



New Mexico Bureau of Mines & Mineral Resources

Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505/835-5420
Publications: 505/835-5410

August 17, 1981

MEMO

TO: Frank E. Kottlowski, Director
FROM: Sam Thompson III, Petroleum Geologist
SUBJECT: Open-file report no. OF-151

As we discussed, the following report from GeoChem Laboratories, Inc. is to be placed in the Bureau Open-file:

OF-151 Hydrocarbon source-rock evaluation study, Cockrell Corp. No. 1 Playas State well, Hidalgo County, New Mexico, by L. Paul Tybor, GeoChem Laboratories, Inc., 1981, 23 p. (including 2 p. text, 8 tables, 9 charts)

ST:sn

xc: Mike R. Smith, GeoChem
Robert A. Bieberman, Subsurface Library
Robert W. Kelley, Editor



Handwritten: OF-151

GEOCHEMICAL ANALYSES
SOURCE ROCK EVALUATION

CRUDE OIL—SOURCE ROCK CORRELATION

CRUDE OIL CHARACTERIZATION
GEOCHEMICAL PROSPECTING

1143 - C BRITTMORE ROAD • HOUSTON, TEXAS 77043 • 713/467-7011

August 12, 1981

Mr. Sam Thompson III
NEW MEXICO BUREAU OF MINES &
MINERAL RESOURCES
Socorro, New Mexico 87801

RE: GeoChem Job No. 2082
Cockrell #1 Playas Well
Sec. 14-30S-17W
Hidalgo County, New Mexico

Dear Mr. Thompson:

Enclosed please find the results of the organic geochemical analyses performed on forty-six (46) well cuttings samples from the Cockrell No. 1 Playas well, located in Sec. 14-30S-17W, Hidalgo County, New Mexico.

Upon arrival at GeoChem the samples were assigned the GeoChem Job Number 2082, followed by the sample sequential number -001 to -046, and submitted to the following geochemical analytical program:

<u>TYPE OF ANALYSIS</u>	<u>TABLE</u>
Total organic carbon determination and brief lithological description	I
Pyrolysis	II
C ₁₅₊ soxhlet extraction, deasphalting, and liquid chromatographic separation.....	III-A,-B,-C
C ₁₅₊ paraffin-naphthene gas chromotography	IV-A,-B
Visual kerogen assessment	V
Vitrinite reflectance analysis	VI; Histograms

DISCUSSION OF THE RESULTSA. Thermal Maturity of Sediments

Based on kerogen coloration, the Paleozoic sediments analyzed from this well range in thermal maturity from a mature Maturation Index Stage 2+ to 3- at 2500+ feet, within the Horquilla formation, to a severely altered Maturation Index Stage 3+ to 4- at 6820+ feet, within the Bliss formation. On the basis of this thermal maturation profile the Horquilla is the only unit in this well which could have generated oil. Below the Horquilla, the maturities of these sediments increase to very mature levels in the Montoya formation. From the El Paso to total depth in the Bliss formation, the thermal maturities attain severely altered levels.

As a result, wet gas and minor amounts of condensate may have been generated in the rocks comprising the well interval from the Mississippian Paradise formation through the Ordovician Montoya formation. Below the Montoya, within the El Paso, to total depth within the Bliss, only gas could have been generated.

The results obtained from the vitrinite reflectance analyses indicate a slightly higher level of thermal maturation for these sediments. However, this discrepancy does affect our interpretation of the thermal maturity of these sediments since it appears that only varying amounts of gas could have been generated from these rocks.

B. Hydrocarbon Source Characterization of Sediments

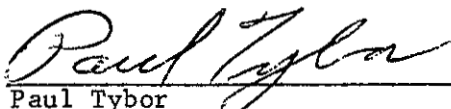
The Paradise, the lower portion of the Percha, the Montoya and the Bliss stratigraphic rock units penetrated by this well have a very mature to severely altered, poor liquid hydrocarbon source character, with a possible fair gas source character.

This fair gas source character is based on the fair amounts of organic matter analyzed from these units (Table I). These units have poor liquid hydrocarbon generating capabilities due to the poor amounts of C₁₅₊ total hydrocarbon (Table III-B), free hydrocarbon yields (S₁; Table II) and remaining hydrocarbon generating potential (S₂; Table II) analyzed from these samples.

The remaining formations analyzed in this well study were analyzed as being organic-lean with poor hydrocarbon generating characteristics.

Should you have any questions concerning this study, or if I may be of further service, please feel free to contact me.

Sincerely,


Paul Tybor
GEOCHEM LABORATORIES, INC.

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Enclosures

SUMMARY TABLE 1

AGE Stratigraphic Unit	Top (Feet)	Lithology	Organic Richness					Predominant Kerogen Type Visual Assessment	Thermal Maturity		T-Max (°C)	Hydrocarbon Source Potential
			Organic Carbon (% of rock)	S1 Free H.C.'s (mg/g)	C ₁₅ ⁺ Total H.C. (ppm)	S2 Residual H.C. Yield (mg/g)	C ₁₅ ⁺ Bitumen (ppm)		Kerogen Alteration (1-5 Scale)	Vitrinite Reflectance (%Ro)		
			<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	<u>MEAN</u>	
<u>PERMIAN</u> <u>PENNSYLVANIAN</u>												
Horquilla	2480- 3836	Limestone, medium dark gray brownish gray.	(14) 0.12	(1) 0.08	n/a	(1) 0.01	n/a	(7) Am;H*(H);W-I	(7) 2+ to 3-	(1) 0.46	(1) 427	Mature, poor hydrocarbon source.
<u>MISSISSIPPIAN</u>												
Paradise	3836- 4127	Limestone, medium dark gray to dark gray.	(5) 0.46	(1) 0.11	(1) 174	(1) 0.00	(1) 347	(4) W-I;H;Am	(4) 3 to 3+	(2) 2.55	(1) 340	Very mature to severely altered, poor liquid hydro- carbon source, possible fair gas source.
Escabrosa	4127- 5192	Limestone, medium dark gray to dark gray.	(9) 0.15	(1) 0.05	(1) 63e	(1) 0.01	(1) 444	(3) H*;Am-W-I;-	(3) 3 to 3+	(1) 2.33	(1) 411	Very mature to severely altered, poor hydrocarbon source.
<u>DEVONIAN</u>												
Percha	5192- 5568	Shale, dark gray to grayish black.	(5) 0.33	(1) 0.11	(1) 80e	(1) 0.00	(1) 1163	(3) I;-;Am	(3) 3 to 3+	n/a	(1) 0	Very mature to severely altered, poor hydrocarbon source. The lower portion of the percha may be a possible fair gas source.

SUMMARY TABLE 1

AGE Stratigraphic Unit	Top (Feet)	Lithology	Organic Richness					Predominant Kerogen Type Visual Assessment	Thermal Maturity		T-Max (°C)	Hydrocarbon Source Potential
			Organic Carbon (% of rock)	S1 Free H.C.'s (mg/g)	C ₁₅ ⁺ Total H.C. (ppm)	S2 Residual H.C. Yield (mg/g)	C ₁₅ ⁺ Bitumen (ppm)		Kerogen Alteration (1-5 Scale)	Vitrinite Reflectance (%Ro)		
			MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN	MEAN		
<u>ORDOVICIAN</u> Montoya	5568- 5890	Dolomite, medium dark gray to dark gray.	(3) 0.19	(1) 0.10	(1) 89e	(1) 0.00	(1) 1382	(1) Am(A1);I;-	(1) 3 to 3+	n/a	(1) 416	Very mature to severely altered, poor liquid hydro- carbon source, possible fair gas source.
El Paso	5890- 6764	Limestone, medium dark gray to dark gray; Dolomite, medium dark gray.	(9) 0.11	n/a	n/a	n/a	n/a	(4) Am(A1);-;I	(4) 3+ to 4-	n/a	n/a	Severely altered, poor hydrocarbon source.
<u>ORDOVICIAN</u> <u>CAMBRIAN</u> Bliss	6764- 7030	Dolomite, medium dark gray.	(1) 0.17	n/a	n/a	n/a	n/a	(1) I;Am;-	(1) 3+ to 4-	n/a	n/a	Severely altered, possible fair gas source.

Table I

SCREEN ANALYSIS SUMMARY

GeoChem Sample Number	Well Interval (Feet)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2082-001	2490-2500	Limestone, medium dark gray to brownish gray.	0.06
2082-002	2590-2600	Limestone, medium dark gray to brownish gray.	0.05
2082-003	2690-2700	Limestone, medium dark gray to dark brownish gray.	0.06
2082-004	2760-2770	Limestone, light brownish gray to dark brownish gray.	0.09
2082-005	2840-2850	Limestone, medium dark gray to brownish gray.	0.05; 0.03R
2082-006	2970-2980	Limestone, medium dark gray to brownish gray.	0.06
2082-007	3070-3080	Limestone, medium dark gray to dark gray.	0.13
2082-008	3150-3160	Limestone, medium dark gray to dark gray.	0.12
2082-009	3250-3260	Limestone, medium dark gray to dark gray.	0.23
2082-010	3310-3320	Limestone, medium dark gray to dark gray.	0.17
2082-011	3410-3420	Limestone, medium dark gray to dark gray.	0.18
2082-012	3500-3510	Limestone, medium dark gray.	0.10
2082-013	3640-3650	Limestone, medium dark gray.	0.19
2082-014	3700-3710	Limestone, medium dark gray and brownish gray.	0.13
2082-015	3880-3890	Limestone, medium dark gray to dark gray.	0.28
2082-016	3900-3910	Limestone, medium dark gray to dark gray.	0.34; 0.35R
2082-017	4000-4010	Limestone, medium dark gray to dark gray.	0.78
2082-018	4050-4060	Limestone, medium dark gray to dark gray Trace of shale.	0.44
2082-019	4100-4110	Limestone, medium dark gray to dark gray. Trace of shale.	0.45

Table I

SCREEN ANALYSIS SUMMARY

GeoChem Sample Number	Well Interval (Meters)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2082-020	4130-4140	Limestone, medium dark gray to dark gray.	0.36
2082-021	4540-4550	Limestone, dark gray to brownish gray.	0.12
2082-022	4590-4600	Limestone, dark gray to brownish gray.	0.15
2082-023	4670-4680	Limestone, medium dark gray to dark gray.	0.11
2082-024	4720-4730	Limestone, medium dark gray to dark gray.	0.18
2082-025	4820-4830	Limestone, medium dark gray to dark gray.	0.10
2082-026	4930-4940	Limestone, white to light brownish gray.	0.07
2082-027	5120-5130	Limestone, very light gray to medium dark gray.	0.12
2082-028	5150-5160	Limestone, medium dark gray to dark gray.	0.14
2082-029	5200-5210	Shale, medium bluish gray to olive gray, Limestone, medium dark gray.	0.11
2082-031	5290-5300	Shale, dark gray, limestone, medium dark gray.	0.18
2082-031	5360-5370	Shale, dark gray.	0.26
2082-032	5460-5470	Shale, dark gray to grayish black.	0.29
2082-033	5560-5570	Shale, dark gray to grayish black.	0.83; 0.83R
2082-034	5570-5580	Dolomite, medium dark gray to dark gray.	0.17
2082-035	5670-5680	Dolomite, medium dark gray to dark gray.	0.26
2082-036	5750-5760	Dolomite, medium dark gray to dark gray.	0.13
2082-037	5900-5910	Limestone, medium gray to medium dark gray.	0.08
2082-038	6030-6040	Limestone, medium dark gray.	0.08
2082-039	6120-6130	Limestone, medium dark gray.	0.06
2082-040	6230-6240	Limestone, medium dark gray to dark gray.	0.08; 0.09R
2082-041	6340-6350	Limestone, medium dark gray to dark gray.	0.09

Table I

SCREEN ANALYSIS SUMMARY

GeoChem Sample Number	Well Interval (Meters)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2082-042	6470-6480	Dolomite, medium dark gray.	0.04
2082-043	6570-6580	Dolomite, medium dark gray.	0.07
2082-044	6630-6640	Composite: dolomite, medium dark gray to dolomitic grayish black shale.	0.36
2082-045	6750-6760	Dolomite, medium dark gray.	0.09
2082-046	6810-6820	Dolomite, coarsely grained, very slightly silty, medium dark gray.	0.17; 0.17R

TABLE II
RESULTS OF ROCK-EVAL PYROLYSIS

T.O.C. = Total organic carbon, wt. %
 S1 = Free hydrocarbons, mg HC/g of rock
 S2 = Residual hydrocarbon potential
 (mg HC/g of rock)
 S3 = CO₂ produced from kerogen pyrolysis
 (mg CO₂/g of rock)
 S1+S2 = Genetic hydrocarbon potential
 (mg HC/g of rock)
 Hydrogen
 Index = mg HC/g organic carbon
 Oxygen
 Index = mg CO₂/g organic carbon
 S1/S1+S2 = Transformation ratio
 Tmax = Temperature Index, degrees C.

GeoChem Sample No.	Depth Interval ()	T.O.C. (wt.%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	S1+S2 (mg/g)	Hydrogen Index	Oxygen Index	S1/S1+S2	Tmax (C)
2082-009	3250 - 3260	0.23	0.08	0.01	0.21	0.09	4	91	0.89	427
2082-017	4000 - 4010	0.78	0.11	0.00	0.44	0.11	0	56	1.00	340-0 (LPT)
2082-020	4130 - 4140	0.36	0.05	0.01	0.65	0.06	3	181	0.83	411
2082-033	5560 - 5570	0.83	0.11	0.00	0.29	0.11	0	35	1.00	0
2082-035	5670 - 5680	0.26	0.10	0.00	0.26	0.10	0	100	1.00	446-0 (LPT)

Table III

Summary of C15+ Soxhlet Extraction, Deasphalting
and Liquid Chromatography

A. Weights of Extracts and Chromatographic Fractions

GeoChem Sample Number	Well Interval	Weight of Rock Extd. (grams)	Total Extract (grams)	Precipitated Asphaltenes (grams)	N-C5 Soluble (grams)	Sulfur (grams)	Paraffins- Naphthenes (grams)	Aromatics (grams)	Eluted NSO'S (grams)	Noneluted NSO'S (grams)
2082-009	3250 -3260	100.0	0.0371	0.0202	0.0169	N.D.	0.0069	0.0026	0.0056	0.0018
2082-017	4000 -4010	56.8	0.0197	0.0031	0.0166	N.D.	0.0068	0.0031	0.0054	0.0013
2082-020	4130 -4140	64.2	0.0285	0.0204	0.0081	N.D.	N.D.	N.D.	N.D.	N.D.
2082-033	5560 -5570	41.6	0.0484	0.0417	0.0067	N.D.	N.D.	N.D.	N.D.	N.D.
2082-035	5670 -5680	29.6	0.0409	0.0356	0.0053	N.D.	N.D.	N.D.	N.D.	N.D.

B. Concentration of Extracted Materials in Rock

GeoChem Sample Number	Well Interval	Total Extract (ppm)	-----Hydrocarbons-----			Sulfur (ppm)	-----Nonhydrocarbons-----			
			Paraffin- Naphthene (ppm)	Aromatic (ppm)	Total (ppm)		Precipitd. Asphaltene (ppm)	Eluted NSO'S (ppm)	Noneluted NSO'S (ppm)	Total (ppm)
2082-009	3250 -3260	371	69	26	95	-	202	56	18	276
2082-017	4000 -4010	347	120	55	174	-	55	95	23	173
2082-020	4130 -4140	444	-	-	-	-	318	-	-	-
2082-033	5560 -5570	1163	-	-	-	-	1002	-	-	-
2082-035	5670 -5680	1382	-	-	-	-	1203	-	-	-

C. Composition of Extracts

GeoChem Sample Number	Well Interval	-----Hydrocarbons-----				-----Nonhydrocarbons-----					
		Paraffin- Naphthene %	Aromatic %	PN/Arom	Sulfur %	Eluted NSO'S %	Noneluted NSO'S %	Precipitd. Asphaltene %	Asph/NSO	HC'S %	HC/Non HC
2082-009	3250 -3260	18.6	7.0	2.65	-	15.1	4.9	54.4	2.73	25.6	0.34
2082-017	4000 -4010	34.5	15.7	2.19	-	27.4	6.6	15.7	0.46	50.3	1.01
2082-020	4130 -4140	-	-	-	-	-	-	71.6	-	-	-
2082-033	5560 -5570	-	-	-	-	-	-	86.2	-	-	-
2082-035	5670 -5680	-	-	-	-	-	-	87.0	-	-	-

Table IV-A

Saturate Hydrocarbon Analyses

Summary of Paraffin-Naphthene Distribution

GeoChem Sample Number	Well Interval	% Paraffin	% Isoprenoid	% Naphthene	C-P Index A	C-P Index B	ip19/ip20
2082-009	3250 -3260	31.6	2.6	65.8	1.02	1.04	1.40
2082-017	4000 -4010	32.0	2.7	65.2	1.05	1.04	1.39
2082-020	4130 -4140	21.3	1.8	76.9	1.00	1.02	1.31
2082-033	5560 -5570	24.8	1.9	73.4	1.04	1.04	1.31
2082-035	5670 -5680	27.1	2.1	70.9	1.04	1.06	0.74

Table IV-B

Saturate Hydrocarbon Analyses

Normalized Paraffin Distribution

GeoChem Sample Number	Well Interval	% nC15	% nC16	% nC17	% ip19	% nC18	% ip20	% nC19	% nC20	% nC21	% nC22	% nC23	% nC24	% nC25	% nC26	% nC27	% nC28	% nC29	% nC30	% nC31	% nC32	% nC33	% nC34	% nC35
2082-009	3250 -3260	5.6	8.1	9.3	4.4	6.7	3.2	5.2	5.8	7.2	7.2	6.1	4.8	4.0	3.7	3.4	3.6	3.5	2.8	2.7	1.4	0.8	0.4	0.1
2082-017	4000 -4010	2.4	6.2	9.0	4.6	7.2	3.3	5.4	5.4	7.9	8.6	8.2	6.9	5.6	4.6	3.6	2.8	2.6	2.2	1.4	0.8	0.6	0.3	0.2
2082-020	4130 -4140	1.4	4.7	8.4	4.4	7.6	3.3	7.0	7.0	7.8	7.8	6.6	5.4	4.7	4.5	4.3	4.2	3.8	2.7	1.7	1.0	0.8	0.4	0.3
2082-033	5560 -5570	1.8	4.8	6.9	4.0	5.6	3.1	5.9	8.5	10.9	10.1	7.5	5.3	4.3	4.0	3.9	4.0	3.8	2.4	1.6	0.7	0.5	0.3	0.2
2082-035	5670 -5680	0.1	1.7	6.7	3.0	9.8	4.1	11.0	10.5	11.6	10.2	6.9	4.6	3.8	3.3	3.2	3.1	2.8	1.6	1.0	0.4	0.3	0.2	0.1

TABLE V
VISUAL KEROGEN ASSESSMENT WORKSHEET

GEOCHEM No	DEPTH	INDIGENOUS POPULATION (INTERPRETED)		GENERAL CHARACTERISTICS			CAVED AND/OR REWORKED POPULATION(S)		SUMMARY ORGANIC MATTER TYPE
		TYPE OF ORGANIC MATTER	MATURATION INDEX	COLOR OF ORGANIC MATTER	STATE OF ORGANIC MATTER	%	TYPE OF ORGANIC MATTER	MATURATION INDEX	
2082-001	2500	Am; -; -							Am; -; -
2082-003	2700	Am; -; H							Am; -; H
2082-005	2850	Am; -; H							Am; -; H
2082-007	3080	Am; -; H							Am; -; H
2082-009	3260	H*; Am-W-I; -							H*; Am-W-I; -
2082-011	3420	W-I; Am-H*; -							W-I; Am-H*; -
2082-013	3650	H*; W-I; Am							H*; W-I; Am
2082-015	3890	W-I; -; H							W-I; -; H
2082-017	4010	W-I; H; Am							W-I; H; Am
2082-019	4110	W-I; -; Am-H							W-I; -; Am-H
2082-020	4140	W-I; H; Am							W-I; H; Am
2082-023	4630	H*; Am-W-I; -							H*; Am-W-I; -
2082-025	4830	H*; Am; W-I							H*; Am; W-I
2082-027	5130	W-I; Am-H*; -							W-I; Am-H*; -
2082-029	5210	I; -; -							I; -; -
2082-031	5370	I; -; Am							I; -; Am
2082-033	5570	I; -; Am							I; -; Am
2082-035	5680	Am(AT); I; -							Am(AT); I; -
2082-037	5910	Am(AT); -; I							Am(AT); -; I
2082-039	6130	Am; -; -							Am; -; -

drilling mud contaminants.

B - bacteria in the sample.

VLOM - very little organic material.

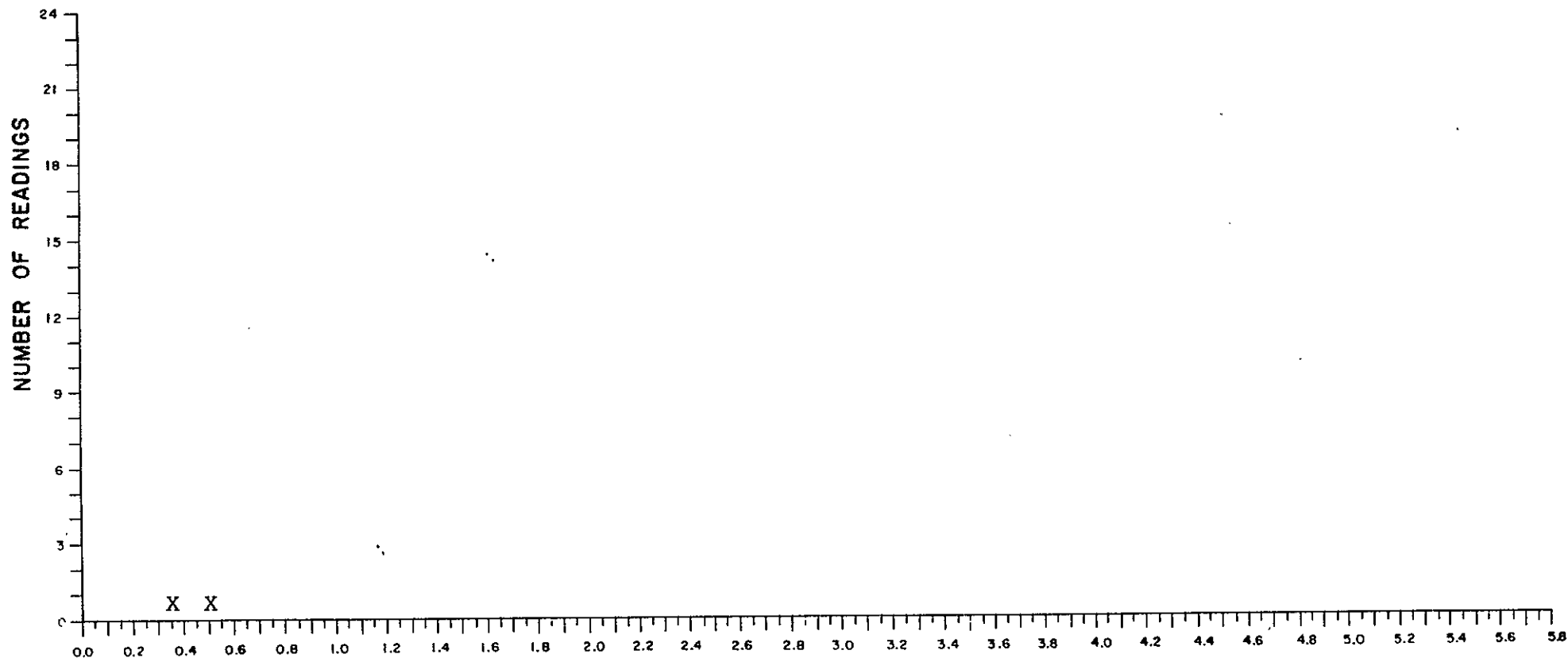
VLOM
VLOM

GEOCHEM NO. 2082-009 TYPE OF SAMPLE: CTG DEPTH/SAMPLE NO. 3260

CLIENT'S NAME NEW MEXICO BUREAU OF MINES WELL NAME COCKRELL #1 PLAYAS

(NO. OF READINGS = 2) 0.39 0.53

<u>POPULATION</u>	<u>NO. OF READINGS</u>	<u>MIN. Ro (%)</u>	<u>MAX. Ro (%)</u>	<u>MEAN Ro (%)</u>	<u>STD. DEV. (%)</u>	<u>REMARKS</u>
(1)	2	0.39	0.53	0.46	-	



VITRINITE REFLECTANCE HISTOGRAM

TABLE VI

VITRINITE REFLECTANCE SUMMARY

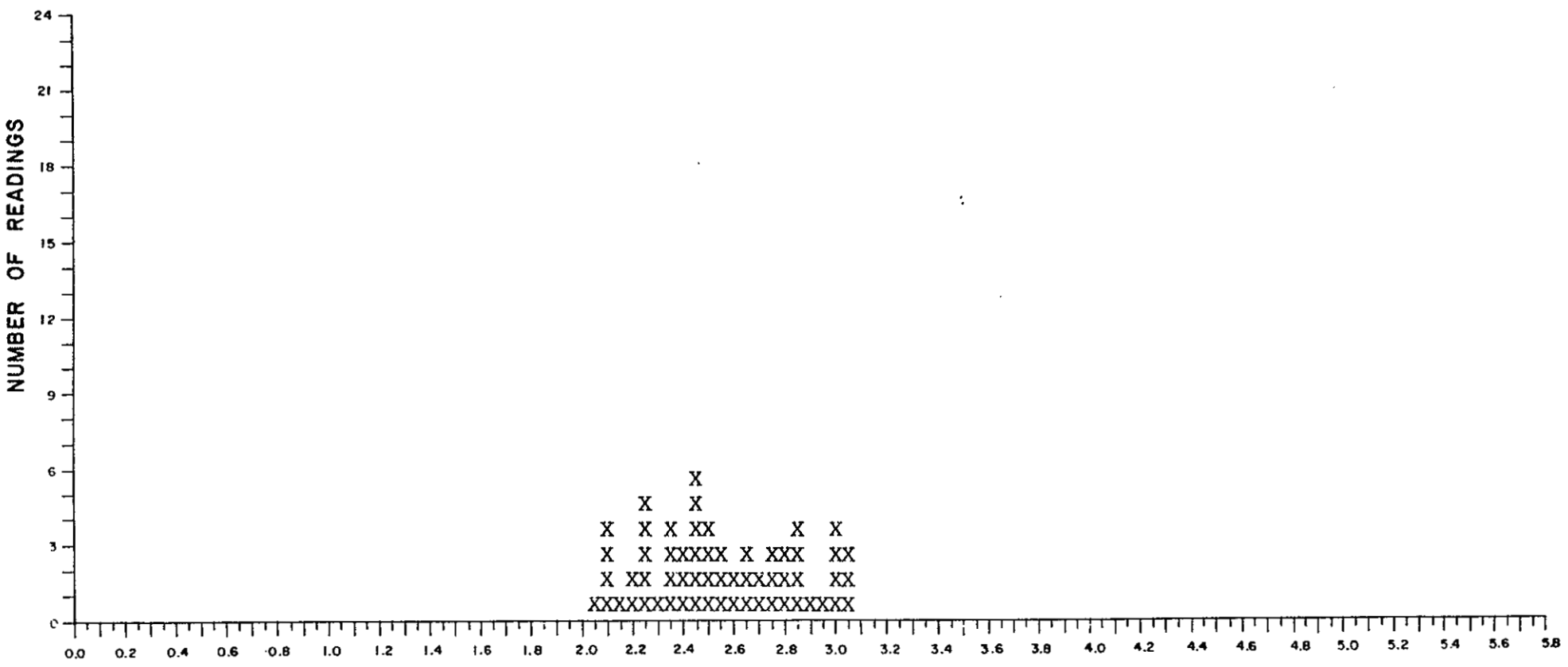
GEOCHEM SAMPLE NUMBER	DEPTH (feet)	TYPE OF SAMPLE	POPULATION	NUMBER OF READINGS	MINIMUM REFLECTANCE (% Ro)	MAXIMUM REFLECTANCE (% Ro)	MEAN REFLECTANCE (% Ro)	STD. DEV. (% Ro)	REMARKS
2082-009	3260	CTG	(1)	2	0.39	0.53	0.46	-	
2082-015	3890	CTG	(1)	25	2.04	3.09	2.52	0.381	
2082-017	4010	CTG	(1)	60	2.06	3.08	2.58	0.287	
2082-020	4140	CTG	(1)	2	0.64	0.67	0.66	-	
			(2)	7	1.94	2.64	2.33	0.229	
			(3)	23	2.71	3.81	3.26	0.320	
			(4)	3	4.17	5.27	4.69	0.552	
2082-033	5570	CTG	NO VITRINITE						

GEOCHEM NO. 2082-017 TYPE OF SAMPLE: CTG DEPTH/SAMPLE NO. 4010

CLIENT'S NAME NEW MEXICO BUREAU OF MINES WELL NAME COCKRELL #1 PLAYAS

(NO. OF READINGS = 60)	2.06	2.10	2.12	2.14	2.14	2.18	2.23	2.24	2.26	2.26	2.26	2.27	2.29	2.34
2.36	2.36	2.37	2.39	2.42	2.43	2.44	2.46	2.46	2.47	2.49	2.49	2.49	2.53	2.53
2.58	2.59	2.62	2.63	2.65	2.66	2.68	2.72	2.74	2.75	2.76	2.77	2.80	2.82	2.84
2.89	2.94	2.98	3.01	3.02	3.03	3.04	3.06	3.08	3.08					

<u>POPULATION</u>	<u>NO. OF READINGS</u>	<u>MIN. Ro (%)</u>	<u>MAX. Ro (%)</u>	<u>MEAN Ro (%)</u>	<u>STD. DEV. (%)</u>	<u>REMARKS</u>
(1)	60	2.06	3.08	2.58	0.287	



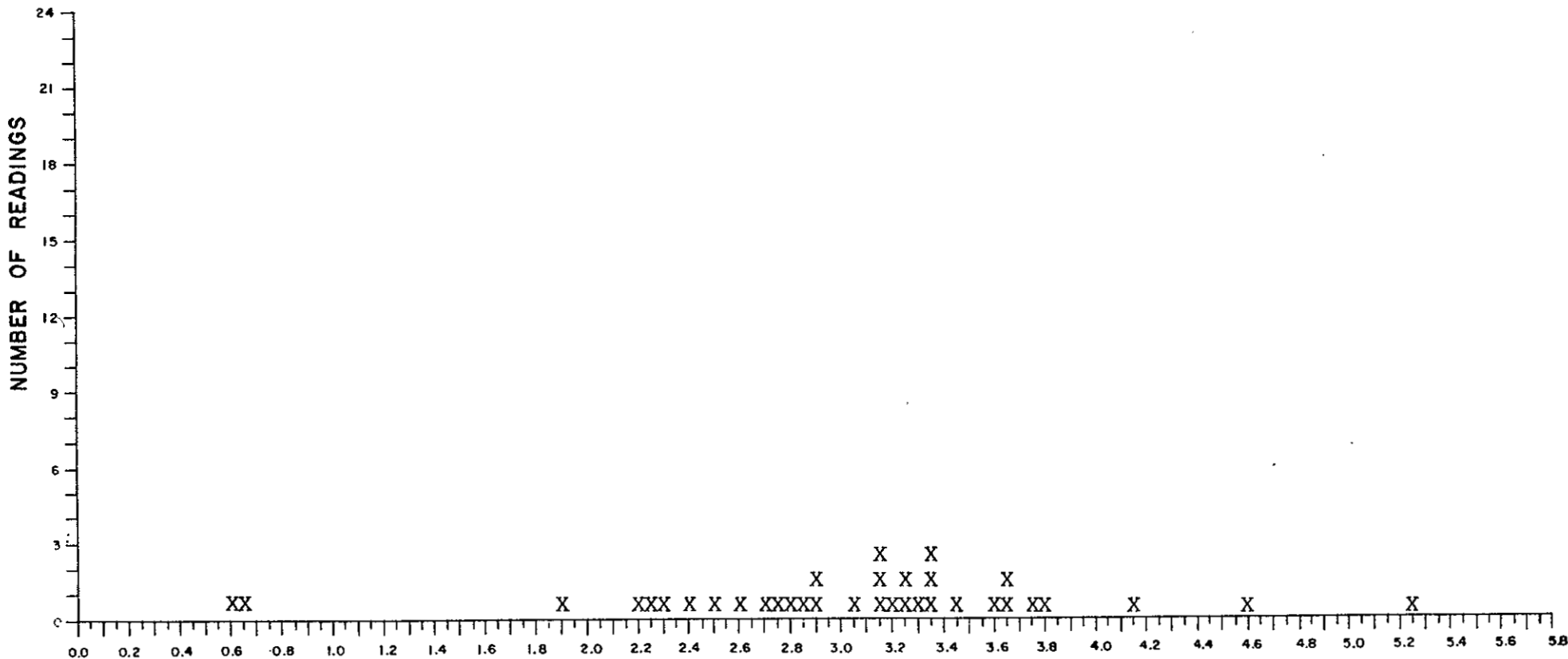
VITRINITE REFLECTANCE HISTOGRAM

GEOCHEM NO. 2082-020 TYPE OF SAMPLE: CTG DEPTH/SAMPLE NO. 4140

CLIENT'S NAME NEW MEXICO BUREAU OF MINES WELL NAME COCKRELL #1 PLAYAS

(NO. OF READINGS = 35) 0.64 0.67 1.94 2.22 2.26 2.32 2.42 2.53 2.64 2.71 2.78 2.84 2.88 2.91
 2.93 3.09 3.18 3.19 3.19 3.23 3.27 3.27 3.32 3.37 3.38 3.39 3.49 3.63 3.66 3.67 3.76 3.81
 4.17 4.63 5.27

<u>POPULATION</u>	<u>NO. OF READINGS</u>	<u>MIN. Ro (%)</u>	<u>MAX. Ro (%)</u>	<u>MEAN Ro (%)</u>	<u>STD. DEV. (%)</u>	<u>REMARKS</u>
(1)	2	0.64	0.67	0.66	-	
(2)	7	1.94	2.64	2.33	0.229	
(3)	23	2.71	3.81	3.26	0.320	
(4)	3	4.17	5.27	4.69	0.552	



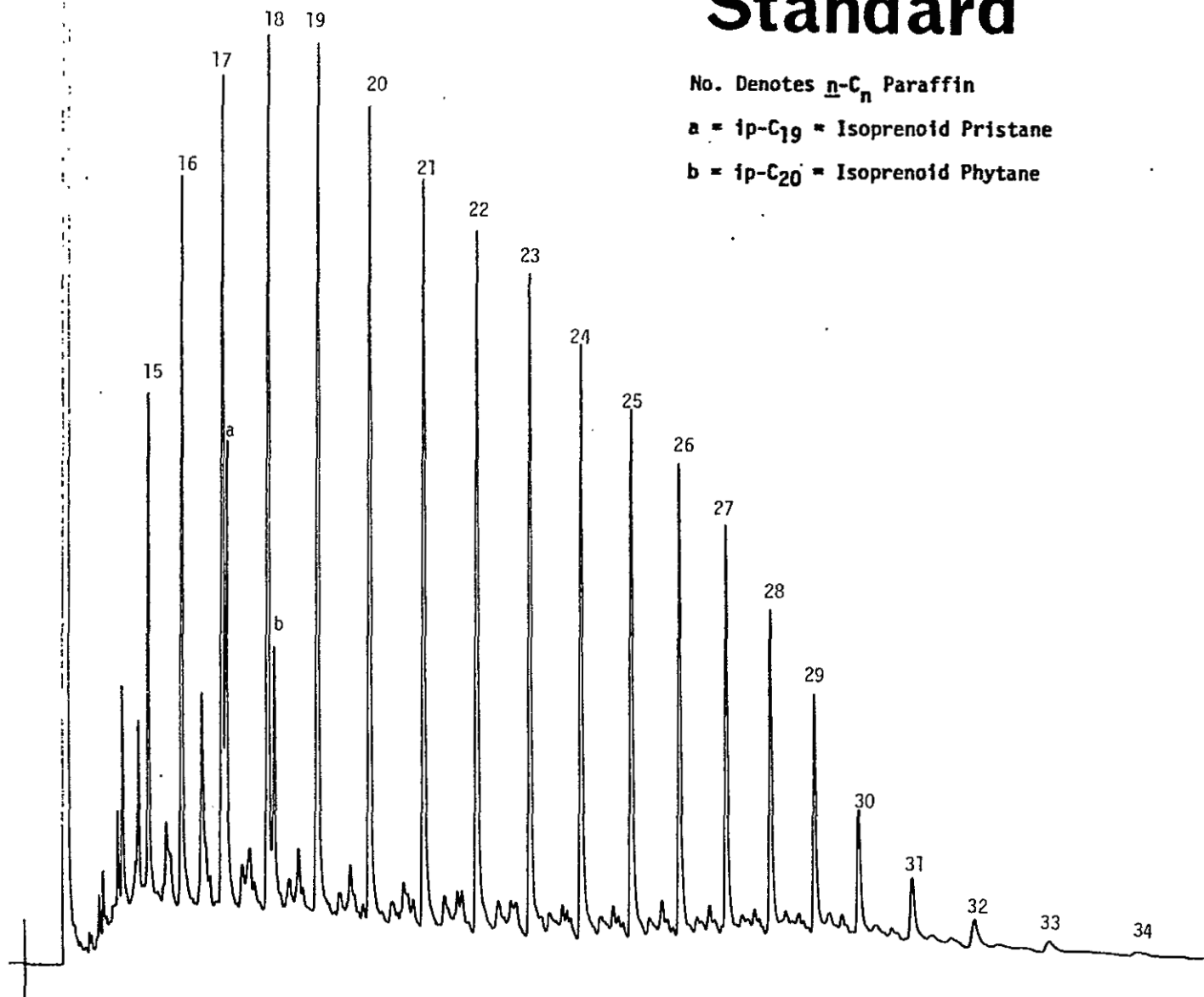
VITRINITE REFLECTANCE HISTOGRAM

Standard

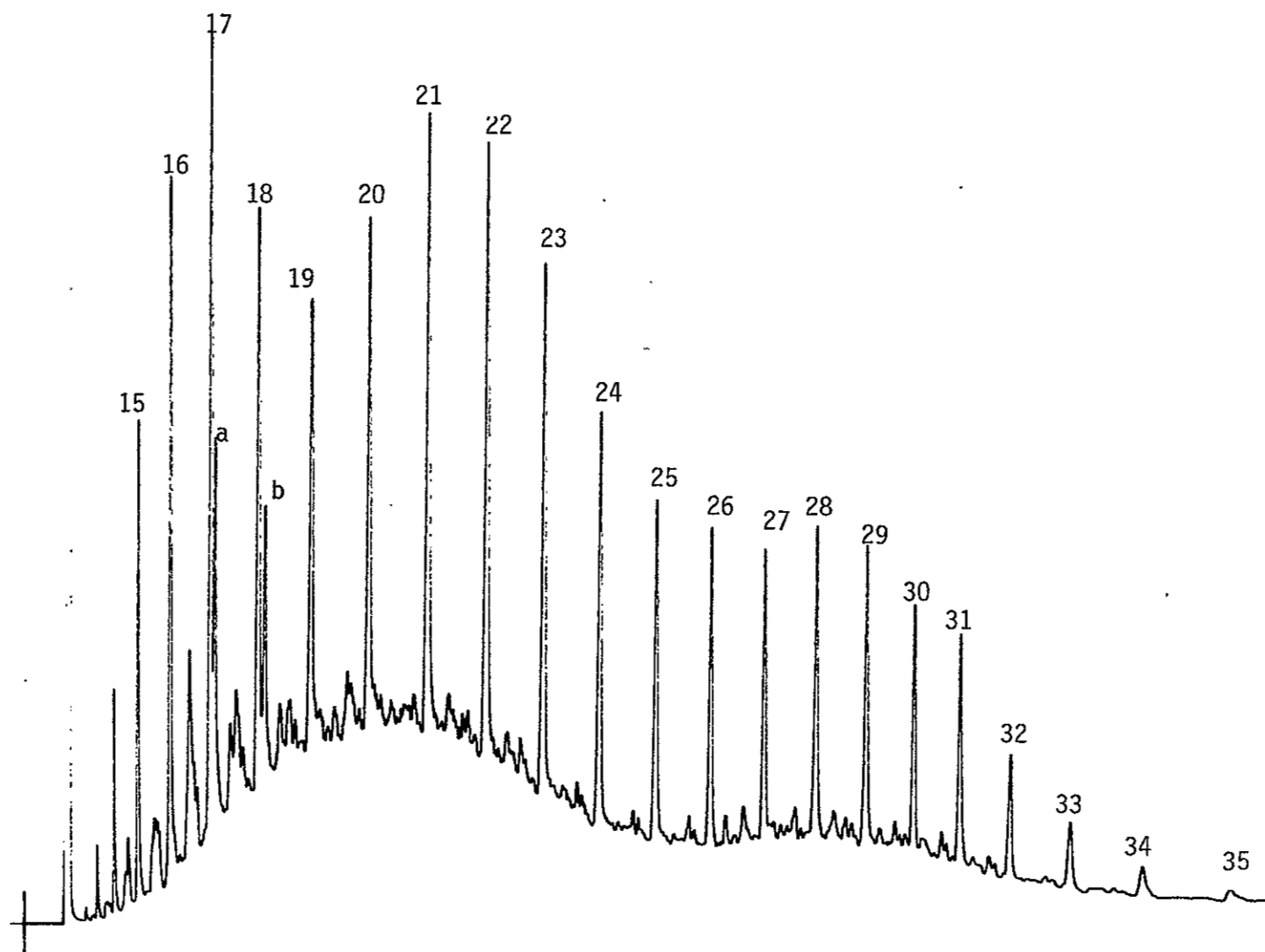
No. Denotes n -C_n Paraffin

a = ip-C₁₉ = Isoprenoid Pristane

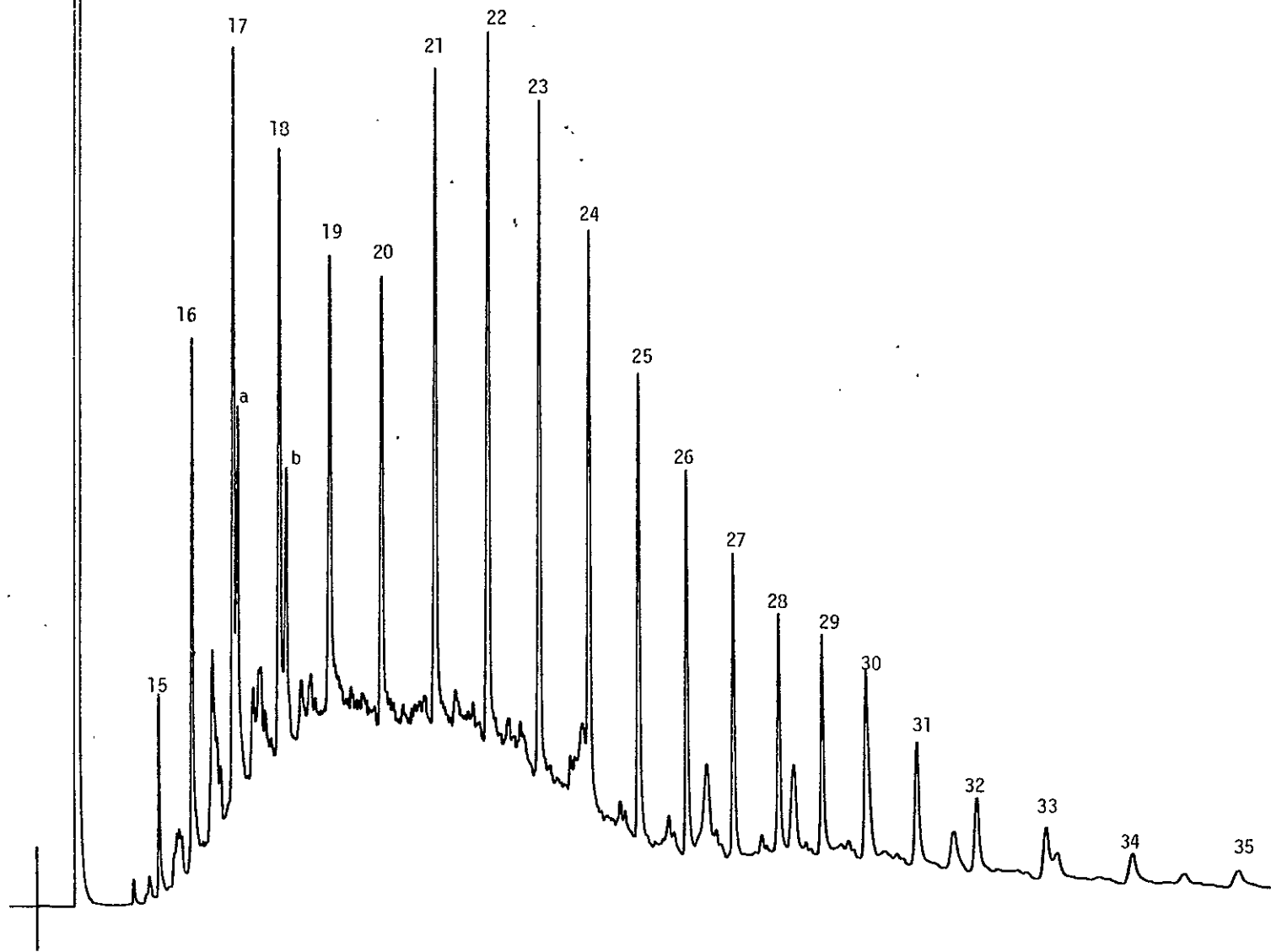
b = ip-C₂₀ = Isoprenoid Phytane

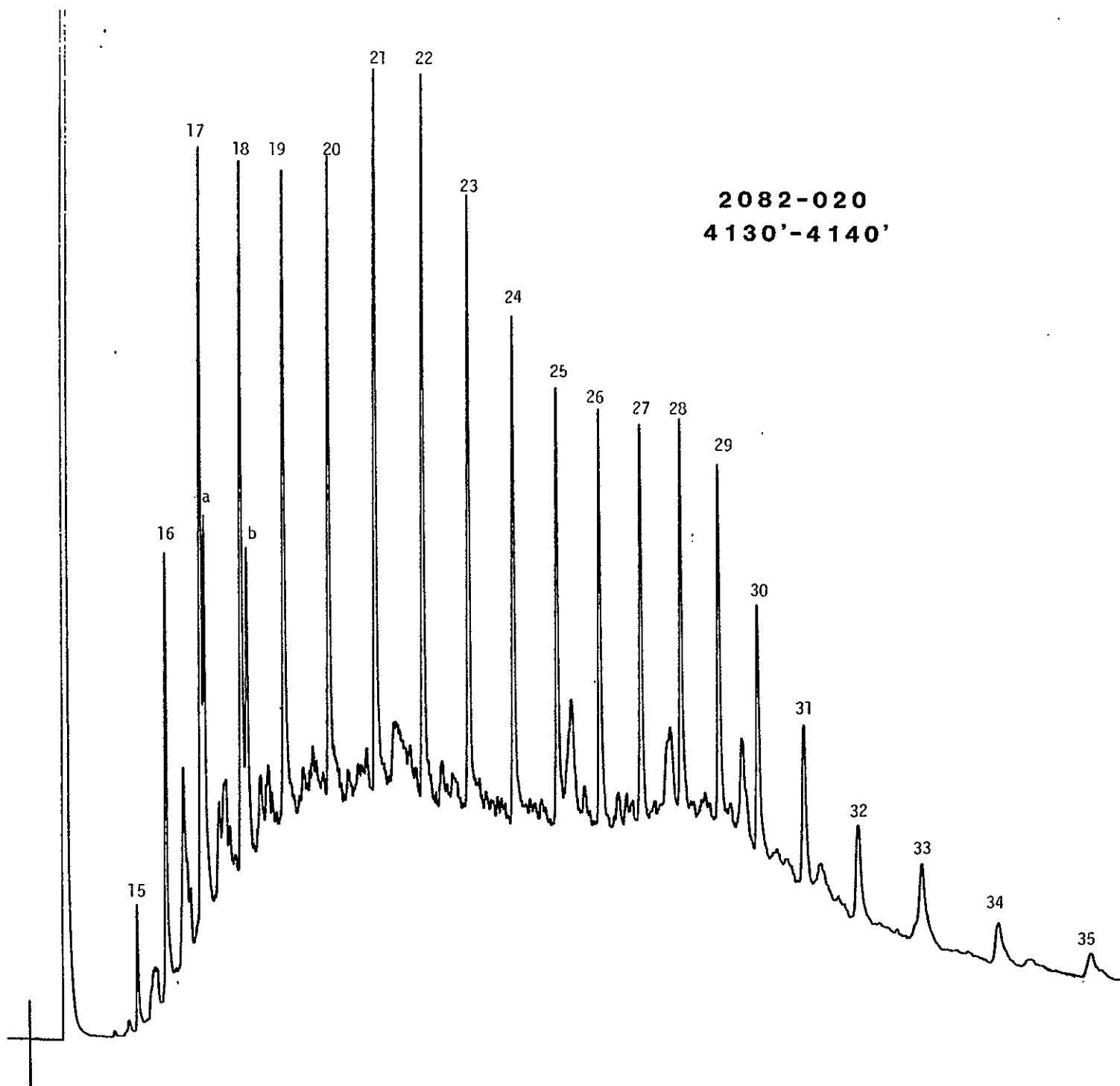


2082-009
3250'-3260'

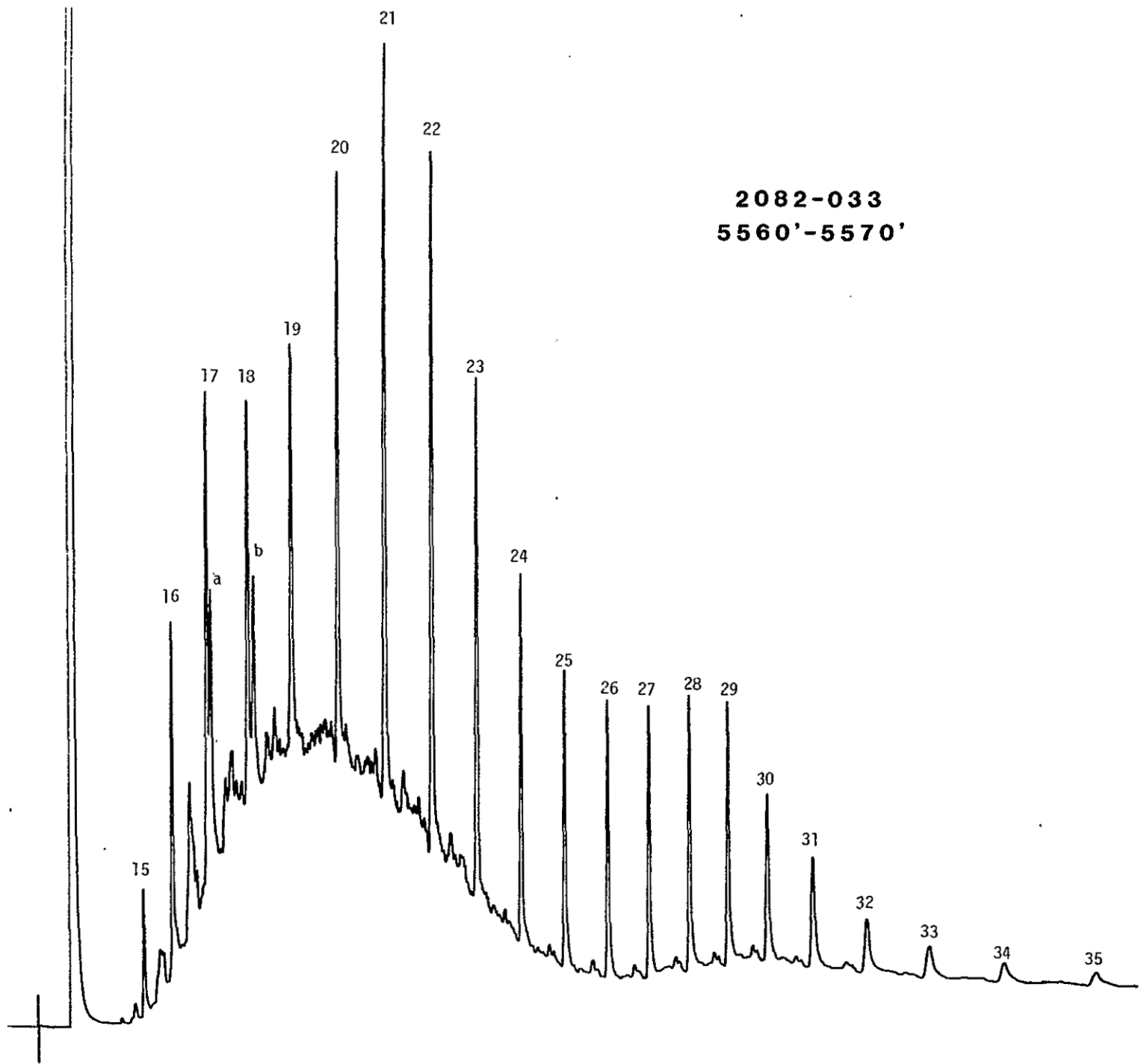


2082-017
4000'-4010'

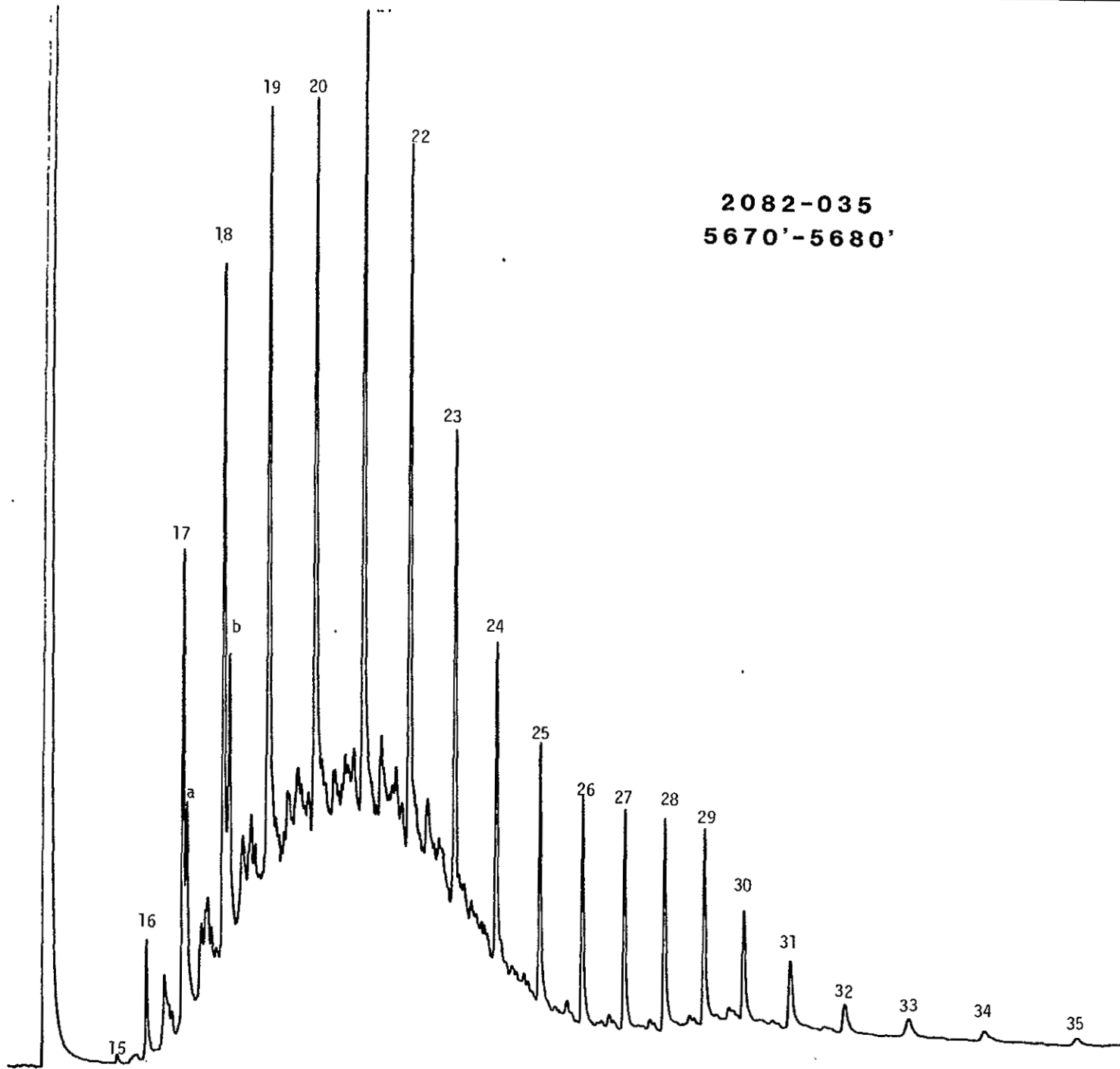




2082-020
4130'-4140'



2082-035
5670'-5680'

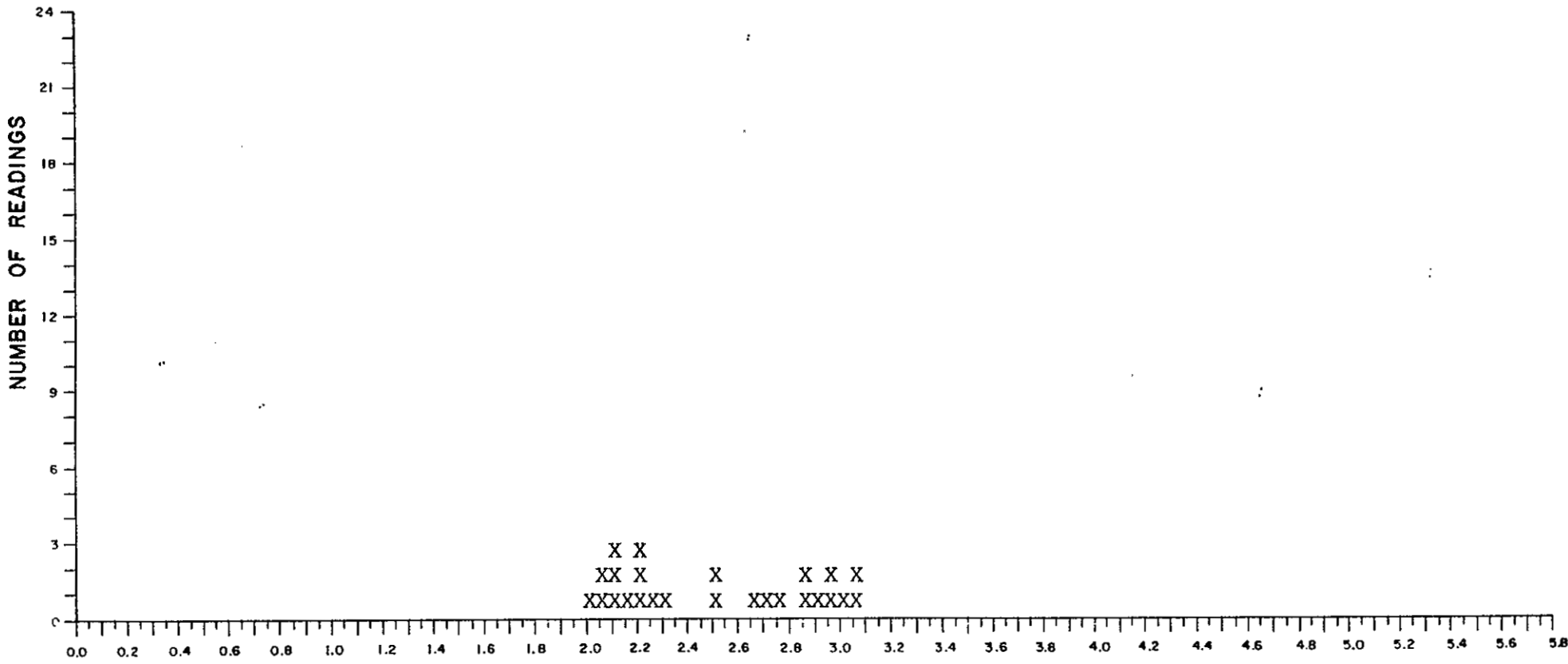


GEOCHEM NO. 2082-015 TYPE OF SAMPLE: CTG DEPTH/SAMPLE NO. 3890

CLIENT'S NAME NEW MEXICO BUREAU OF MINES WELL NAME COCKRELL #1 PLAYAS

(NO. OF READINGS = 25) 2.04 2.08 2.08 2.10 2.10 2.12 2.19 2.20 2.22 2.24 2.26 2.33 2.52 2.53
 2.65 2.72 2.79 2.87 2.88 2.93 2.96 2.99 3.04 3.08 3.09

<u>POPULATION</u>	<u>NO. OF READINGS</u>	<u>MIN. Ro (%)</u>	<u>MAX. Ro (%)</u>	<u>MEAN Ro (%)</u>	<u>STD. DEV. (%)</u>	<u>REMARKS</u>
(1)	25	2.04	3.09	2.52	0.381	



VITRINITE REFLECTANCE HISTOGRAM