ohio State University (1974).
 17. N. Monnanteuil, J. C. Depannemaecker, J. Bellet, A. Barbe, C. Secroun, P. Jouve, S. Giorgianni, Yan-Shek Hoh and K. Narahari Rao, "Microwave and Infrared Study of the ν_2 State of $^{16}O_3$ and Identification of the $(\nu_3+\nu_2)-\nu_2$ Band Lines at $10\text{ }\mu\text{m}$," J. Mol. Spectrosc. 71, 399-413 (1978).
 18. A. Barbe, C. Secroun, P. Jouve, N. Monnanteuil, J. C. Depannemaecker, B. Duterage and J. Bellet, "Infrared and Microwave High-Resolution Spectrum of the ν_3 Band of Ozone," J. Mol. Spectrosc. 64, 343-364 (1977).
 19. D. G. Murcray, A. Goldman, C. M. Bradford, G. R. Cook, J. W. Van Allen, F. S. Bonomo and F. H. Murcray, "Identification of the ν_2 Vibration-Rotation Band of Ammonia in Ground Level Solar Spectra," Geophys. Res. Lett. 5, 527-530 (1978).
 20. A. Goldman, D. G. Murcray, F. J. Murcray, G. R. Cook, J. W. Van Allen, F. S. Bonomo and R. D. Blatherwick, "Identification of the ν_3 Vibration-Rotation Band of CF_4 in Balloon-Borne Infrared Solar Spectra," Geophys. Res. Lett. 6, 609-612 (1979).

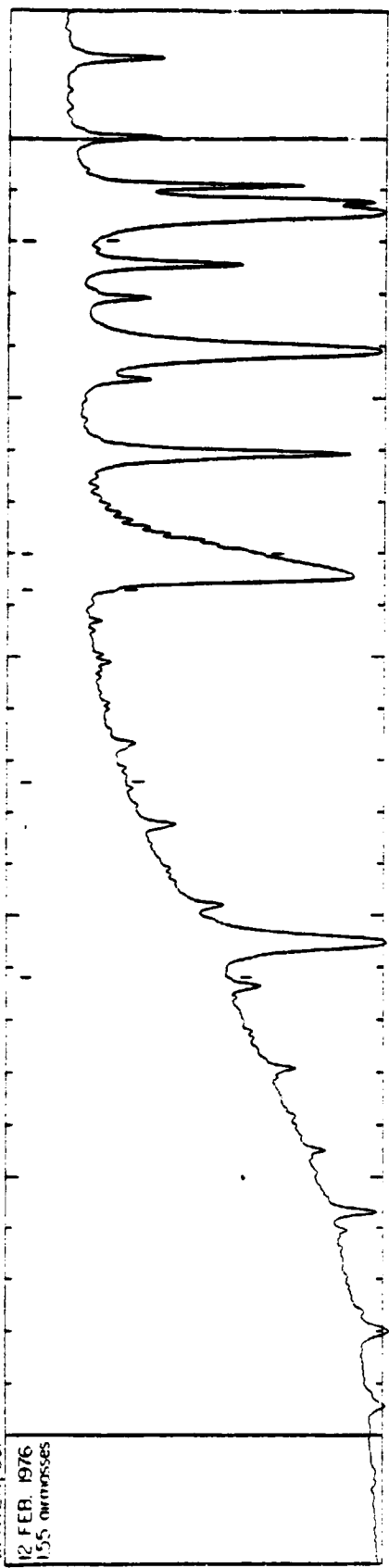
Table I. Reference sources in addition to the AFGL compilation⁶ used in the identification of atmospheric species. The column labeled "Region" refers to the spectral region in cm^{-1} over which the indicated reference was used for identification.

<u>Species</u>	<u>Region (cm^{-1})</u>	<u>Reference</u>
CFC1_3	835 - 855	10
CF_2Cl_2	915 - 935	10
	1160 - 1162	10
CH_4	1120 - 1300	11
H_2O	840 - 1300	12
	1925 - 2175	12
HNO_3	850 - 925	10
NH_3	850 - 950	10, 16
N_2O	1215 - 1245	10, 15
OCS	2025 - 2085	10
O_3	775 - 806	17
	987 - 1049	17
	1007 - 1072	18
	1100 - 1225	13
	1990 - 2170	14

APPENDIX A

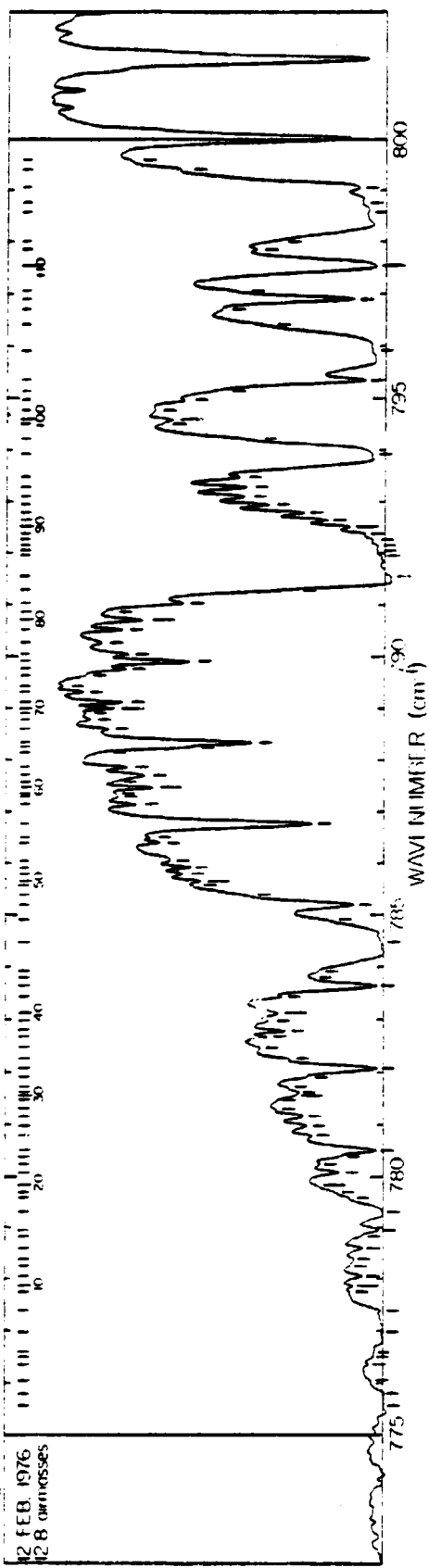
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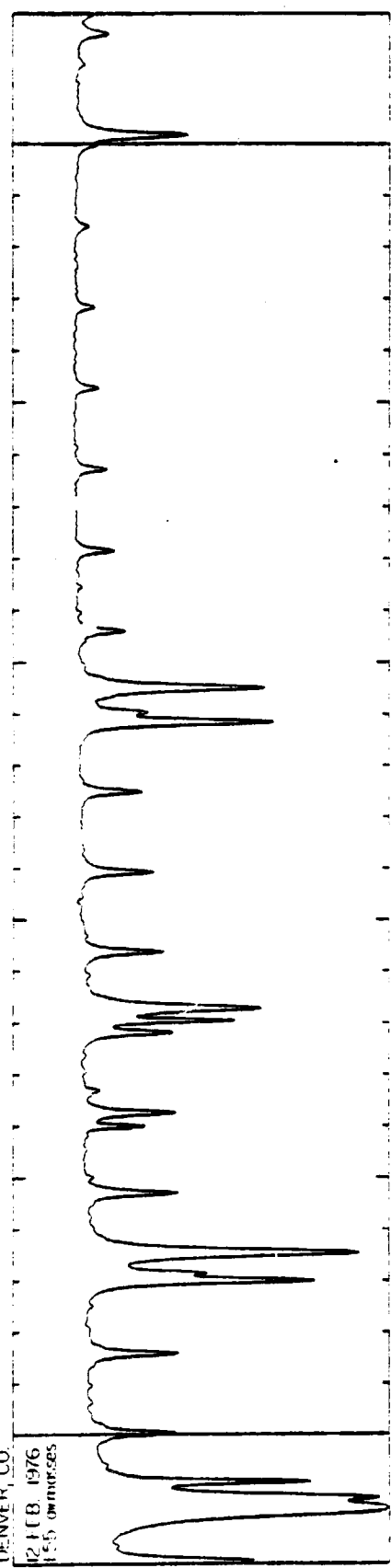


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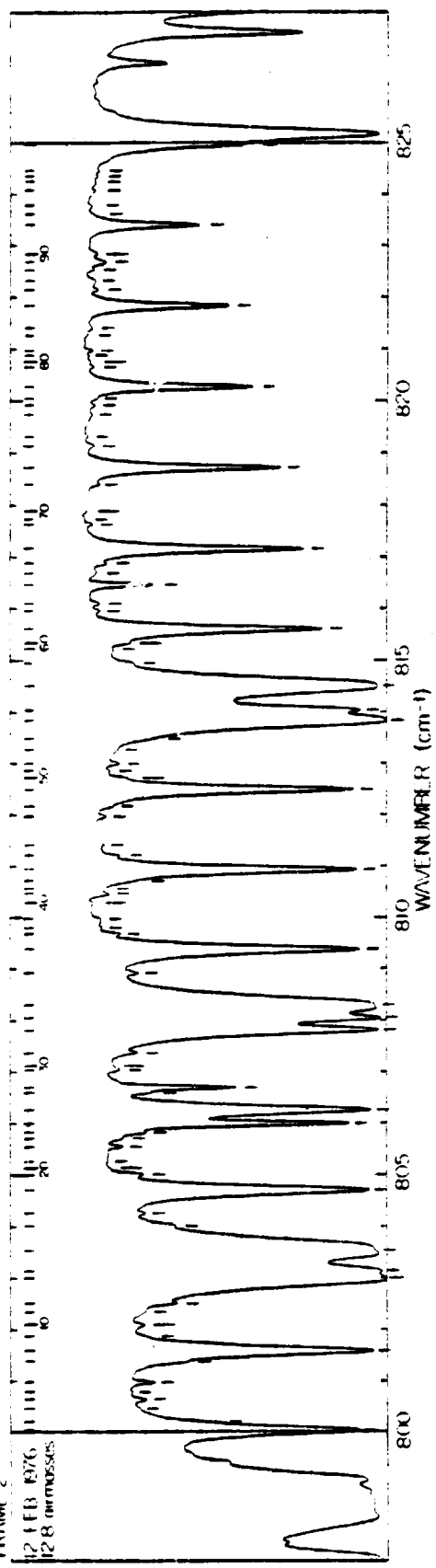


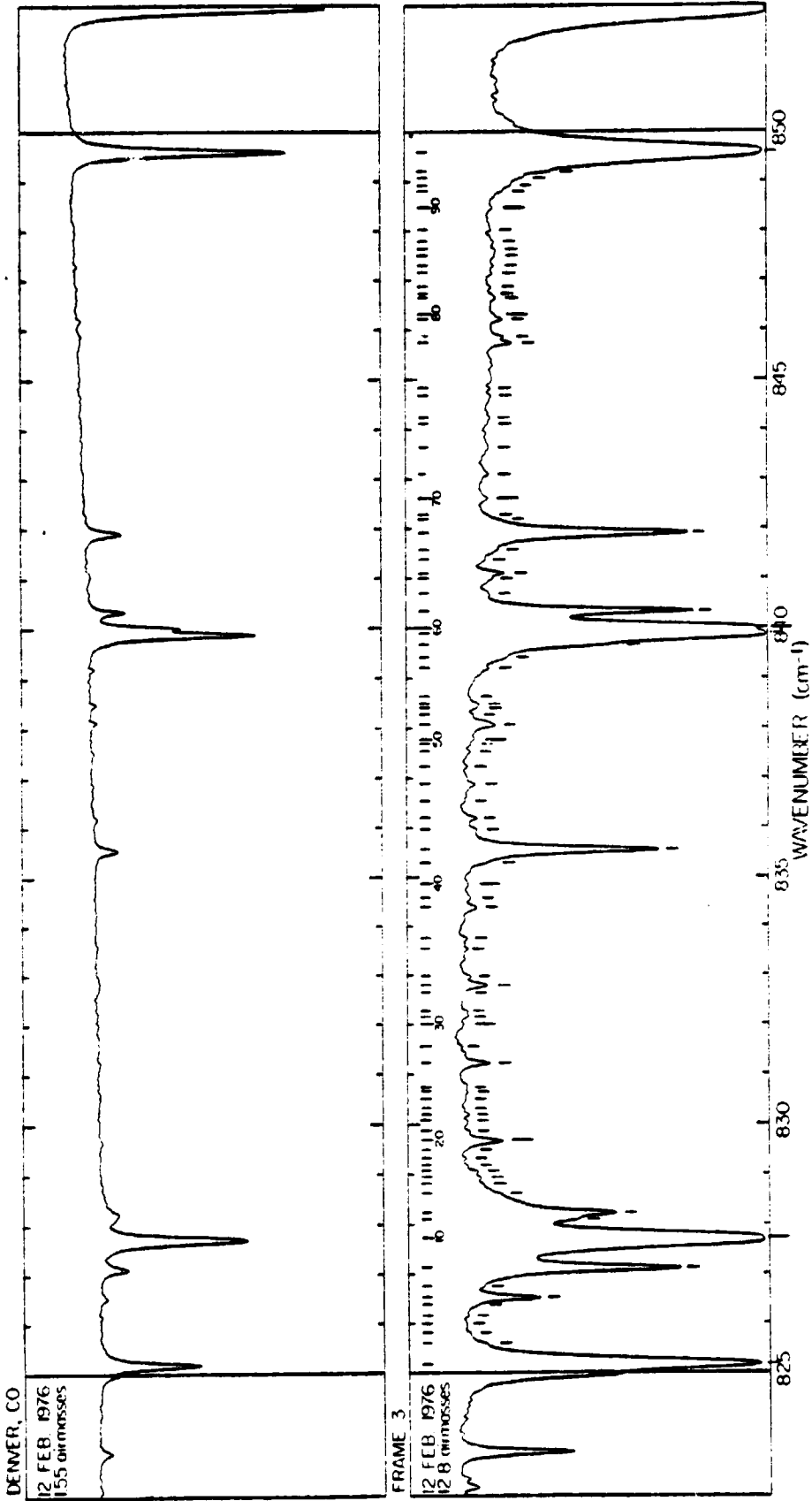
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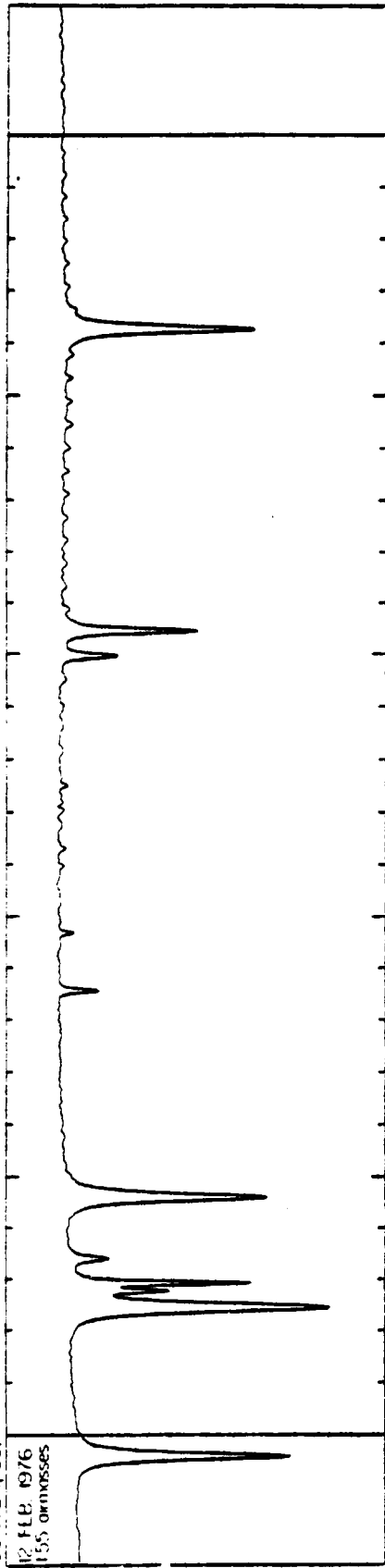
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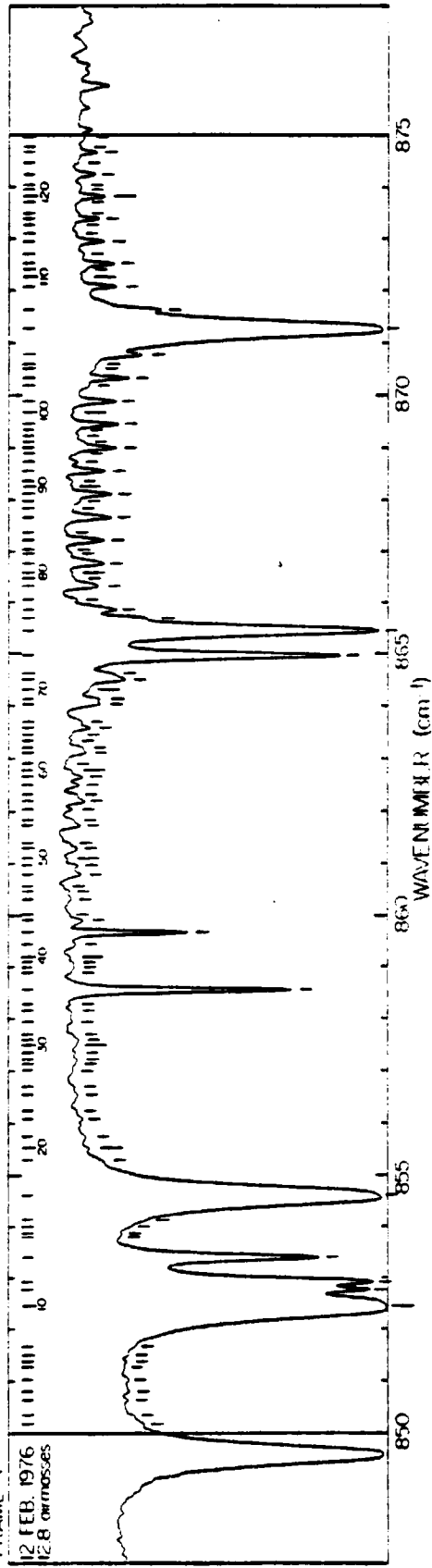


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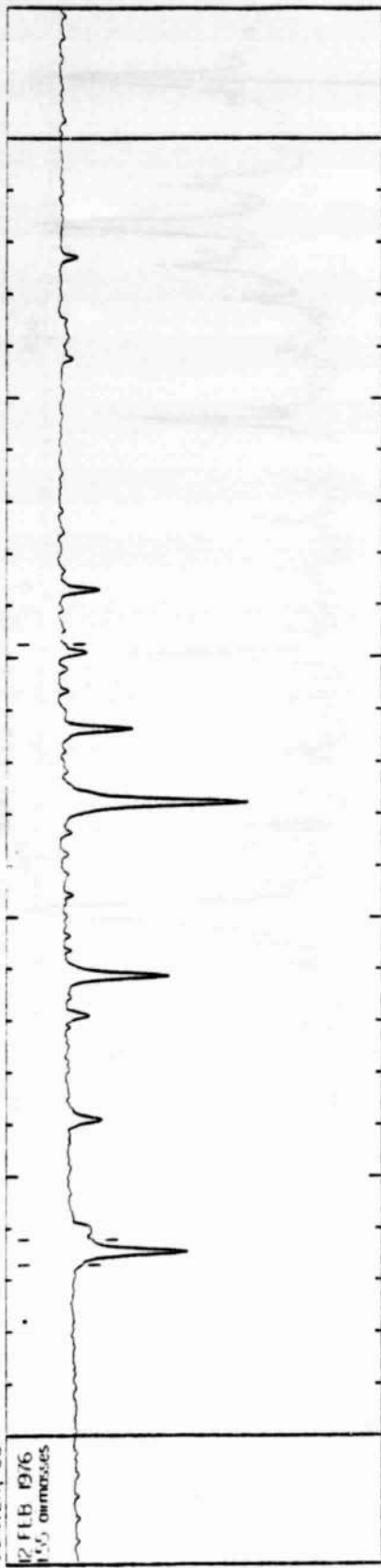


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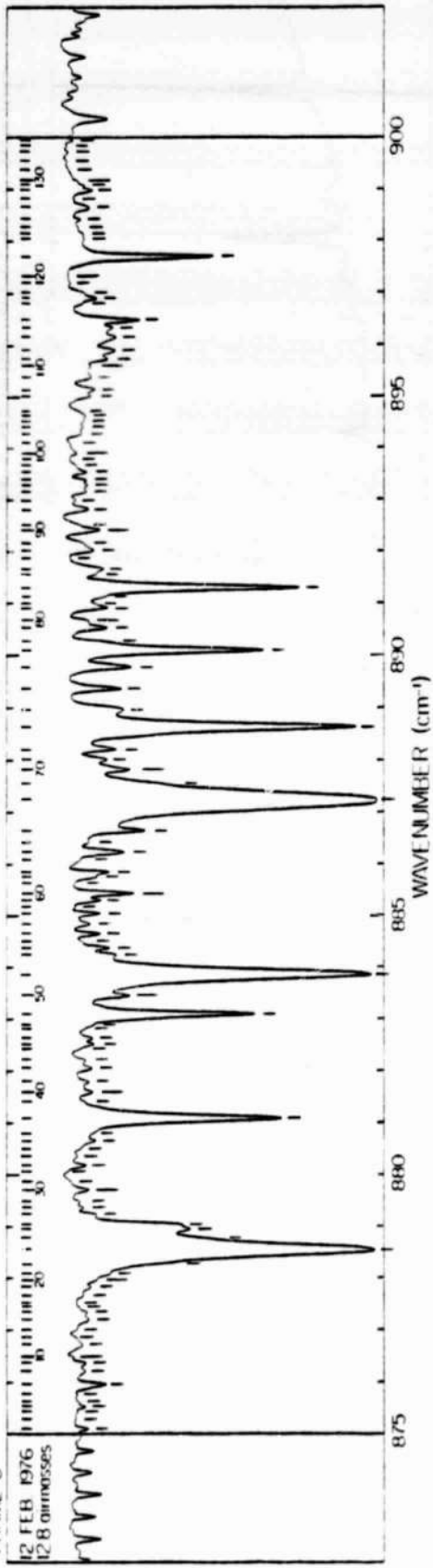
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15.5 OMINOSSES

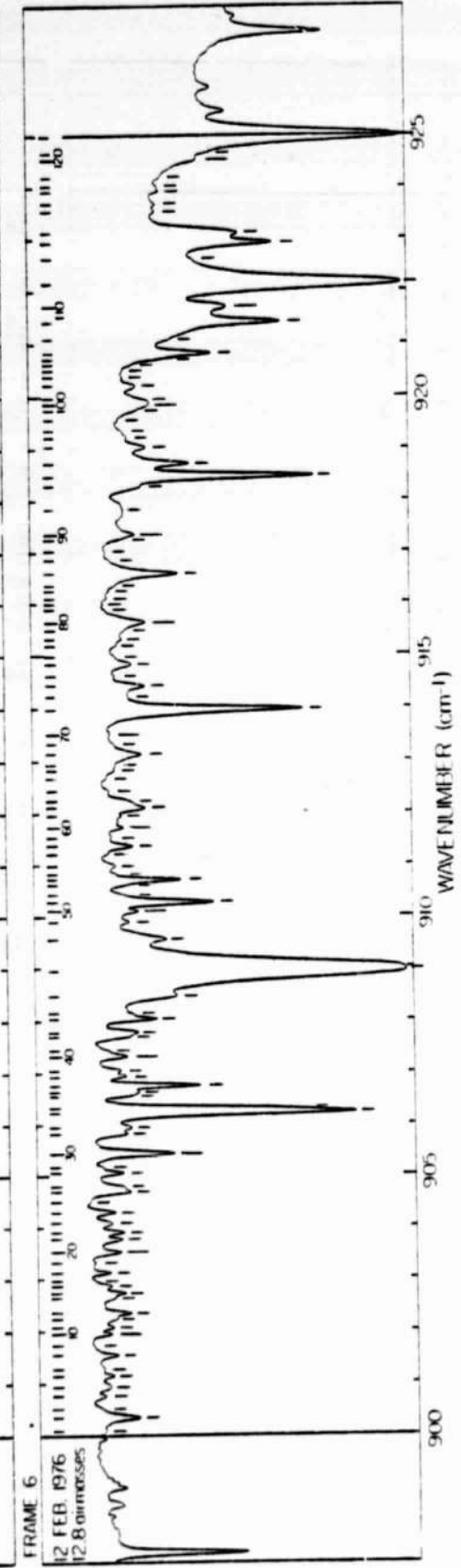
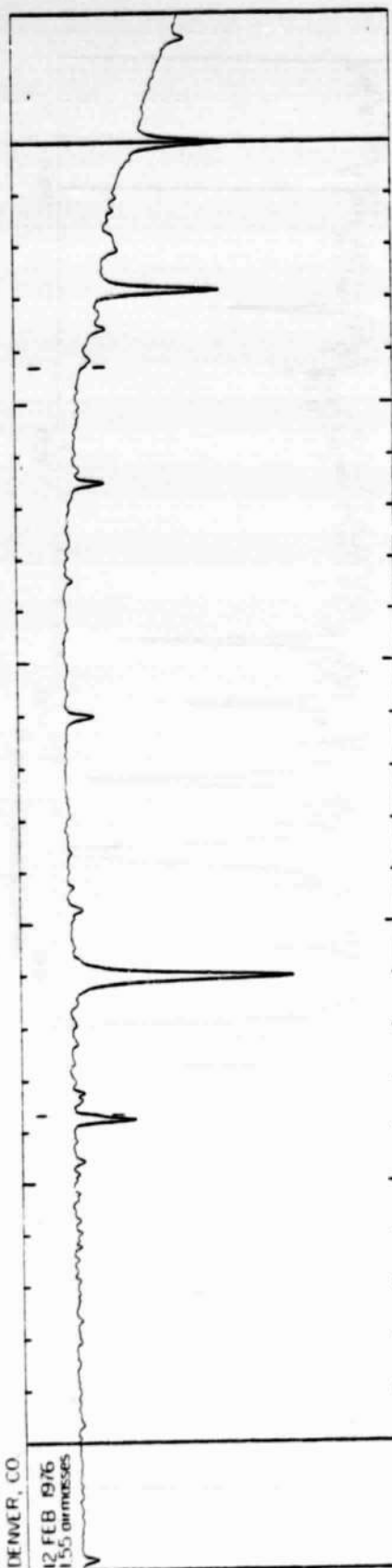


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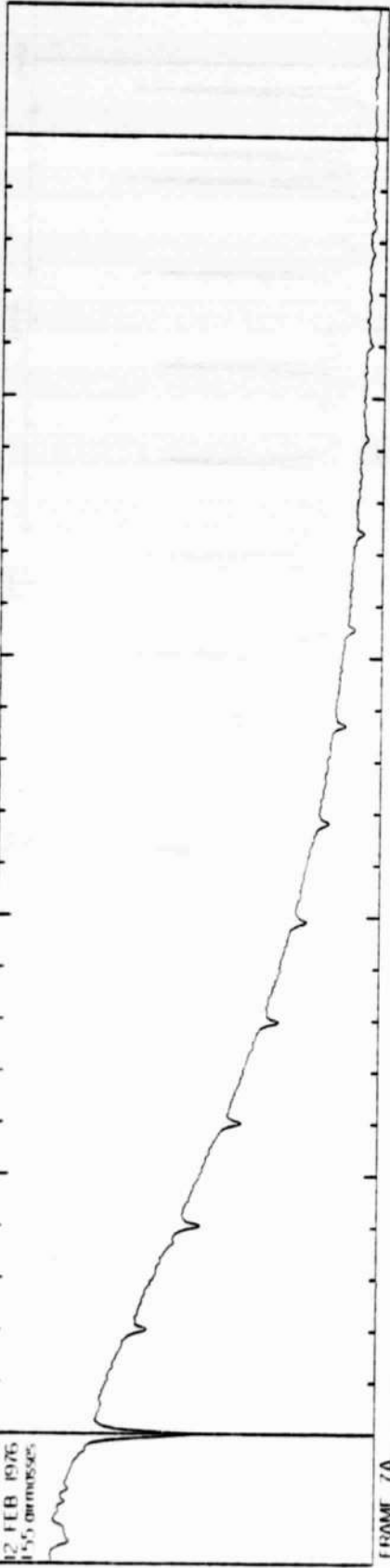
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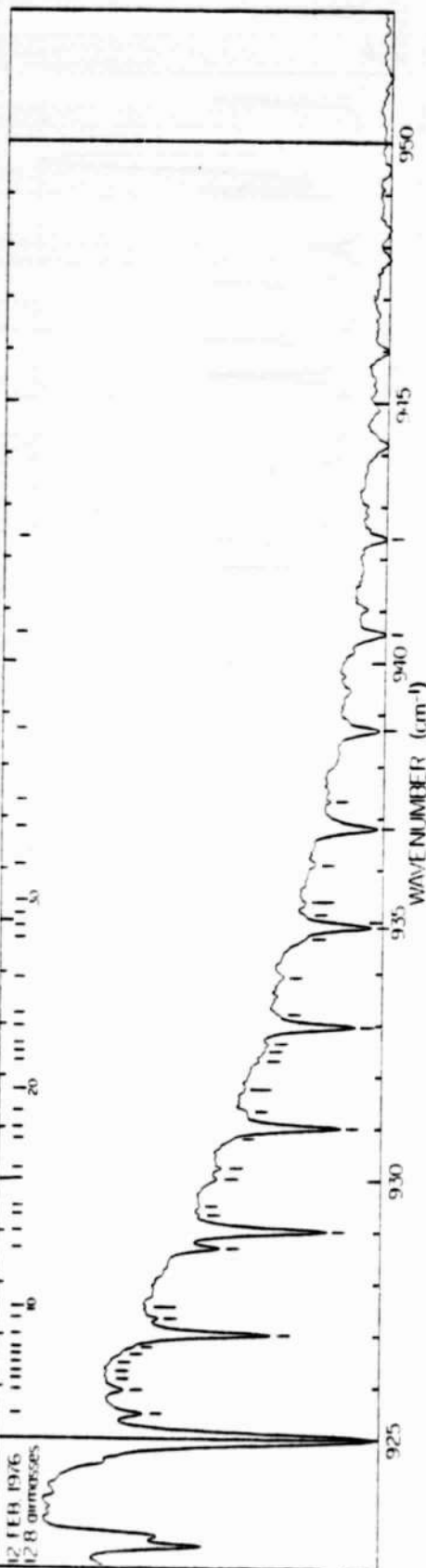


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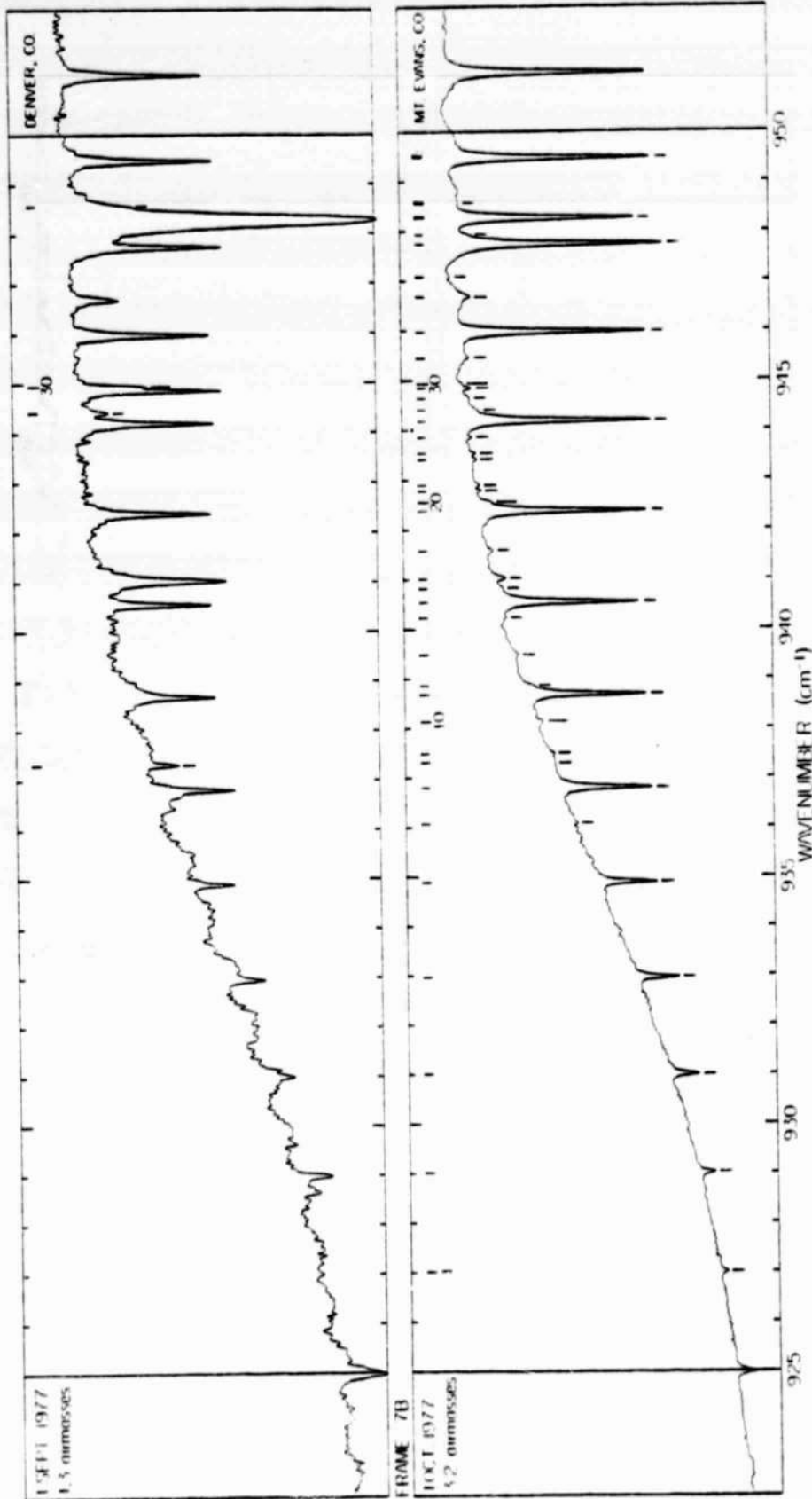
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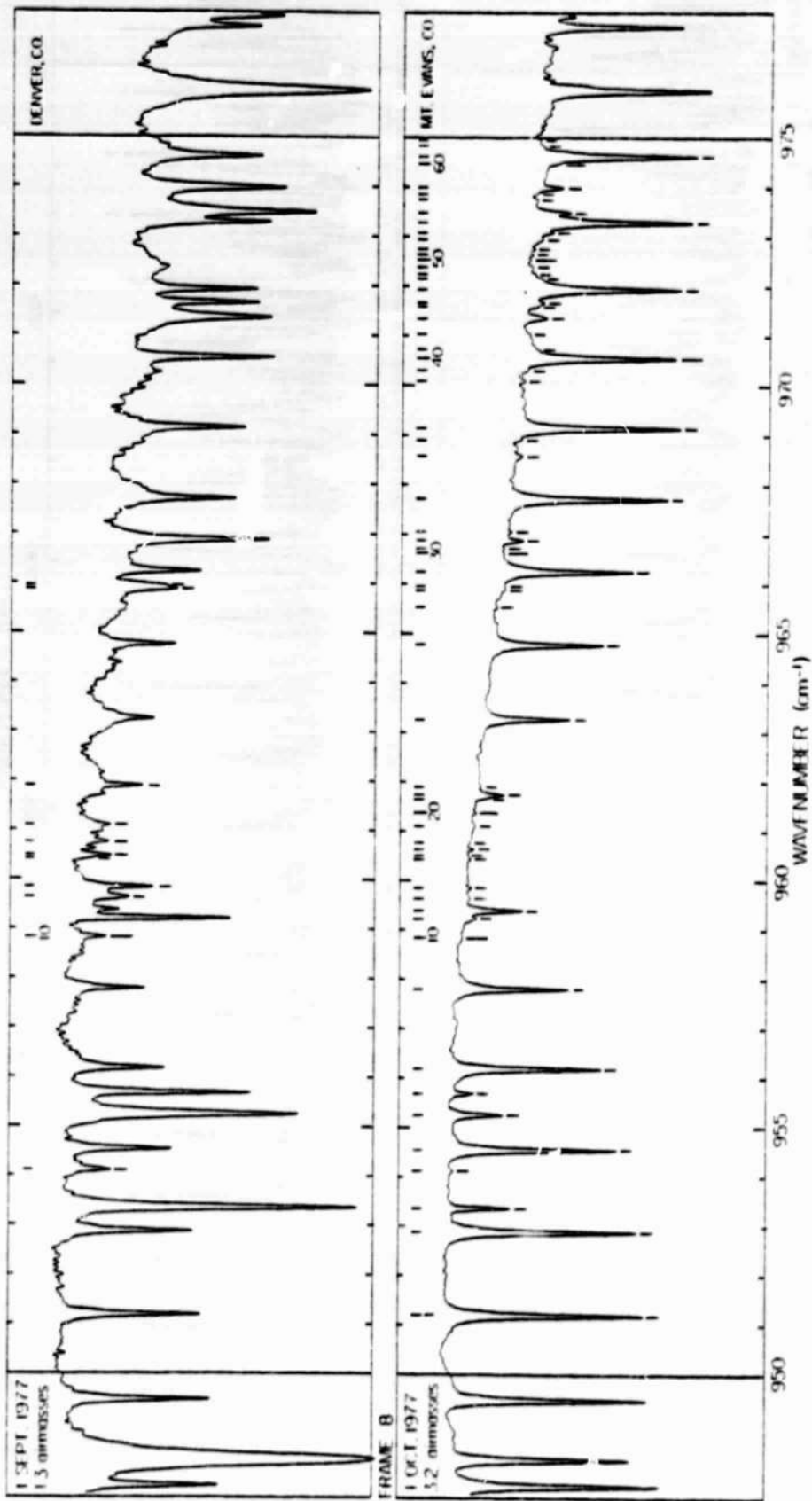
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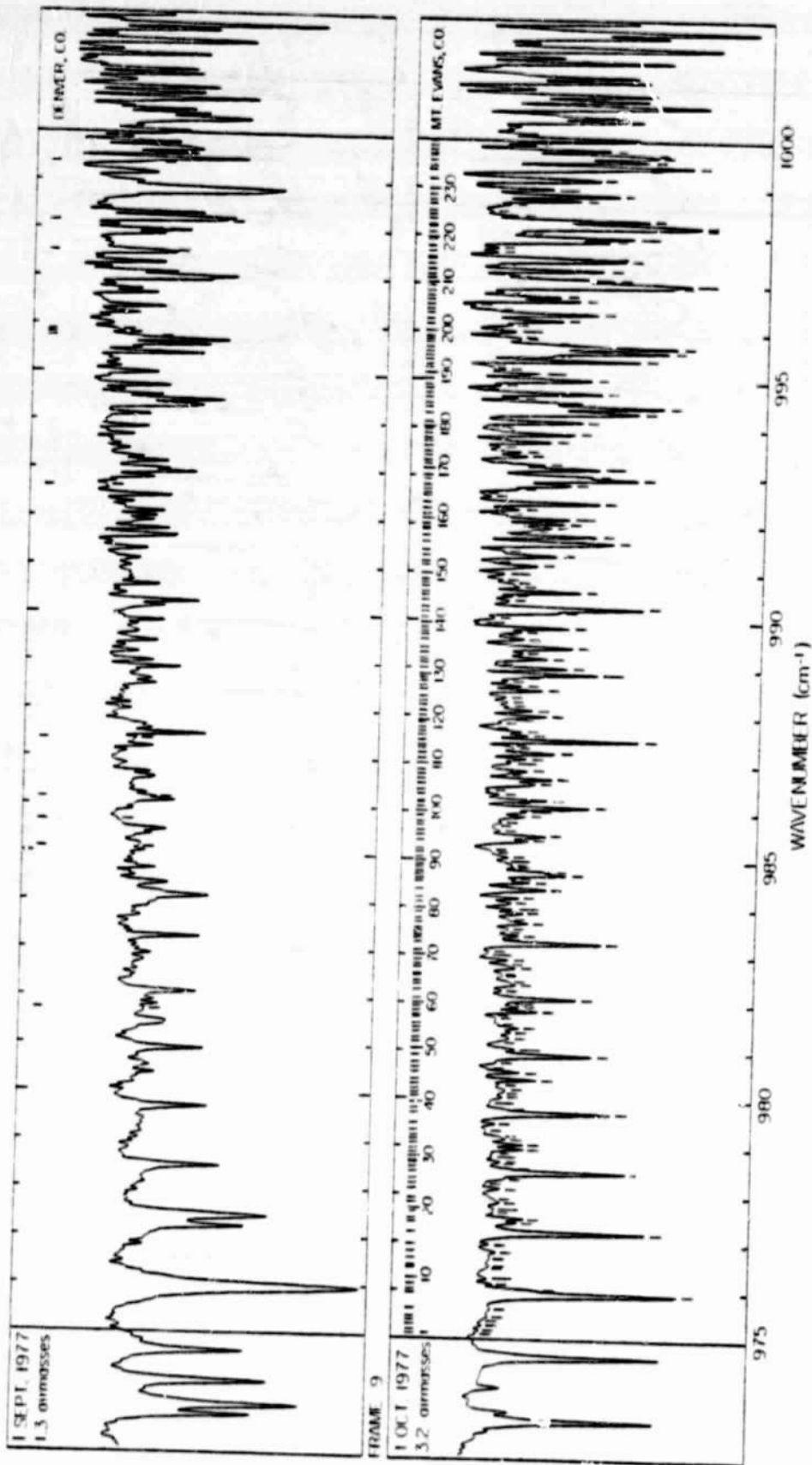
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SIGNAL



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G.P.

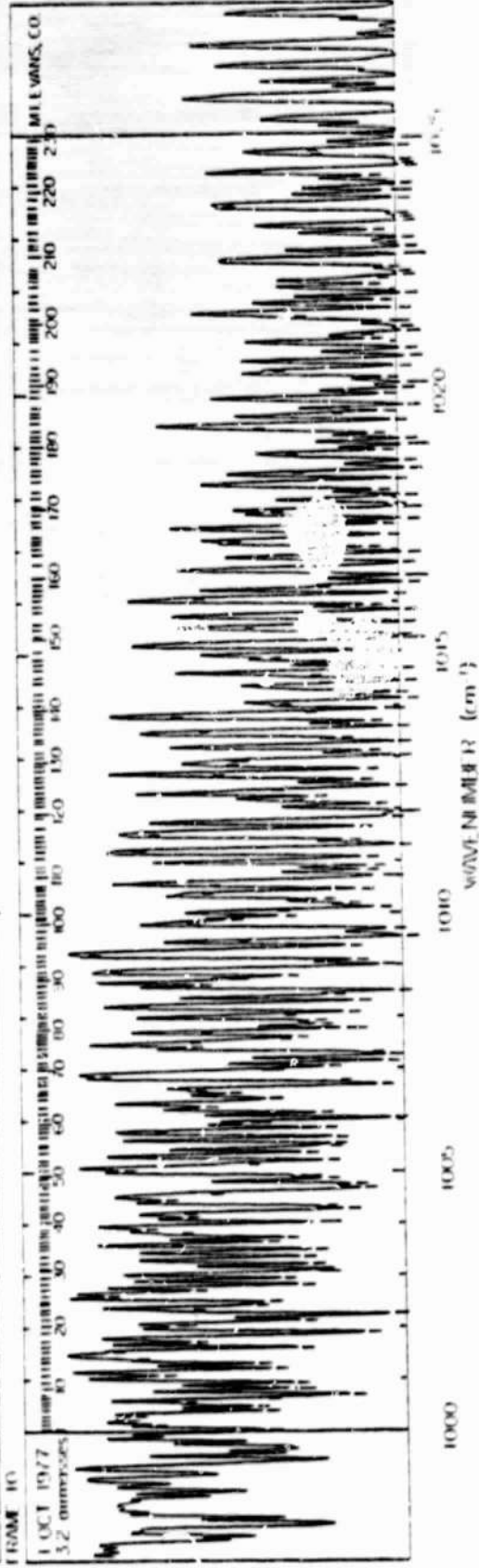
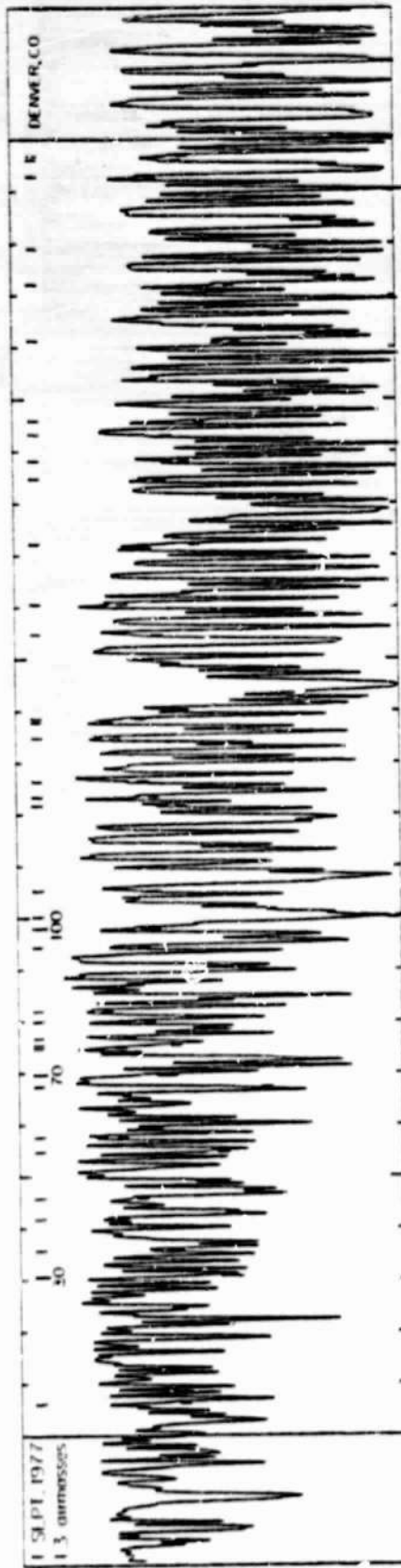
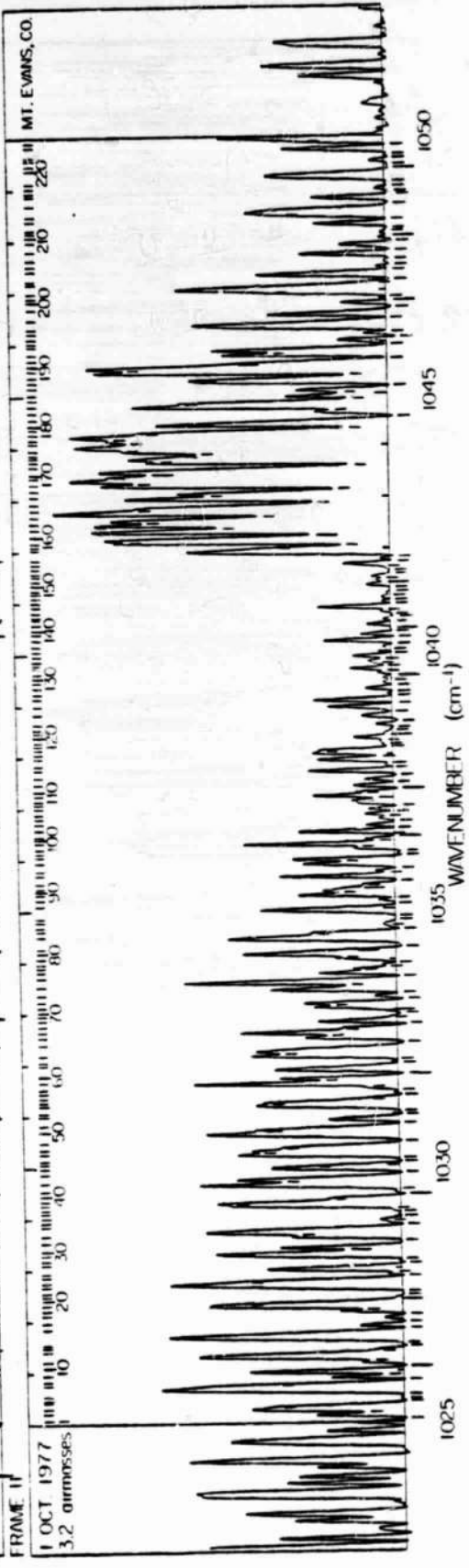
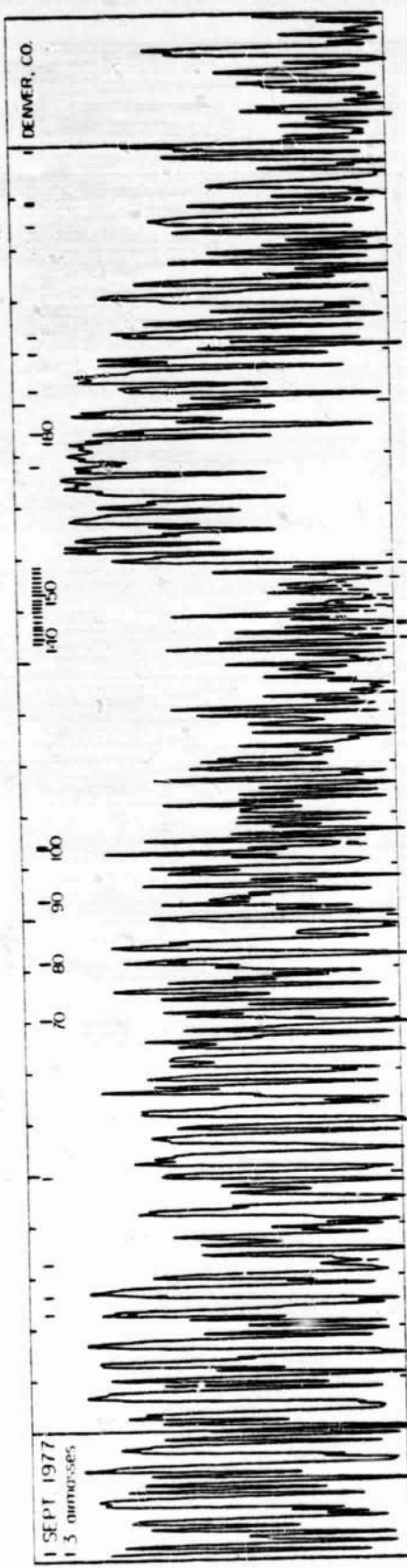
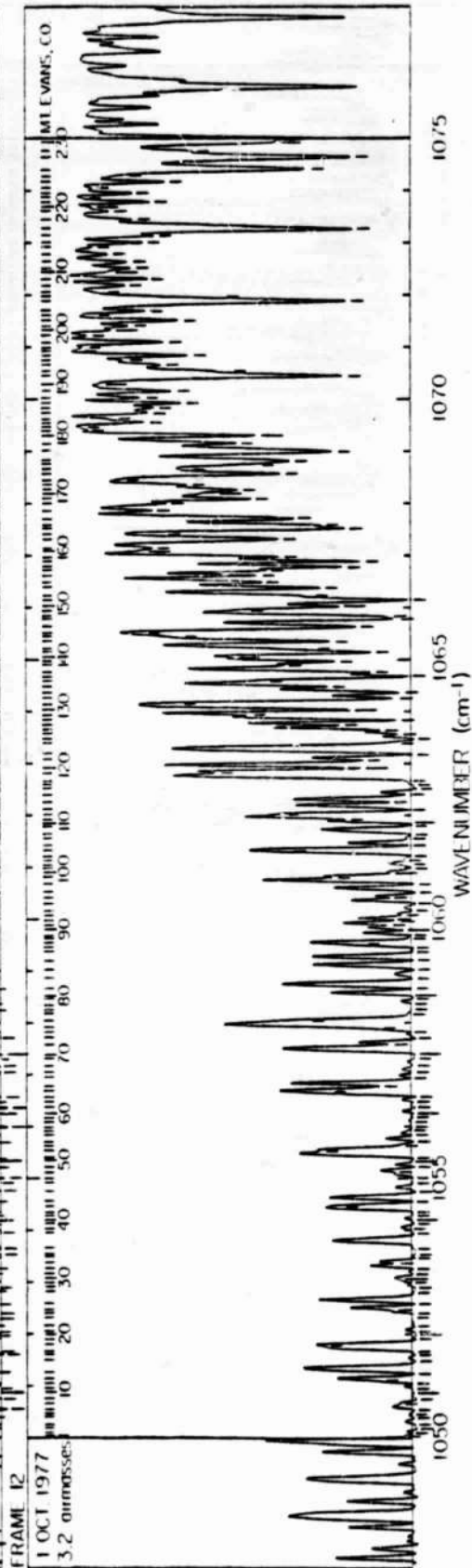
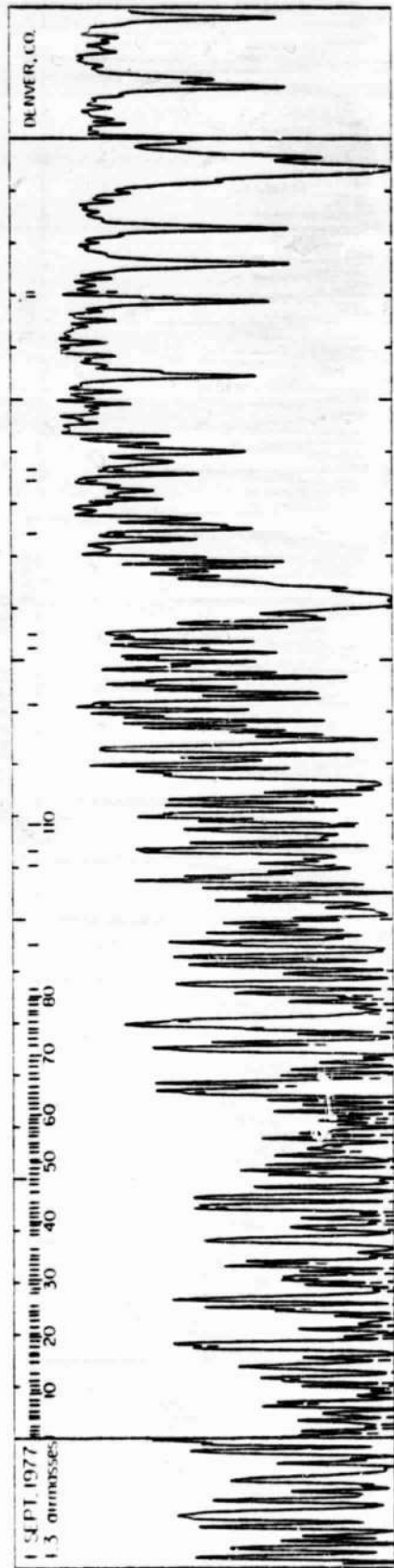


FIGURE 10

SIGNATURE

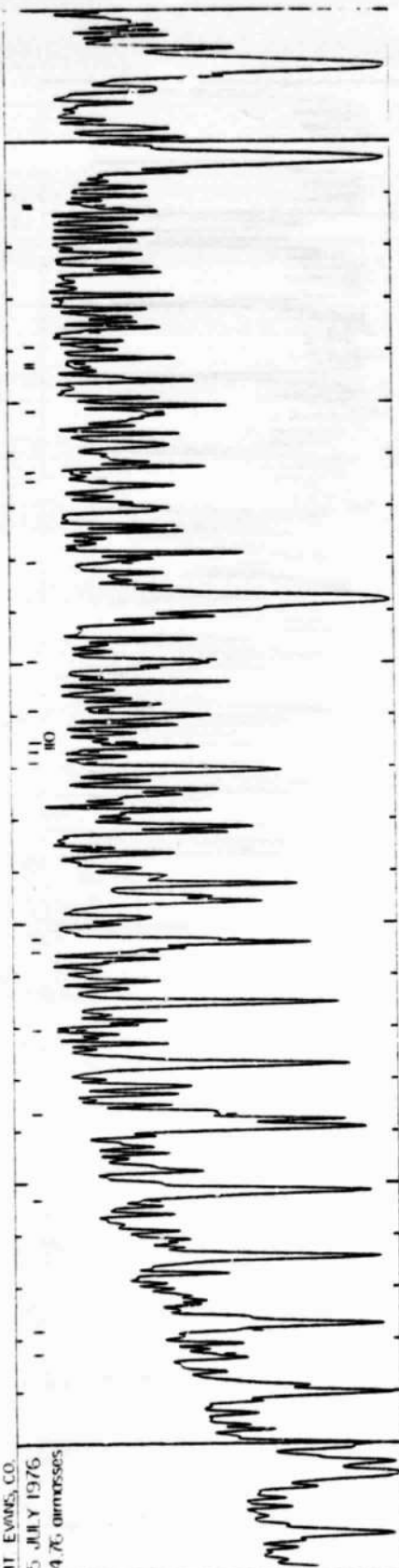


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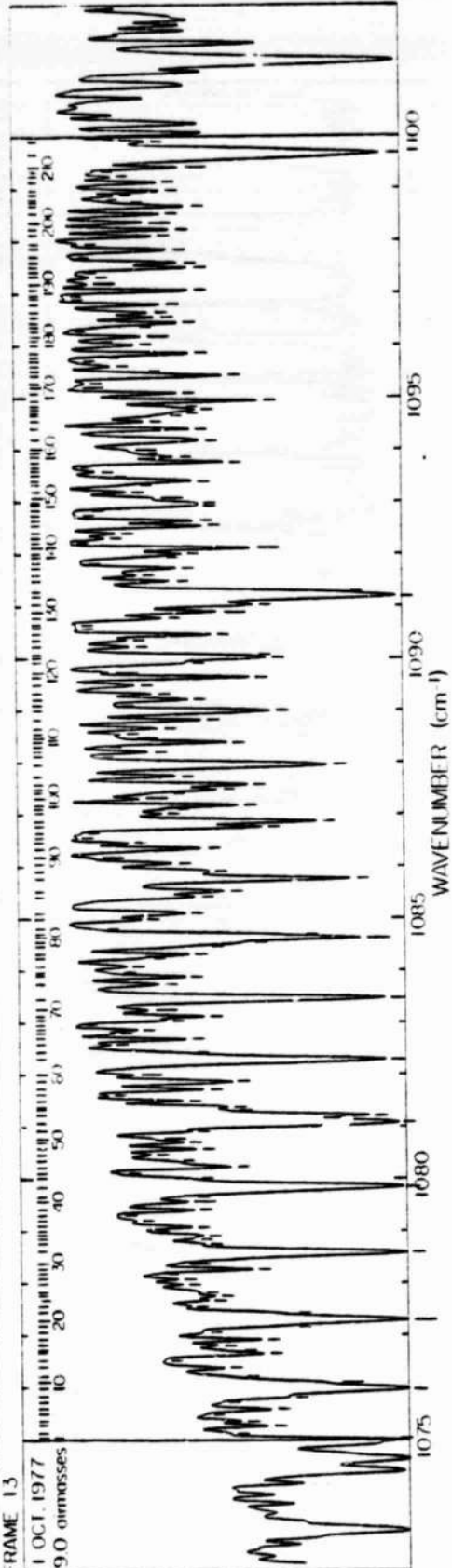


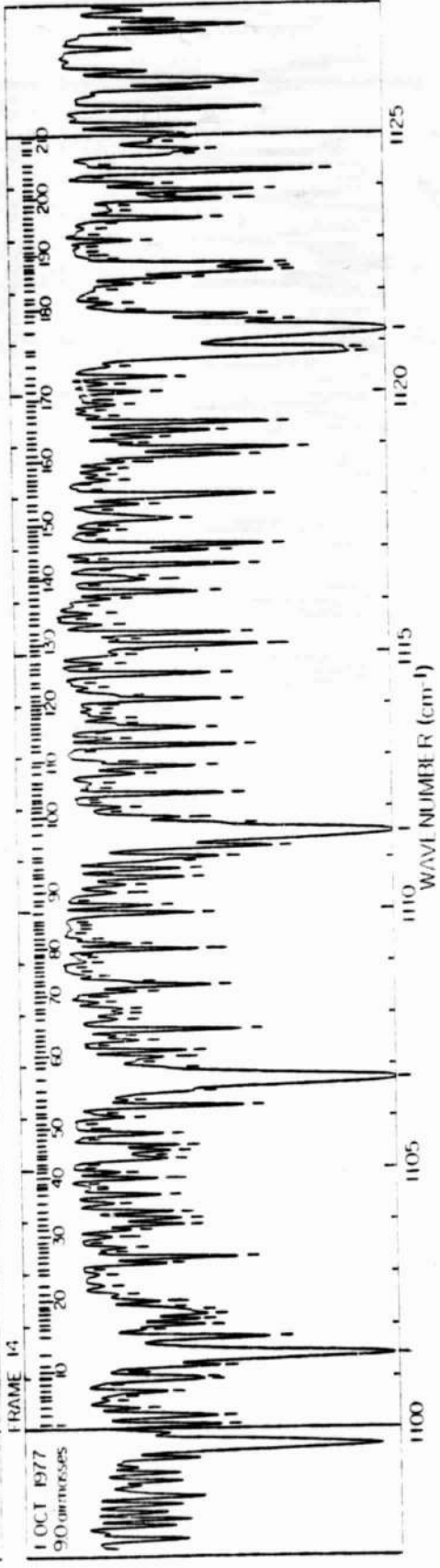
SIGNAL

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5 JULY 1976
4.76 airmasses



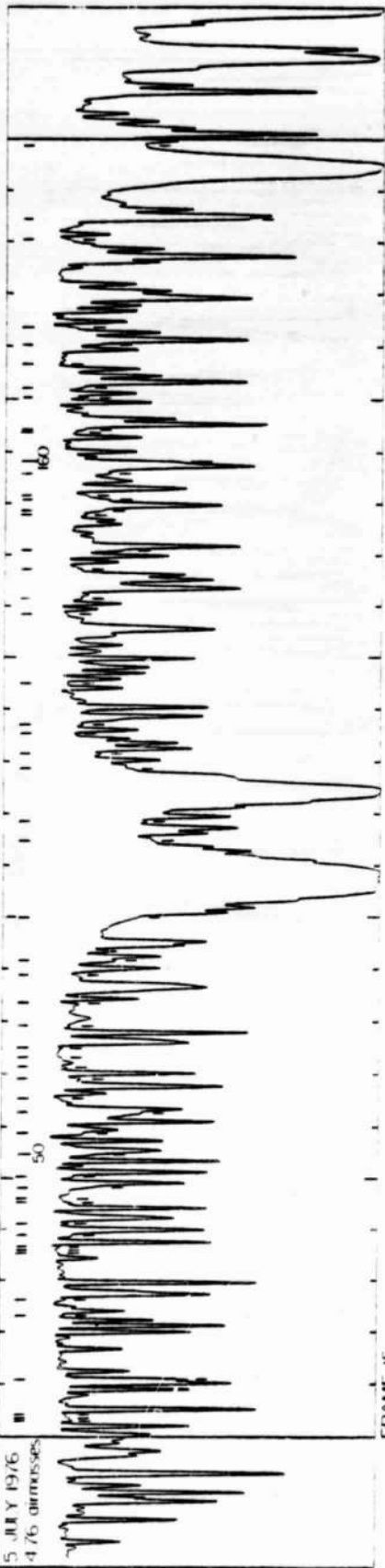
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9.0 airmasses





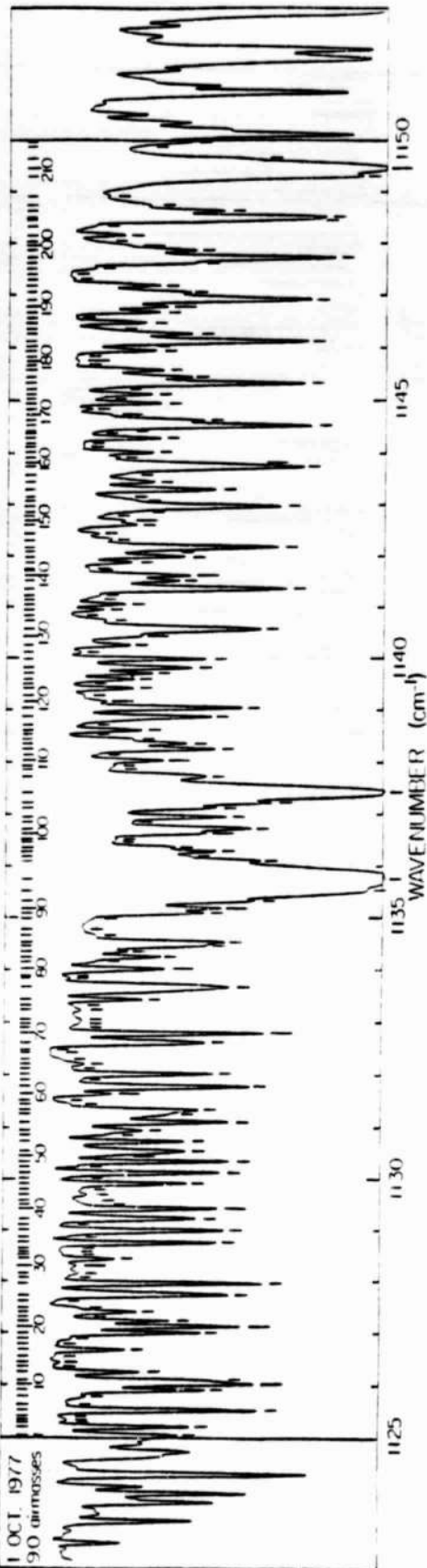
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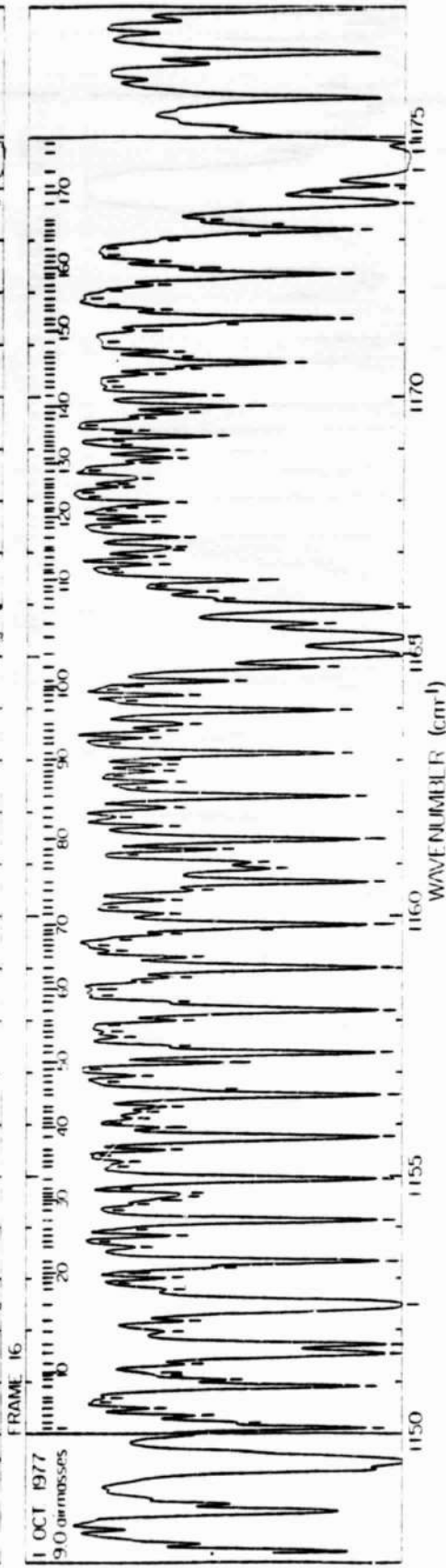
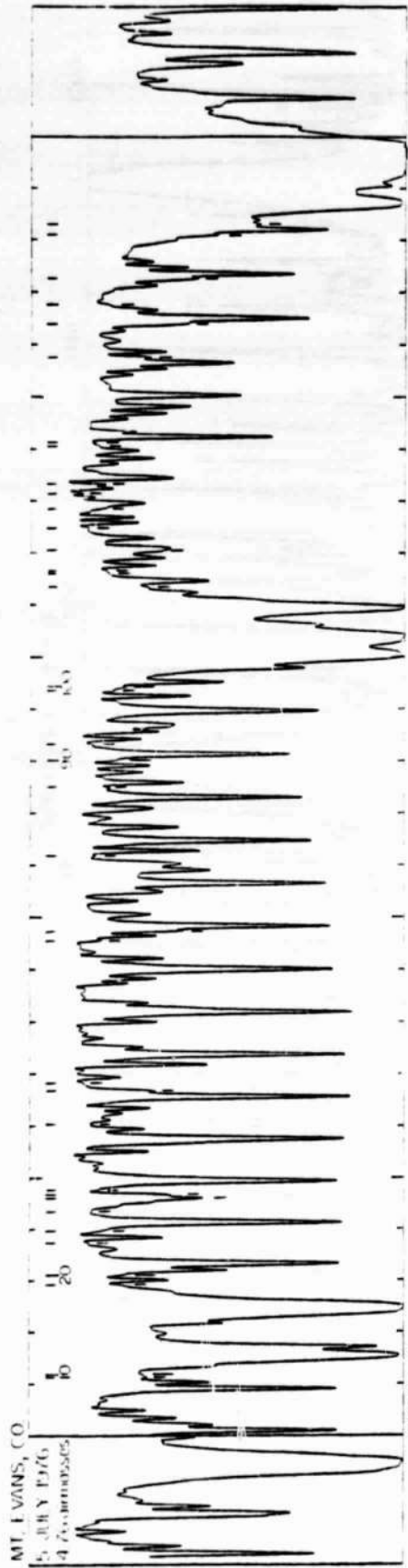
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5 JULY 1976
476 arranges

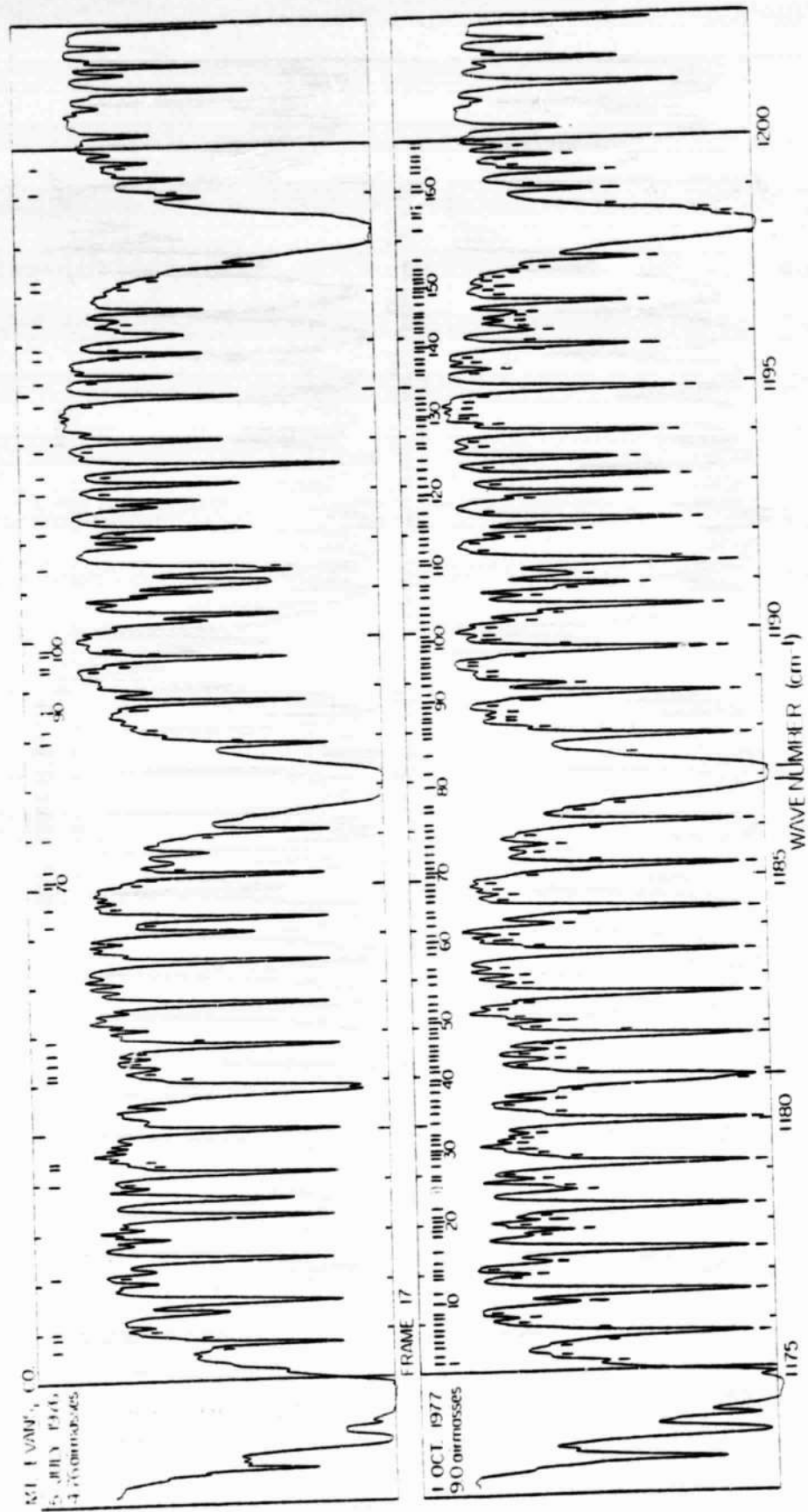


FRAME 15

1 OCT. 1977
90 arranges



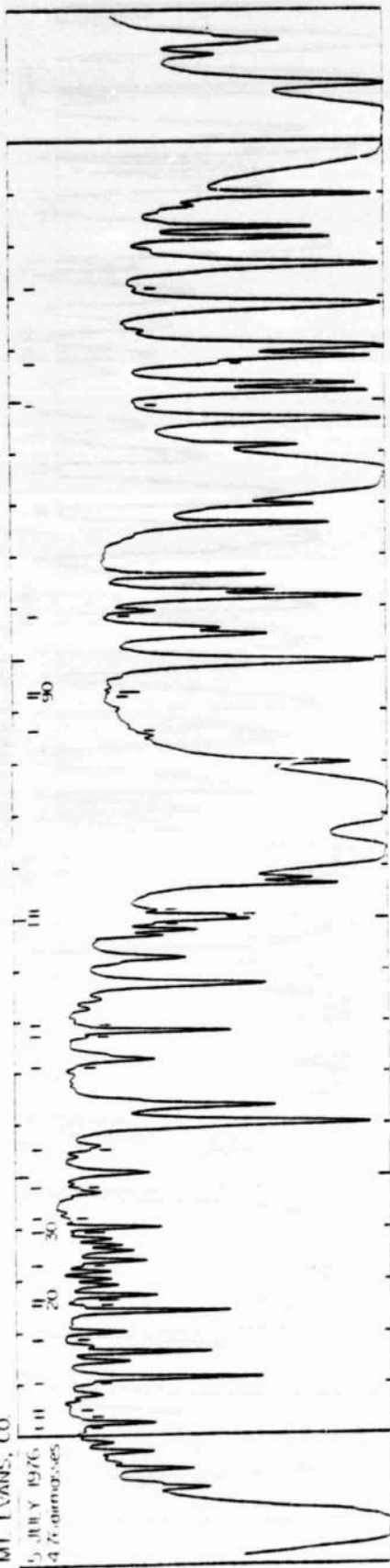




SIGNAL

MT. EVANS, CO.

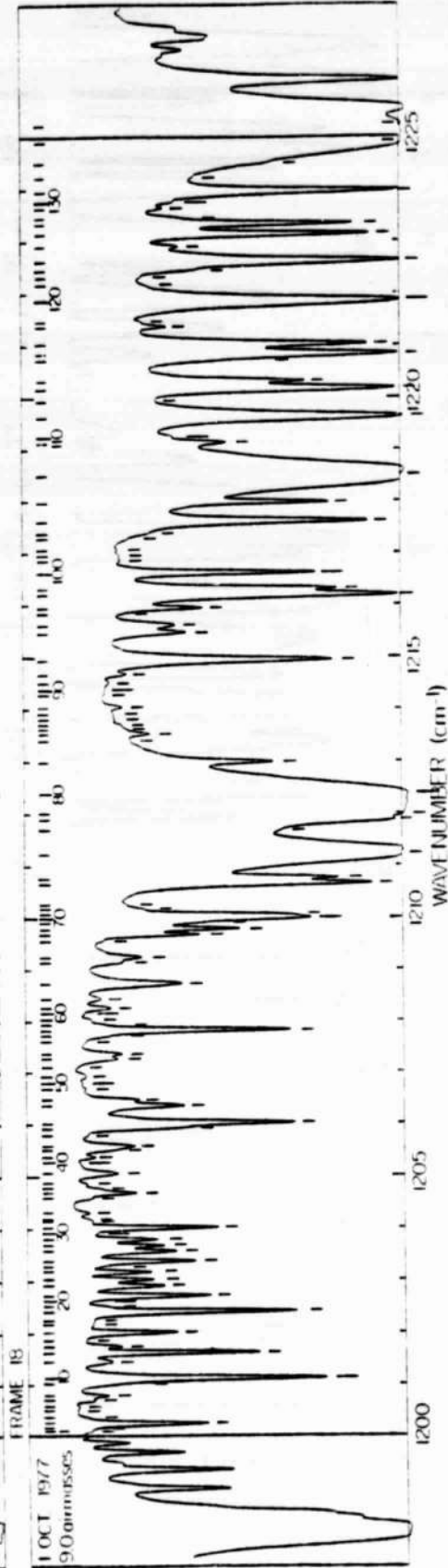
5 JULY 1976
4.7 atmospheres

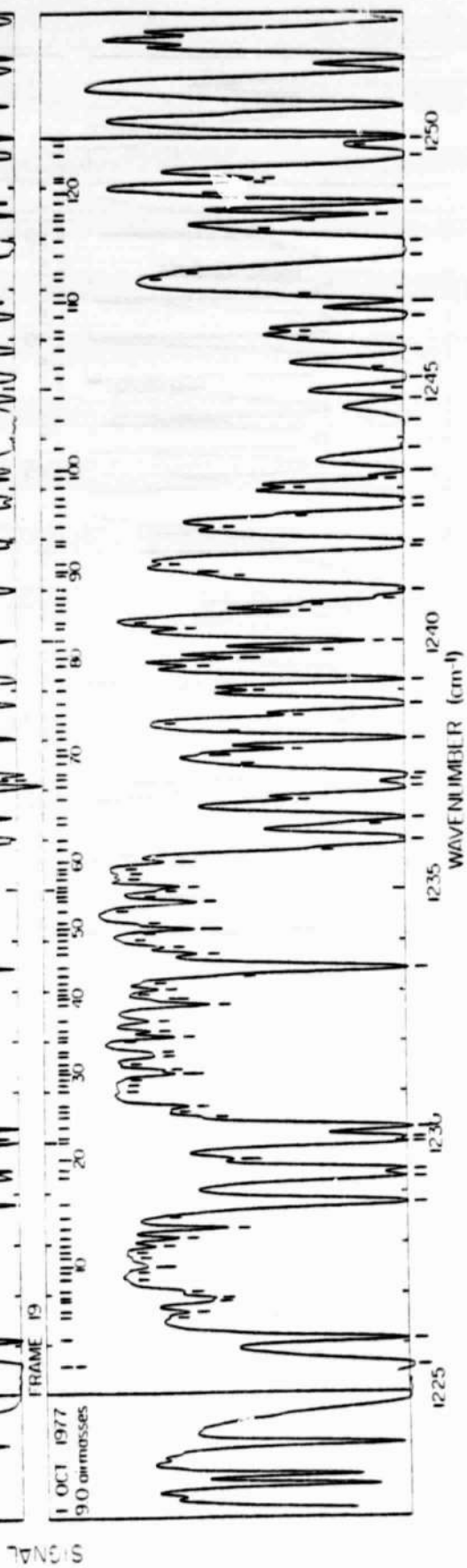
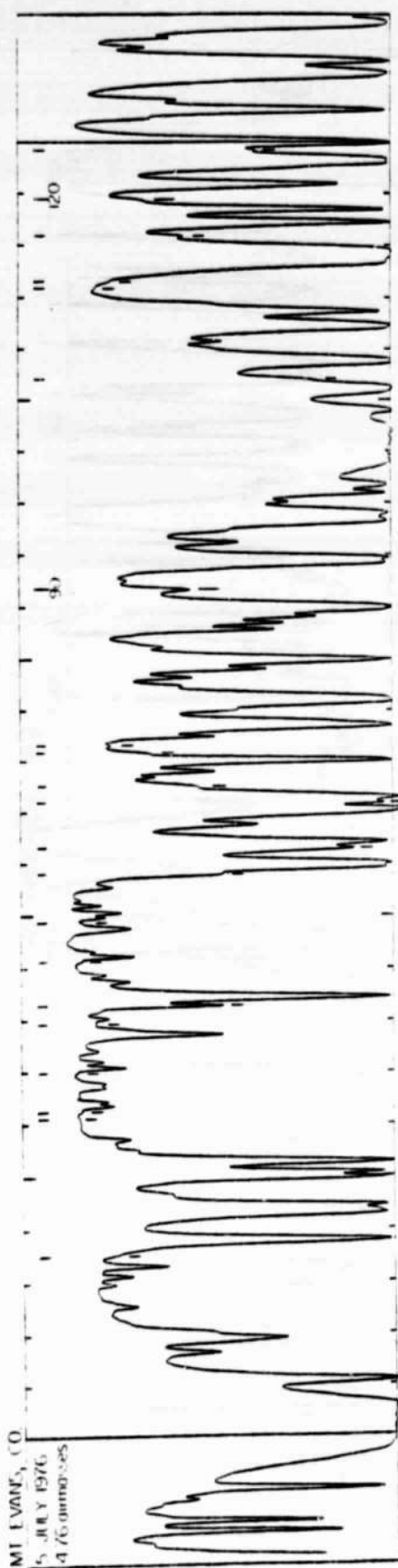


Signal

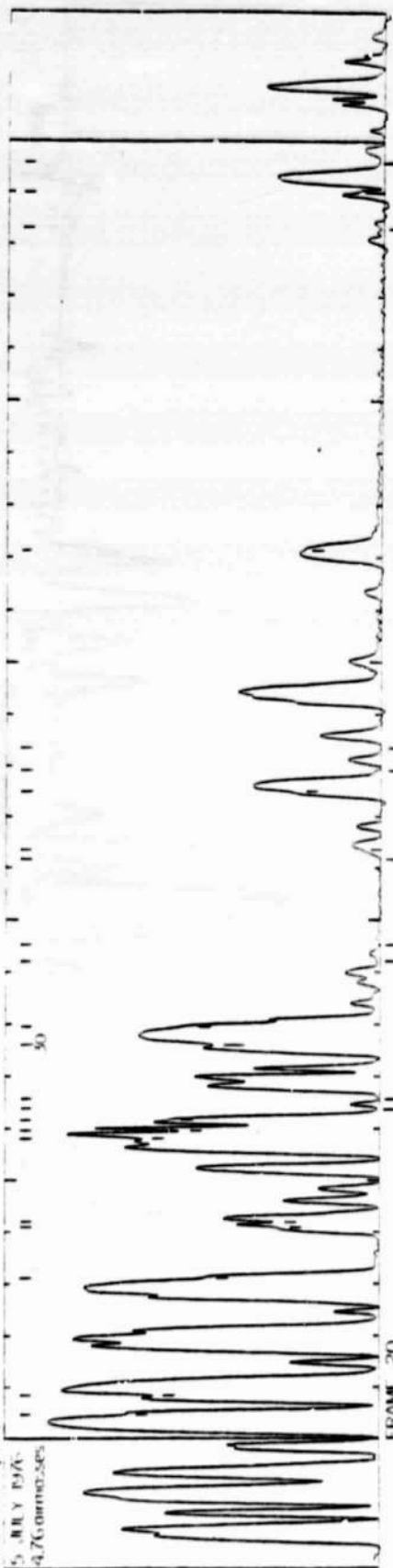
FRAME 15

1 OCT 1977
9.0 atmospheres



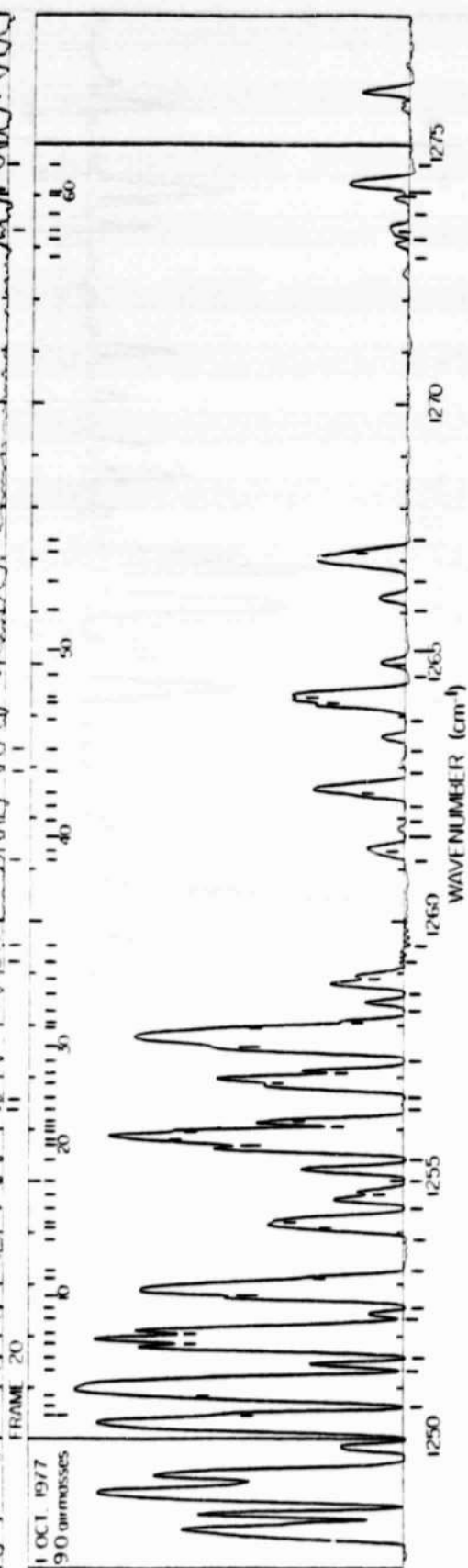


MT. EVANS, CO.
5 JULY 1976
4.76 cm-sec



SIGNAL

1 OCT 1977
9.0 cm-sec



FRAME 20

60

50

40

30

20

10

1250

1255

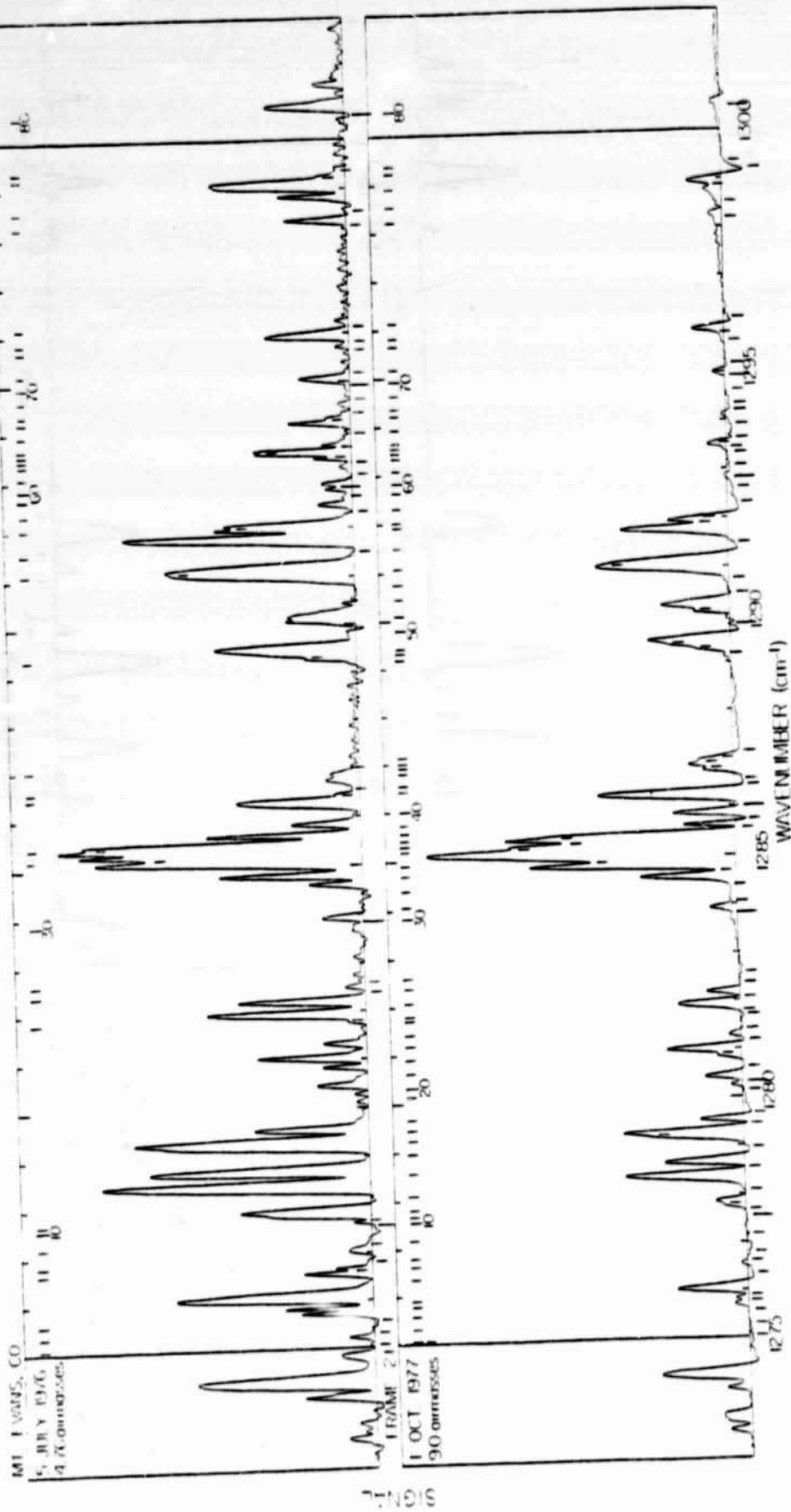
1260

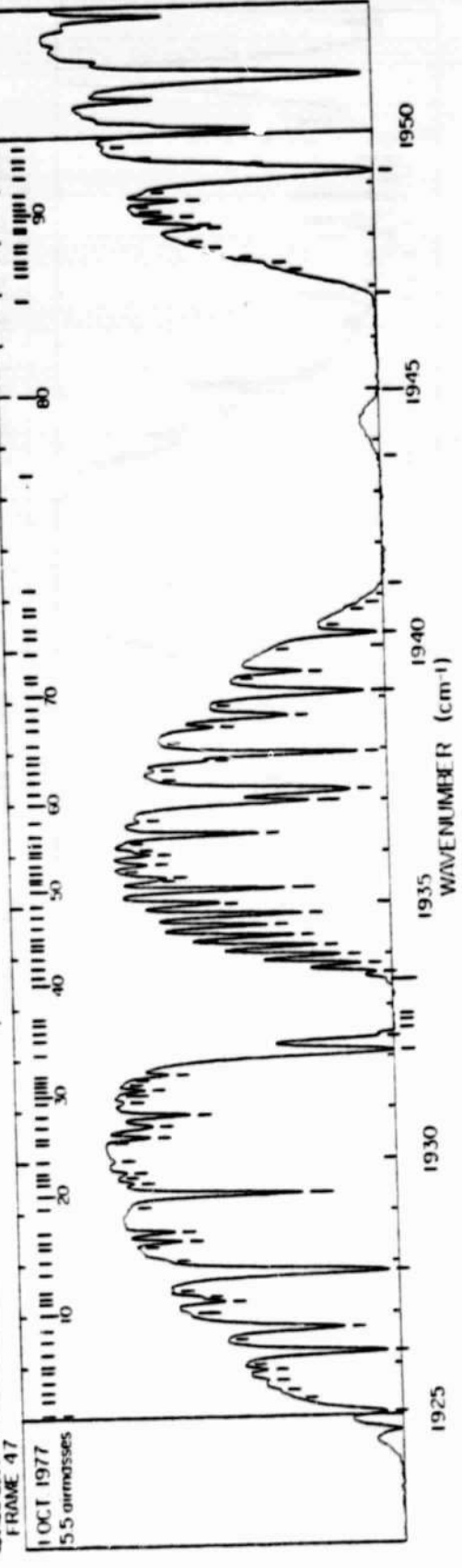
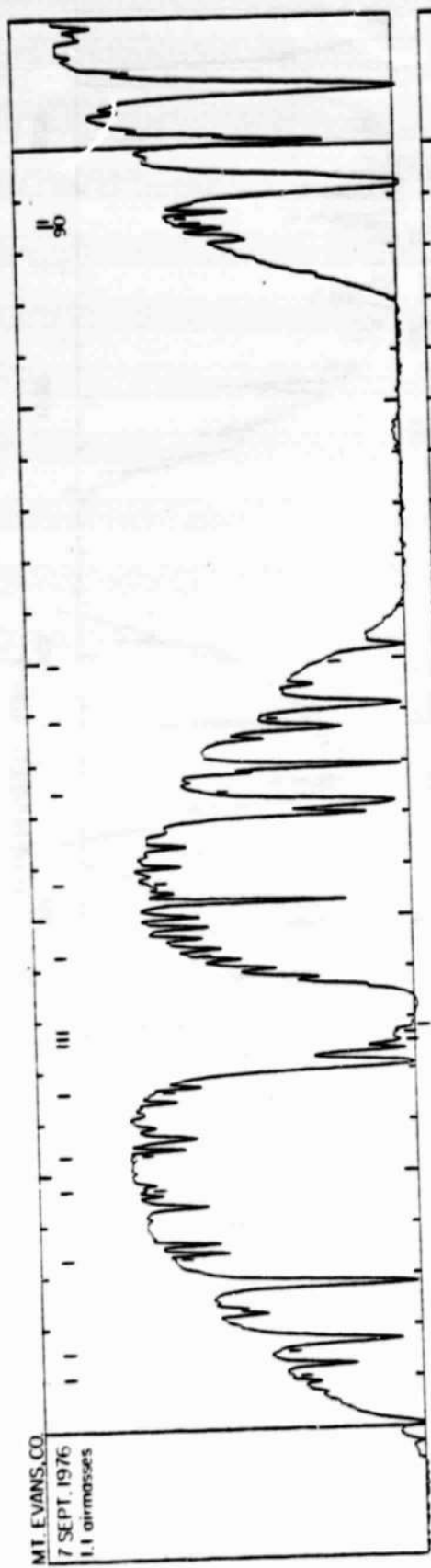
1265

1270

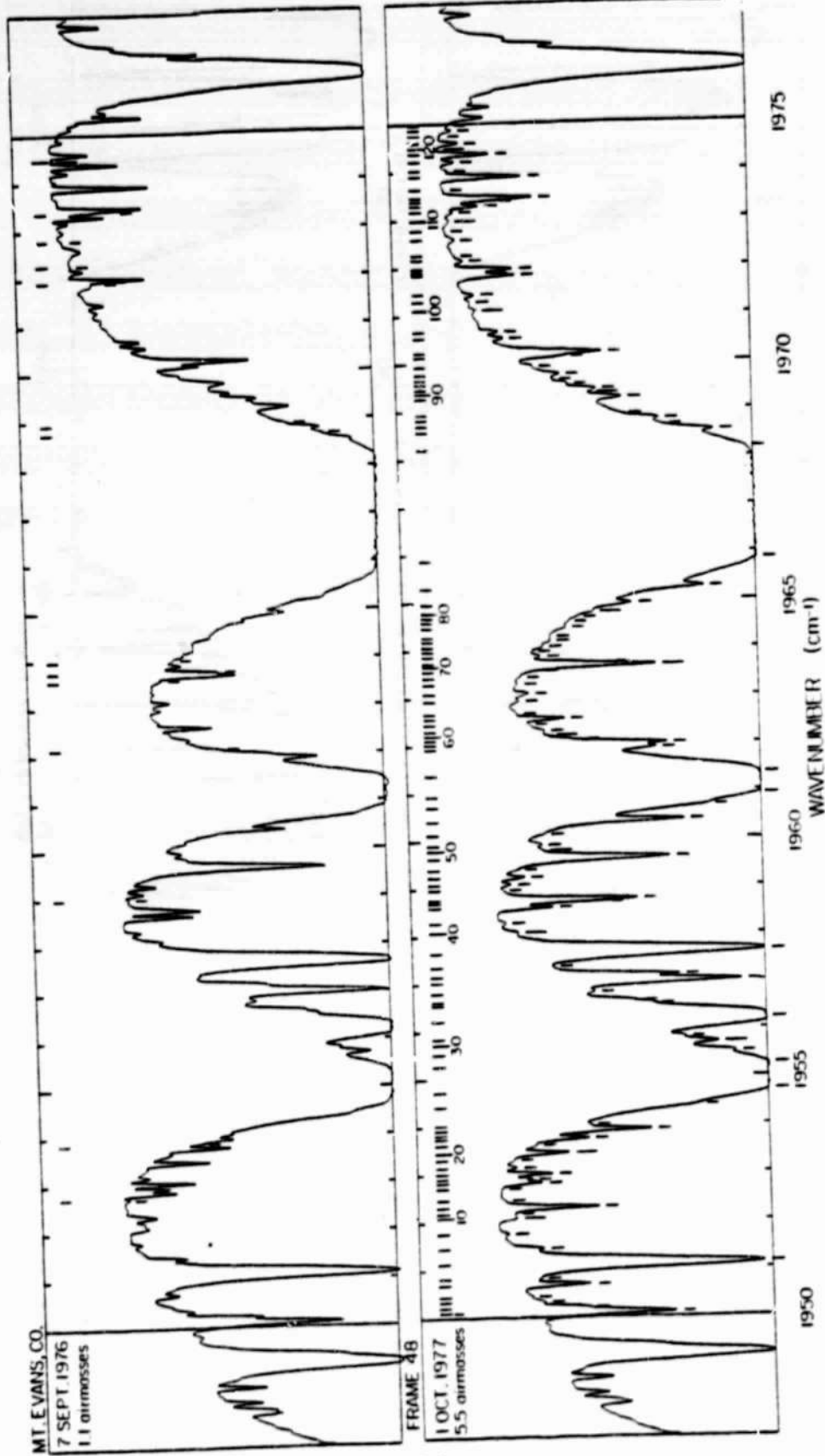
1275

WAVENUMBER (cm⁻¹)





SIGNAL



MT. EVANS, CO.
7 SEPT. 1976
1.1 airmasses

FRAME 48
1 OCT. 1977
5.5 airmasses

SIGNAL

1950

1955

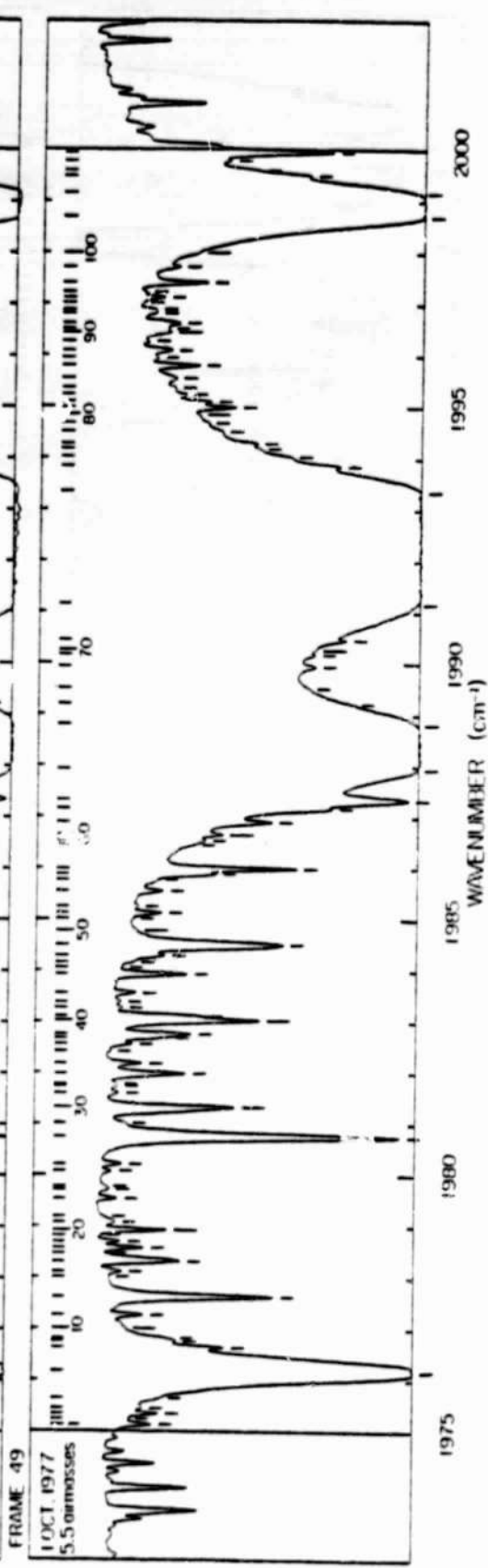
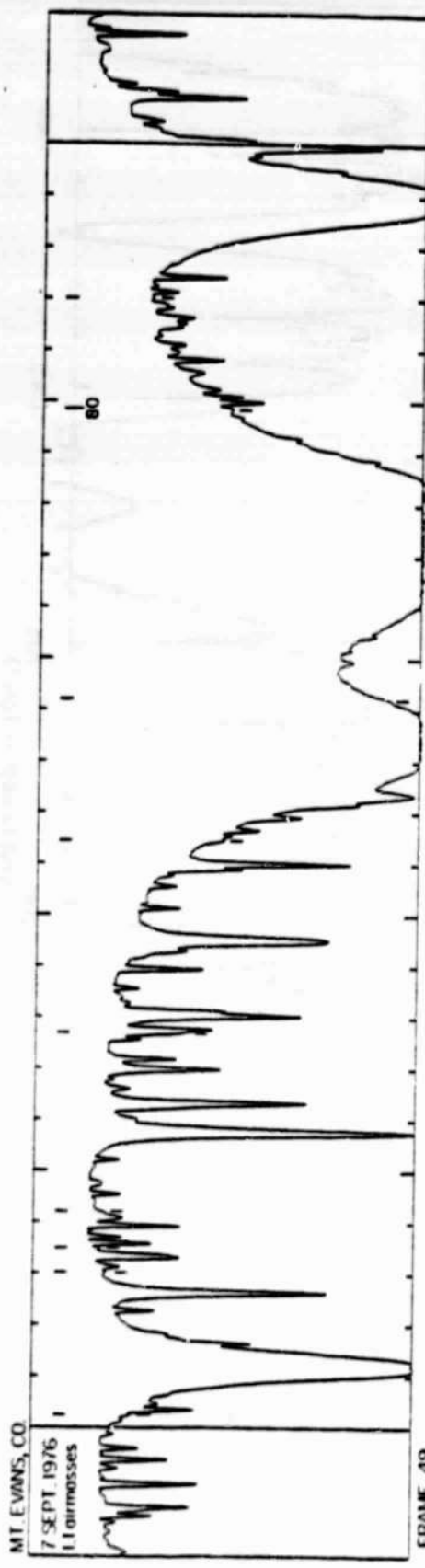
1960

1965

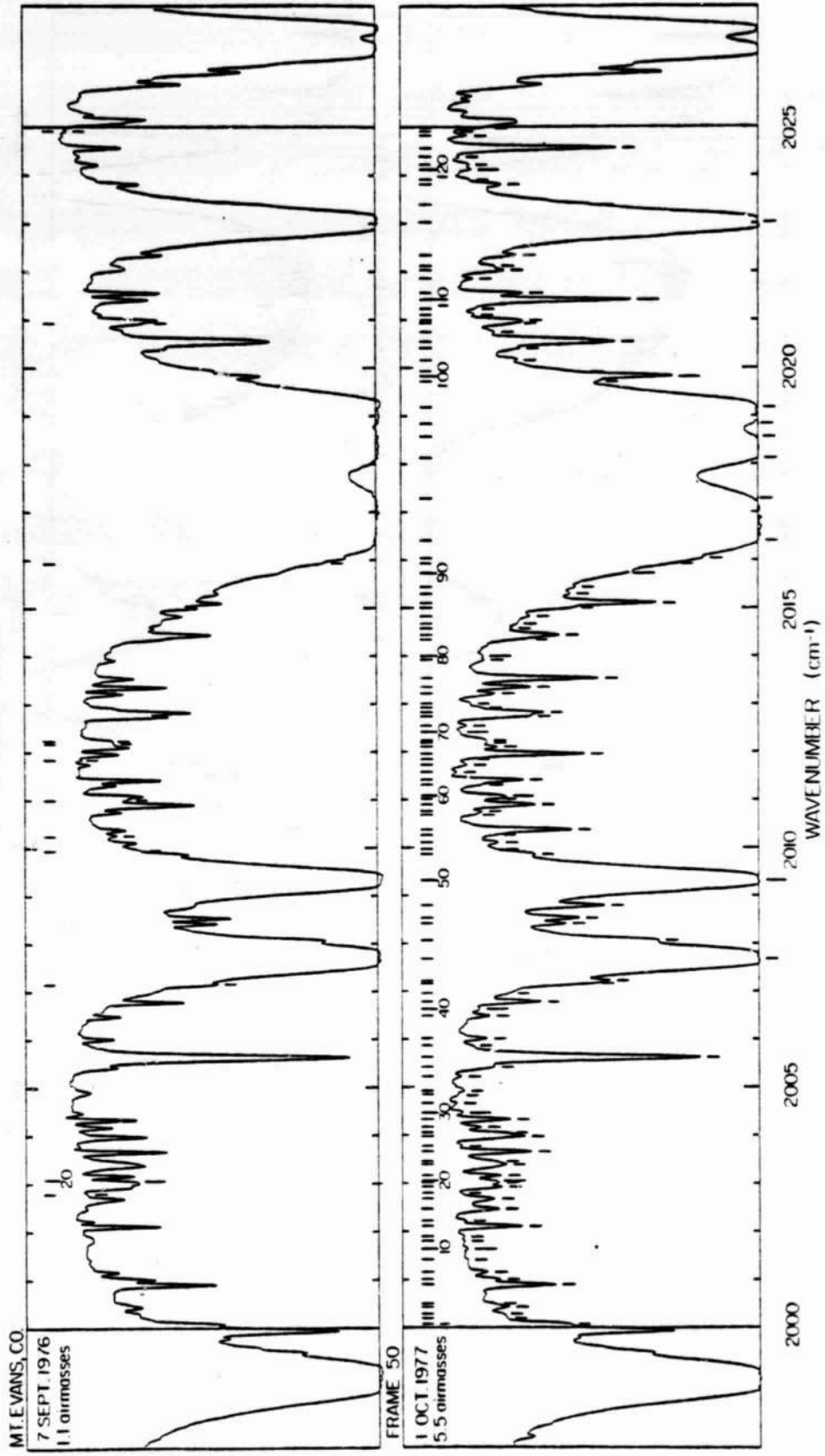
1970

1975

WAVENUMBER (cm⁻¹)

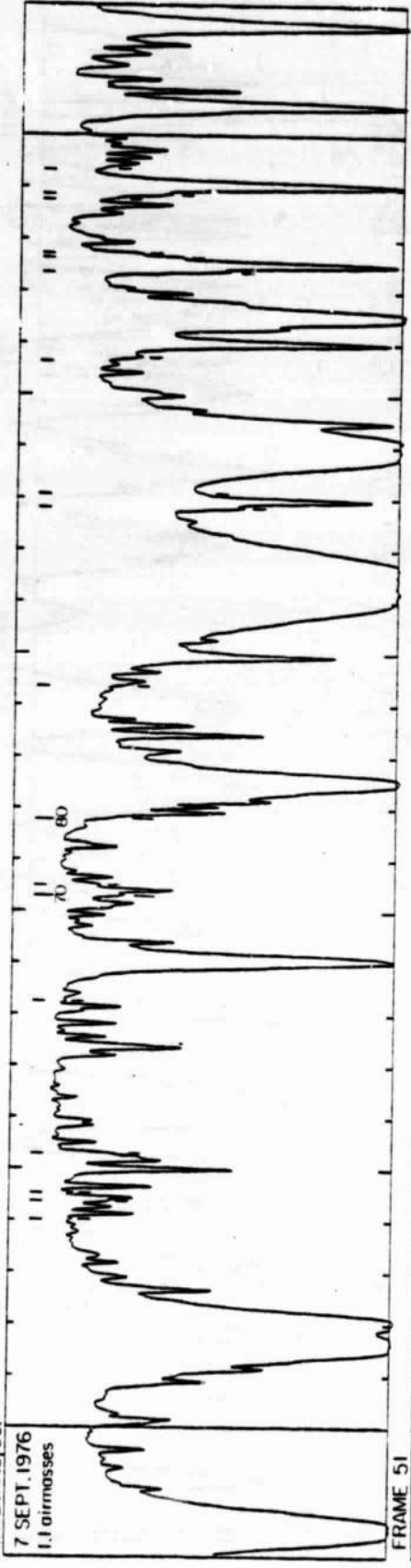


SIGNAL

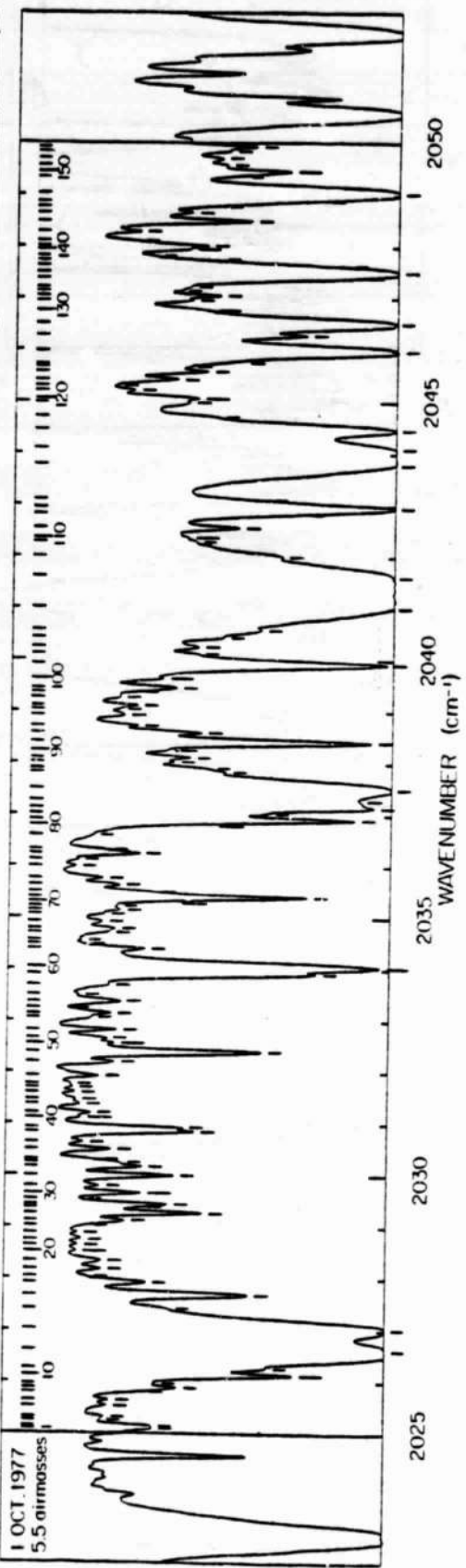


SIGNAL

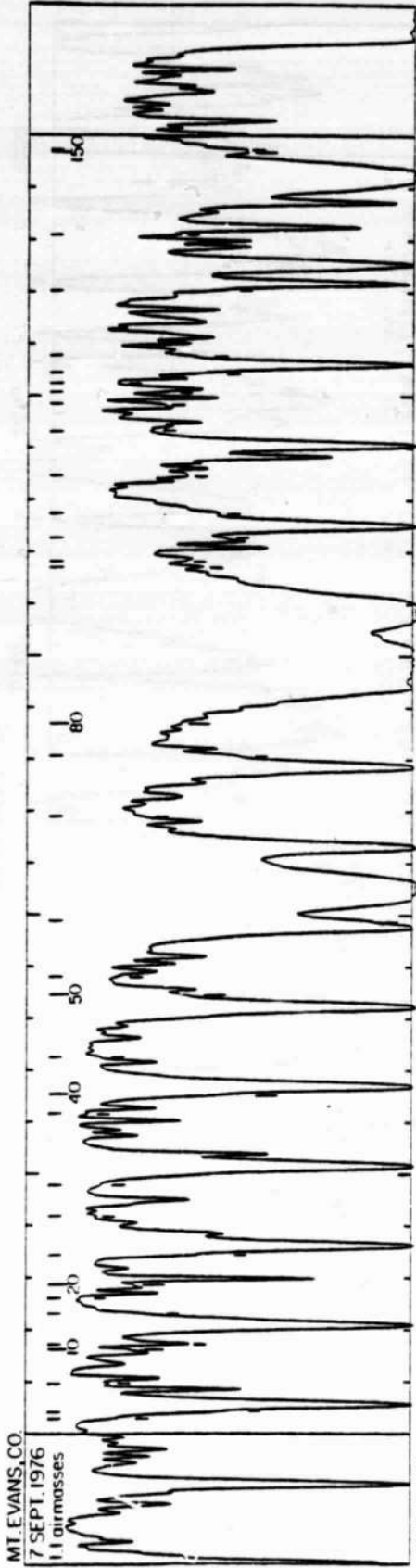
MT. EVANS, CO.
7 SEPT. 1976
1.1 atmospheres



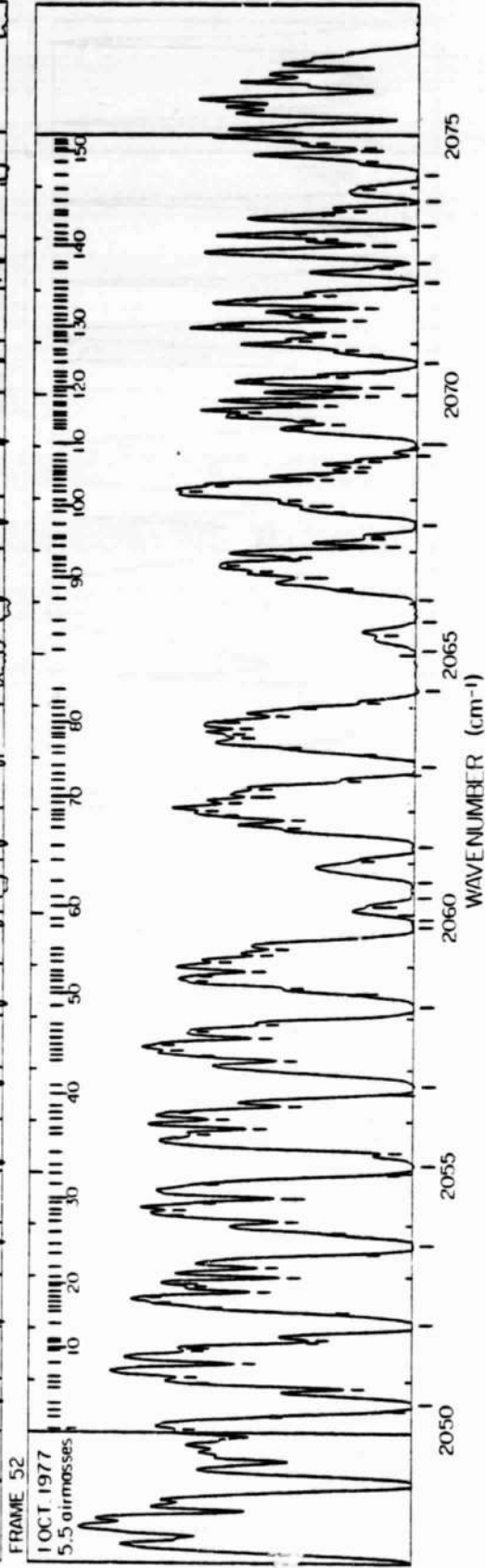
FRAME 51
1 OCT. 1977
5.5 atmospheres



SIGNAL

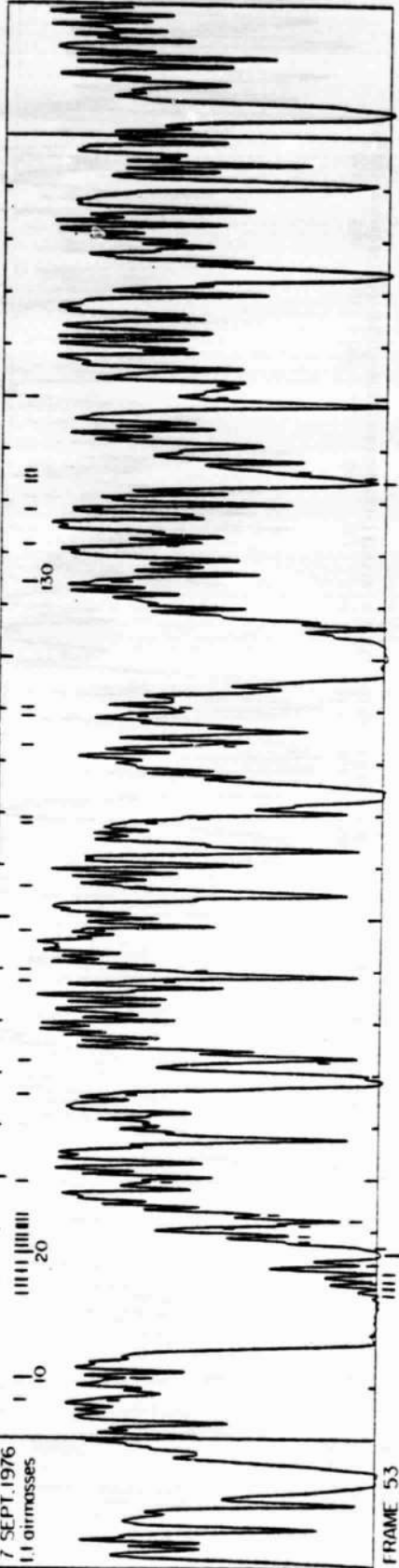


SIGNAL



MT EVANS, CO

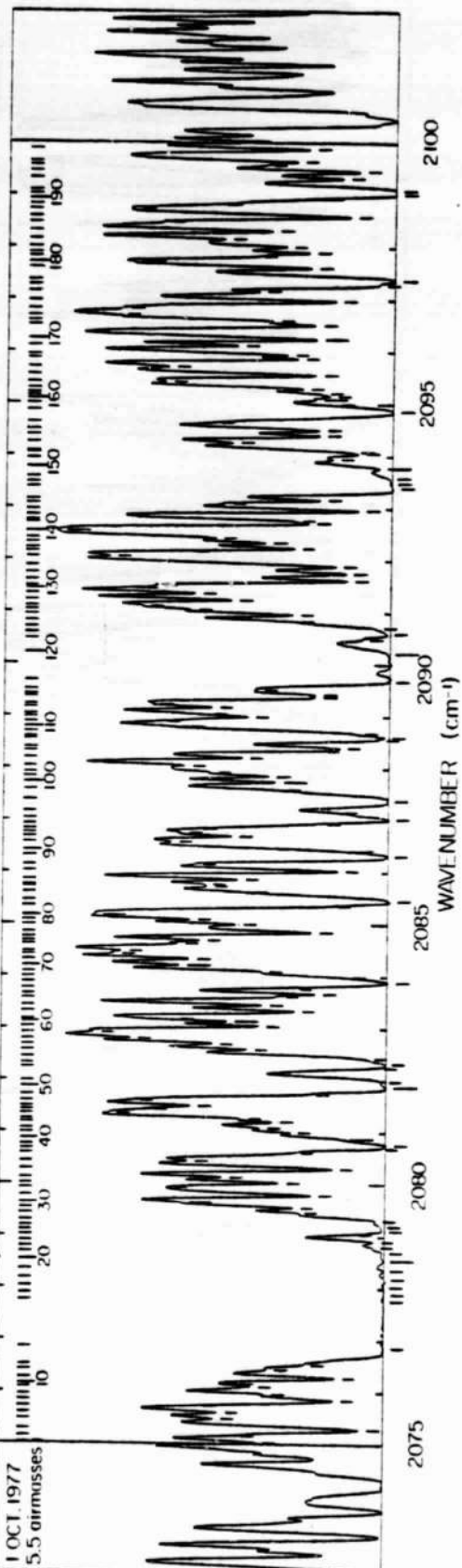
7 SEPT. 1976
11 airmisses



SIGNAL

FRAME 53

1 OCT. 1977
5.5 airmisses



2075

2080

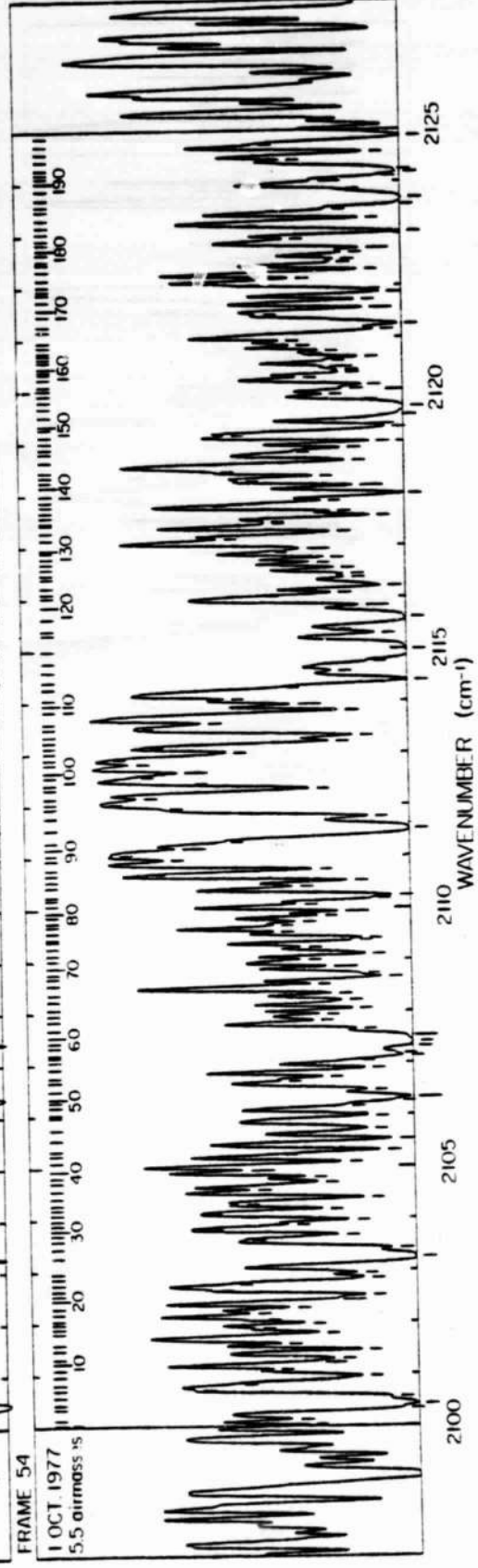
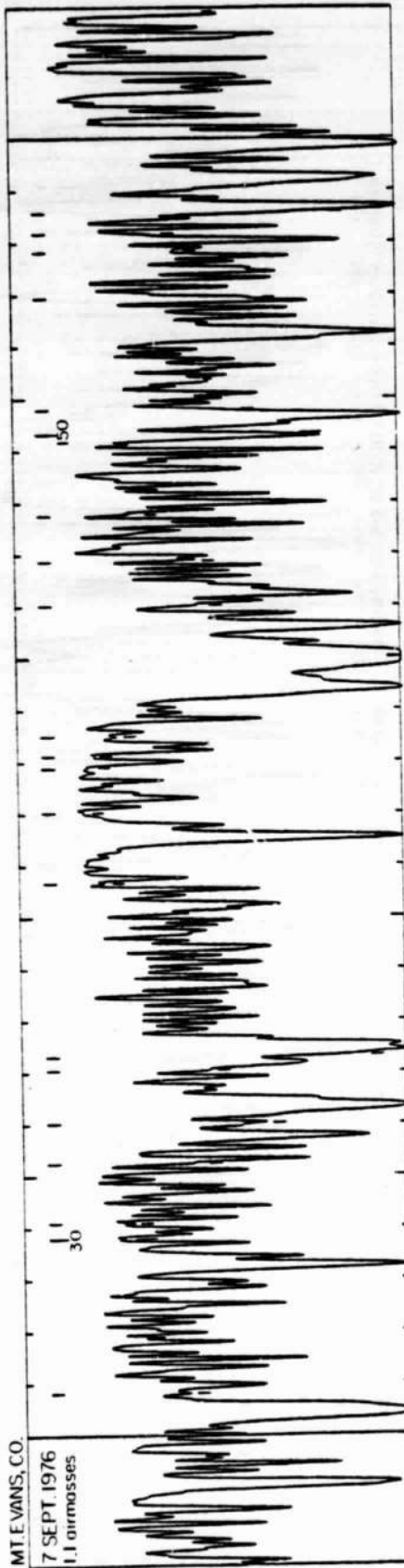
2085

2090

2095

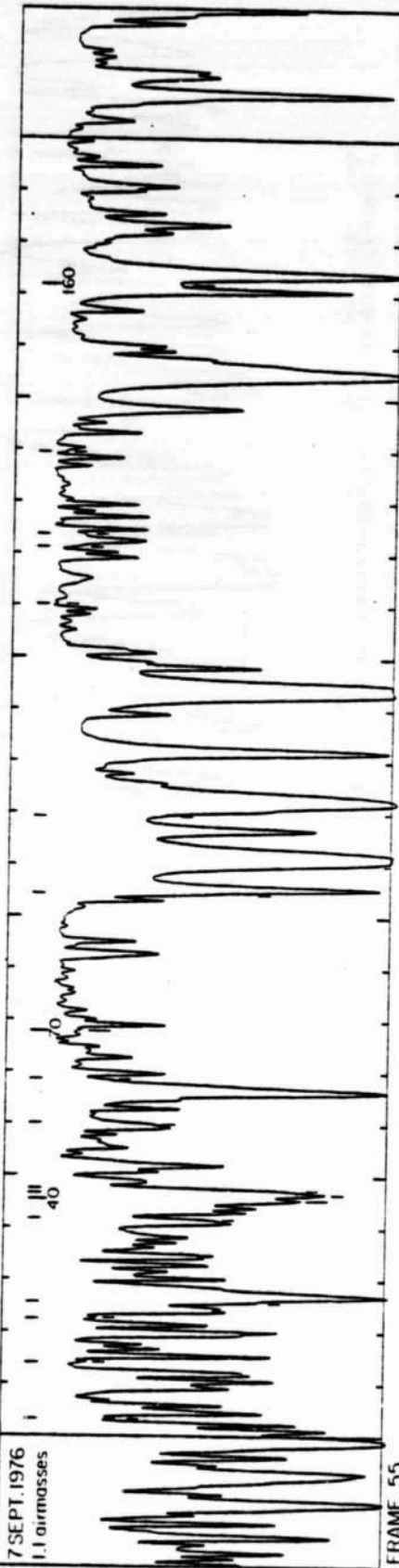
2100

WAVELENGTH (microns)



MT. EVANS, CO.

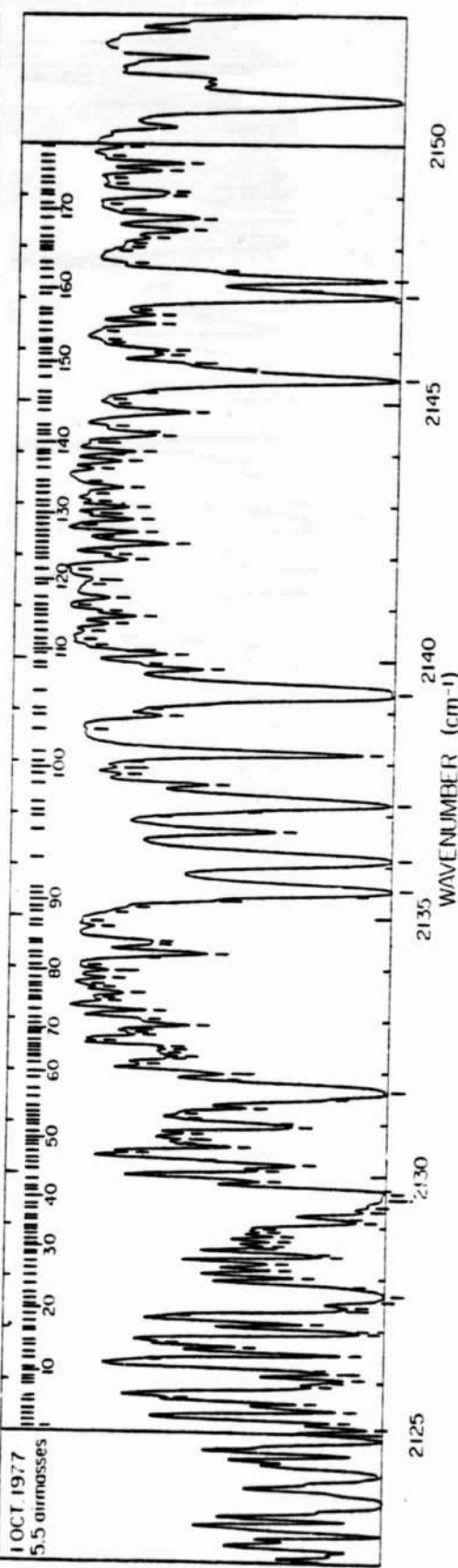
7 SEPT. 1976
1.1 airmasses



FRAME 55

SIGNAL

1 OCT. 1977
5.5 airmasses



2125

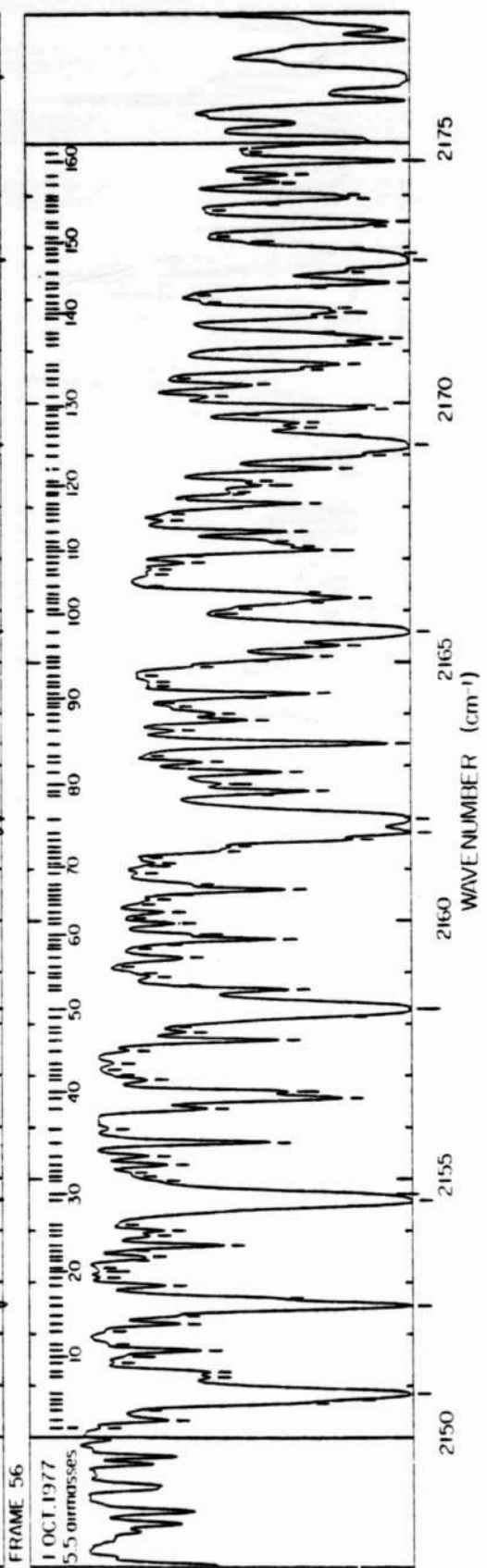
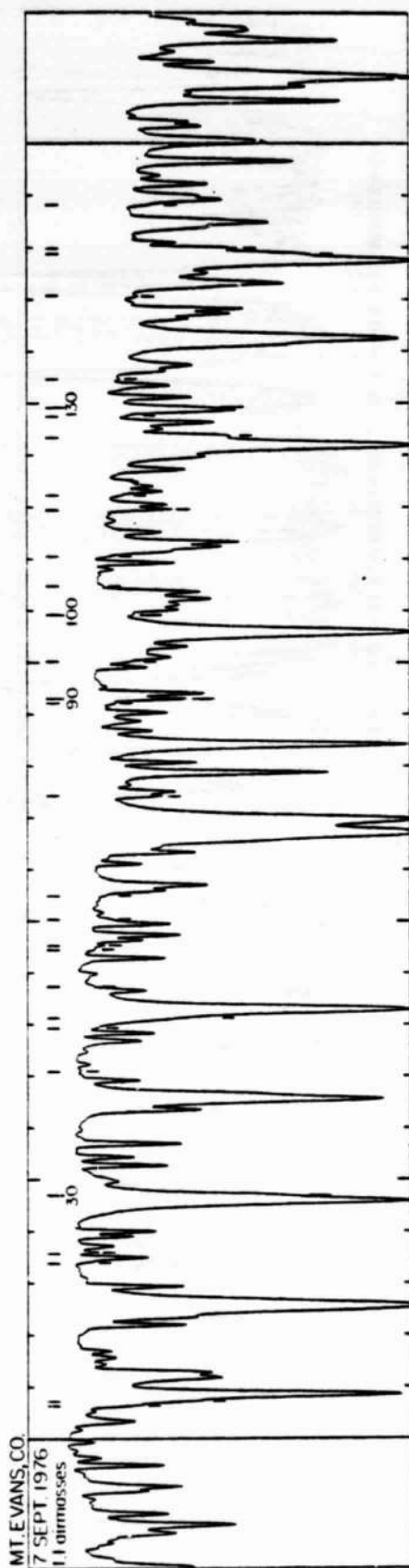
2130

2135

2140

2145

2150



SIGNAL

APPENDIX B

TABLES OF LINE POSITIONS
AND IDENTIFICATIONS

FRAME 1 (775-800 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	775.568	H ₂ O, CO ₂	31	781.600	CO ₂
2	775.925	CO ₂	32	781.696	?
3	776.077	?	33	781.903	O ₃
4	776.367	H ₂ O?	34	782.076	CO ₂
5	776.487	CO ₂	35	782.247	CO ₂
6	776.581	CO ₂	36	782.446	CO ₂
7	776.985	H ₂ O, CO ₂	37	782.662	O ₃
8	777.357	CO ₂	38	782.780	CO ₂
9	777.739	?	39	782.971	H ₂ O
10	777.856	O ₃ ?	40	783.110	CO ₂ , H ₂ O
11	778.045	CO ₂	41	783.424	CO ₂
12	778.236	CO ₂	42	783.640	CO ₂
13	778.376	CO ₂ , H ₂ O	43	783.782	?
14	778.583	CO ₂	44	783.917	H ₂ O
15	778.819	CO ₂ ?	45	784.476	H ₂ O
16	778.941	CO ₂	46	784.911	O ₃
17	779.310	H ₂ O	47	785.195	CO ₂
18	779.586	CO ₂	48	785.378	H ₂ O
19	779.683	CO ₂	49	785.561	?
20	779.816	CO ₂ ?	50	785.641	O ₃ +
21	780.080	CO ₂	51	785.788	CO ₂
22	780.228	CO ₂	52	785.911	CO ₂
23	780.379	CO ₂ ?	53	786.042	CO ₂ +?
24	780.508	CO ₂	54	786.394	O ₃
25	780.790	O ₃	55	786.487	CO ₂
26	780.976	CO ₂	56	786.767	CO ₂
27	781.165	O ₃ , CO ₂	57	787.140	O ₃
28	781.284	CO ₂	58	787.291	CO ₂
29	781.448	H ₂ O*	59	787.354	CO ₂
30	781.559	CO ₂ ?	60	787.464	O ₃

FRAME 1 (775-800 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	787.572	?	91	792.646	CO_2
62	787.705	$\text{H}_2\text{O}^*?$, CO_2	92	792.785	CO_2
63	787.857	O_3	93	792.945	CO_2
64	788.142	CO_2	94	793.103	CO_2
65	788.245	O_3	95	793.275	CO_2
66	788.329	CO_2	96	793.479	CO_2 , H_2O
67	788.588	?	97	793.925	H_2O , CO_2
68	788.774	CO_2	98	794.223	H_2O
69	788.888	?	99	794.513	?
70	788.998	O_3	100	794.587	CO_2
71	789.113	CO_2 , O_3	101	794.773	CO_2 +?
72	789.317	O_3	102	794.968	O_3
73	789.430	CO_2	103	795.128	CO_2
74	789.628	CO_2	104	795.357	CO_2 , O_3
75	789.756	O_3	105	795.909	H_2O
76	789.961	CO_2 , O_3	106	796.409	?
77	790.041	$\text{O}_3^*?$	107	796.710	H_2O
78	790.267	CO_2	108	796.906	CO_2
79	790.514	O_3	109	797.057	?
80	790.699	CO_2 , O_3	110	797.553	H_2O
81	790.846	CO_2	111	797.852	O_3
82	791.026	CO_2	112	798.005	CO_2
83	791.284	O_3	113	798.567	H_2O , CO_2
84	791.548	CO_2	114	798.760	H_2O
85	791.978	CO_2	115	799.074	H_2O
86	792.053	CO_2 , H_2O	116	799.401	?
87	792.160	CO_2	117	799.580	CO_2
88	792.262	CO_2			
89	792.384	CO_2			
90	792.512	CO_2			

FRAME 2 (800-825 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	800.039	CO ₂	31	807.377	O ₃ ?
2	800.204	O ₃	32	807.821	CO ₂
3	800.441	CO ₂	33	808.050	H ₂ O
4	800.629	O ₃	34	808.286	H ₂ O
5	800.785	?	35	808.918	O ₃ ?
6	800.973	CO ₂ , O ₃	36	809.379	CO ₂
7	801.381	O ₃	37	809.677	?
8	801.589	CO ₂	38	809.788	?
9	801.862	CO ₂ , H ₂ O	39	809.974	?
10	802.091	O ₃	40	810.282	NaI?
11	802.345	?	41	810.458	?
12	802.526	CO ₂ , H ₂ O	42	810.556	?
13	803.003	H ₂ O	43	810.719	CO ₂
14	803.143	CO ₂	44	810.935	CO ₂
15	803.543	H ₂ O	45	811.216	?
16	804.020	CO ₂	46	811.427	?
17	804.263	?	47	811.971	?
18	804.706	CO ₂	48	812.170	CO ₂
19	805.009	O ₃	49	812.491	CO ₂
20	805.120	H ₂ O?	50	812.713	CO ₂
21	805.262	SiI?	51	812.868	?
22	805.552	CO ₂	52	813.000	?
23	805.710	?	53	813.267	?
24	805.828	O ₃ +	54	813.479	?
25	805.997	H ₂ O	55	813.851	H ₂ O
26	806.263	CO ₂	56	814.042	CO ₂
27	806.594	O ₃	57	814.514	H ₂ O
28	806.696	H ₂ O*	58	814.935	?
29	807.035	?	59	815.228	CO ₂
30	807.119	CO ₂	60	815.336	?

Most of the unidentified lines on this page have been tentatively identified as being O₃ lines.

FRAME 2 (800-825 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	815.602	CO ₂	91	823.398	CO ₂
62	815.954	solar	92	823.599	CO ₂
63	816.100	?	93	823.765	?
64	816.461	H ₂ O	94	824.057	?
65	816.683	CO ₂ +?	95	824.225	?
66	816.874	?	96	824.329	CO ₂ +?
67	817.161	CO ₂	97	824.455	?
68	817.638	?	98	824.976	CO ₂
69	817.725	?			
70	817.881	?			
71	818.396	?			
72	818.717	CO ₂			
73	819.143	MgI? +?			
74	819.315	?			
75	819.728	CO ₂			
76	819.904	?			
77	820.037	?			
78	820.277	CO ₂			
79	820.651	?			
80	820.752	NaI? +?			
81	820.873	?			
82	820.967	?			
83	821.270	CO ₂			
84	821.410	?			
85	821.839	CO ₂			
86	822.138	?			
87	822.311	?			
88	822.526	?			
89	822.671	H ₂ O			
90	822.833	CO ₂ +?			

Most of the unidentified lines on this page have been tentatively identified as being O₃ lines.

FRAME 3 (825-850 cm^{-1});

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	825.171	H ₂ O	31	832.148	CO ₂
2	825.586	?	32	832.250	?
3	825.804	NO ₂ ?	33	832.637	?
4	826.003	CO ₂ +?	34	832.785	CO ₂
5	826.158	?	35	832.986	CO ₂
6	826.367	?	36	833.529	?
7	826.523	CO ₂	37	833.741	CO ₂
8	826.745	?	38	834.377	CO ₂
9	827.115	H ₂ O	39	834.579	CO ₂
10	827.707	H ₂ O	40	834.845	?
11	828.091	CO ₂	41	835.282	CO ₂
12	828.225	CO ₂	42	835.548	H ₂ O
13	828.608	CO ₂	43	835.957	CO ₂
14	828.806	CO ₂	44	836.188	CO ₂
15	828.938	CO ₂	45	836.520	CO ₂ +?
16	829.055	CO ₂	46	836.862	CO ₂
17	829.164	CO ₂	47	837.224	CO ₂ +?
18	829.308	CO ₂	48	837.532	CO ₂
19	829.470	CO ₂	49	837.665	?
20	829.665	CO ₂ , H ₂ O	50	837.761	CO ₂
21	829.873	CO ₂	51	838.058	H ₂ O
22	830.055	CO ₂ +?	52	838.260	?
23	830.190	CO ₂ +?	53	838.401	CO ₂
24	830.300	?	54	838.475	?
25	830.478	?	55	838.611	?
26	830.637	CO ₂	56	839.194	?
27	830.729	H ₂ O	57	839.411	CO ₂
28	831.232	CO ₂	58	839.660	H ₂ O
29	831.545	?	59	839.875	H ₂ O
30	832.010	?	60	840.002	H ₂ O

835-855 cm^{-1} region is superimposed on a broad CFCI₃ band.

FRAME 3 (825-850 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	840.336	H ₂ O	91	848.798	?
62	840.687	CO ₂ +?	92	848.904	?
63	841.003	CO ₂	93	849.084	?
64	841.094	H ₂ O*	94	849.190	CO ₂
65	841.385	?	95	849.595	H ₂ O
66	841.566	CO ₂			
67	841.912	H ₂ O			
68	842.181	?			
69	842.265	CO ₂			
70	842.605	CO ₂			
71	843.095	CO ₂			
72	843.643	NO ₂ ?			
73	844.121	?			
74	844.243	CO ₂			
75	844.675	CO ₂			
76	844.822	?			
77	845.736	H ₂ O*			
78	845.845	CO ₂			
79	846.192	CO ₂			
80	846.294	H ₂ O			
81	846.640	H ₂ O, CO ₂			
82	846.709	?			
83	846.851	solar?			
84	847.121	?			
85	847.285	solar			
86	847.491	CO ₂			
87	847.623	?			
88	847.771	CO ₂			
89	848.021	?			
90	848.476	?			

835-855 cm^{-1} region is superimposed on a broad CFC1₃ band.

FRAME 4 (850-875 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	850.171	?	31	857.591	HNO_3 , CO_2
2	850.350	?	32	857.688	HNO_3
3	850.634	?	33	857.942	HNO_3
4	850.805	CO_2	34	858.145	HNO_3
5	851.020	H_2O	35	858.278	HNO_3
6	851.266	HNO_3 +?	36	858.550	H_2O
7	851.367	CO_2 , HNO_3 , NH_3	37	858.888	HNO_3
8	851.492	H_2O	38	858.991	HNO_3
9	851.646	HNO_3	39	859.074	HNO_3 , CO_2
10	852.444	H_2O	40	859.190	HNO_3 , CO_2
11	852.766	H_2O	41	859.450	HNO_3
12	852.922	H_2O	42	859.670	H_2O
13	853.393	H_2O	43	859.911	HNO_3
14	853.783	HNO_3	44	860.025	HNO_3
15	853.853	NH_3	45	860.325	HNO_3
16	853.996	CO_2	46	860.470	HNO_3
17	854.117	CO_2	47	860.568	HNO_3 ?
18	854.596	H_2O	48	860.794	HNO_3 , CO_2
19	855.277	HNO_3	49	860.971	HNO_3
20	855.532	CO_2	50	861.085	HNO_3 , H_2O
21	855.735	CO_2 , HNO_3	51	861.298	HNO_3
22	856.085	CO_2 , HNO_3	52	861.388	HNO_3
23	856.238	HNO_3	53	861.725	HNO_3
24	856.558	HNO_3	54	861.825	HNO_3
25	856.696	HNO_3	55	862.038	solar, HNO_3
26	857.010	HNO_3 , CO_2	56	862.196	HNO_3
27	857.130	HNO_3	57	862.320	HNO_3 , CO_2
28	857.214	HNO_3 ?	58	862.501	H_2O , solar
29	857.336	HNO_3	59	862.659	HNO_3
30	857.492	HNO_3 , CO_2	60	862.762	HNO_3

835-855 cm^{-1} region is superimposed on a broad CFCl_3 band.

FRAME 4 (850-875 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	862.891	HNO ₃	91	868.364	HNO ₃
62	863.116	HNO ₃	92	868.552	HNO ₃
63	863.209	HNO ₃	93	868.730	HNO ₃
64	863.348	HNO ₃	94	868.897	HNO ₃
65	863.448	HNO ₃	95	869.001	HNO ₃
66	863.579	HNO ₃ , CO ₂	96	869.105	HNO ₃
67	863.686	HNO ₃ , CO ₂	97	869.237	HNO ₃
68	864.042	HNO ₃ , CO ₂	98	869.339	?
69	864.129	HNO ₃ , CO ₂	99	869.448	HNO ₃
70	864.307	HNO ₃ , CO ₂	100	869.667	HNO ₃
71	864.495	HNO ₃ , CO ₂	101	869.886	HNO ₃
72	864.599	HNO ₃ , CO ₂	102	870.190	HNO ₃
73	864.957	H ₂ O, HNO ₃	103	870.328	HNO ₃
74	865.449	H ₂ O	104	870.510	HNO ₃
75	865.687	H ₂ O, HNO ₃	105	870.581	HNO ₃
76	865.839	HNO ₃	106	870.773	HNO ₃
77	866.054	HNO ₃	107	871.265	H ₂ O, HNO ₃
78	866.317	HNO ₃	108	871.638	HNO ₃
79	866.467	HNO ₃	109	872.077	HNO ₃
80	866.584	HNO ₃ , solar	110	872.269	HNO ₃
81	866.764	HNO ₃ , H ₂ O	111	872.410	HNO ₃
82	866.957	HNO ₃ , solar	112	872.515	HNO ₃
83	867.045	HNO ₃	113	872.686	HNO ₃
84	867.215	HNO ₃	114	872.950	HNO ₃
85	867.371	HNO ₃	115	873.103	CO ₂ ?
86	867.664	HNO ₃	116	873.264	HNO ₃
87	867.835	HNO ₃	117	873.382	HNO ₃
88	867.977	HNO ₃ , NH ₃	118	873.479	HNO ₃
89	868.111	HNO ₃	119	873.705	HNO ₃
90	868.247	HNO ₃	120	873.813	HNO ₃

FRAME 4 (850-875 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	873.949	HNO_3
122	874.042	HNO_3 , CO_2
123	874.248	HNO_3
124	874.458	HNO_3 , CO_2
125	874.671	HNO_3
126	874.765	HNO_3
127	874.969	HNO_3

FRAME 5 (875-900 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	875.094	HNO_3	31	879.868	HNO_3
2	875.282	HNO_3	32	880.069	?
3	875.428	HNO_3	33	880.180	HNO_3
4	875.525	$\text{HNO}_3, \text{CO}_2$	34	880.364	$\text{HNO}_3, \text{CO}_2$
5	875.621	HNO_3	35	880.509	HNO_3
6	875.765	HNO_3	36	880.651	HNO_3
7	875.960	$\text{H}_2\text{O}, \text{HNO}_3$	37	880.797	HNO_3
8	876.209	HNO_3	38	881.094	H_2O
9	876.371	HNO_3	39	881.400	HNO_3
10	876.476	$\text{HNO}_3, \text{CO}_2$	40	881.592	HNO_3
11	876.710	HNO_3	41	881.795	HNO_3
12	876.867	HNO_3	42	882.057	HNO_3
13	876.994	HNO_3	43	882.217	HNO_3
14	877.193	HNO_3	44	882.417	HNO_3
15	877.345	HNO_3	45	882.523	HNO_3
16	877.430	HNO_3	46	882.624	HNO_3
17	877.519	HNO_3	47	882.791	HNO_3
18	877.651	HNO_3	48	882.880	CaI?
19	877.832	HNO_3	49	883.095	H_2O
20	877.939	HNO_3	50	883.449	HNO_3
21	878.081	HNO_3	51	883.860	H_2O
22	878.282	HNO_3	52	884.235	$\text{HNO}_3, \text{CO}_2$
23	878.547	H_2O	53	884.369	HNO_3
24	878.781	HNO_3	54	884.485	HNO_3
25	878.941	HNO_3	55	884.646	$\text{HNO}_3, \text{H}_2\text{O}$
26	879.032	HNO_3	56	884.835	HNO_3
27	879.228	HNO_3	57	885.046	HNO_3
28	879.359	HNO_3	58	885.166	$\text{HNO}_3, \text{H}_2\text{O}$
29	879.488	HNO_3	59	885.297	HNO_3
30	879.709	HNO_3	60	885.440	HNO_3

FRAME 5 (875-900 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	885.633	$\text{H}_2\text{O}?$	91	892.519	HNO_3
62	885.753	HNO_3	92	892.810	HNO_3
63	885.846	HNO_3	93	892.991	$\text{HNO}_3, \text{CO}_2$
64	886.096	$\text{CO}_2, \text{HNO}_3$	94	893.161	HNO_3
65	886.235	HNO_3	95	893.285	HNO_3
66	886.417	$\text{HNO}_3, \text{CO}_2$	96	893.387	$\text{CO}_2, \text{HNO}_3$
67	886.649	HNO_3	97	893.545	HNO_3
68	887.230	H_2O	98	893.680	HNO_3
69	887.551	HNO_3	99	893.791	HNO_3
70	887.818	HNO_3	100	893.909	HNO_3
71	888.017	HNO_3	101	894.106	HNO_3
72	888.207	HNO_3	102	894.288	HNO_3
73	888.638	H_2O	103	894.423	HNO_3
74	888.974	HNO_3	104	894.526	CO_2
75	889.367	HNO_3	105	894.628	HNO_3
76	889.780	$\text{HNO}_3, \text{CO}_2$	106	894.719	HNO_3
77	890.092	H_2O	107	895.034	$\text{HNO}_3, \text{CO}_2$
78	890.229	HNO_3	108	895.138	$\text{CO}_2, \text{HNO}_3$
79	890.526	HNO_3	109	895.399	HNO_3
80	890.678	HNO_3	110	895.619	HNO_3
81	890.903	HNO_3	111	895.748	HNO_3
82	891.002	$\text{HNO}_3?$	112	895.934	$\text{H}_2\text{O}, \text{HNO}_3$
83	891.123	HNO_3	113	896.179	HNO_3
84	891.299	$\text{H}_2\text{O}, \text{HNO}_3$	114	896.354	HNO_3
85	891.533	$\text{CO}_2, \text{HNO}_3$	115	896.507	$\text{H}_2\text{O}, \text{CO}_2, \text{HNO}_3$
86	891.653	HNO_3	116	896.812	HNO_3
87	891.874	NH_3	117	896.918	$\text{CO}_2, \text{HNO}_3$
88	892.029	HNO_3	118	897.016	$\text{CO}_2, \text{HNO}_3$
89	892.170	HNO_3	119	897.206	HNO_3
90	892.423	HNO_3	120	897.340	HNO_3

FRAME 5 (875-900 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	897.701	H_2O
122	898.041	HNO_3
123	898.135	H_2O
124	898.264	$\text{HNO}_3?$
125	898.423	CO_2
126	898.655	$\text{CO}_2, \text{HNO}_3$
127	898.808	HNO_3
128	898.987	$\text{CO}_2, \text{HNO}_3$
129	899.077	HNO_3
130	899.163	HNO_3
131	899.376	HNO_3
132	899.538	HNO_3
133	899.722	HNO_3
134	899.831	HNO_3
135	899.941	HNO_3

FRAME 6 (900-925 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	900.108	HNO_3	31	905.814	HNO_3
2	900.356	CO_2 , HNO_3	32	905.949	CO_2
3	900.519	HNO_3	33	906.241	H_2O
4	900.763	HNO_3	34	906.335	H_2O
5	900.943	CO_2 +?	35	906.565	HNO_3
6	901.152	HNO_3	36	906.646	CO_2
7	901.272	HNO_3	37	906.763	H_2O
8	901.552	HNO_3	38	906.943	HNO_3
9	901.715	HNO_3	39	907.051	CO_2
10	901.945	HNO_3	40	907.331	HNO_3
11	902.083	CO_2	41	907.441	HNO_3
12	902.222	CO_2 , HNO_3	42	907.705	HNO_3
13	902.350	HNO_3	43	907.784	CO_2 , H_2O
14	902.634	H_2O	44	908.034	HNO_3 , H_2O
15	902.732	HNO_3	45	908.134	HNO_3 , NH_3
16	902.872	CO_2	46	908.465	CO_2 , HNO_3
17	902.975	?	47	908.970	H_2O
18	903.124	HNO_3	48	909.550	CO_2 , HNO_3
19	903.320	HNO_3	49	909.898	HNO_3
20	903.515	HNO_3	50	910.108	H_2O^*
21	903.783	CO_2	51	910.277	H_2O , CO_2
22	903.903	HNO_3	52	910.433	HNO_3
23	904.102	CO_2 +?	53	910.630	HNO_3
24	904.288	HNO_3	54	910.721	H_2O
25	904.488	?	55	910.833	HNO_3
26	904.680	HNO_3	56	910.985	HNO_3
27	904.789	CO_2	57	911.221	HNO_3
28	905.056	HNO_3	58	911.364	CO_2 , HNO_3
29	905.162	HNO_3 , solar?	59	911.530	H_2O^*
30	905.434	H_2O , CO_2 , HNO_3	60	911.727	HNO_3

FRAME 6 (900-925 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	911.956	HNO_3	91	917.817	HNO_3 , CF_2Cl_2
62	912.121	CO_2 , HNO_3	92	918.293	CO_2
63	912.230	CO_2 , H_2O	93	918.477	H_2O
64	912.427	HNO_3	94	918.725	CO_2
65	912.670	HNO_3	95	919.050	CO_2
66	912.815	HNO_3	96	919.234	HNO_3
67	912.921	HNO_3 , CO_2	97	919.359	CF_2Cl_2
68	913.136	CO_2 , HNO_3	98	919.564	HNO_3
69	913.317	HNO_3	99	919.744	CF_2Cl_2 , N_2O
70	913.510	HNO_3	100	919.854	CF_2Cl_2 +?
71	913.981	H_2O	101	919.955	CO_2
72	914.230	HNO_3 , CO_2	102	920.230	CO_2 , HNO_3
73	914.428	CO_2	103	920.377	HNO_3 , CF_2Cl_2
74	914.620	HNO_3	104	920.502	HNO_3
75	914.837	CO_2	105	920.610	N_2O
76	914.983	HNO_3	106	920.724	CO_2 , CF_2Cl_2
77	915.185	?	107	920.835	CO_2
78	915.303	HNO_3	108	921.085	CF_2Cl_2
79	915.472	$\text{H}_2\text{O}^?$	109	921.416	H_2O^*
80	915.639	CO_2	110	921.703	CF_2Cl_2 , CO_2
81	915.869	HNO_3	111	922.151	H_2O
82	915.990	HNO_3	112	922.629	CF_2Cl_2 , HNO_3
83	916.090	HNO_3 , H_2O	113	922.923	CO_2 , CF_2Cl_2
84	916.225	HNO_3	114	923.116	CF_2Cl_2 , CO_2
85	916.354	HNO_3	115	923.543	HNO_3 +?
86	916.584	CO_2	116	923.692	$\text{NaI}^?$
87	916.858	HNO_3 , H_2O	117	923.929	solar?
88	917.026	?	118	924.023	CO_2
89	917.258	CO_2	119	924.204	N_2O , CF_2Cl_2
90	917.352	CO_2	120	924.545	CO_2

FRAME 6 (900-925 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	924.671	$\text{CF}_2\text{Cl}_2?$
122	924.998	$\text{H}_2\text{O}, \text{CO}_2$

FRAME 7A (925-950 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	925.480	H ₂ O	31	936.077	CO ₂
2	925.940	CO ₂	32	936.802	CO ₂
3	926.146	CF ₂ Cl ₂	33	937.317	H ₂ O*
4	926.292	CF ₂ Cl ₂	34	938.692	CO ₂
5	926.464	CF ₂ Cl ₂	35	940.552	CO ₂
6	926.622	CF ₂ Cl ₂	36	942.385	CO ₂
7	926.751	CF ₂ Cl ₂			
8	927.016	CO ₂			
9	927.314	CO ₂ , NH ₃			
10	927.537	?			
11	928.682	H ₂ O, CO ₂			
12	929.015	CO ₂ , H ₂ O			
13	929.318	CF ₂ Cl ₂			
14	929.479	CO ₂ , CF ₂ Cl ₂			
15	930.019	CO ₂			
16	930.224	CO ₂			
17	930.774	H ₂ O, CF ₂ Cl ₂			
18	931.008	CO ₂			
19	931.322	CO ₂ , NH ₃			
20	931.752	CO ₂ , H ₂ O, NH ₃			
21	932.296	H ₂ O			
22	932.468	CO ₂			
23	932.626	CO ₂			
24	932.968	CO ₂			
25	933.193	CO ₂			
26	933.902	CO ₂			
27	934.660	CO ₂			
28	934.900	CO ₂			
29	935.135	CO ₂			
30	935.368	CO ₂			

FRAME 7B (925-950 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	927.016	CO_2	31	945.460	CO_2
2	929.015	$\text{CO}_2, \text{H}_2\text{O}$	32	945.981	CO_2
3	931.008	CO_2	33	946.680	$\text{H}_2\text{O}, \text{CO}_2$
4	932.968	CO_2	34	947.096	CO_2
5	934.900	CO_2	35	947.743	CO_2
6	936.077	CO_2	36	947.927	CO_2
7	936.802	CO_2	37	948.270	H_2O
8	937.317	H_2O^*	38	948.581	?
9	937.483	CO_2	39	949.480	CO_2
10	938.142	CO_2			
11	938.692	CO_2			
12	938.876	CO_2			
13	939.492	CO_2			
14	940.241	CO_2			
15	940.552	CO_2			
16	940.829	CO_2			
17	941.034	H_2O^*			
18	941.586	CO_2			
19	942.385	CO_2			
20	942.558	?			
21	942.794	?			
22	942.901	CO_2			
23	943.415	CO_2			
24	943.540	?			
25	943.866	H_2O			
26	944.195	CO_2			
27	944.416	H_2O			
28	944.632	CO_2			
29	944.853	H_2O			
30	944.941	H_2O			

FRAME 8 (950-975 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	951.192	CO_2	31	966.720	O_3
2	952.882	CO_2	32	966.882	H_2O
3	953.366	H_2O	33	967.066	O_3
4	954.113	H_2O	34	967.709	CO_2
5	954.546	CO_2	35	968.575	?
6	955.256	H_2O	36	968.920	?
7	955.687	H_2O	37	969.141	CO_2
8	956.186	CO_2	38	970.100	CO_2, O_3
9	957.800	CO_2	39	970.306	$\text{O}_3, \text{H}_2\text{O}$
10	958.836	H_2O	40	970.5/	$\text{CO}_2, \text{H}_2\text{O}^*$
11	959.223	H_2O	41	970.7.1	O_3
12	959.392	CO_2	42	971.033	O_3
13	959.644	H_2O	43	971.362	H_2O
14	959.850	H_2O	44	971.592	O_3
15	960.432	?	45	971.662	H_2O
16	960.487	H_2O	46	971.932	CO_2
17	960.631	?	47	972.160	O_3
18	960.766	H_2O	48	972.245	O_3
19	961.105	H_2O	49	972.383	$\text{H}_2\text{O}, \text{O}_3$
20	961.370	?	50	972.541	O_3
21	961.643	$\text{O}_3?$	51	972.638	O_3
22	961.734	CO_2	52	972.755	O_3
23	961.903	H_2O	53	972.956	O_3
24	963.265	CO_2	54	973.090	O_3
25	964.771	CO_2	55	973.290	CO_2
26	965.535	$\text{O}_3?$	56	973.490	H_2O
27	965.885	H_2O	57	973.728	O_3
28	965.960	H_2O	58	973.855	O_3
29	966.251	CO_2	59	973.985	H_2O
30	966.625	O_3	60	974.474	O_3

FRAME 8 (950-975 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	974.621	CO_2
62	974.832	O_3
63	974.952	O_3

FRAME 9 (975-1000 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	975.107	O_3	31	978.869	$\text{O}_3, \text{H}_2\text{O}$
2	975.180	O_3	32	978.961	O_3
3	975.280	O_3	33	979.056	O_3
4	975.363	O_3	34	979.162	O_3
5	975.471	O_3	35	979.235	O_3
6	975.623	O_3	36	979.342	$\text{O}_3^+?$
7	975.935	$\text{CO}_2, \text{H}_2\text{O}$	37	979.478	O_3
8	976.045	O_3	38	979.705	CO_2
9	976.147	O_3	39	979.805	O_3
10	976.258	O_3	40	979.920	O_3
11	976.465	H_2O	41	980.043	O_3
12	976.521	O_3	42	980.116	O_3
13	976.666	O_3	43	980.201	O_3
14	976.810	$\text{O}_3^+?$	44	980.316	O_3
15	976.975	O_3	45	980.409	$\text{O}_3, \text{H}_2\text{O}$
16	977.216	CO_2	46	980.569	O_3
17	977.427	H_2O	47	980.653	O_3
18	977.512	O_3	48	980.767	O_3
19	977.626	$\text{O}_3^?$	49	980.914	CO_2
20	977.708	O_3	50	981.046	O_3
21	977.845	$\text{O}_3^+?$	51	981.183	O_3
22	977.925	O_3	52	981.277	O_3
23	978.132	O_3	53	981.397	$\text{H}_2\text{O}, \text{O}_3$
24	978.228	O_3	54	981.491	O_3
25	978.344	O_3	55	981.571	?
26	978.473	CO_2	56	981.685	O_3
27	978.559	O_3	57	981.742	O_3
28	978.637	O_3	58	981.839	O_3
29	978.694	O_3	59	981.928	O_3
30	978.793	O_3	60	982.003	O_3

FRAME 9 (975-1000 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	982.095	$\text{CO}_2, \text{H}_2\text{O}$	91	985.061	O_3
62	982.271	O_3	92	985.146	O_3
63	982.394	O_3	93	985.192	?
64	982.468	O_3	94	985.399	O_3
65	982.571	O_3	95	985.498	CO_2
66	982.623	O_3	96	985.619	$\text{O}_3?$
67	982.749	O_3	97	985.707	O_3
68	982.808	O_3	98	985.786	O_3
69	982.911	$\text{O}_3?$	99	985.916	O_3
70	983.028	O_3	100	986.013	O_3
71	983.087	O_3	101	986.101	O_3
72	983.262	CO_2, O_3	102	986.174	O_3
73	983.357	O_3	103	986.254	O_3
74	983.422	O_3	104	986.372	O_3
75	983.490	O_3	105	986.460	O_3
76	983.561	?	106	986.593	CO_2, O_3
77	983.686	O_3	107	986.694	O_3
78	983.763	O_3	108	986.789	O_3
79	983.889	O_3	109	986.864	O_3
80	983.973	O_3	110	987.033	?
81	984.106	$\text{H}_2\text{O}, \text{O}_3$	111	987.118	O_3
82	984.207	O_3	112	987.232	O_3
83	984.386	CO_2, O_3	113	987.335	O_3
84	984.536	O_3	114	987.392	O_3
85	984.607	O_3	115	987.500	O_3
86	984.693	O_3	116	987.608	CO_2
87	984.754	O_3	117	987.687	O_3
88	984.845	O_3	118	987.761	O_3
89	984.912	O_3	119	987.869	O_3
90	984.978	$\text{O}_3?$	120	987.926	O_3

FRAME 9 (975-1000 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	988.009	O_3	151	991.147	O_3
122	988.133	O_3	152	991.232	O_3
123	988.219	O_3	153	991.356	O_3
124	988.305	O_3 ?	154	991.468	$\text{O}_3, \text{H}_2\text{O}$
125	988.403	O_3	155	991.628	O_3, CO_2
126	988.549	O_3	156	991.771	O_3
127	988.641	CO_2, O_3	157	991.884	O_3
128	988.738	O_3	158	991.947	O_3
129	988.808	O_3	159	992.032	O_3
130	988.886	$\text{O}_3, \text{H}_2\text{O}$	160	992.123	O_3
131	989.014	O_3	161	992.220	CO_2
132	989.113	O_3	162	992.322	O_3
133	989.212	O_3	163	992.451	O_3
134	989.327	O_3	164	992.593	O_3
135	989.440	O_3	165	992.665	O_3 ?
136	989.623	CO_2, O_3	166	992.742	O_3
137	989.717	O_3	167	992.833	O_3
138	989.775	O_3	168	992.946	O_3
139	989.857	O_3	169	993.013	O_3
140	989.946	O_3	170	993.166	O_3
141	990.064	O_3 ?	171	993.257	O_3
142	990.166	$\text{O}_3, \text{H}_2\text{O}$	172	993.326	O_3
143	990.260	O_3	173	993.426	O_3
144	990.419	O_3	174	993.514	O_3
145	990.515	O_3	175	993.622	O_3 ?
146	990.604	O_3, CO_2	176	993.721	O_3
147	990.711	O_3	177	993.796	O_3
148	990.780	O_3 ?	178	993.886	O_3
149	990.860	O_3	179	993.976	O_3
150	990.982	O_3	180	994.042	O_3

FRAME 9 (975-1000 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	994.141	O_3	211	997.104	O_3
182	994.332	O_3	212	997.192	O_3
183	994.451	$\text{O}_3, \text{H}_2\text{O}$	213	997.303	O_3
184	994.540	O_3	214	997.402	$\text{O}_3, \text{H}_2\text{O}$
185	994.647	O_3	215	997.511	O_3
186	994.736	$\text{O}_3, \text{H}_2\text{O}$	216	997.546	O_3
187	994.826	$\text{O}_3, \text{H}_2\text{O}$	217	997.679	$\text{H}_2\text{O}, \text{O}_3$
188	994.907	O_3	218	997.766	O_3
189	995.012	O_3	219	997.905	O_3
190	995.145	O_3	220	997.980	O_3
191	995.248	O_3 ?	221	998.077	O_3
192	995.320	$\text{H}_2\text{O}, \text{O}_3$	222	998.194	O_3
193	995.419	O_3	223	998.238	O_3
194	995.515	O_3	224	998.340	O_3
195	995.604	O_3	225	998.435	O_3
196	995.702	O_3	226	998.524	$\text{O}_3, \text{H}_2\text{O}$
197	995.769	O_3	227	998.667	O_3
198	995.849	O_3	228	998.753	O_3
199	995.894	O_3	229	998.852	$\text{O}_3, \text{H}_2\text{O}$
200	996.022	O_3	230	998.992	O_3
201	996.165	O_3	231	999.177	O_3
202	996.249	O_3	232	999.392	O_3
203	996.387	O_3	233	999.463	O_3
204	996.466	O_3	234	999.580	O_3
205	996.557	O_3	235	999.673	O_3
206	996.667	O_3	236	999.711	O_3
207	996.748	O_3	237	999.806	O_3
208	996.845	O_3	238	999.908	O_3
209	996.971	O_3	239	999.995	O_3
210	997.017	O_3			

FRAME 10 (1000-1025 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1000.036	O_3	31	1003.124	O_3
2	1000.136	O_3	32	1003.228	O_3
3	1000.222	O_3	33	1003.373	O_3
4	1000.302	$\text{H}_2\text{O}, \text{O}_3$	34	1003.511	$\text{O}_3, \text{H}_2\text{O}$
5	1000.405	O_3	35	1003.585	O_3
6	1000.488	O_3	36	1003.656	$\text{O}_3, \text{H}_2\text{O}$
7	1000.557	O_3	37	1003.745	O_3
8	1000.639	O_3	38	1003.814	O_3
9	1000.713	O_3	39	1003.912	O_3
10	1000.834	O_3	40	1004.031	O_2
11	1000.946	O_3	41	1004.129	O_3
12	1001.082	$\text{O}_3, \text{H}_2\text{O}$	42	1004.196	O_3
13	1001.222	O_3	43	1004.281	O_3
14	1001.314	O_3	44	1004.345	O_3
15	1001.397	O_3	45	1004.457	$\text{O}_3, \text{H}_2\text{O}$
16	1001.537	O_3	46	1004.595	O_3
17	1001.623	O_3	47	1004.685	O_3
18	1001.728	O_3	48	1004.761	O_3
19	1001.902	O_3	49	1004.873	O_3
20	1002.026	O_3	50	1004.923	O_3
21	1002.148	O_3	51	1005.035	O_3
22	1002.248	O_3	52	1005.152	O_3
23	1002.331	O_3	53	1005.227	O_3
24	1002.449	O_3	54	1005.385	O_3
25	1002.500	O_3	55	1005.482	O_3
26	1002.614	$\text{O}_3, \text{H}_2\text{O}$	56	1005.542	O_3
27	1002.720	O_3	57	1005.682	O_3
28	1002.838	O_3	58	1005.768	O_3
29	1002.956	O_3	59	1005.860	O_3
30	1003.085	O_3	60	1005.945	O_3

FRAME 10 (1000-1025 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1006.037	O_3	91	1008.791	O_3
62	1006.144	O_3	92	1008.892	$\text{O}_3?$
63	1006.257	O_3	93	1009.002	O_3
64	1006.422	O_3	94	1009.098	O_3
65	1006.520	O_3	95	1009.202	O_3
66	1006.584	O_3	96	1009.372	O_3
67	1006.692	O_3	97	1009.456	O_3
68	1006.748	O_3	98	1009.550	O_3
69	1006.852	O_3	99	1009.694	O_3
70	1006.968	O_3	100	1009.819	O_3
71	1007.040	O_3	101	1009.883	O_3
72	1007.148	O_3	102	1009.957	O_3
73	1007.262	$\text{O}_3, \text{H}_2\text{O}$	103	1010.031	H_2O
74	1007.301	O_3	104	1010.117	O_3
75	1007.412	O_3	105	1010.183	O_3
76	1007.499	O_3	106	1010.267	O_3
77	1007.554	O_3	107	1010.376	O_3
78	1007.618	O_3	108	1010.464	O_3
79	1007.692	O_3	109	1010.536	O_3
80	1007.778	O_3	110	1010.717	O_3
81	1007.866	O_3	111	1010.835	$\text{O}_3, \text{H}_2\text{O}$
82	1007.922	O_3	112	1010.917	O_3
83	1008.022	O_3	113	1011.085	O_3
84	1008.093	O_3	114	1011.206	$\text{O}_3?$
85	1008.216	O_3	115	1011.321	O_3
86	1008.309	O_3	116	1011.416	O_3
87	1008.423	O_3	117	1011.509	O_3
88	1008.501	O_3	118	1011.667	O_3
89	1008.620	O_3	119	1011.858	O_3
90	1008.729	O_3	120	1011.941	O_3

FRAME 10 (1000-1025 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1012.107	O_3	151	1015.362	O_3
122	1012.182	O_3	152	1015.488	O_3
123	1012.252	O_3	153	1015.607	O_3
124	1012.353	O_3	154	1015.847	O_3
125	1012.457	O_3	155	1015.947	O_3
126	1012.567	O_3	156	1016.070	O_3
127	1012.647	O_3	157	1016.166	O_3
128	1012.781	O_3	158	1016.283	O_3
129	1012.871	O_3	159	1016.378	O_3
130	1012.942	$\text{O}_3?$	160	1016.509	O_3
131	1013.037	O_3	161	1016.757	O_3
132	1013.128	O_3	162	1016.954	O_3
133	1013.300	O_3	163	1017.056	O_3
134	1013.381	O_3	164	1017.146	O_3
135	1013.490	O_3	165	1017.224	O_3
136	1013.597	O_3	166	1017.294	O_3
137	1013.702	O_3	167	1017.501	$\text{O}_3, \text{H}_2\text{O}$
138	1013.787	O_3	168	1017.600	$\text{O}_3, \text{H}_2\text{O}$
139	1013.863	$\text{O}_3?$	169	1017.717	O_3
140	1013.934	O_3	170	1017.832	O_3
141	1014.025	O_3	171	1017.883	$\text{O}_3, \text{H}_2\text{O}$
142	1014.142	O_3	172	1018.054	O_3
143	1014.258	O_3	173	1018.154	O_3
144	1014.475	$\text{O}_3, \text{H}_2\text{O}$	174	1018.369	O_3
145	1014.588	O_3	175	1018.465	O_3
146	1014.724	O_3	176	1018.569	O_3
147	1014.834	O_3	177	1018.715	O_3
148	1014.924	O_3	178	1018.820	O_3
149	1015.064	O_3	179	1018.922	O_3
150	1015.314	O_3	180	1019.014	O_3

FRAME 10 (1000-1025 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	1019.137	O_3	211	1022.839	O_3
182	1019.241	O_3	212	1022.920	O_3
183	1019.313	O_3	213	1023.001	O_3
184	1019.494	O_3	214	1023.150	O_3
185	1019.593	$\text{O}_3, \text{H}_2\text{O}$	215	1023.338	O_3
186	1019.671	O_3	216	1023.415	O_3
187	1019.787	O_3	217	1023.489	O_3
188	1019.997	O_3	218	1023.600	O_3
189	1020.114	O_3	219	1023.756	O_3
190	1020.215	O_3	220	1023.890	O_3
191	1020.314	O_3	221	1024.042	O_3
192	1020.423	O_3	222	1024.178	O_3
193	1020.537	O_3	223	1024.284	O_3
194	1020.722	O_3	224	1024.397	O_3
195	1020.876	O_3	225	1024.437	O_3
196	1021.057	O_3	226	1024.519	O_3
197	1021.130	O_3	227	1024.602	O_3
198	1021.211	O_3	228	1024.696	O_3
199	1021.296	O_3	229	1024.774	O_3
200	1021.383	O_3	230	1024.921	O_3
201	1021.466	O_3			
202	1021.648	O_3			
203	1021.805	O_3			
204	1021.938	$\text{O}_3, \text{H}_2\text{O}$			
205	1022.108	O_3			
206	1022.214	O_3			
207	1022.290	O_3			
208	1022.359	O_3			
209	1022.443	O_3			
210	1022.676	O_3			

FRAME 11 (1025-1050 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1025.071	O_3	31	1028.523	O_3
2	1025.198	O_3	32	1028.646	$\text{O}_3, \text{H}_2\text{O}$
3	1025.296	CO_2	33	1028.844	O_3
4	1025.421	O_3	34	1028.910	O_3
5	1025.461	O_3	35	1029.003	O_3
6	1025.532	O_3	36	1029.090	O_3
7	1025.726	O_3	37	1029.158	O_3
8	1025.827	O_3	38	1029.259	O_3
9	1025.931	O_3	39	1029.341	O_3
10	1026.109	O_3	40	1029.443	O_3, CO_2
11	1026.212	O_3	41	1029.522	$\text{O}_3, \text{H}_2\text{O}$
12	1026.398	O_3	42	1029.691	$\text{H}_2\text{O}, \text{O}_3$
13	1026.486	O_3	43	1029.855	$\text{O}_3?$
14	1026.530	O_3	44	1029.978	O_3
15	1026.831	O_3	45	1030.074	O_3
16	1026.965	O_3	46	1030.114	O_3
17	1027.101	O_3	47	1030.260	O_3
18	1027.207	O_3	48	1030.346	O_3
19	1027.304	O_3	49	1030.471	$\text{O}_3, \text{H}_2\text{O}$
20	1027.385	O_3, CO_2	50	1030.688	O_3
21	1027.466	O_3	51	1030.817	O_3
22	1027.541	O_3	52	1031.004	O_3
23	1027.652	O_3	53	1031.049	O_3
24	1027.741	O_3	54	1031.207	O_3
25	1027.854	O_3	55	1031.281	O_3
26	1027.925	O_3	56	1031.369	O_3
27	1028.108	O_3	57	1031.455	O_3, CO_2
28	1028.164	O_3	58	1031.520	$\text{O}_3?$
29	1028.279	H_2O	59	1031.661	O_3
30	1028.362	O_3	60	1031.783	O_3

FRAME 11 (1025-1050 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1031.985	O_3	91	1035.436	O_3, CO_2
62	1032.048	O_3	92	1035.541	O_3
63	1032.181	$\text{O}_3, \text{H}_2\text{O}$	93	1035.696	O_3
64	1032.394	O_3	94	1035.782	O_3
65	1032.530	O_3	95	1035.921	O_3
66	1032.654	O_3	96	1036.041	O_3
67	1032.736	O_3	97	1036.106	O_3
68	1032.867	O_3	98	1036.207	O_3
69	1032.945	O_3	99	1036.316	O_3
70	1033.029	$\text{O}_3, \text{H}_2\text{O}$	100	1036.402	O_3
71	1033.118	O_3	101	1036.439	O_3
72	1033.230	O_3	102	1036.571	O_3
73	1033.345	O_3	103	1036.694	O_3
74	1033.499	O_3, CO_2	104	1036.790	O_3
75	1033.678	O_3	105	1036.893	O_3
76	1033.796	O_3	106	1036.992	O_3
77	1033.863	O_3	107	1037.084	O_3
78	1033.940	O_3	108	1037.144	O_3
79	1034.064	O_3	109	1037.246	O_3
80	1034.167	O_3	110	1037.327	O_3
81	1034.263	O_3	111	1037.457	O_3, CO_2
82	1034.498	O_3	112	1037.599	O_3
83	1034.601	O_3	113	1037.754	O_3
84	1034.651	O_3	114	1037.825	O_3
85	1034.786	O_3	115	1037.971	O_3
86	1034.853	O_3	116	1038.061	$\text{O}_3, \text{H}_2\text{O}$
87	1035.087	$\text{O}_3, \text{H}_2\text{O}$	117	1038.152	O_3
88	1035.200	O_3	118	1038.210	O_3
89	1035.311	O_3	119	1038.279	O_3
90	1035.367	O_3	120	1038.389	O_3

FRAME 11 (1025-1050 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1038.460	O_3	151	1041.415	O_3
122	1038.528	O_3	152	1041.505	O_3
123	1038.648	O_3	153	1041.587	O_3
124	1038.830	O_3	154	1041.657	O_3
125	1038.991	O_3	155	1041.763	O_3
126	1039.143	O_3	156	1041.850	O_3
127	1039.237	O_3	157	1042.017	O_3
128	1039.346	O_3, CO_2	158	1042.082	O_3
129	1039.447	$\text{O}_3, \text{H}_2\text{O}$	159	1042.176	O_3
130	1039.532	$\text{O}_3, \text{H}_2\text{O}$	160	1042.286	O_3
131	1039.616	O_3	161	1042.439	O_3
132	1039.727	O_3	162	1042.536	$\text{H}_2\text{O}, \text{O}_3$
133	1039.776	O_3	163	1042.654	O_3
134	1039.864	O_3	164	1042.799	$\text{O}_3?$
135	1039.977	O_3	165	1042.910	O_3
136	1040.050	O_3	166	1043.058	O_3
137	1040.145	O_3	167	1043.168	CO_2, O_3
138	1040.284	O_3	168	1043.309	O_3
139	1040.402	O_3	169	1043.415	O_3
140	1040.490	O_3	170	1043.479	O_3
141	1040.578	O_3	171	1043.629	O_3
142	1040.683	O_3	172	1043.728	O_3
143	1040.717	O_3	173	1043.810	O_3
144	1040.814	O_3	174	1043.863	O_3
145	1040.925	O_3	175	1043.947	O_3
146	1041.010	O_3	176	1044.082	O_3
147	1041.093	O_3	177	1044.152	O_3
148	1041.168	O_3	178	1044.266	$\text{O}_3, \text{H}_2\text{O}$
149	1041.227	O_3, CO_2	179	1044.354	O_3
150	1041.344	O_3	180	1044.443	O_3

FRAME 11 (1025-1050 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	1044.554	O_3	211	1048.169	O_3
182	1044.689	O_3	212	1048.213	O_3
183	1044.818	O_3	213	1048.386	O_3
184	1044.908	O_3	214	1048.472	O_3
185	1045.017	CO_2	215	1048.704	O_3, CO_2
186	1045.153	O_3	216	1048.880	O_3
187	1045.263	O_3	217	1048.922	O_3
188	1045.359	O_3	218	1049.028	O_3
189	1045.476	O_3	219	1049.104	O_3
190	1045.582	$\text{O}_3^+?$	220	1049.373	$\text{O}_3, \text{H}_2\text{O}$
191	1045.690	O_3	221	1049.443	O_3
192	1045.803	O_3	222	1049.570	O_3
193	1045.946	O_3	223	1049.644	O_3
194	1045.999	O_3	224	1049.826	O_3
195	1046.102	O_3	225	1049.909	O_3
196	1046.211	O_3			
197	1046.313	O_3			
198	1046.466	O_3			
199	1046.683	O_3			
200	1046.815	O_3			
201	1046.879	O_3, CO_2			
202	1046.974	O_3			
203	1047.150	O_3			
204	1047.218	O_3			
205	1047.414	O_3			
206	1047.510	O_3			
207	1047.620	O_3			
208	1047.802	O_3			
209	1047.968	O_3			
210	1048.072	O_3			

FRAME 12 (1050-1075 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1050.041	O_3	31	1053.166	O_3
2	1050.094	O_3	32	1053.259	O_3
3	1050.184	$\text{O}_3, \text{H}_2\text{O}$	33	1053.370	O_3
4	1050.252	O_3	34	1053.466	O_3
5	1050.393	O_3	35	1053.531	O_3
6	1050.449	CO_2	36	1053.657	O_3
7	1050.548	O_3	37	1053.948	O_3, CO_2
8	1050.656	O_3	38	1054.031	O_3
9	1050.759	O_3	39	1054.125	O_3
10	1050.868	O_3	40	1054.185	O_3
11	1050.947	O_3	41	1054.289	O_3
12	1051.048	O_3	42	1054.355	O_3
13	1051.123	O_3	43	1054.460	O_3
14	1051.244	$\text{O}_3, \text{H}_2\text{O}$	44	1054.558	O_3
15	1051.492	O_3	45	1054.757	O_3
16	1051.607	O_3	46	1054.914	O_3
17	1051.642	O_3	47	1055.007	O_3
18	1051.776	O_3	48	1055.118	O_3
19	1051.904	O_3	49	1055.217	O_3
20	1051.992	O_3	50	1055.339	O_3
21	1052.038	O_3	51	1055.398	O_3
22	1052.150	O_3	52	1055.529	H_2O
23	1052.294	O_3, CO_2	53	1055.628	CO_2
24	1052.395	O_3	54	1055.702	O_3
25	1052.476	O_3	55	1055.831	O_3
26	1052.587	O_3	56	1055.921	O_3
27	1052.823	O_3	57	1055.992	O_3
28	1052.896	O_3	58	1056.082	O_3
29	1052.991	O_3	59	1056.166	O_3
30	1053.070	O_3	60	1056.246	O_3

FRAME 12 (1050-1075 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1056.364	O_3	91	1059.888	O_3
62	1056.470	O_3	92	1059.987	O_3
63	1056.575	O_3	93	1060.085	$\text{O}_3, \text{H}_2\text{O}$
64	1056.668	$\text{O}_3, \text{H}_2\text{O}$	94	1060.172	O_3
65	1056.781	O_3	95	1060.298	O_3
66	1056.942	O_3	96	1060.420	O_3
67	1057.046	O_3	97	1060.517	O_3, CO_2
68	1057.179	O_3	98	1060.679	O_3
69	1057.305	O_3, CO_2	99	1060.809	O_3
70	1057.388	O_3	100	1060.894	O_3
71	1057.590	O_3	101	1060.987	O_3
72	1057.721	O_3	102	1061.049	O_3
73	1057.827	O_3	103	1061.134	O_3
74	1057.908	O_3	104	1061.218	O_3
75	1058.032	O_3	105	1061.329	O_3
76	1058.191	O_3	106	1061.426	O_3
77	1058.249	O_3	107	1061.538	O_3
78	1058.363	O_3	108	1061.641	O_3
79	1058.466	O_3	109	1061.806	O_3
80	1058.518	O_3	110	1061.841	O_3
81	1058.662	$\text{O}_3, \text{H}_2\text{O}$	111	1061.931	O_3
82	1058.870	O_3, CO_2	112	1062.021	O_3
83	1059.026	O_3	113	1062.110	O_3, CO_2
84	1059.210	O_3	114	1062.261	O_3
85	1059.383	O_3	115	1062.404	O_3
86	1059.458	O_3	116	1062.511	O_3
87	1059.534	$\text{O}_3, \text{H}_2\text{O}$	117	1062.603	$\text{O}_3, \text{H}_2\text{O}$
88	1059.628	O_3	118	1062.664	O_3
89	1059.689	O_3	119	1062.821	O_3
90	1059.796	O_3	120	1062.913	O_3

FRAME 12 (1050-1075 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1063.066	O_3	151	1066.153	$\text{H}_2\text{O}, \text{O}_3$
122	1063.181	O_3	152	1066.244	O_3
123	1063.390	O_3	153	1066.386	$\text{O}_3, \text{H}_2\text{O}$
124	1063.468	O_3	154	1066.491	$\text{O}_3, \text{H}_2\text{O}$
125	1063.564	O_3	155	1066.622	O_3
126	1063.643	O_3	156	1066.715	O_3
127	1063.739	O_3	157	1066.793	O_3
128	1063.837	O_3	158	1066.900	O_3
129	1063.926	O_3	159	1066.982	O_3
130	1064.037	O_3	160	1067.085	O_3
131	1064.146	O_3	161	1067.143	O_3
132	1064.259	O_3	162	1067.324	O_3
133	1064.368	O_3	163	1067.425	O_3
134	1064.482	O_3, CO_2	164	1067.530	CO_2, O_3
135	1064.583	O_3	165	1067.589	O_3
136	1064.673	O_3	166	1067.718	O_3
137	1064.760	O_3	167	1067.865	O_3
138	1064.895	O_3	168	1068.005	O_3
139	1064.969	O_3	169	1068.092	O_3
140	1065.044	O_3, CO_2	170	1068.178	O_3
141	1065.147	O_3	171	1068.263	O_3
142	1065.216	O_3	172	1068.355	O_3, CO_2
143	1065.357	O_3	173	1068.448	O_3
144	1065.441	O_3	174	1068.576	O_3
145	1065.508	$\text{O}_3?$	175	1068.664	$\text{O}_3?$
146	1065.640	O_3	176	1068.755	O_3
147	1065.790	O_3	177	1068.822	$\text{O}_3+?$
148	1065.844	O_3	178	1069.009	CO_2, O_3
149	1065.948	O_3	179	1069.160	O_3
150	1066.029	O_3, CO_2	180	1069.305	O_3

FRAME 12 (1050-1075 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	1069.404	$\text{O}_3^+?$	211	1072.516	O_3
182	1069.468	O_3	212	1072.638	$\text{H}_2\text{O}, \text{O}_3$
183	1069.560	O_3	213	1072.785	O_3
184	1069.633	O_3	214	1072.919	$\text{O}_3, \text{H}_2\text{O}$
185	1069.746	O_3	215	1073.010	O_3
186	1069.844	O_3	216	1073.145	O_3
187	1069.930	$\text{O}_3, \text{H}_2\text{O}$	217	1073.277	CO_2, O_3
188	1070.031	O_3	218	1073.452	O_3
189	1070.162	O_3	219	1073.613	O_3
190	1070.290	O_3	220	1073.690	O_3
191	1070.457	CO_2, O_3	221	1073.789	O_3
192	1070.535	O_3	222	1073.878	CO_2
193	1070.657	O_3	223	1073.957	$\text{O}_3, \text{H}_2\text{O}$
194	1070.751	O_3	224	1074.050	O_3
195	1070.842	O_3	225	1074.174	O_3
196	1070.935	O_3	226	1074.269	$\text{H}_2\text{O}, \text{O}_3$
197	1070.992	O_3	227	1074.417	$\text{H}_2\text{O}, \text{O}_3$
198	1071.099	O_3	228	1074.647	CO_2, O_3
199	1071.223	O_3	229	1074.750	O_3
200	1071.335	O_3	230	1074.925	$\text{O}_3, \text{H}_2\text{O}$
201	1071.411	O_3			
202	1071.518	O_3			
203	1071.624	O_3			
204	1071.696	O_3			
205	1071.888	CO_2, O_3			
206	1071.972	O_3			
207	1072.064	$\text{H}_2\text{O}^*?$			
208	1072.193	O_3			
209	1072.316	O_3			
210	1072.443	O_3			

FRAME 13 (1075-1100 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1075.002	O_3	31	1078.594	CO_2, O_3
2	1075.128	O_3	32	1078.768	O_3
3	1075.277	O_3	33	1078.863	O_3
4	1075.369	$\text{O}_3, \text{H}_2\text{O}$	34	1078.926	O_3
5	1075.480	?	35	1079.008	CO_2, O_3
6	1075.590	O_3	36	1079.091	O_3
7	1075.723	O_3	37	1079.205	O_3
8	1075.823	O_3	38	1079.307	?
9	1075.986	CO_2, O_3	39	1079.412	O_3
10	1076.117	$\text{O}_3, \text{H}_2\text{O}$	40	1079.574	O_3
11	1076.218	O_3	41	1079.655	O_3, CO_2
12	1076.387	O_3	42	1079.857	CO_2, O_3
13	1076.525	?	43	1080.025	O_3
14	1076.661	O_3	44	1080.108	O_3
15	1076.724	O_3	45	1080.235	O_3
16	1076.821	O_3, CO_2	46	1080.348	O_3
17	1076.927	O_3	47	1080.478	O_3
18	1077.070	O_3	48	1080.586	O_3
19	1077.184	O_3	49	1080.708	O_3
20	1077.302	CO_2, O_3	50	1080.786	O_3
21	1077.451	O_3	51	1080.920	O_3
22	1077.566	$\text{CO}_2+?$	52	1081.090	CO_2, O_3
23	1077.686	O_3	53	1081.228	O_3
24	1077.767	O_3	54	1081.29	$\text{O}_3, \text{H}_2\text{O}$
25	1077.838	O_3	55	1081.387	O_3
26	1077.984	O_3	56	1081.515	O_3
27	1078.083	O_3	57	1081.617	$\text{O}_3, \text{H}_2\text{O}$
28	1078.179	O_3	58	1081.730	O_3
29	1078.2	O_3, CO_2	59	1081.876	O_3
30	1078.381	O_3	60	1082.008	O_3

FRAME 13 (1075-1100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1082.301	CO_2, O_3	91	1086.359	O_3
62	1082.429	O_3	92	1086.463	O_3
63	1082.590	O_3	93	1086.568	O_3
64	1082.694	O_3	94	1086.659	$\text{O}_3?$
65	1082.796	O_3	95	1086.769	O_3
66	1082.877	O_3	96	1086.871	CO_2
67	1082.963	O_3	97	1087.022	O_3
68	1083.054	O_3	98	1087.108	O_3
69	1083.137	$\text{O}_3?$	99	1087.186	O_3
70	1083.249	O_3	100	1087.315	O_3
71	1083.483	CO_2, O_3	101	1087.405	O_3
72	1083.754	O_3	102	1087.490	O_3
73	1083.898	O_3	103	1087.584	O_3
74	1083.980	O_3	104	1087.753	O_3
75	1084.095	O_3	105	1087.955	$\text{O}_3, \text{CO}_2, \text{H}_2\text{O}$
76	1084.253	O_3	106	1088.115	O_3
77	1084.324	O_3	107	1088.218	O_3
78	1084.461	O_3	108	1088.303	O_3
79	1084.534	O_3	109	1088.399	O_3
80	1084.634	CO_2	110	1088.477	$\text{O}_3?$
81	1084.704	O_3	111	1088.553	$\text{O}_3?$
82	1084.805	H_2O	112	1088.669	O_3
83	1084.997	O_3	113	1088.825	O_3
84	1085.115	O_3	114	1089.000	CO_2, O_3
85	1085.437	H_2O	115	1089.110	O_3
86	1085.536	O_3	116	1089.222	O_3
87	1085.768	CO_2, O_3	117	1089.350	O_3
88	1085.930	O_3	118	1089.500	O_3
89	1086.074	O_3	119	1089.647	O_3
90	1086.176	O_3	120	1089.742	O_3

FRAME 13 (1075-1100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1089.921	O_3	151	1093.203	O_3
122	1090.018	CO_2, O_3	152	1093.335	O_3
123	1090.058	O_3	153	1093.418	O_3
124	1090.238	O_3	154	1093.508	O_3
125	1090.366	?+ O_3	155	1093.597	$\text{H}_2\text{O}, \text{O}_3$
126	1090.469	O_3	156	1093.676	H_2O
127	1090.584	?	157	1093.779	O_3
128	1090.649	?	158	1093.878	O_3
129	1090.788	O_3	159	1093.949	O_3
130	1090.907	O_3	160	1094.015	O_3
131	1091.038	O_3, CO_2	161	1094.196	O_3
132	1091.204	$\text{H}_2\text{O}, \text{O}_3$	162	1094.412	O_3
133	1091.289	O_3	163	1094.560	O_3
134	1091.495	O_3	164	1094.657	O_3
135	1091.608	O_3	165	1094.716	O_3
136	1091.746	O_3	166	1094.776	O_3 +
137	1091.843	O_3	167	1094.853	O_3
138	1091.959	O_3	168	1094.949	O_3
139	1092.014	CO_2, O_3	169	1095.101	O_3
140	1092.121	O_3	170	1095.199	?
141	1092.219	O_3	171	1095.290	O_3 ?
142	1092.316	O_3	172	1095.431	O_3
143	1092.409	O_3	173	1095.505	O_3
144	1092.551	O_3	174	1095.619	O_3, CO_2
145	1092.649	O_3	175	1095.708	O_3
146	1092.751	O_3	176	1095.766	O_3 ?
147	1092.839	?	177	1095.861	O_3
148	1092.937	O_3	178	1096.028	O_3
149	1092.996	O_3	179	1096.100	O_3
150	1093.087	O_3	180	1096.187	O_3

FRAME 13 (1075-1100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	1096.282	?	211	1099.676	H_2O , O_3
182	1096.371	O_3	212	1099.915	O_3
183	1096.448	O_3			
184	1096.560	O_3			
185	1096.649	O_3			
186	1096.803	O_3			
187	1096.905	?			
188	1096.967	O_3 ?			
189	1097.069	O_3			
190	1097.198	O_3			
191	1097.327	O_3			
192	1097.400	O_3			
193	1097.507	O_3			
194	1097.605	O_3			
195	1097.709	?			
196	1097.850	O_3			
197	1097.963	O_3			
198	1098.113	O_3			
199	1098.238	O_3			
200	1098.375	O_3			
201	1098.532	O_3			
202	1098.681	O_3			
203	1098.751	O_3			
204	1098.804	O_3			
205	1098.890	O_3			
206	1098.980	O_3			
207	1099.138	O_3			
208	1099.246	O_3			
209	1099.331	O_3			
210	1099.427	O_3			

FRAME 14 (1100-1125 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1100.081	O_3	31	1103.845	O_3
2	1100.258	O_3	32	1103.947	O_3
3	1100.421	O_3	33	1104.064	O_3
4	1100.573	O_3 +?	34	1104.194	O_3
5	1100.655	O_3	35	1104.358	O_3
6	1100.742	O_3	36	1104.523	O_3
7	1100.845	O_3 ?	37	1104.629	O_3
8	1100.983	O_3	38	1104.672	O_3
9	1101.025	O_3	39	1104.740	?
10	1101.132	?	40	1104.843	O_3
11	1101.244	O_3	41	1104.963	O_3
12	1101.447	H_2O	42	1105.053	O_3
13	1101.787	O_3	43	1105.110	O_3
14	1101.941	O_3	44	1105.222	O_3
15	1102.031	O_3	45	1105.290	O_3
16	1102.131	O_3	46	1105.377	O_3
17	1102.232	O_3	47	1105.479	O_3
18	1102.300	O_3	48	1105.578	?
19	1102.371	O_3	49	1105.704	O_3
20	1102.478	O_3	50	1105.797	O_3 ?
21	1102.611	$\text{O}_3, \text{H}_2\text{O}$	51	1105.897	?
22	1102.773	$\text{O}_3, \text{H}_2\text{O}$	52	1106.020	O_3
23	1102.990	O_3 +?	53	1106.102	O_3
24	1103.090	?	54	1106.234	O_3
25	1103.198	O_3	55	1106.345	O_3
26	1103.316	O_3	56	1106.524	O_3
27	1103.419	O_3	57	1106.741	$\text{H}_2\text{O}, \text{O}_3$
28	1103.501	O_3	58	1106.979	O_3
29	1103.595	?	59	1107.097	O_3
30	1103.710	O_3	60	1107.175	O_3

FRAME 14 (1100-1125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1107.301	O_3	91	1110.523	O_3
62	1107.399	O_3	92	1110.669	O_3
63	1107.504	O_3	93	1110.743	?
64	1107.593	O_3	94	1110.834	O_3
65	1107.710	O_3	95	1110.990	$\text{O}_3, \text{H}_2\text{O}$
66	1107.920	O_3	96	1111.060	O_3
67	1108.035	O_3	97	1111.253	O_3
68	1108.125	O_3	98	1111.509	H_2O
69	1108.248	O_3	99	1111.725	O_3
70	1108.356	$\text{H}_2\text{O}?$	100	1111.834	O_3
71	1108.455	O_3	101	1111.949	?
72	1108.570	O_3	102	1112.036	O_3
73	1108.659	$\text{O}_3, \text{H}_2\text{O}$	103	1112.125	?
74	1108.757	O_3 +?	104	1112.183	?
75	1108.846	O_3	105	1112.292	O_3
76	1108.926	$\text{O}_3?$	106	1112.409	O_3
77	1109.036	O_3	107	1112.501	O_3
78	1109.111	$\text{O}_3?$	108	1112.690	O_3
79	1109.164	?	109	1112.827	O_3
80	1109.271	O_3	110	1112.917	O_3
81	1109.383	O_3	111	1113.126	O_3
82	1109.477	O_3 +?	112	1113.232	O_3
83	1109.584	O_3	113	1113.366	O_3
84	1109.672	O_3	114	1113.457	O_3
85	1109.743	O_3	115	1113.572	O_3
86	1109.807	O_3	116	1113.664	O_3
87	1109.971	O_3	117	1113.766	O_3
88	1110.117	O_3	118	1113.846	O_3
89	1110.207	?	119	1113.943	O_3
90	1110.366	$\text{O}_3, \text{H}_2\text{O}$	120	1114.019	O_3

FRAME 14 (1100-1125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1114.118	O_3	151	1117.590	$\text{H}_2\text{O}, \text{O}_3$
122	1114.208	O_3	152	1117.765	O_3
123	1114.355	O_3	153	1117.870	O_3
124	1114.454	O_3	154	1118.044	O_3
125	1114.625	$\text{O}_3, \text{H}_2\text{O}$	155	1118.152	O_3 +?
126	1114.721	?	156	1118.246	?
127	1114.825	O_3	157	1118.336	O_3
128	1114.995	O_3	158	1118.435	O_3
129	1115.081	O_3	159	1118.558	O_3
130	1115.174	O_3	160	1118.689	O_3
131	1115.287	O_3	161	1118.812	O_3
132	1115.400	O_3	162	1118.948	O_3
133	1115.569	O_3	163	1119.054	O_3
134	1115.674	O_3	164	1119.162	O_3
135	1115.781	O_3	165	1119.284	O_3
136	1115.933	O_3 +?	166	1119.451	O_3
137	1116.059	O_3	167	1119.578	O_3
138	1116.183	O_3	168	1119.686	O_3 +?
139	1116.316	O_3 ?	169	1119.799	O_3
140	1116.420	O_3	170	1119.890	O_3
141	1116.484	O_3	171	1120.049	O_3
142	1116.615	O_3 ?	172	1120.215	O_3
143	1116.704	O_3	173	1120.353	O_3
144	1116.811	O_3	174	1120.565	O_3
145	1116.972	O_3	175	1120.791	$\text{H}_2\text{O}, \text{O}_3$
146	1117.081	O_3	176	1120.873	O_3
147	1117.173	O_3	177	1121.22	H_2O
148	1117.275	O_3	178	1121.445	O_3
149	1117.373	O_3	179	1121.563	O_3
150	1117.464	?	180	1121.652	O_3

FRAME 14 (1100-1125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
181	1121.793	O_3
182	1121.895	?
183	1122.057	O_3
184	1122.173	O_3
185	1122.293	O_3
186	1122.405	O_3
187	1122.462	O_3
188	1122.542	O_3
189	1122.643	O_3
190	1122.703	O_3
191	1122.779	$\text{O}_3?$
192	1122.883	O_3
193	1123.001	O_3
194	1123.101	?
195	1123.228	O_3
196	1123.333	O_3
197	1123.422	O_3
198	1123.562	O_3
199	1123.656	O_3, CH_4
200	1123.775	O_3
201	1123.846	$\text{H}_2\text{O}, \text{O}_3$
202	1123.948	O_3
203	1124.082	O_3
204	1124.185	O_3
205	1124.311	O_3
206	1124.437	O_3
207	1124.653	O_3
208	1124.734	O_3
209	1124.884	O_3
210	1124.970	O_3

FRAME 15 (1125-1150 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1125.046	O_3	31	1128.442	O_3
2	1125.210	O_3	32	1128.524	?
3	1125.305	O_3	33	1128.577	O_3
4	1125.355	O_3	34	1128.653	?
5	1125.417	O_3	35	1128.753	O_3
6	1125.527	O_3	36	1128.870	O_3
7	1125.632	$\text{O}_3?$	37	1128.995	O_3
8	1125.792	$\text{H}_2\text{O}, \text{O}_3, \text{N}_2\text{O}$	38	1129.115	$\text{N}_2\text{O}?$
9	1125.908	O_3	39	1129.233	O_3
10	1126.026	O_3	40	1129.428	O_3
11	1126.085	O_3	41	1129.519	O_3
12	1126.252	O_3	42	1129.575	O_3
13	1126.352	?	43	1129.706	$\text{N}_2\text{O}, \text{O}_3$
14	1126.433	O_3	44	1129.805	$\text{N}_2\text{O}, \text{O}_3, \text{H}_2\text{O}$
15	1126.547	$\text{N}_2\text{O}, \text{O}_3$	45	1129.918	O_3
16	1126.675	O_3	46	1130.029	$\text{O}_3?$
17	1126.780	O_3	47	1130.130	O_3
18	1126.892	$\text{H}_2\text{O}, \text{N}_2\text{O}, \text{O}_3$	48	1130.252	O_3
19	1127.003	O_3	49	1130.353	O_3
20	1127.128	O_3	50	1130.451	$\text{O}_3, \text{N}_2\text{O}$
21	1127.236	O_3	51	1130.554	O_3
22	1127.321	$\text{O}_3?$	52	1130.744	O_3
23	1127.410	O_3	53	1130.873	O_3
24	1127.494	O_3	54	1130.954	O_3
25	1127.637	N_2O	55	1131.113	O_3
26	1127.738	O_3	56	1131.269	$\text{N}_2\text{O}, \text{O}_3$
27	1127.962	O_3	57	1131.343	O_3
28	1128.073	O_3	58	1131.448	$\text{N}_2\text{O}, \text{O}_3$
29	1128.162	$\text{N}_2\text{O}, \text{O}_3$	59	1131.535	?
30	1128.305	O_3	60	1131.650	O_3

FRAME 15 (1125-1150 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1131.781	O_3	91	1135.328	O_3
62	1131.912	$\text{H}_2\text{O}?$	92	1135.542	$\text{H}_2\text{O}, \text{O}_3$
63	1132.024	$\text{O}_3, \text{N}_2\text{O}$	93	1135.75	$\text{H}_2\text{O}, \text{O}_3$
64	1132.118	?	94	1136.104	O_3
65	1132.214	$\text{N}_2\text{O}, \text{O}_3$	95	1136.201	O_3
66	1132.305	O_3	96	1136.237	O_3
67	1132.437	O_3	97	1136.368	O_3
68	1132.496	?	98	1136.480	O_3
69	1132.619	O_3	99	1136.525	O_3
70	1132.797	O_3	100	1136.643	O_3
71	1132.899	?	101	1136.732	O_3
72	1132.984	$\text{N}_2\text{O}, \text{O}_3$	102	1136.852	O_3
73	1133.048	$\text{H}_2\text{O}, \text{N}_2\text{O}, \text{O}_3$	103	1136.952	O_3
74	1133.236	O_3	104	1137.133	O_3
75	1133.327	$\text{H}_2\text{O}?$	105	1137.230	O_3
76	1133.435	O_3	106	1137.43	$\text{H}_2\text{O}, \text{O}_3, \text{N}_2\text{O}$
77	1133.669	$\text{O}_3, \text{N}_2\text{O}$	107	1137.733	O_3
78	1133.828	?	108	1137.863	O_3
79	1133.864	N_2O	109	1137.954	N_2O
80	1134.021	O_3	110	1138.036	O_3
81	1134.167	H_2O	111	1138.148	?
82	1134.252	O_3	112	1138.255	$\text{O}_3, \text{N}_2\text{O}$
83	1134.359	N_2O	113	1138.360	O_3
84	1134.461	O_3	114	1138.442	O_3
85	1134.528	O_3	115	1138.525	O_3
86	1134.660	$\text{N}_2\text{O}, \text{O}_3$	116	1138.611	O_3
87	1134.779	O_3	117	1138.710	O_3
88	1134.893	O_3	118	1138.870	O_3
89	1135.093	O_3	119	1139.043	$\text{O}_3, \text{N}_2\text{O}$
90	1135.183	O_3	120	1139.160	N_2O

FRAME 15 (1125-1150 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1139.280	O_3	151	1142.777	O_3
122	1139.415	O_3	152	1142.858	$\text{N}_2\text{O}, \text{O}_3$
123	1139.497	O_3	153	1142.972	$\text{N}_2\text{O}, \text{O}_3$
124	1139.588	$\text{O}_3, \text{N}_2\text{O}$	154	1143.076	O_3
125	1139.703	O_3	155	1143.159	O_3
126	1139.817	N_2O	156	1143.299	O_3
127	1139.986	$\text{O}_3, \text{N}_2\text{O}$	157	1143.447	O_3
128	1140.124	H_2O	158	1143.594	O_3
129	1140.248	O_3	159	1143.747	$\text{N}_2\text{O}, \text{O}_3$
130	1140.435	$\text{O}_3, \text{N}_2\text{O}$	160	1143.822	O_3
131	1140.567	O_3	161	1143.917	N_2O
132	1140.736	N_2O	162	1144.015	O_3
133	1140.841	?	163	1144.124	$\text{O}_3?$
134	1140.946	O_3	164	1144.183	O_3
135	1141.056	O_3	165	1144.288	O_3
136	1141.155	O_3	166	1144.378	O_3
137	1141.232	N_2O	167	1144.432	$\text{O}_3?$
138	1141.365	$\text{N}_2\text{O}, \text{O}_3$	168	1144.535	$\text{N}_2\text{O}, \text{O}_3$
139	1141.526	$\text{H}_2\text{O}, \text{O}_3, \text{N}_2\text{O}$	169	1144.633	O_3
140	1141.627	O_3	170	1144.730	N_2O
141	1141.721	?	171	1144.837	O_3
142	1141.760	$\text{O}_3?$	172	1144.951	O_3
143	1141.878	O_3	173	1145.036	O_3
144	1141.994	O_3	174	1145.116	O_3
145	1142.082	$\text{O}_3, \text{N}_2\text{O}$	175	1145.216	O_3
146	1142.177	$\text{N}_2\text{O}, \text{O}_3$	176	1145.331	N_2O
147	1142.318	N_2O	177	1145.447	O_3
148	1142.434	O_3	178	1145.576	O_3
149	1142.610	O_3	179	1145.671	O_3
150	1142.683	O_3	180	1145.740	O_3

FRAME 15 (1125- : 30 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
181	1145.834	$\text{O}_3?$	211	1149.655	O_3
182	1145.945	O_3	212	1149.882	O_3
183	1146.029	H_2O	213	1149.971	O_3
184	1146.128	N_2O			
185	1146.265	O_3			
186	1146.361	$\text{N}_2\text{O}?$			
187	1146.471	O_3			
188	1146.568	?			
189	1146.674	O_3			
190	1146.783	O_3			
191	1146.920	N_2O			
192	1147.055	O_3			
193	1147.186	O_3			
194	1147.299	?			
195	1147.407	O_3			
196	1147.513	O_3			
197	1147.614	O_3			
198	1147.720	N_2O			
199	1147.867	O_3			
200	1147.957	$\text{N}_2\text{O}, \text{CH}_4$			
201	1148.048	O_3			
202	1148.153	O_3			
203	1148.339	$\text{O}_3?$			
204	1148.462	O_3			
205	1148.504	N_2O			
206	1148.635	$\text{N}_2\text{O}, \text{O}_3$			
207	1148.742	$\text{N}_2\text{O}, \text{O}_3$			
208	1148.916	O_3			
209	1149.313	N_2O			
210	1149.45	$\text{H}_2\text{O}, \text{O}_3$			

FRAME 16 (1150-1175 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1150.106	N_2O	31	1154.613	O_3
2	1150.207	O_3	32	1154.670	$\text{H}_2\text{O}, \text{O}_3$
3	1150.345	O_3	33	1154.775	?
4	1150.495	O_3	34	1154.948	N_2O
5	1150.611	$\text{O}_3, \text{H}_2\text{O}?$	35	1155.194	O_3
6	1150.698	$\text{O}_3?$	36	1155.288	N_2O
7	1150.912	N_2O	37	1155.406	$\text{O}_3?$
8	1151.036	O_3	38	1155.516	O_3
9	1151.130	N_2O	39	1155.759	$\text{N}_2\text{O}, \text{O}_3$
10	1151.182	N_2O	40	1155.945	O_3
11	1151.342	O_3	41	1156.034	$\text{O}_3?$
12	1151.546	H_2O	42	1156.125	$\text{N}_2\text{O}, \text{O}_3$
13	1151.715	$\text{N}_2\text{O}, \text{O}_3$	43	1156.253	O_3
14	1151.972	N_2O	44	1156.347	O_3
15	1152.177	O_3	45	1156.568	N_2O
16	1152.48	$\text{H}_2\text{O}, \text{N}_2\text{O}, \text{O}_3$	46	1156.672	O_3
17	1152.786	N_2O	47	1156.827	?
18	1152.914	?	48	1156.944	$\text{O}_3, \text{N}_2\text{O}$
19	1153.011	O_3	49	1157.067	?
20	1153.110	H_2O	50	1157.188	O_3
21	1153.214	$\text{O}_3, \text{H}_2\text{O}$	51	1157.381	N_2O
22	1153.330	$\text{N}_2\text{O}, \text{O}_3$	52	1157.511	O_3
23	1153.619	N_2O	53	1157.690	O_3
24	1153.738	?	54	1157.790	N_2O
25	1153.839	O_3	55	1157.895	O_3
26	1153.984	O_3	56	1158.007	O_3
27	1154.139	$\text{N}_2\text{O}, \text{O}_3$	57	1158.194	$\text{N}_2\text{O}, \text{O}_3$
28	1154.346	?	58	1158.363	O_3
29	1154.460	$\text{N}_2\text{O}, \text{H}_2\text{O}$	59	1158.485	$\text{N}_2\text{O}, \text{O}_3$
30	1154.534	O_3	60	1158.619	N_2O

FRAME 16 (1150-1175 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1158.747	O_3	91	1163.132	N_2O
62	1158.836	O_3	92	1163.321	O_3
63	1159.010	N_2O	93	1163.425	O_3
64	1159.218	O_3	94	1163.573	O_3
65	1159.343	CH_4	95	1163.702	$\text{O}_3, \text{H}_2\text{O}$
66	1159.444	O_3	96	1163.963	N_2O
67	1159.566	O_3, CH_4	97	1164.161	$\text{O}_3?$
68	1159.657	O_3	98	1164.257	O_3
69	1159.746	O_3	99	1164.365	?
70	1159.836	N_2O	100	1164.433	?
71	1160.046	O_3	101	1164.527	$\text{O}_3, \text{N}_2\text{O}, \text{CH}_4$
72	1160.176	?	102	1164.794	N_2O
73	1160.308	$\text{O}_3, \text{CH}_4, \text{N}_2\text{O}$	103	1165.052	$\text{H}_2\text{O}, \text{O}_3$
74	1160.500	O_3	104	1165.37	H_2O
75	1160.656	$\text{N}_2\text{O}, \text{O}_3$	105	1165.625	N_2O
76	1160.910	$\text{CF}_2\text{Cl}_2, \text{O}_3, \text{CH}_4$	106	1165.938	$\text{H}_2\text{O}, \text{O}_3$
77	1161.030	CF_2Cl_2	107	1166.106	O_3
78	1161.182	O_3	108	1166.242	$\text{N}_2\text{O}, \text{O}_3$
79	1161.283	O_3	109	1166.335	O_3
80	1161.479	N_2O	110	1166.465	N_2O
81	1161.740	$\text{O}_3, \text{H}_2\text{O}$	111	1166.602	O_2
82	1161.912	O_3	112	1166.657	?
83	1162.089	O_3	113	1166.762	O_3
84	1162.307	N_2O	114	1166.911	$\text{O}_3, \text{H}_2\text{O}$
85	1162.484	O_3	115	1167.039	$\text{N}_2\text{O}, \text{O}_3, \text{H}_2\text{O}$
86	1162.585	$\text{O}_3, \text{H}_2\text{O}$	116	1167.100	$\text{O}_3, \text{N}_2\text{O}$
87	1162.692	O_3	117	1167.292	$\text{N}_2\text{O}, \text{O}_3$
88	1162.784	$\text{O}_3, \text{N}_2\text{O}$	118	1167.476	?
89	1162.912	O_3	119	1167.586	O_3
90	1163.016	$\text{H}_2\text{O}, \text{O}_3$	120	1167.692	$\text{O}_3 +?$

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FRAME 16 (1150-1175 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1167.801	$\text{O}_3?$	151	1171.407	$\text{N}_2\text{O}, \text{O}_3$
122	1167.853	$\text{N}_2\text{O}?$	152	1171.507	$\text{N}_2\text{O}, \text{H}_2\text{O}, \text{O}_3$
123	1167.958	$\text{O}_3, \text{N}_2\text{O}$	153	1171.666	$\text{O}_3, \text{H}_2\text{O}$
124	1168.075	$\text{N}_2\text{O}, \text{O}_3$	154	1171.762	O_3
125	1168.149	O_3	155	1171.885	O_3
126	1168.266	CH_4, O_3	156	1172.022	O_3
127	1168.320	$\text{O}_3?$	157	1172.131	$\text{N}_2\text{O}, \text{O}_3$
128	1168.423	$\text{O}_3 +?$	158	1172.259	$\text{O}_3, \text{N}_2\text{O}$
129	1168.572	?	159	1172.350	N_2O
130	1168.723	$\text{N}_2\text{O}, \text{O}_3$	160	1172.471	O_3
131	1168.826	$\text{O}_3, \text{N}_2\text{O}$	161	1172.588	O_3, CH_4
132	1168.972	N_2O	162	1172.704	$\text{O}_3, \text{H}_2\text{O}?$
133	1169.081	O_3	163	1172.820	O_3
134	1169.136	H_2O	164	1173.002	$\text{O}_3, \text{N}_2\text{O}$
135	1169.239	$\text{O}_3, \text{H}_2\text{O}$	165	1173.093	O_3
136	1169.340	O_3, CH_4	166	1173.196	N_2O
137	1169.450	CH_4	167	1173.295	O_3
138	1169.584	$\text{O}_3, \text{N}_2\text{O}$	168	1173.387	H_2O
139	1169.686	$\text{O}_3, \text{N}_2\text{O}$	169	1173.714	$\text{H}_2\text{O}, \text{O}_3$
140	1169.814	N_2O	170	1173.928	$\text{O}_3, \text{H}_2\text{O}$
141	1170.032	$\text{O}_3, \text{H}_2\text{O}$	171	1174.055	$\text{N}_2\text{O}, \text{O}_3$
142	1170.191	CH_4, O_3	172	1174.350	} H_2O
143	1170.296	$\text{O}_3?$	173	1174.715	
144	1170.430	$\text{CH}_4, \text{N}_2\text{O}, \text{O}_3$	174	1174.893	$\text{N}_2\text{O}, \text{O}_3$
145	1170.549	$\text{O}_3, \text{N}_2\text{O}$			
146	1170.654	N_2O			
147	1170.756	O_3			
148	1170.870	$\text{O}_3, \text{CH}_4, \text{H}_2\text{O}$			
149	1171.077	?			
150	1171.274	N_2O			

FRAME 17 (1175-1200 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1175.189	O_3	31	1179.624	O_3
2	1175.326	O_3	32	1179.718	O_3
3	1175.504	N_2O	33	1179.813	$\text{CH}_4, \text{N}_2\text{O}$
4	1175.612	O_3	34	1180.052	N_2O
5	1175.758	N_2O	35	1180.246	$\text{O}_3, \text{N}_2\text{O}, \text{H}_2\text{O}$
6	1175.883	O_3	36	1180.390	$\text{O}_3, \text{H}_2\text{O}?$
7	1176.007	$\text{O}_3?$	37	1180.504	O_3
8	1176.106	O_3	38	1180.669	$\text{N}_2\text{O}, \text{O}_3$
9	1176.200	CH_4	39	1180.828	H_2O
10	1176.417	$\text{H}_2\text{O}, \text{O}_3, \text{N}_2\text{O}$	40	1180.915	N_2O
11	1176.614	N_2O	41	1181.092	$\text{N}_2\text{O}, \text{CH}_4$
12	1176.911	O_3	42	1181.186	$\text{O}_3, \text{N}_2\text{O}$
13	1176.991	$\text{O}_3, \text{H}_2\text{O}$	43	1181.323	O_3, CH_4
14	1177.099	O_3	44	1181.429	?
15	1177.238	$\text{O}_3, \text{N}_2\text{O}, \text{H}_2\text{O}$	45	1181.523	$\text{CH}_4, \text{N}_2\text{O}$
16	1177.471	N_2O	46	1181.623	O_3
17	1177.775	CH_4, O_3	47	1181.778	$\text{N}_2\text{O}, \text{CH}_4$
18	1177.877	CH_4, O_3	48	1181.887	O_3
19	1177.965	O_3	49	1181.980	N_2O
20	1178.084	$\text{O}_3, \text{N}_2\text{O}$	50	1182.106	CH_4
21	1178.161	O_3	51	1182.190	O_3
22	1178.328	N_2O	52	1182.352	N_2O
23	1178.675	$\text{H}_2\text{O}, \text{O}_3$	53	1182.480	O_3
24	1178.757	O_3	54	1182.648	N_2O
25	1178.905	$\text{O}_3, \text{N}_2\text{O}$	55	1182.893	$\text{O}_3, \text{N}_2\text{O}$
26	1178.994	?	56	1183.052	O_3
27	1179.190	N_2O	57	1183.200	$\text{N}_2\text{O}, \text{O}_3$
28	1179.329	$\text{N}_2\text{O}, \text{CH}_4$	58	1183.517	N_2O
29	1179.409	O_3	59	1183.663	O_3
30	1179.498	O_3	60	1183.778	N_2O

FRAME 17 (1175-1200 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1183.886	O_3	91	1188.757	N_2O
62	1184.101	$\text{H}_2\text{O}, \text{N}_2\text{O}$	92	1188.954	CH_4, O_3
63	1184.244	O_3	93	1189.104	O_3
64	1184.386	N_2O	94	1189.197	$\text{N}_2\text{O}, \text{H}_2\text{O}$
65	1184.592	O_3	95	1189.308	O_3
66	1184.707	$\text{O}_3, \text{N}_2\text{O}$	96	1189.386	?
67	1184.815	O_3	97	1189.487	O_3
68	1184.929	N_2O	98	1189.634	N_2O
69	1185.057	CH_4	99	1189.729	$\text{O}_3?$
70	1185.148	O_3	100	1189.838	$\text{H}_2\text{O}?$
71	1185.257	N_2O	101	1189.928	CH_4
72	1185.375	O_3	102	1190.095	$\text{N}_2\text{O}, \text{O}_3$
73	1185.541	$\text{H}_2\text{O}, \text{O}_3$	103	1190.230	CH_4
74	1185.698	$\text{H}_2\text{O}, \text{CH}_4$	104	1190.375	$\text{H}_2\text{O}, \text{O}_3$
75	1185.881	O_3	105	1190.514	N_2O
76	1186.007	O_3, CH_4	106	1190.743	CH_4
77	1186.130	N_2O	107	1190.887	CH_4, O_3
78	1186.374	O_3	108	1190.974	$\text{CH}_4, \text{N}_2\text{O}$
79	1186.500	$\text{N}_2\text{O}, \text{O}_3$	109	1191.167	$\text{H}_2\text{O}, \text{O}_3$
80	1186.901	} $\text{H}_2\text{O}, \text{N}_2\text{O}$	110	1191.400	N_2O
81	1187.160		111	1191.476	$\text{CH}_4, \text{H}_2\text{O}$
82	1187.533	$\text{N}_2\text{O}, \text{O}_3$	112	1191.663	?
83	1187.878	N_2O	113	1191.809	N_2O
84	1187.974	O_3	114	1191.927	$\text{H}_2\text{O}, \text{N}_2\text{O}, \text{O}_3$
85	1188.069	O_3	115	1192.067	CH_4
86	1188.185	H_2O	116	1192.162	O_3
87	1188.271	$\text{N}_2\text{O}, \text{O}_3$	117	1192.272	N_2O
88	1188.382	$\text{CH}_4, \text{N}_2\text{O}$	118	1192.441	O_3
89	1188.512	O_3	119	1192.707	H_2O
90	1188.601	O_3	120	1192.827	CH_4

FRAME 17 (1175-1200 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	1192.976	O_3	151	1197.130	H_2O
122	1193.157	N_2O	152	1197.210	O_3
123	1193.303	O_3	153	1197.292	O_3
124	1193.513	H_2O	154	1197.391	$\text{CH}_4, \text{N}_2\text{O}$
125	1193.748	$\text{N}_2\text{O}, \text{O}_3$	155	1197.585	N_2O
126	1193.816	CH_4	156	1198.20	H_2O
127	1194.040	N_2O	157	1198.451	N_2O
128	1194.210	O_3	158	1198.565	$\text{CH}_4, \text{H}_2\text{O}$
129	1194.335	?	159	1198.667	$\text{N}_2\text{O}, \text{O}_3$
130	1194.405	$\text{N}_2\text{O} + ?$	160	1198.999	CH_4
131	1194.528	O_3	161	1199.079	H_2O
132	1194.657	$\text{N}_2\text{O}, \text{O}_3$	162	1199.360	N_2O
133	1194.759	?	163	1199.475	O_3
134	1194.933	$\text{N}_2\text{O}, \text{CH}_4$	164	1199.590	$\text{H}_2\text{O}, \text{O}_3$
135	1195.240	N_2O	165	1199.691	CH_4
136	1195.336	$\text{H}_2\text{O}, \text{O}_3$	166	1199.868	CH_4
137	1195.472	O_3	167	1199.983	O_3
138	1195.569	N_2O			
139	1195.718	O_3			
140	1195.810	N_2O			
141	1195.898	?			
142	1196.120	$\text{CH}_4, \text{N}_2\text{O}$			
143	1196.204	H_2O			
144	1196.316	CH_4			
145	1196.415	CH_4, O_3			
146	1196.486	$\text{CH}_4, \text{N}_2\text{O}$			
147	1196.695	N_2O			
148	1196.844	O_3			
149	1196.949	$\text{N}_2\text{O}, \text{CH}_4$			
150	1197.025	CH_4			

FRAME 18 (1200-1225 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1200.086	O_3	31	1204.031	CH_4
2	1200.149	$\text{O}_3, \text{N}_2\text{O}$	32	1204.137	$\text{O}_3?$
3	1200.247	N_2O	33	1204.193	O_3
4	1200.347	$\text{N}_2\text{O}?$	34	1204.317	CH_4 +?
5	1200.494	$\text{O}_3?$	35	1204.603	O_3
6	1200.574	O_3	36	1204.699	N_2O
7	1200.701	O_3, CH_4	37	1204.767	O_3, CH_4
8	1200.791	$\text{O}_3, \text{CH}_4, \text{H}_2\text{O}$	38	1204.871	O_3
9	1201.027	$\text{O}_3?$	39	1205.073	H_2O
10	1201.133	$\text{CH}_4, \text{N}_2\text{O}$	40	1205.259	?
11	1201.469	H_2O	41	1205.382	O_3, CH_4
12	1201.640	CH_4	42	1205.525	O_3
13	1201.759	CH_4, O_3	43	1205.597	N_2O
14	1201.869	?	44	1205.799	?
15	1202.026	N_2O	45	1205.929	CH_4
16	1202.185	O_3	46	1206.031	$\text{H}_2\text{O}, \text{CH}_4$
17	1202.255	O_3	47	1206.367	H_2O
18	1202.420	CH_4	48	1206.476	N_2O
19	1202.521	O_3	49	1206.687	O_3
20	1202.624	O_3	50	1206.797	O_3
21	1202.722	CH_4	51	1206.928	O_3
22	1202.917	N_2O	52	1207.100	O_3
23	1203.037	CH_4	53	1207.278	H_2O
24	1203.180	CH_4	54	1207.374	N_2O
25	1203.287	O_3	55	1207.605	$\text{N}_2\text{O}, \text{O}_3?$
26	1203.387	$\text{CH}_4, \text{H}_2\text{O}$	56	1207.719	O_3
27	1203.584	$\text{CH}_4, \text{H}_2\text{O}$	57	1207.833	CH_4
28	1203.688	CH_4	58	1207.921	?
29	1203.806	N_2O	59	1208.053	O_3
30	1203.924	H_2O	60	1208.163	?

FRAME 18 (1200-1225 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1208.270	N_2O	91	1214.526	N_2O
62	1208.449	$\text{H}_2\text{O}, \text{O}_3$	92	1214.687	CH_4
63	1208.755	H_2O	93	1214.955	H_2O
64	1209.138	$\text{N}_2\text{O}, \text{O}_3$	94	1215.484	H_2O
65	1209.261	$\text{H}_2\text{O}, \text{O}_3$	95	1215.632	$\text{H}_2\text{O}, \text{CH}_4$
66	1209.583	?	96	1215.851	O_3
67	1209.697	CH_4	97	1215.951	CH_4
68	1209.806	CH_4	98	1216.204	$\text{CH}_4, \text{H}_2\text{O}$
69	1209.914	CH_4	99	1216.321	CH_4
70	1210.004	CH_4	100	1216.629	CH_4
71	1210.072	$\text{CH}_4, \text{N}_2\text{O}$	101	1216.867	$\text{CH}_4?$
72	1210.183	H_2O	102	1216.961	$\text{N}_2\text{O}?$
73	1210.291	N_2O	103	1217.073	$\text{CH}_4?$
74	1210.675	CH_4	104	1217.285	H_2O
75	1210.779	CH_4	105	1217.387	$\text{O}_3 +?$
76	1211.25	$\text{H}_2\text{O}, \text{CH}_4$	106	1217.626	CH_4
77	1211.685	$\text{CH}_4 +?$	107	1217.990	CH_4
78	1211.889	CH_4	108	1218.52	$\text{H}_2\text{O}, \text{CH}_4$
79	1212.002	} $\text{H}_2\text{O}, \text{CH}_4$	109	1219.141	$\text{H}_2\text{O}^*, \text{CH}_4$
80	1212.393		110	1219.250	N_2O
81	1213.003	H_2O	111	1219.650	CH_4
82	1213.426	?	112	1219.945	H_2O
83	1213.542	CH_4	113	1220.192	CH_4
84	1213.635	N_2O	114	1220.341	$\text{H}_2\text{O}, \text{CH}_4$
85	1213.700	$\text{O}_3, \text{CH}_4?$	115	1220.741	H_2O
86	1213.825	$\text{O}_3?$	116	1220.857	CH_4
87	1213.927	N_2O	117	1221.047	H_2O
88	1214.052	CH_4	118	1221.377	$\text{CH}_4 +?$
89	1214.282	?	119	1221.471	CH_4
90	1214.367	CH_4	120	1221.877	$\text{CH}_4, \text{H}_2\text{O}$

FRAME 18 (1200-1225 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	1222.185	H_2O
122	1222.322	N_2O , CH_4
123	1222.457	H_2O , CH_4
124	1222.639	CH_4 , H_2O
125	1222.909	CH_4
126	1223.155	CH_4
127	1223.356	CH_4 , N_2O
128	1223.467	CH_4 ?
129	1223.649	N_2O
130	1223.768	H_2O
131	1223.985	CH_4
132	1224.243	?
133	1224.521	H_2O , N_2O
134	1224.909	} H_2O
135	1225.244	

FRAME 19 (1225-1250 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1225.548	H_2O , CH_4	31	1231.427	CH_4
2	1226.090	CH_4 , H_2O	32	1231.544	N_2O ?
3	1226.542	N_2O	33	1231.702	N_2O
4	1226.654	H_2O	34	1231.780	CH_4
5	1226.871	H_2O , CH_4	35	1231.995	?
6	1226.928	H_2O	36	1232.088	CH_4 , CO_2
7	1227.061	H_2O , N_2O , CH_4	37	1232.200	N_2O
8	1227.294	H_2O	38	1232.407	CH_4 , N_2O
9	1227.437	?	39	1232.729	H_2O , N_2O
10	1227.540	H_2O , N_2O	40	1232.838	CO_2
11	1227.732	CH_4	41	1232.940	CH_4
12	1227.835	?	42	1233.037	N_2O
13	1227.957	N_2O	43	1233.158	H_2O
14	1228.116	CH_4	44	1233.287	H_2O^*
15	1228.309	CH_4	45	1233.455	CH_4
16	1228.532	?	46	1233.744	N_2O
17	1228.790	CH_4	47	1233.874	N_2O
18	1229.299	CH_4	48	1233.986	N_2O
19	1229.451	H_2O , CH_4	49	1234.136	N_2O , CH_4
20	1229.659	N_2O	50	1234.225	CH_4
21	1229.982	CH_4	51	1234.317	CO_2 , N_2O
22	1230.082	CH_4	52	1234.558	?
23	1230.286	CH_4	53	1234.755	N_2O +?
24	1230.510	N_2O , H_2O ?	54	1234.860	CH_4
25	1230.613	CO_2	55	1234.970	CH_4
26	1230.711	CH_4 , N_2O	56	1235.058	CH_4 , N_2O
27	1231.000	CH_4	57	1235.201	H_2O
28	1231.113	?	58	1235.297	CH_4
29	1231.250	CH_4	59	1235.392	?
30	1231.354	N_2O , CO_2	60	1235.554	CH_4 , N_2O

FRAME 19 (1225-1250 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1235.813	N_2O , CH_4	91	1241.508	N_2O , CH_4
62	1235.98	CH_4	92	1241.855	CH_4 , N_2O
63	1236.300	H_2O	93	1241.947	CH_4
64	1236.435	CH_4	94	1242.241	H_2O
65	1236.771	H_2O , N_2O	95	1242.458	CO_2 , N_2O
66	1237.071	CH_4 , H_2O	96	1242.654	CH_4
67	1237.190	$\text{H}_2\text{O}^*?$, N_2O	97	1242.813	N_2O , H_2O
68	1237.300	CH_4 , $\text{H}_2\text{O}^*?$	98	1243.020	H_2O , CH_4
69	1237.519	H_2O	99	1243.192	CO_2 , H_2O
70	1237.690	CH_4	100	1243.350	CH_4
71	1237.810	N_2O	101	1243.806	} H_2O , N_2O
72	1238.019	CH_4	102	1244.355	
73	1238.137	?	103	1244.789	N_2O , H_2O
74	1238.308	?	104	1245.213	CH_4
75	1238.496	CH_4	105	1245.414	CO_2
76	1238.72	CH_4 , N_2O	106	1245.78	CH_4 , N_2O
77	1239.004	CH_4 , N_2O	107	1246.024	N_2O
78	1239.213	H_2O	108	1246.156	CO_2
79	1239.497	CO_2 , CH_4	109	1246.45	CH_4
80	1239.655	CH_4 , N_2O	110	1246.744	N_2O , H_2O , CH_4
81	1239.814	N_2O	111	1246.903	CO_2 , N_2O
82	1239.992	H_2O , CH_4	112	1247.176	?
83	1240.237	CO_2	113	1247.297	N_2O , CH_4
84	1240.341	H_2O	114	1247.660	} CH_4 , N_2O
85	1240.578	CH_4 , H_2O , N_2O	115	1247.940	
86	1240.705	H_2O , CH_4	116	1248.179	H_2O
87	1240.826	N_2O	117	1248.349	CO_2 , CH_4
88	1240.99	CH_4	118	1248.449	H_2O , N_2O
89	1241.275	N_2O	119	1248.697	N_2O
90	1241.341	$\text{H}_2\text{O} +?$	120	1248.879	H_2O

FRAME 19 (1225-1250 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	1249.114	CO_2
122	1249.182	H_2O
123	1249.64	$\text{CH}_4, \text{N}_2\text{O}$
124	1249.833	CO_2
125	1249.992	CH_4

FRAME 20 (1250-1275 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1250.484	N_2O , CH_4	31	1257.941	CO_2
2	1250.632	N_2O , CO_2	32	1258.060	CH_4
3	1250.832	H_2O	33	1258.27	N_2O
4	1251.344	H_2O , N_2O , CO_2	34	1258.60	H_2O
5	1251.596	N_2O	35	1258.902	H_2O
6	1251.867	CH_4	36	1259.21	N_2O
7	1252.058	CO_2	37	1259.514	} CH_4 , H_2O , N_2O
8	1252.343	H_2O , CH_4	38	1261.167	
9	1252.556	N_2O , CH_4	39	1261.346	N_2O
10	1252.792	CO_2	40	1261.65	CH_4
11	1253.110	N_2O	41	1261.950	} N_2O , CH_4
12	1253.363	} CH_4 , N_2O , H_2O	42	1262.224	
13	1253.850		43	1262.484	N_2O
14	1254.092	H_2O	44	1262.90	N_2O
15	1254.191	H_2O	45	1263.33	CH_4
16	1254.465	N_2O	46	1263.93	N_2O , H_2O
17	1254.738	H_2O	47	1264.253	N_2O , CH_4
18	1255.00	CH_4	48	1264.367	CH_4
19	1255.414	N_2O	49	1264.77	N_2O
20	1255.696	N_2O , CH_4	50	1265.268	} CH_4 , H_2O , N_2O
21	1255.797	H_2O	51	1266.122	
22	1255.959	H_2O	52	1266.60	N_2O , H_2O
23	1256.070	CH_4	53	1267.139	N_2O
24	1256.163	CH_4 , N_2O	54	1267.388	} N_2O , CH_4 , H_2O
25	1256.387	N_2O	55	1272.814	
26	1256.61	CH_4	56	1273.192	N_2O
27	1256.898	H_2O , N_2O	57	1273.310	H_2O
28	1257.086	H_2O	58	1273.66	N_2O , H_2O
29	1257.32	N_2O , H_2O	59	1274.009	CH_4
30	1257.600	H_2O , CH_4	60	1274.096	N_2O

FRAME 20 (1250-1275 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	1274.61	N_2O

FRAME 21 (1275-1300 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1275.05	$\text{CH}_4, \text{N}_2\text{O}$	31	1284.066	} $\text{H}_2\text{O}, \text{N}_2\text{O}$
2	1275.304	} $\text{N}_2\text{O}, \text{CH}_4$	32	1284.400	
3	1275.576		4	1275.775	CH_4
4	1275.775	CH_4	5	1275.904	N_2O
5	1275.904	N_2O	6	1276.36	N_2O
6	1276.36	N_2O	7	1276.630	H_2O
7	1276.630	H_2O	8	1276.82	$\text{CH}_4, \text{N}_2\text{O}$
8	1276.82	$\text{CH}_4, \text{N}_2\text{O}$	9	1277.168	} $\text{N}_2\text{O}, \text{CH}_4$
9	1277.168	} $\text{N}_2\text{O}, \text{CH}_4$	10	1277.551	
10	1277.551		11	1277.675	N_2O
11	1277.675	N_2O	12	1277.809	$\text{N}_2\text{O}, \text{CO}_2$
12	1277.809	$\text{N}_2\text{O}, \text{CO}_2$	13	1278.09	N_2O
13	1278.09	N_2O	14	1278.568	N_2O
14	1278.568	N_2O	15	1278.97	N_2O
15	1278.97	N_2O	16	1279.237	CO_2
16	1279.237	CO_2	17	1279.454	$\text{N}_2\text{O}, \text{CH}_4$
17	1279.454	$\text{N}_2\text{O}, \text{CH}_4$	18	1279.673	} $\text{H}_2\text{O}, \text{N}_2\text{O}, \text{CH}_4$
18	1279.673	} $\text{H}_2\text{O}, \text{N}_2\text{O}, \text{CH}_4$	19	1280.144	
19	1280.144		20	1280.343	N_2O
20	1280.343	N_2O	21	1280.63	$\text{N}_2\text{O}, \text{H}_2\text{O}$
21	1280.63	$\text{N}_2\text{O}, \text{H}_2\text{O}$	22	1280.907	$\text{H}_2\text{O}, \text{N}_2\text{O}$
22	1280.907	$\text{H}_2\text{O}, \text{N}_2\text{O}$	23	1281.183	$\text{CH}_4, \text{N}_2\text{O}, \text{H}_2\text{O}$
23	1281.183	$\text{CH}_4, \text{N}_2\text{O}, \text{H}_2\text{O}$	24	1281.421	} $\text{CH}_4, \text{N}_2\text{O}$
24	1281.421	} $\text{CH}_4, \text{N}_2\text{O}$	25	1281.699	
25	1281.699		26	1281.800	H_2O
26	1281.800	H_2O	27	1282.085	$\text{N}_2\text{O}, \text{H}_2\text{O}$
27	1282.085	$\text{N}_2\text{O}, \text{H}_2\text{O}$	28	1282.38	N_2O
28	1282.38	N_2O	29	1282.588	} $\text{CH}_4, \text{N}_2\text{O}$
29	1282.588	} $\text{CH}_4, \text{N}_2\text{O}$	30	1283.834	
30	1283.834		31	1284.066	} $\text{H}_2\text{O}, \text{N}_2\text{O}$
		32	1284.400		
		33	1284.688	N_2O	
		34	1284.906	H_2O	
		35	1285.172	$\text{H}_2\text{O}, \text{CH}_4$	
		36	1285.303	$\text{CH}_4, \text{N}_2\text{O}$	
		37	1285.423	N_2O	
		38	1285.557	N_2O	
		39	1285.737	N_2O	
		40	1286.01	H_2O	
		41	1286.433	N_2O	
		42	1286.55	$\text{N}_2\text{O}, \text{CH}_4, \text{H}_2\text{O}$	
		43	1286.794	CH_4	
		44	1286.909	N_2O	
		45	1286.999	H_2O	
		46	1287.115	} $\text{N}_2\text{O}, \text{H}_2\text{O}, \text{CH}_4$	
		47	1289.175		
		48	1289.304	$\text{N}_2\text{O}?$	
		49	1289.413	$\text{N}_2\text{O}?$	
		50	1289.80	$\text{N}_2\text{O}, \text{CH}_4$	
		51	1290.111	$\text{H}_2\text{O}, \text{CH}_4, \text{N}_2\text{O}$	
		52	1290.436	} $\text{H}_2\text{O}, \text{N}_2\text{O}, \text{CH}_4$	
		53	1290.752		
		54	1291.095	N_2O	
		55	1291.49	N_2O	
		56	1291.905	$\text{CH}_4, \text{N}_2\text{O}, \text{H}_2\text{O}$	
		57	1292.014	$\text{H}_2\text{O}, \text{N}_2\text{O}$	
		58	1292.31	$\text{N}_2\text{O}, \text{H}_2\text{O}, \text{CH}_4$	
		59	1292.63	CH_4	
		60	1292.827	$\text{H}_2\text{O}, \text{CH}_4$	

FRAME 21 (1275-1300 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	1293.09	N_2O
62	1293.34	H_2O , CH_4
63	1293.440	CH_4
64	1293.537	H_2O , CH_4
65	1293.546	CH_4 , N_2O
66	1293.92	N_2O , H_2O , CH_4
67	1294.209	CH_4 , N_2O
68	1294.37	CH_4
69	1294.634	} N_2O , CH_4 , H_2O
70	1294.918	
71	1295.186	} N_2O , CH_4 , H_2O
72	1295.645	
73	1295.812	CH_4
74	1296.135	} N_2O , CH_4 , H_2O
75	1298.216	
76	1298.55	N_2O , CH_4
77	1298.903	N_2O
78	1299.211	H_2O , CH_4
79	1299.379	} N_2O , CH_4
80	1300.504	

FRAME 47 (1925-1950 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	1925.065	H ₂ C	31	1931.407	solar CO
2	1925.351	?	32	1931.506	?
3	1925.515	solar CO	33	1931.594	H ₂ O?
4	1925.706	solar CO	34	1931.695	solar CO
5	1925.911	solar CO	35	1932.111	H ₂ O
6	1926.019	?	36	1932.388	H ₂ O
7	1926.255	CO ₂	37	1932.544	CO ₂ , solar CO
8	1926.511	solar CO, H ₂ O	38	1932.704	CO ₂ , solar CO?
9	1926.726	H ₂ O	39	1932.814	} CO ₂ , H ₂ O
10	1927.034	solar CO	40	1933.487	
11	1927.254	solar CO	41	1933.640	CO ₂
12	1927.349	solar CO	42	1933.814	CO ₂
13	1927.467	H ₂ O	43	1933.996	CO ₂
14	1927.823	H ₂ O, CO ₂ , solar CO	44	1934.185	CO ₂
15	1928.058	solar CO	45	1934.278	solar CO
16	1928.328	?	46	1934.391	CO ₂
17	1928.440	solar CO	47	1934.602	CO ₂
18	1928.625	solar CO	48	1934.819	CO ₂
19	1929.107	solar CO +?	49	1935.024	CO ₂ , solar CO
20	1929.356	CO ₂	50	1935.320	H ₂ O*, CO ₂
21	1929.585	solar CO, H ₂ O	51	1935.486	solar CO
22	1929.696	solar CO+?	52	1935.554	CO ₂ , solar CO
23	1929.790	solar CO	53	1935.679	H ₂ O
24	1930.022	solar CO	54	1935.814	CO ₂ , H ₂ O
25	1930.376	?	55	1936.000	solar CO
26	1930.473	solar CO	56	1936.089	CO ₂ , solar CO
27	1930.695	H ₂ O	57	1936.226	H ₂ O
28	1930.907	CO ₂	58	1936.387	CO ₂
29	1931.168	solar CO	59	1936.665	H ₂ O, CO ₂ , solar CO
30	1931.301	solar CO	60	1937.009	H ₂ O

FRAME 47 (1925-1950 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	1937.221	H ₂ O
62	1937.450	H ₂ O
63	1937.642	solar CO
64	1937.819	solar CO
65	1937.947	H ₂ O, CO ₂
66	1938.163	H ₂ O
67	1938.473	solar CO, H ₂ O
68	1938.679	H ₂ O, solar CO
69	1938.883	solar CO
70	1939.130	H ₂ O
71	1939.401	solar CO
72	1939.522	CO ₂ , solar CO
73	1939.958	solar CO+?
74	1940.261	H ₂ O, solar CO
75	1940.420	solar CO
76	1940.719	solar CO?
77	1940.845	solar CO?
78	1941.206	} H ₂ O
79	1943.686	
80	1944.973	} H ₂ O
81	1946.851	
82	1947.348	solar CO
83	1947.498	solar CO, CO ₂
84	1947.612	solar CO
85	1947.811	solar CO
86	1947.928	?
87	1948.196	solar CO
88	1948.261	solar CO
89	1948.420	solar CO
90	1948.529	solar CO

Seq. No.	ν (observed) (cm^{-1})	Identification
91	1948.630	?
92	1948.737	solar CO
93	1948.907	solar CO
94	1949.235	H ₂ O
95	1949.435	H ₂ O
96	1949.580	solar CO
97	1949.801	H ₂ O

FRAME 48 (1950-1975 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification	Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	1950.109	H ₂ O	31	1955.846	solar CO, H ₂ O
2	1950.214	H ₂ O*	32	1956.22	H ₂ O
3	1950.333	H ₂ O*?	33	1956.551	H ₂ O*
4	1950.444	solar CO?	34	1956.622	H ₂ O
5	1950.686	CO ₂ , solar CO	35	1956.808	H ₂ O
6	1950.820	solar CO	36	1957.028	H ₂ O, solar CO
7	1951.125	H ₂ O	37	1957.154	CO ₂ , solar CO
8	1951.448	solar CO	38	1957.352	solar CO
9	1951.764	solar CO	39	1957.649	H ₂ O, solar CO
10	1952.093	solar CO, H ₂ O	40	1958.082	solar CO, H ₂ O
11	1952.181	H ₂ O	41	1958.284	solar CO
12	1952.311	CO ₂ , solar CO	42	1958.603	solar CO, H ₂ O
13	1952.471	?	43	1958.723	solar CO
14	1952.710	?	44	1958.769	CO ₂
15	1952.824	solar CO	45	1958.978	solar CO+?
16	1952.907	solar CO	46	1959.089	solar CO
17	1953.015	solar CO	47	1959.242	solar CO
18	1953.146	solar CO	48	1959.401	solar CO, N ₂ O
19	1953.310	H ₂ O	49	1959.633	H ₂ O
20	1953.449	solar CO	50	1959.796	solar CO
21	1953.619	solar CO	51	1959.909	?
22	1953.745	solar CO	52	1960.131	solar CO
23	1953.826	solar CO	53	1960.412	CO ₂ , solar CO
24	1953.924	CO ₂ , solar CO	54	1960.712	H ₂ O
25	1954.029	solar CO	55	1960.933	} H ₂ O
26	1954.421	H ₂ O	56	1961.373	
27	1954.726	} H ₂ O	57	1961.923	H ₂ O
28	1955.268		58	1962.021	CO ₂ , solar CO
29	1955.521	CO ₂	59	1962.113	solar CO
30	1955.729	H ₂ O	60	1962.203	N ₂ O

FRAME 48 (1950-1975 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	1962.302	solar CO
62	1962.440	?
63	1962.559	solar CO
64	1962.663	?
65	1962.932	solar CO
66	1963.086	solar CO, N_2O
67	1963.285	solar CO
68	1963.424	?
69	1963.555	?
70	1963.660	CO_2 , solar CO
71	1963.723	solar CO
72	1963.862	solar CO
73	1963.970	?
74	1964.065	solar CO, N_2O
75	1964.183	H_2O
76	1964.269	solar CO
77	1964.462	?
78	1964.582	solar CO +?
79	1964.674	?
80	1964.774	solar CO
81	1964.953	solar CO
82	1965.291	CO_2 , solar CO, H_2O
83	1965.870	} H_2O
84	1968.195	
85	1968.561	CO_2 , solar CO
86	1968.690	solar CO +?
87	1968.816	solar CO
88	1968.923	?
89	1969.263	H_2O , solar CO
90	1969.367	H_2O , solar CO

Seq. No.	ν (observed) (cm^{-1})	Identification
91	1969.447	solar CO, H_2O
92	1969.558	H_2O , solar CO
93	1969.651	solar CO
94	1969.765	H_2O
95	1969.930	solar CO, H_2O
96	1970.130	solar CO
97	1970.218	CO_2 , H_2O , solar CO
98	1970.525	solar CO
99	1970.663	solar CO
100	1971.110	solar CO
101	1971.290	solar CO, N_2O
102	1971.447	solar CO
103	1971.846	CO_2
104	1971.906	solar CO
105	1971.981	solar CO
106	1972.162	solar CO
107	1972.265	solar CO +?
108	1972.590	H_2O , solar CO
109	1972.778	N_2O ?
110	1972.984	H_2O , N_2O
111	1973.172	solar CO
112	1973.292	solar CO
113	1973.382	solar CO
114	1973.457	solar CO, CO_2
115	1973.635	N_2O
116	1973.905	solar CO
117	1974.028	solar CO, N_2O
118	1974.216	solar CO
119	1974.378	solar CO, N_2O
120	1974.490	N_2O

FRAME 48 (1950-1975 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	1974.603	solar CO, H_2O^*
122	1974.753	solar CO?
123	1974.874	solar CO
124	1974.977	solar CO?

FRAME 49 (1975-2000 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification	Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	1975.134	CO ₂	31	1981.607	H ₂ O
2	1975.248	solar CO?	32	1981.742	CO ₂
3	1975.347	H ₂ O	33	1981.785	solar CO
4	1975.454	H ₂ O, solar CO	34	1981.987	H ₂ O
5	1975.650	solar CO	35	1982.187	H ₂ O*
6	1976.18	H ₂ O	36	1982.425	O ₃
7	1976.639	solar CO	37	1982.570	solar CO
8	1976.760	CO ₂ , CO, solar CO	38	1982.686	H ₂ O
9	1976.817	H ₂ O	39	1982.763	solar CO, H ₂ O
10	1977.014	solar CO	40	1983.031	H ₂ O
11	1977.274	solar CO	41	1983.119	solar CO
12	1977.626	H ₂ O	42	1983.279	solar CO
13	1978.015	H ₂ O	43	1983.393	H ₂ O, CO ₂
14	1978.119	solar CO	44	1983.567	solar CO
15	1978.316	solar CO, CO ₂	45	1983.939	solar CO
16	1978.476	?	46	1984.064	N ₂ O
17	1978.585	solar CO	47	1984.166	solar CO, H ₂ O
18	1978.703	solar CO	48	1984.300	H ₂ O
19	1978.822	?	49	1984.513	H ₂ O
20	1978.929	solar CO	50	1984.789	N ₂ O
21	1979.085	H ₂ O	51	1985.020	?
22	1979.198	solar CO	52	1985.132	solar CO
23	1979.542	solar CO	53	1985.261	CO ₂ ?
24	1979.721	solar CO	54	1985.560	solar CO
25	1979.786	solar CO	55	1985.777	solar CO, O ₃
26	1980.085	CO ₂	56	1985.887	solar CO
27	1980.215	solar CO	57	1985.994	H ₂ O
28	1980.755	H ₂ O	58	1986.458	H ₂ O
29	1981.021	H ₂ O	59	1986.543	solar CO
30	1981.334	H ₂ O*, solar CO	60	1986.657	H ₂ O

FRAME 49 (1975-2000 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	1986.906	solar CO, H ₂ O	91	1996.526	H ₂ O
62	1987.168	H ₂ O, solar CO	92	1996.630	solar CO, H ₂ O
63	1987.338	H ₂ O	93	1996.822	? + O ₃
64	1987.942	} H ₂ O	94	1996.893	solar CO
65	1988.816		95	1997.026	solar CO
66	1989.210	solar CO	96	1997.131	solar CO
67	1989.517	solar CO +?	97	1997.242	solar CO
68	1989.941	H ₂ O	98	1997.415	solar CO
69	1990.170	solar CO, H ₂ O	99	1997.722	CO ₂
70	1990.262	solar CO, CO	100	1997.997	O ₃ ?
71	1990.458	solar CO	101	1998.698	} H ₂ O
72	1991.161	} H ₂ O	102	1999.163	
73	1993.356		103	1999.490	solar CO, H ₂ O
74	1993.848	solar CO	104	1999.598	solar CO
75	1994.031	solar CO	105	1999.784	solar CO
76	1994.186	solar CO	106	1999.945	H ₂ O
77	1994.286	solar CO			
78	1994.522	CO ₂ , O ₃			
79	1994.691	solar CO			
80	1994.855	?			
81	1994.994	solar CO			
82	1995.105	solar CO			
83	1995.243	H ₂ O, solar CO			
84	1995.374	O ₃ ?			
85	1995.560	H ₂ O, CO, solar CO			
86	1995.808	solar CO			
87	1995.961	H ₂ O			
88	1996.097	solar CO, CO ₂			
89	1996.277	solar CO			
90	1996.450	solar CO			

FRAME 50 (2000-2025 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	2000.076	solar CO
2	2000.195	O ₃ ?
3	2000.289	solar CO
4	2000.433	solar CO
5	2000.502	solar CO
6	2000.898	H ₂ O, CO ₂
7	2001.008	H ₂ O*
8	2001.159	solar CO
9	2001.413	solar CO
10	2001.643	O ₃
11	2001.805	H ₂ O
12	2001.896	O ₃ ?
13	2002.114	solar CO
14	2002.222	solar CO
15	2002.471	CO ₂
16	2002.683	solar CO, H ₂ O
17	2002.799	solar CO
18	2002.931	solar CO
19	2003.014	H ₂ O
20	2003.055	solar CO
21	2003.165	solar CO
22	2003.394	H ₂ O
23	2003.455	solar CO, CO
24	2003.666	solar CO, H ₂ O, CO
25	2003.776	O ₃
26	2003.977	solar CO
27	2004.057	CO ₂
28	2004.175	H ₂ O, solar CO
29	2004.336	solar CO, CO
30	2004.470	solar CO

Seq. No.	ν (observed) (cm ⁻¹)	Identification
31	2004.668	O ₃
32	2004.822	O ₃
33	2004.925	H ₂ O, solar CO, O ₃
34	2005.224	O ₃
35	2005.422	solar CO
36	2005.629	H ₂ O, CO ₂
37	2005.871	O ₃ , H ₂ O
38	2006.014	solar CO
39	2006.486	solar CO
40	2006.629	O ₃
41	2006.784	solar CO
42	2006.958	H ₂ O
43	2007.162	solar CO
44	2007.219	CO ₂
45	2007.68	H ₂ O
46	2008.065	H ₂ O, solar CO
47	2008.420	solar CO
48	2008.533	solar CO
49	2008.798	CO ₂
50	2009.32	H ₂ O
51	2009.864	solar CO, O ₃
52	2009.971	?
53	2010.108	solar CO
54	2010.264	solar CO, O ₃
55	2010.375	CO ₂
56	2010.688	O ₃
57	2010.762	solar CO
58	2010.901	H ₂ O
59	2011.018	O ₃
60	2011.082	solar CO

FRAME 50 (2000-2025 cm⁻¹)
Continued

Seq. No.	ν (observed) (cm ⁻¹)	Identification
61	2011.314	H ₂ O
62	2011.418	solar CO
63	2011.579	?
64	2011.730	solar CO, O ₃
65	2011.847	H ₂ O, solar CO
66	2011.960	CO ₂
67	2012.106	solar CO
68	2012.191	solar CO, H ₂ O, CO
69	2012.242	solar CO, O ₃
70	2012.411	H ₂ O, O ₃
71	2012.546	O ₃
72	2012.741	solar CO, H ₂ O
73	2012.828	solar CO, CO
74	2012.924	H ₂ O
75	2013.006	O ₃
76	2013.216	solar CO
77	2013.351	solar CO
78	2013.537	CO ₂
79	2013.921	O ₃ +
80	2013.998	O ₃
81	2014.340	solar CO
82	2014.438	H ₂ O
83	2014.576	solar CO
84	2014.672	H ₂ O
85	2014.829	H ₂ O
86	2015.003	solar CO, O ₃
87	2015.101	CO ₂ , solar CO
88	2015.296	H ₂ O
89	2015.439	O ₃
90	2015.726	H ₂ O

Seq. No.	ν (observed) (cm ⁻¹)	Identification
91	2015.930	solar CO
92	2016.038	solar CO
93	2016.408	} H ₂ O, CO ₂
94	2017.282	
95	2018.125	} H ₂ O, CO ₂
96	2018.567	
97	2018.839	} H ₂ O, CO ₂
98	2019.179	
99	2019.719	solar CO, O ₃
100	2019.827	CO ₂ , solar CO
101	2019.933	H ₂ O
102	2020.158	CO ₂ , O ₃
103	2020.409	solar CO
104	2020.545	H ₂ O, solar CO
105	2020.744	solar CO, O ₃ , CO
106	2020.932	solar CO
107	2020.989	solar CO
108	2021.101	O ₃
109	2021.229	O ₃
110	2021.418	CO ₂
111	2021.560	solar CO
112	2021.860	O ₃
113	2022.034	CO ₂ , solar CO, O ₃
114	2022.123	O ₃ , H ₂ O
115	2022.344	solar CO
116	2023.03	H ₂ O, CO ₂
117	2023.395	solar CO
118	2023.811	solar CO, O ₃
119	2023.913	O ₃ , CO ₂
120	2024.124	?

FRAME 50 (2000-2025 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	2024.225	solar CO, O ₃
122	2024.386	H ₂ O
123	2024.564	CO ₂
124	2024.825	CO ₂ , O ₃
125	2024.910	solar CO
126	2024.999	CO, CO ₂ , O ₃

FRAME 51 (2025-2050 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	2025.093	solar CO
2	2025.145	solar CO
3	2025.254	H ₂ O
4	2025.317	O ₃
5	2025.527	CO
6	2025.643	O ₃ , H ₂ O
7	2025.800	solar CO
8	2025.881	H ₂ O
9	2025.965	H ₂ O, O ₃
10	2026.130	CO ₂
11	2026.265	solar CO?
12	2026.62	H ₂ O
13	2027.03	H ₂ O
14	2027.416	OCS, O ₃
15	2027.683	CO ₂ , solar CO, CO
16	2027.920	CO ₂ , solar CO
17	2028.039	H ₂ O
18	2028.183	solar CO
19	2028.344	H ₂ O +?
20	2028.527	OCS?
21	2028.646	O ₃
22	2028.751	solar CO, O ₃
23	2028.884	solar CO, O ₃
24	2029.024	OCS
25	2029.127	solar CO, CO ₂
26	2029.262	CO ₂ , CO, solar CO
27	2029.375	solar CO
28	2029.434	CO ₂ , solar CO
29	2029.536	solar CO
30	2029.655	solar CO, CO

Seq. No.	ν (observed) (cm ⁻¹)	Identification
31	2029.795	O ₃ ?
32	2029.993	H ₂ O
33	2030.163	solar CO
34	2030.249	H ₂ O
35	2030.310	solar CO
36	2030.505	solar CO, CO ₂
37	2030.645	O ₃
38	2030.844	CO ₂
39	2030.930	CO ₂
40	2031.119	O ₃ , OCS
41	2031.213	?
42	2031.383	solar CO
43	2031.475	O ₃
44	2031.608	solar CO, O ₃
45	2031.705	O ₃
46	2031.776	CO ₂
47	2031.929	CO ₂ +?
48	2032.203	solar CO, H ₂ O
49	2032.398	CO ₂ , CO, solar CO
50	2032.562	solar CO
51	2032.667	OCS?, O ₃
52	2032.821	solar CO
53	2033.061	solar CO, OCS?
54	2033.143	solar CO
55	2033.254	solar CO
56	2033.371	CO, CO ₂ , solar CO
57	2033.510	O ₃ , solar CO
58	2033.699	solar CO, O ₃
59	2033.916	CO ₂ , CO
60	2034.046	H ₂ O

FRAME 51 (2025-2050 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	2034.401	solar CO, H ₂ O	91	2038.413	CO ₂
62	2034.495	solar CO	92	2038.590	solar CO, CO ₂
63	2034.568	O ₃	93	2038.718	solar CO, OCS?
64	2034.714	solar CO, OCS	94	2038.928	OCS, O ₃
65	2034.795	OCS, solar CO	95	2039.041	O ₃
66	2034.923	solar CO	96	2039.111	CO ₂
67	2035.071	solar CO	97	2039.171	H ₂ O, OCS
68	2035.148	H ₂ O	98	2039.373	solar CO
69	2035.228	OCS, O ₃	99	2039.450	CO ₂ , solar CO, OCS
70	2035.311	H ₂ O	100	2039.554	solar CO
71	2035.405	CO ₂	101	2039.727	CO ₂ , H ₂ O
72	2035.510	H ₂ O	102	2040.119	O ₃ +?
73	2035.639	solar CO+?	103	2040.251	solar CO, OCS
74	2035.766	OCS, O ₃	104	2040.434	O ₃ +?
75	2036.000	O ₃ +?	105	2040.584	OCS +?
76	2036.129	solar CO	106	2041.016	} H ₂ O, CO ₂ , CO
77	2036.247	solar CO, OCS	107	2041.618	
78	2036.329	solar CO	108	2042.006	CO, OCS
79	2036.601	?	109	2042.287	solar CO
80	2036.807	H ₂ O, solar CO	110	2042.366	?
81	2036.911	CO ₂	111	2042.560	OCS, CO ₂
82	2037.025	solar CO, CO	112	2042.826	solar CO
83	2037.135	CO ₂ , solar CO	113	2042.955	CO ₂ , solar CO
84	2037.279	solar CO	114	2043.110	solar CO, O ₃
85	2037.51	H ₂ O, CO ₂ , CO, solar CO	115	2043.789	} H ₂ O
86	2037.828	CO ₂ , solar CO +?	116	2044.100	
87	2037.903	CO, OCS	117	2044.466	CO ₂
88	2038.021	CO ₂	118	2044.713	solar CO
89	2038.102	H ₂ O	119	2044.987	solar CO, O ₃
90	2038.244	OCS, solar CO	120	2045.064	OCS, solar CO

FRAME 51 (2025-2050 cm⁻¹)
Continued

Seq. No.	ν (observed) (cm ⁻¹)	Identification	Seq. No.	ν (observed) (cm ⁻¹)	Identification
121	2045.218	O ₃	151	2049.576	solar CO, CO ₂
122	2045.310	?	152	2049.710	CO ₂ , H ₂ O, solar CO
123	2045.421	OCS, solar CO	153	2049.842	CO, solar CO, CO ₂ , OCS
124	2045.583	OCS	154	2049.926	OCS, CO ₂ , solar CO
125	2045.677	CO ₂			
126	2045.734	CO, solar CO			
127	2045.988	CO ₂			
128	2046.286	CO, solar CO			
129	2046.52	H ₂ O			
130	2046.769	H ₂ O*			
131	2046.961	solar CO			
132	2047.055	OCS + ?			
133	2047.148	O ₃			
134	2047.224	OCS			
135	2047.391	solar CO			
136	2047.511	CO ₂			
137	2047.639	solar CO			
138	2047.742	solar CO, H ₂ O			
139	2047.829	O ₃			
140	2047.950	solar CO			
141	2048.021	OCS + ?			
142	2048.118	OCS			
143	2048.293	O ₃ +			
144	2048.495	OCS + ?			
145	2048.655	H ₂ O, solar CO			
146	2048.774	solar CO			
147	2048.873	solar CO			
148	2049.036	CO ₂ , OCS			
149	2049.347	CO ₂			
150	2049.447	OCS, CO ₂			

FRAME 52 (2050-2075 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	2050.066	CO; O ₃
2	2050.303	O ₃
3	2050.424	OCS, solar CO
4	2050.564	CO ₂ , solar CO
5	2050.854	CO, OCS, solar CO
6	2050.965	O ₃
7	2051.072	solar CO, H ₂ O
8	2051.337	OCS, H ₂ O
9	2051.577	H ₂ O, OCS
10	2051.629	solar CO, O ₃
11	2051.740	solar CO
12	2051.788	OCS
13	2052.095	CO ₂
14	2052.330	O ₃
15	2052.416	O ₃ , CO
16	2052.515	O ₃
17	2052.609	?
18	2052.709	OCS, solar CO
19	2052.818	solar CO
20	2052.866	solar CO
21	2052.989	H ₂ O
22	2053.183	OCS, solar CO
23	2053.445	solar CO
24	2053.628	CO ₂
25	2053.856	CO, H ₂ O
26	2054.066	OCS, CO
27	2054.194	solar CO
28	2054.291	O ₃ , solar CO +?
29	2054.424	H ₂ O
30	2054.513	OCS, H ₂ O

Seq. No.	ν (observed) (cm ⁻¹)	Identification
31	2054.786	O ₃ , H ₂ O
32	2054.988	OCS
33	2055.155	CO ₂
34	2055.396	CO, OCS, solar CO
35	2055.750	solar CO
36	2055.858	OCS + ?
37	2056.040	solar CO
38	2056.171	solar CO
39	2056.292	OCS, solar CO
40	2056.526	solar CO
41	2056.690	CO ₂
42	2057.168	OCS, solar CO
43	2057.271	O ₃ , OCS
44	2057.374	OCS, O ₃
45	2057.483	solar CO
46	2057.610	OCS, solar CO
47	2057.740	solar CO, O ₃
48	2057.870	CO, solar CO
49	2058.230	CO ₂ , CO, OCS
50	2058.477	OCS, solar CO
51	2058.575	CO ₂ , O ₃ , H ₂ O +?
52	2058.715	?
53	2058.808	O ₃
54	2058.900	OCS, solar CO
55	2059.080	solar CO, H ₂ O
56	2059.210	solar CO, OCS
57	2059.328	OCS, O ₃
58	2059.763	CO ₂
59	2059.908	CO, solar CO
60	2060.154	OCS

FRAME 52 (2050-2075 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	2060.322	} H_2O	91	2066.606	O_3 , H_2O , OCS
62	2060.633		92	2066.720	solar CO +?
63	2061.038	OCS, CO_2	93	2066.831	O_3
64	2061.317	CO_2	94	2066.879	OCS, O_3
65	2061.665	O_3 , solar CO	95	2067.096	CO_2 , solar CO
66	2061.819	CO, OCS, solar CO	96	2067.238	OCS, solar CO, O_3
67	2061.912	CO, O_3 , H_2O	97	2067.283	H_2O , O_3
68	2061.995	O_3	98	2067.512	CO_2
69	2062.147	OCS + ?	99	2067.755	H_2O , solar CO
70	2062.268	solar CO +?	100	2067.871	O_3 , OCS
71	2062.416	O_3 +?	101	2067.976	OCS, O_3
72	2062.583	OCS, CO_2 , H_2O	102	2068.142	OCS, O_3
73	2062.703	solar CO	103	2068.251	OCS, O_3
74	2062.862	CO_2 , OCS	104	2068.372	OCS, O_3
75	2063.095	H_2O	105	2068.473	solar CO, O_3
76	2063.222	solar CO	106	2068.530	CO_2 , OCS
77	2063.402	OCS, solar CO	107	2068.621	CO_2 , O_3 , solar CO
78	2063.471	O_3	108	2068.730	OCS, O_3
79	2063.581	O_3 , OCS	109	2068.845	CO, solar CO
80	2063.697	solar CO	110	2069.068	CO_2
81	2063.827	OCS, O_3 , solar CO	111	2069.354	O_3
82	2063.974	solar CO	112	2069.430	OCS, O_3
83	2064.087	CO_2 , O_3	113	2069.507	solar CO, O_3
84	2064.329	} H_2O , CO_2 , CO, OCS	114	2069.602	O_3
85	2065.091		115	2069.660	CO
86	2065.388	OCS, solar CO	116	2069.796	OCS, O_3
87	2065.655	} H_2O , CO_2 , CO	117	2069.850	solar CO
88	2066.074		118	2069.980	CO_2 , O_3
89	2066.280	OCS, O_3	119	2070.078	solar CO, O_3
90	2066.489	OCS	120	2070.150	CO_2 , OCS

FRAME 52 (2050-2075 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	2070.258	O_3	151	2074.730	CO_2 , O_3
122	2070.354	O_3 , OCS +?	152	2074.835	OCS, O_3
123	2070.439	OCS, O_3	153	2074.900	O_3
124	2070.624	CO_2			
125	2070.778	O_3			
126	2070.865	OCS, O_3			
127	2071.037	solar CO, O_3			
128	2071.139	solar CO, O_3 +?			
129	2071.195	OCS, O_3			
130	2071.319	O_3			
131	2071.439	CO_2 , solar CO			
132	2071.539	OCS			
133	2071.674	CO_2 , O_3			
134	2071.812	O_3			
135	2071.911	OCS, O_3 , H_2O			
136	2072.044	O_3			
137	2072.176	CO_2 , OCS			
138	2072.445	O_3 , H_2O , solar CO +?			
139	2072.544	H_2O , OCS			
140	2072.881	CO_2 , OCS, solar CO			
141	2072.995	O_3 , solar CO			
142	2073.111	solar CO			
143	2073.260	CO, CO_2 , OCS, H_2O , solar CO			
144	2073.469	CO, O_3 , solar CO			
145	2073.544	OCS, CO, O_3			
146	2073.735	CO_2			
147	2073.962	H_2O			
148	2074.23	H_2O , CO_2 , OCS			
149	2074.484	OCS, solar CO, O_3			
150	2074.695	O_3			

FRAME 53 (2075-2100 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	2075.034	solar CO, O ₃	31	2079.786	CO ₂ , O ₃
2	2075.156	OCS, solar CO, O ₃	32	2079.930	H ₂ O
3	2075.292	CO ₂ , O ₃	33	2080.021	O ₃ , solar CO, CO ₂
4	2075.485	OCS, O ₃ , solar CO	34	2080.127	O ₃ , CO ₂
5	2075.603	O ₃	35	2080.298	CO ₂ , O ₃ , solar CO
6	2075.730	O ₃	36	2080.440	OSC, O ₃
7	2075.850	CO ₂ , O ₃ , OCS, H ₂ O	37	2080.599	CO ₂ , O ₃
8	2075.961	O ₃ , H ₂ O	38	2080.684	O ₃
9	2076.101	OCS, O ₃	39	2080.766	CO ₂
10	2076.163	solar CO	40	2080.882	CO ₂ , O ₃
11	2076.279	CO ₂ , O ₃	41	2080.993	O ₃ , OCS
12	2076.433	OCS	42	2081.079	O ₃ , CO
13	2076.528	O ₃	43	2081.196	CO, O ₃ , CO ₂
14	2076.865	} CO ₂ , CO, O ₃ , H ₂ O, solar CO	44	2081.258	solar CO, O ₃ , OCS
15	2077.771		45	2081.364	O ₃ , CO, H ₂ O
16	2077.902	CO ₂	46	2081.435	O ₃ , CO ₂
17	2078.044	CO ₂ , H ₂ O	47	2081.499	O ₃ , OCS
18	2078.196	CO ₂	48	2081.604	CO ₂ ?
19	2078.365	CO ₂	49	2081.724	O ₃
20	2078.55	H ₂ O, CO ₂	50	2081.88	H ₂ O, CO ₂
21	2078.703	CO ₂	51	2081.990	CO
22	2078.809	CO ₂ , O ₃ , H ₂ O	52	2082.251	O ₃
23	2078.914	CO ₂	53	2082.332	CO ₂
24	2079.027	O ₃	54	2082.450	CO ₂ , O ₃
25	2079.121	CO ₂	55	2082.587	O ₃
26	2079.201	CO ₂	56	2082.693	solar CO, O ₃
27	2079.314	CO ₂ , O ₃	57	2082.799	solar CO, O ₃
28	2079.441	O ₃ , solar CO	58	2082.919	solar CO, H ₂ O
29	2079.548	CO ₂	59	2083.034	O ₃
30	2079.642	O ₃ , OCS	60	2083.132	O ₃

FRAME 53 (2075-2100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	2083.178	solar CO
62	2083.332	CO_2 , O_3
63	2083.446	O_3
64	2083.587	O_3
65	2083.664	O_3
66	2083.773	H_2O
67	2083.897	CO_2
68	2083.999	CO_2 , O_3
69	2084.090	O_3
70	2084.207	O_3
71	2084.324	O_3 , solar CO
72	2084.427	O_3
73	2084.483	O_3 , OCS
74	2084.623	O_3
75	2084.683	O_3
76	2084.757	solar CO, CO
77	2084.848	CO_2 , O_3
78	2084.993	O_3 , CO, H_2O
79	2085.085	O_3
80	2085.174	solar CO, H_2O ?
81	2085.354	O_3 , solar CO, CO
82	2085.463	CO_2 , O_3 , H_2O
83	2085.619	O_3
84	2085.727	solar CO
85	2085.764	O_3
86	2085.861	O_3 , solar CO
87	2086.028	O_3 , solar CO
88	2086.142	O_3
89	2086.323	CO, CO_2 , solar CO
90	2086.424	O_3

Seq. No.	ν (observed) (cm^{-1})	Identification
91	2086.581	solar CO, O_3
92	2086.686	O_3
93	2086.761	O_3
94	2086.832	O_3 , solar CO, H_2O
95	2086.926	O_3
96	2087.037	CO_2 , O_3
97	2087.170	O_3
98	2087.39	H_2O , O_3
99	2087.592	O_3
100	2087.735	O_3
101	2087.842	O_3
102	2087.921	CO_2 , O_3
103	2088.041	O_3
104	2088.196	O_3
105	2088.338	O_3 , solar CO
106	2088.401	O_3
107	2088.561	O_3
108	2088.608	CO_2
109	2088.702	O_3 , CO, H_2O
110	2088.792	solar CO
111	2088.888	O_3
112	2088.987	O_3 , solar CO
113	2089.042	solar CO, O_3
114	2089.168	O_3
115	2089.224	solar CO, H_2O
116	2089.372	O_3 , solar CO
117	2089.422	O_3 , CO_2
118	2089.509	solar CO, O_3
119	2089.685	} H_2O , CO_2 , O_3
120	2090.219	

FRAME 53 (2075-2100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
121	2090.484	O_3
122	2090.605	CO, O_3
123	2090.709	O_3
124	2090.832	O_3
125	2090.957	$\text{O}_3, \text{H}_2\text{O}$
126	2091.046	$\text{H}_2\text{O}, \text{O}_3$
127	2091.113	O_3
128	2091.225	O_3
129	2091.352	O_3
130	2091.449	O_3
131	2091.500	solar CO
132	2091.617	O_3
133	2091.754	$\text{CO}_2, \text{H}_2\text{O}$
134	2091.887	O_3
135	2092.057	O_3
136	2092.165	solar CO
137	2092.230	O_3
138	2092.337	$\text{O}_3, \text{H}_2\text{O}, \text{CO}_2$
139	2092.420	O_3, CO
140	2092.546	$\text{H}_2\text{O}, \text{solar CO}$
141	2092.716	$\text{O}_3, \text{solar CO}$
142	2092.764	O_3
143	2092.857	O_3
144	2092.964	$\text{O}_3, \text{H}_2\text{O}$
145	2093.084	O_3, CO_2
146	2093.160	O_3
147	2093.401	$\text{CO}_2, \text{H}_2\text{O}, \text{O}_3$
148	2093.491	$\text{CO}_2, \text{H}_2\text{O}$
149	2093.590	CO_2, O_3
150	2093.778	$\text{O}_3, \text{CO}_2, \text{H}_2\text{O}$

Seq. No.	ν (observed) (cm^{-1})	Identification
151	2093.944	$\text{CO}_2, \text{O}_3, \text{H}_2\text{O}$
152	2094.044	CO_2, O_3
153	2094.093	$\text{O}_3, \text{CO}_2, \text{H}_2\text{O}$
154	2094.254	solar CO, CO_2
155	2094.395	O_3, CO_2
156	2094.503	O_3, CO_2
157	2094.636	CO_2
158	2094.868	$\text{CO}, \text{O}_3, \text{CO}_2, \text{H}_2\text{O}, \text{solar CO}$
159	2094.997	$\text{H}_2\text{O}, \text{O}_3$
160	2095.088	$\text{O}_3, \text{CO}_2, \text{H}_2\text{O}$
161	2095.148	O_3
162	2095.204	$\text{O}_3, \text{H}_2\text{O}$
163	2095.292	$\text{O}_3, \text{solar CO}$
164	2095.411	O_3
165	2095.552	$\text{O}_3, \text{H}_2\text{O}$
166	2095.698	CO_2
167	2095.865	$\text{O}_3, \text{H}_2\text{O}$
168	2095.938	O_3
169	2096.107	$\text{O}_3, \text{solar CO}$
170	2096.239	$\text{O}_3, \text{H}_2\text{O}$
171	2096.507	O_3, CO_2
172	2096.587	O_3
173	2096.687	O_3
174	2096.813	O_3
175	2096.970	$\text{O}_3, \text{H}_2\text{O}$
176	2097.151	O_3
177	2097.274	O_3, CO_2
178	2097.366	$\text{H}_2\text{O}, \text{O}_3$
179	2097.605	O_3
180	2097.705	$\text{O}_3, \text{CO}_2?$

FRAME 53 (2075-2100 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
181	2097.818	solar CO, O ₃
182	2097.894	O ₃
183	2098.002	O ₃
184	2098.149	O ₃
185	2098.311	O ₃ , solar CO
186	2098.470	solar CO, O ₃
187	2098.584	O ₃ , H ₂ O
188	2098.721	solar CO, O ₃
189	2098.817	CO ₂
190	2098.920	O ₃
191	2099.013	O ₃
192	2099.084	CO
193	2099.319	O ₃ , CO ₂
194	2099.453	O ₃ , solar CO
195	2099.564	O ₃ , solar CO
196	2099.635	O ₃ , CO ₂ , CO
197	2099.874	O ₃

FRAME 54 (2100-2125 cm⁻¹)

Seq. No.	ν (observed) (cm ⁻¹)	Identification
1	2100.023	O ₃
2	2100.140	O ₃
3	2100.346	O ₃
4	2100.429	H ₂ O, CO ₂
5	2100.573	O ₃
6	2100.710	O ₃
7	2100.815	solar CO, CO ₂ , O ₃
8	2100.975	O ₃
9	2101.103	O ₃ , CO
10	2101.235	CO ₂
11	2101.317	O ₃ , solar CO
12	2101.480	O ₃ , solar CO
13	2101.591	O ₃
14	2101.806	O ₃ , H ₂ O
15	2101.894	O ₃
16	2101.987	O ₃ , CO ₂
17	2102.053	O ₃ , solar CO
18	2102.178	solar CO, O ₃
19	2102.291	O ₃
20	2102.448	CO ₂ , O ₃
21	2102.535	O ₃
22	2102.628	solar CO, O ₃
23	2102.745	O ₃
24	2102.864	O ₃ , CO ₂ , solar CO
25	2102.961	O ₃ , CO, H ₂ O
26	2103.268	CO, O ₃ , H ₂ O, solar CO
27	2103.441	O ₃
28	2103.592	O ₃ , CO ₂
29	2103.703	O ₃
30	2103.797	O ₃

Seq. No.	ν (observed) (cm ⁻¹)	Identification
31	2103.893	O ₃
32	2103.983	CO ₂ , O ₃
33	2104.095	solar CO, O ₃
34	2104.196	O ₃
35	2104.284	solar CO, O ₃
36	2104.420	O ₃ , CO ₂
37	2104.562	O ₃
38	2104.715	O ₃ , solar CO
39	2104.817	O ₃ , solar CO
40	2104.943	O ₃ , CO
41	2105.107	O ₃ , solar CO
42	2105.243	solar CO, O ₃
43	2105.331	O ₃
44	2105.542	O ₃ , CO ₂
45	2105.743	H ₂ O, O ₃
46	2105.986	CO ₂ , O ₃
47	2106.036	O ₃ , solar CO
48	2106.184	O ₃ , solar CO, H ₂ O
49	2106.279	O ₃
50	2106.347	H ₂ O, O ₃
51	2106.494	O ₃ , CO
52	2106.666	O ₃ , solar CO
53	2106.747	O ₃ , H ₂ O
54	2106.917	CO, O ₃
55	2107.055	O ₃
56	2107.148	O ₃ , CO ₂
57	2107.195	O ₃ , CO ₂
58	2107.337	O ₃
59	2107.427	CO, O ₃
60	2107.538	H ₂ O, CO ₂ , O ₃

FRAME 54 (2100-2125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	2107.677	O_3
62	2107.845	O_3
63	2107.960	O_3
64	2108.074	O_3
65	2108.236	O_3
66	2108.364	O_3 , solar CO
67	2108.543	O_3
68	2108.678	O_3 , CO_2 , solar CO
69	2108.752	O_3 , CO, solar CO
70	2108.881	O_3
71	2109.016	O_3
72	2109.121	O_3 , CO_2 , solar CO
73	2109.256	O_3
74	2109.391	O_3
75	2109.435	O_3 , solar CO
76	2109.555	O_3
77	2109.681	O_3
78	2109.748	O_3 , solar CO
79	2109.864	O_3
80	2109.946	O_3 , CO, H_2O
81	2110.083	O_3
82	2110.191	O_3 , solar CO
83	2110.251	O_3 , CO_2
84	2110.436	O_3 , CO
85	2110.543	O_3 , solar CO
86	2110.666	solar CO
87	2110.767	CO_2 , O_3
88	2110.957	O_3
89	2111.048	solar CO
90	2111.176	O_3

Seq. No.	ν (observed) (cm^{-1})	Identification
91	2111.296	O_3
92	2111.543	CO, H_2O , O_3
93	2111.774	CO_2 , O_3
94	2111.949	O_3
95	2112.040	?
96	2112.149	solar CO
97	2112.326	CO_2 , O_3 , solar CO
98	2112.411	solar CO
99	2112.558	solar CO, CO
100	2112.650	solar CO, O_3
101	2112.808	O_3
102	2112.896	solar CO
103	2113.024	O_3 , solar CO
104	2113.125	O_3
105	2113.236	O_3
106	2113.346	CO_2 , CO, O_3
107	2113.496	solar CO
108	2113.594	O_3
109	2113.830	O_3 , H_2O
110	2113.954	CO_2 , CO, H_2O
111	2114.058	O_3
112	2114.269	O_3 , H_2O
113	2114.403	H_2O , O_3
114	2114.597	O_3 , H_2O
115	2114.773	O_3
116	2115.00	H_2O , CO_2 , O_3
117	2115.318	O_3
118	2115.397	O_3
119	2115.627	CO, O_3 , CO_2
120	2115.858	O_3 , solar CO

FRAME 54 (2100-2125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	2116.034	solar CO, H ₂ O, O ₃	151	2119.521	O ₃
122	2116.108	O ₃	152	2119.684	CO, CO ₂ , O ₃
123	2116.230	O ₃ , H ₂ O	153	2119.812	O ₃
124	2116.405	O ₃	154	2119.929	O ₃
125	2116.471	CO ₂	155	2120.032	O ₃
126	2116.589	O ₃	156	2120.102	O ₃
127	2116.693	O ₃	157	2120.247	O ₃ , CO
128	2116.791	O ₃ , CO	158	2120.345	O ₃ , CO ₂
129	2116.907	solar CO, O ₃	159	2120.398	O ₃
130	2116.957	O ₃	160	2120.460	O ₃
131	2117.150	CO ₂ , O ₃	161	2120.576	O ₃ , solar CO
132	2117.289	O ₃	162	2120.636	O ₃
133	2117.442	CO, O ₃	163	2120.708	O ₃
134	2117.481	O ₃	164	2120.762	O ₃
135	2117.586	O ₃	165	2120.864	CO, O ₃
136	2117.679	O ₃	166	2120.954	O ₃
137	2117.791	solar CO, O ₃	167	2121.168	CO ₂ , O ₃
138	2117.879	O ₃	168	2121.265	O ₃ , H ₂ O, solar CO
139	2118.003	O ₃ , CO ₂	169	2121.459	O ₃ , solar CO
140	2118.168	O ₃	170	2121.582	O ₃ , H ₂ O
141	2118.261	O ₃ , solar CO	171	2121.743	O ₃
142	2118.356	O ₃	172	2121.883	O ₃
143	2118.448	O ₃ , H ₂ O	173	2121.947	O ₃ , CO ₂
144	2118.652	O ₃ , CO ₂ , solar CO	174	2122.028	O ₃
145	2118.814	O ₃	175	2122.155	O ₃ , solar CO
146	2118.898	O ₃	176	2122.325	O ₃
147	2119.012	O ₃ , solar CO	177	2122.463	O ₃ , H ₂ O
148	2119.136	O ₃	178	2122.520	O ₃
149	2119.285	O ₃ , H ₂ O, solar CO	179	2122.652	O ₃
150	2119.345	O ₃	180	2122.734	O ₃ , CO ₂ , solar CO

FRAME 54 (2100-2125 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
181	2122.842	H_2O , O_3
182	2122.919	O_3
183	2123.048	O_3
184	2123.171	O_3 , H_2O
185	2123.311	O_3
186	2123.480	O_3
187	2123.571	O_3 , CO , CO_2
188	2123.700	CO , O_3
189	2123.872	O_3
190	2124.022	O_3
191	2124.113	O_3 , solar CO
192	2124.187	O_3
193	2124.273	H_2O , O_3 , CO , CO_2
194	2124.433	O_3
195	2124.582	O_3
196	2124.725	O_3
197	2124.887	H_2O , O_3

FRAME 55 (2125-2150 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification
1	2125.104	O_3
2	2125.221	O_3 , solar CO
3	2125.329	?
4	2125.436	O_3 , H_2O
5	2125.584	O_3
6	2125.682	O_3 , H_2O
7	2125.916	O_3 , CO_2 , solar CO
8	2125.991	O_3
9	2126.053	O_3
10	2126.170	O_3 , solar CO, H_2O
11	2126.232	O_3
12	2126.414	O_3
13	2126.527	O_3
14	2126.664	O_3
15	2126.753	solar CO
16	2126.943	CO , O_3
17	2126.995	O_3
18	2127.128	O_3 , H_2O
19	2127.266	O_3
20	2127.390	O_3 , solar CO
21	2127.452	CO_2 , O_3 , solar CO
22	2127.563	O_3 , solar CO
23	2127.678	CO , O_3 , solar CO
24	2127.849	O_3
25	2128.015	O_3 , solar CO, H_2O
26	2128.158	O_3
27	2128.284	solar CO, O_3 , H_2O
28	2128.421	O_3
29	2128.472	O_3
30	2128.582	solar CO, O_3

Seq. No.	ν (observed) (cm^{-1})	Identification
31	2128.623	O_3
32	2128.716	O_3
33	2128.814	O_3 , H_2O , solar CO
34	2128.897	O_3 , N_2O , CO_2 , H_2O
35	2128.961	CO_2 , O_3
36	2129.095	O_3
37	2129.160	O_3 , CO_2
38	2129.306	O_3 , CO_2
39	2129.395	O_3 , CO_2 , solar CO
40	2129.545	O_3 , CO_2 , solar CO, H_2O
41	2129.660	CO_2 , O_3
42	2129.733	CO_2 , H_2O , O_3
43	2129.880	O_3 , N_2O
44	2130.084	O_3 , N_2O
45	2130.201	O_3 , solar CO, CO , H_2O
46	2130.295	O_3 , solar CO
47	2130.418	O_3
48	2130.540	O_3
49	2130.608	solar CO, O_3
50	2130.682	O_3
51	2130.794	O_3 , solar CO
52	2130.933	CO , O_3
53	2131.006	CO , O_3 , solar CO
54	2131.096	O_3 , solar CO
55	2131.184	N_2O , O_3
56	2131.293	solar CO, O_3
57	2131.476	O_3
58	2131.630	CO , O_3 , solar CO, H_2O
59	2131.850	O_3
60	2131.968	O_3 , solar CO

FRAME 55 (2125-2150 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
61	2132.137	O_3	91	2135.435	solar CO
62	2132.252	O_3	92	2135.544	CO , solar CO, H_2O
63	2132.295	solar CO, O_3 , N_2O	93	2136.13	H_2O , solar CO
64	2132.365	O_3	94	2136.673	H_2O , CO, solar CO
65	2132.429	O_3	95	2136.940	O_3
66	2132.485	O_3	96	2137.048	solar CO
67	2132.583	O_3	97	2137.205	H_2O , solar CO
68	2132.702	O_3	98	2137.571	CO, solar CO, CO_2
69	2132.752	O_3	99	2137.761	solar CO
70	2132.809	solar CO, O_3	100	2137.883	N_2O , O_3 , H_2O
71	2132.903	solar CO, O_3 , CO_2	101	2137.997	solar CO
72	2133.015	O_3 , solar CO	102	2138.185	H_2O , solar CO
73	2133.181	O_3	103	2138.622	O_3
74	2133.362	O_3	104	2138.904	solar CO
75	2133.420	O_3	105	2139.023	N_2O , solar CO
76	2133.523	CO, O_3 , N_2O	106	2139.36	CO, H_2O , solar CO
77	2133.627	solar CO, O_3	107	2139.812	H_2O
78	2133.683	O_3 ?	108	2139.911	CO, solar CO, H_2O
79	2133.802	O_3	109	2140.094	solar CO, N_2O
80	2133.948	O_3 , solar CO	110	2140.170	solar CO
81	2134.049	?	111	2140.253	O_3
82	2134.190	solar CO	112	2140.369	O_3
83	2134.290	CO, solar CO, O_3	113	2140.532	solar CO
84	2134.465	CO_2 , O_3	114	2140.686	CO_2 , O_3
85	2134.523	solar CO, CO	115	2140.827	CO, O_3 , solar CO
86	2134.804	O_3	116	2140.928	solar CO
87	2134.908	?	117	2141.033	?
88	2135.081	O_3	118	2141.184	N_2O , O_3 , solar CO
89	2135.181	O_3 , solar CO	119	2141.438	solar CO
90	2135.316	solar CO	120	2141.528	H_2O , CO, O_3

FRAME 55 (2125-2150 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	2141.726	O_3	151	2145.914	solar CO
122	2141.933	solar CO	152	2146.005	solar CO
123	2142.032	solar CO, H_2O	153	2146.141	N_2O
124	2142.132	O_3 , solar CO	154	2146.200	solar CO, CO
125	2142.253	H_2O , N_2O	155	2146.367	solar CO, O_3
126	2142.368	solar CO, N_2O	156	2146.516	N_2O
127	2142.473	solar CO	157	2146.691	solar CO
128	2142.599	O_3 ?	158	2146.785	solar CO, O_3
129	2142.719	solar CO, H_2O	159	2147.082	CO
130	2142.820	solar CO	160	2147.196	CO, solar CO
131	2142.952	solar CO	161	2147.396	H_2O , solar CO
132	2143.055	solar CO, CO, O_3	162	2147.556	N_2O
133	2143.204	solar CO	163	2147.695	O_3 , solar CO
134	2143.334	N_2O , O_3	164	2147.933	solar CO, O_3
135	2143.440	solar CO, O_3	165	2148.000	solar CO, N_2O
136	2143.691	solar CO	166	2148.076	solar CO
137	2143.851	solar CO, H_2O	167	2148.190	H_2O
138	2143.970	solar CO, O_3	168	2148.348	H_2O^*
139	2144.033	CO, solar CO, O_3	169	2148.559	N_2O , solar CO
140	2144.194	N_2O	170	2148.726	N_2O , O_3
141	2144.342	solar CO	171	2148.839	solar CO
142	2144.418	N_2O , solar CO	172	2149.008	N_2O , solar CO
143	2144.524	solar CO	173	2149.084	solar CO, H_2O
144	2144.808	H_2O	174	2149.236	CO, solar CO, O_3
145	2144.955	O_3	175	2149.346	solar CO, O_3
146	2145.050	CO, N_2O	176	2149.492	solar CO
147	2145.170	N_2O , O_3	177	2149.638	N_2O , solar CO
148	2145.461	H_2O , N_2O	178	2149.771	solar CO, N_2O
149	2145.658	H_2O , solar CO	179	2149.947	solar CO, N_2O
150	2145.762	solar CO			

FRAME 56 (2150-2175 cm^{-1})

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
1	2150.185	O_3	31	2154.969	H_2O , solar CO
2	2150.339	solar CO, CO	32	2155.052	?
3	2150.530	solar CO	33	2155.157	N_2O
4	2150.645	N_2O	34	2155.283	solar CO
5	2150.735	solar CO	35	2155.443	solar CO
6	2150.854	CO	36	2155.700	N_2O , solar CO
7	2151.180	H_2O , solar CO	37	2155.969	?
8	2151.279	solar CO	38	2156.360	solar CO, N_2O
9	2151.445	solar CO	39	2156.567	H_2O , CO
10	2151.566	solar CO	40	2156.690	N_2O , solar CO
11	2151.693	N_2O	41	2156.925	solar CO, N_2O
12	2151.804	N_2O	42	2157.014	N_2O
13	2152.056	N_2O	43	2157.119	?
14	2152.202	solar CO	44	2157.237	solar CO, N_2O
15	2152.360	solar CO	45	2157.482	N_2O , solar CO
16	2152.553	H_2O	46	2157.689	N_2O
17	2152.709	N_2O	47	2157.844	solar CO
18	2152.940	solar CO	48	2157.944	O_3
19	2153.090	O_3 , solar CO	49	2158.140	N_2O , H_2O
20	2153.214	N_2O	50	2158.296	CO, solar CO
21	2153.283	N_2O	51	2158.668	N_2O
22	2153.425	CO, N_2O ?	52	2158.751	N_2O
23	2153.501	solar CO	53	2158.916	N_2O
24	2153.608	solar CO	54	2158.989	solar CO
25	2153.718	N_2O	55	2159.121	solar CO?
26	2153.909	solar CO	56	2159.297	solar CO, N_2O
27	2154.006	solar CO	57	2159.466	solar CO
28	2154.115	H_2O ?	58	2159.541	solar CO, CO
29	2154.593	CO, solar CO	59	2159.640	N_2O
30	2154.713	N_2O , H_2O	60	2159.738	solar CO

FRAME 56 (2150-2175 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification
61	2159.957	solar CO, H ₂ O
62	2160.054	solar CO
63	2160.172	N ₂ O
64	2160.323	N ₂ O, solar CO
65	2160.420	N ₂ O
66	2160.506	N ₂ O
67	2160.608	N ₂ O
68	2160.707	H ₂ O, N ₂ O
69	2160.928	N ₂ O
70	2161.039	O ₃
71	2161.121	solar CO
72	2161.231	O ₃ , N ₂ O
73	2161.343	solar CO
74	2161.440	N ₂ O, solar CO
75	2161.572	N ₂ O
76	2161.707	H ₂ O
77	2161.971	CO, H ₂ O, solar CO
78	2162.435	solar CO
79	2162.514	N ₂ O, CO, solar CO
80	2162.651	N ₂ O, solar CO
81	2162.884	H ₂ O, N ₂ O
82	2163.081	solar CO
83	2163.195	N ₂ O
84	2163.429	H ₂ O, N ₂ O
85	2163.694	solar CO, N ₂ O
86	2163.878	N ₂ O
87	2164.010	N ₂ O, solar CO
88	2164.149	N ₂ O
89	2164.224	solar CO
90	2164.315	solar CO

Seq. No.	ν (observed) (cm^{-1})	Identification
91	2164.407	N ₂ O, solar CO
92	2164.544	solar CO
93	2164.630	N ₂ O
94	2164.747	N ₂ O
95	2164.922	solar CO
96	2165.026	N ₂ O
97	2165.117	N ₂ O, CO
98	2165.323	N ₂ O
99	2165.598	CO, solar CO
100	2165.942	solar CO
101	2166.037	solar CO
102	2166.132	N ₂ O, solar CO
103	2166.246	N ₂ O
104	2166.381	N ₂ O, solar CO
105	2166.483	?
106	2166.706	N ₂ O
107	2166.808	solar CO, N ₂ O
108	2166.939	solar CO
109	2167.060	N ₂ O, solar CO
110	2167.169	N ₂ O
111	2167.249	N ₂ O, solar CO
112	2167.345	N ₂ O, H ₂ O
113	2167.534	N ₂ O
114	2167.752	N ₂ O, H ₂ O
115	2167.878	N ₂ O
116	2167.978	solar CO
117	2168.073	N ₂ O
118	2168.250	N ₂ O
119	2168.292	N ₂ O, solar CO
120	2168.420	N ₂ O, CO, solar CO

FRAME 56 (2150-2175 cm^{-1})
Continued

Seq. No.	ν (observed) (cm^{-1})	Identification	Seq. No.	ν (observed) (cm^{-1})	Identification
121	2168.502	N_2O	151	2173.207	?
122	2168.745	N_2O	152	2173.405	N_2O
123	2168.994	N_2O	153	2173.493	N_2O , solar CO
124	2169.197	CO, solar CO	154	2173.713	solar CO, N_2O
125	2169.385	solar CO	155	2173.824	N_2O , solar CO
126	2169.527	N_2O	156	2173.930	N_2O , solar CO
127	2169.631	N_2O , solar CO	157	2174.003	N_2O , solar CO
128	2169.779	N_2O	158	2174.227	N_2O , solar CO
129	2169.884	N_2O , solar CO	159	2174.392	N_2O
130	2169.952	N_2O	160	2174.666	N_2O
131	2170.138	solar CO	161	2174.826	solar CO, N_2O
132	2170.366	N_2O , solar CO			
133	2170.482	O_3			
134	2170.644	N_2O			
135	2170.750	N_2O			
136	2171.135	N_2O			
137	2171.254	H_2O , solar CO			
138	2171.360	N_2O			
139	2171.645	N_2O			
140	2171.739	N_2O , solar CO			
141	2171.831	N_2O , solar CO			
142	2171.940	N_2O			
143	2172.079	solar CO, N_2O			
144	2172.227	H_2O , solar CO			
145	2172.319	N_2O			
146	2172.521	N_2O			
147	2172.757	CO, N_2O , solar CO			
148	2172.890	N_2O , solar CO			
149	2172.989	solar CO, N_2O			
150	2173.103	solar CO			