

NMBMMR Open-File Report 344

THE HYDROCARBON POTENTIAL OF THE
TUCUMCARI BASIN, NEW MEXICO

Appendix A
Geochemical Data

Robertson Research (U.S.), Inc.

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APPENDIX A

GEOCHEMICAL DATA

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AMOCO, #1 BLACKBURN FARMS

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FIGURES

AMOCO, #1 G.C. BAKER

AMOCO #1 G.C. BAKER

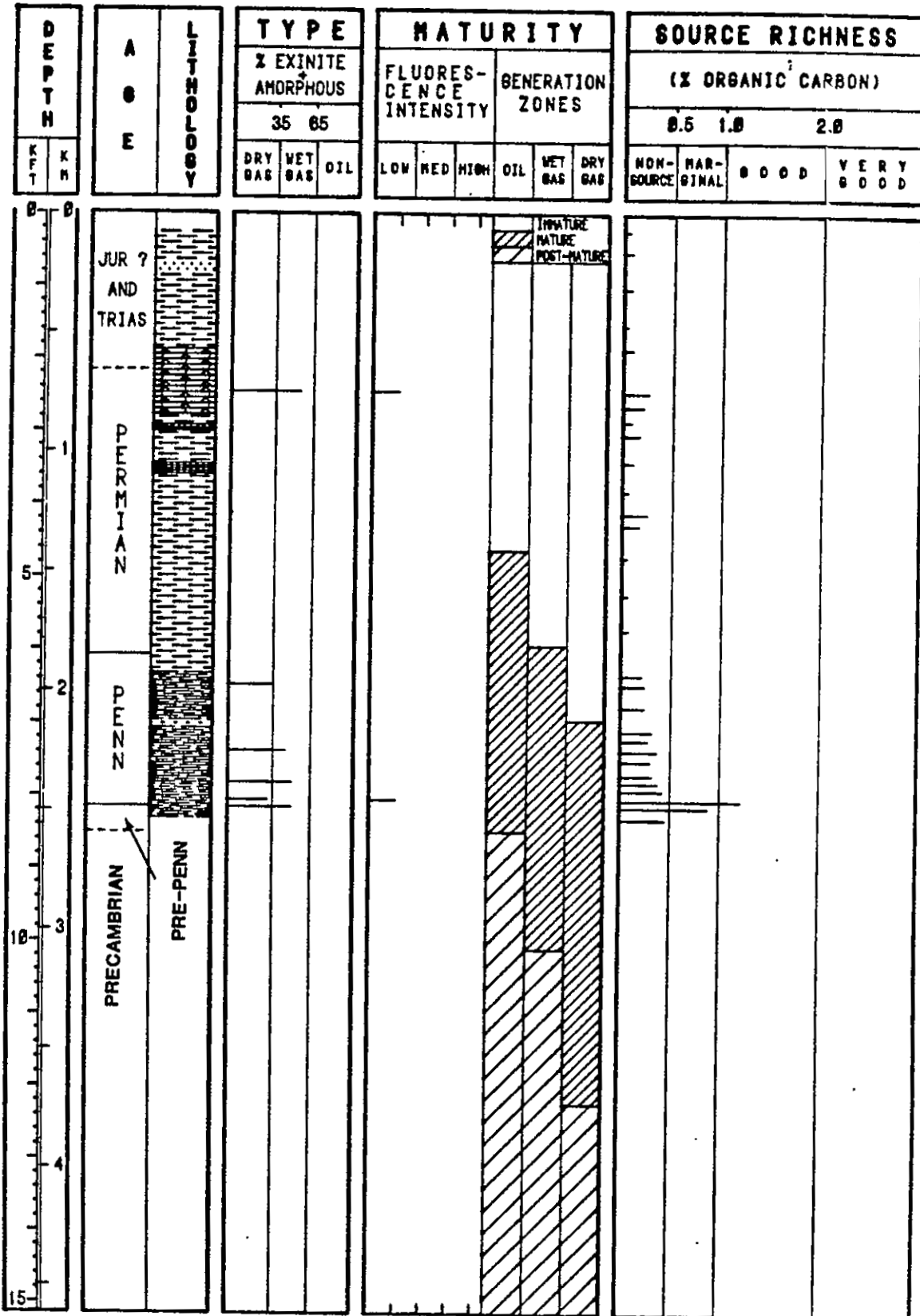


FIGURE A.1 Summary plots showing kerogen types, maturity and source richness.

AMOCO #1 G.C. BAKER

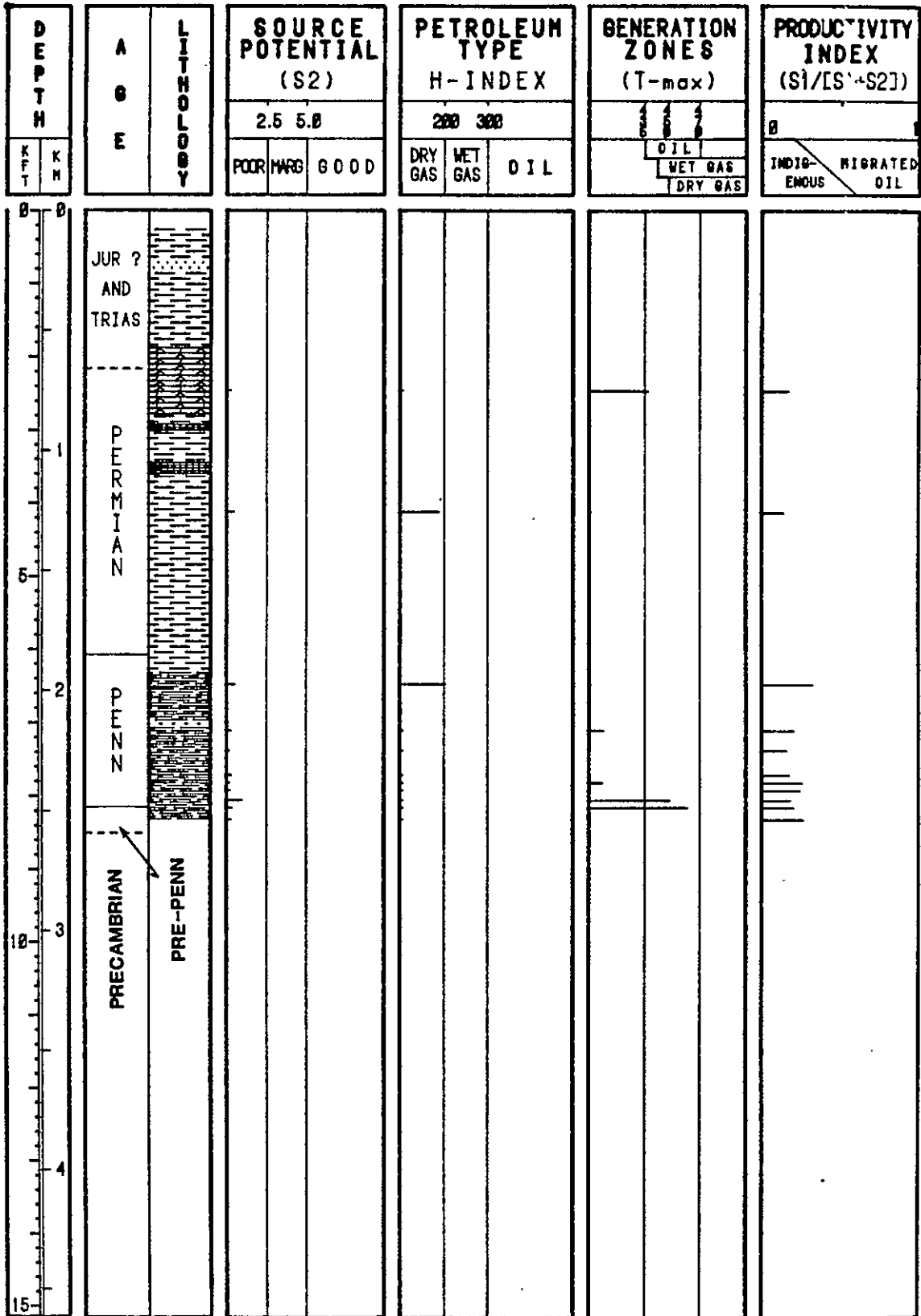


FIGURE A.2 Summary plots of Rock-Eval pyrolysis data.

AMOCO #1 G.C. BAKER

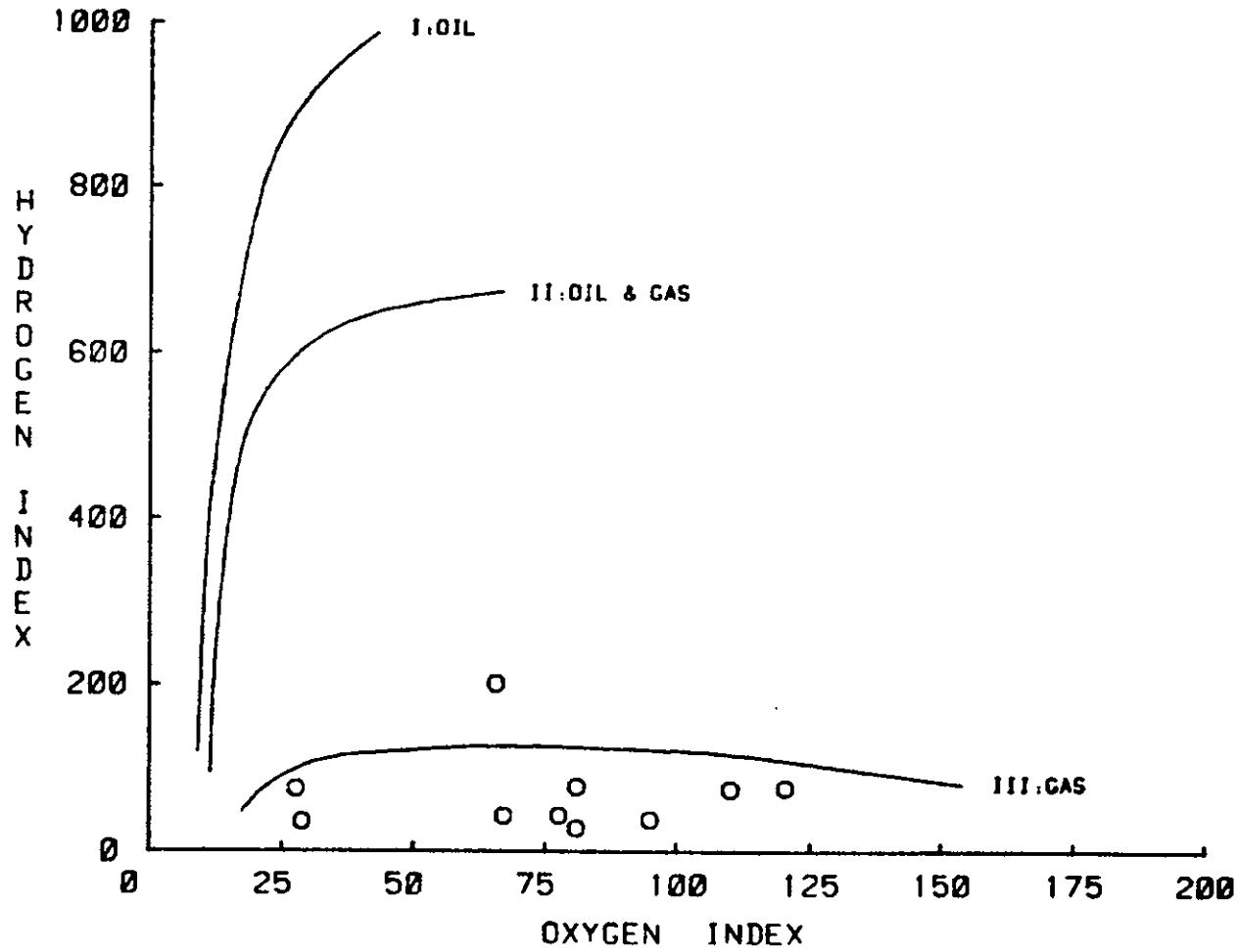


FIGURE A.3 Kerogen type determination from Rock-Eval pyrolysis data.

AMOCO #1 G.C. BAKER

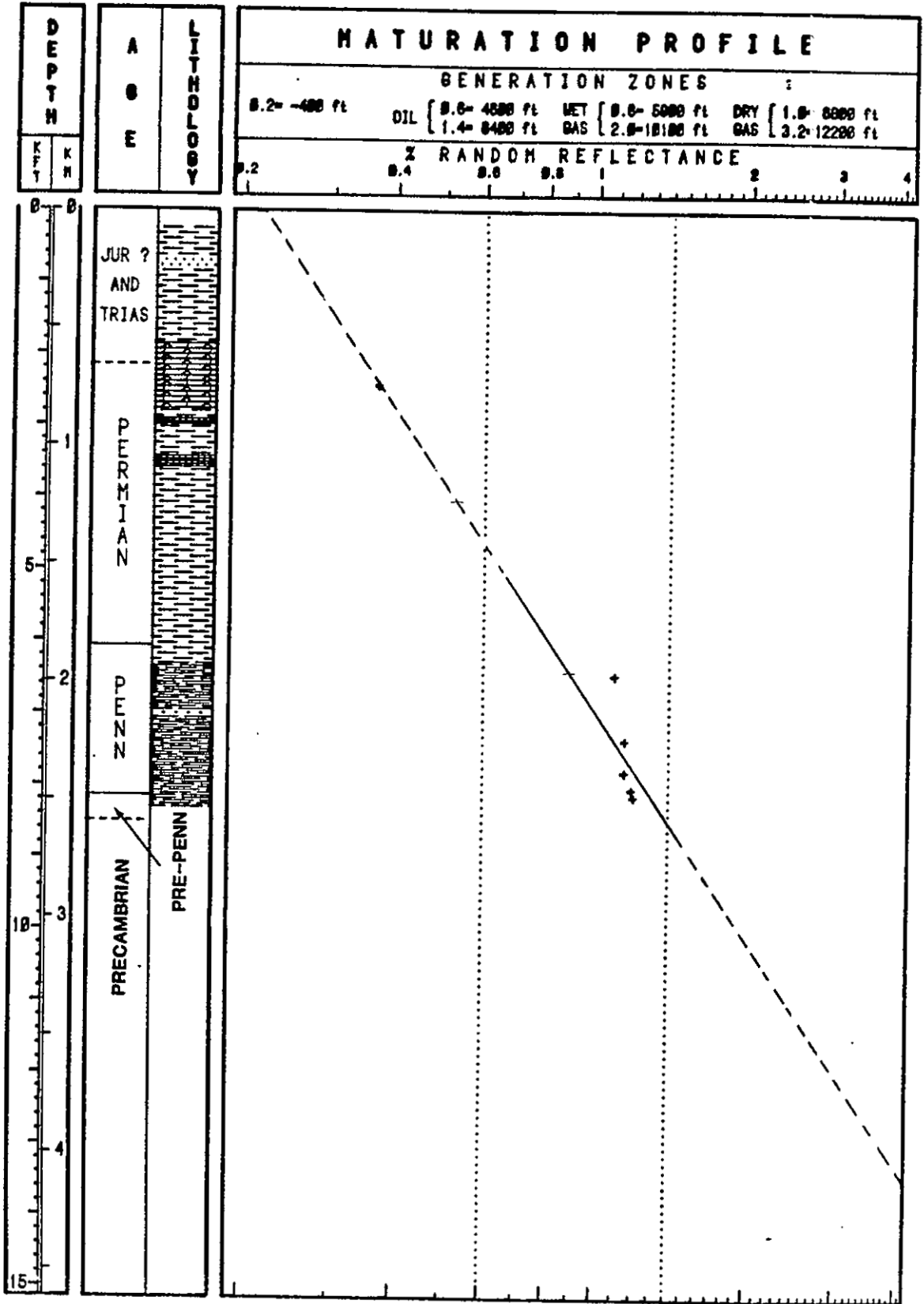


FIGURE A.4 Maturation profile based on vitrinite reflectance data.

AMOCO, # 1 BLACKBURN FARMS

AMOCO BLACKBURN FARMS

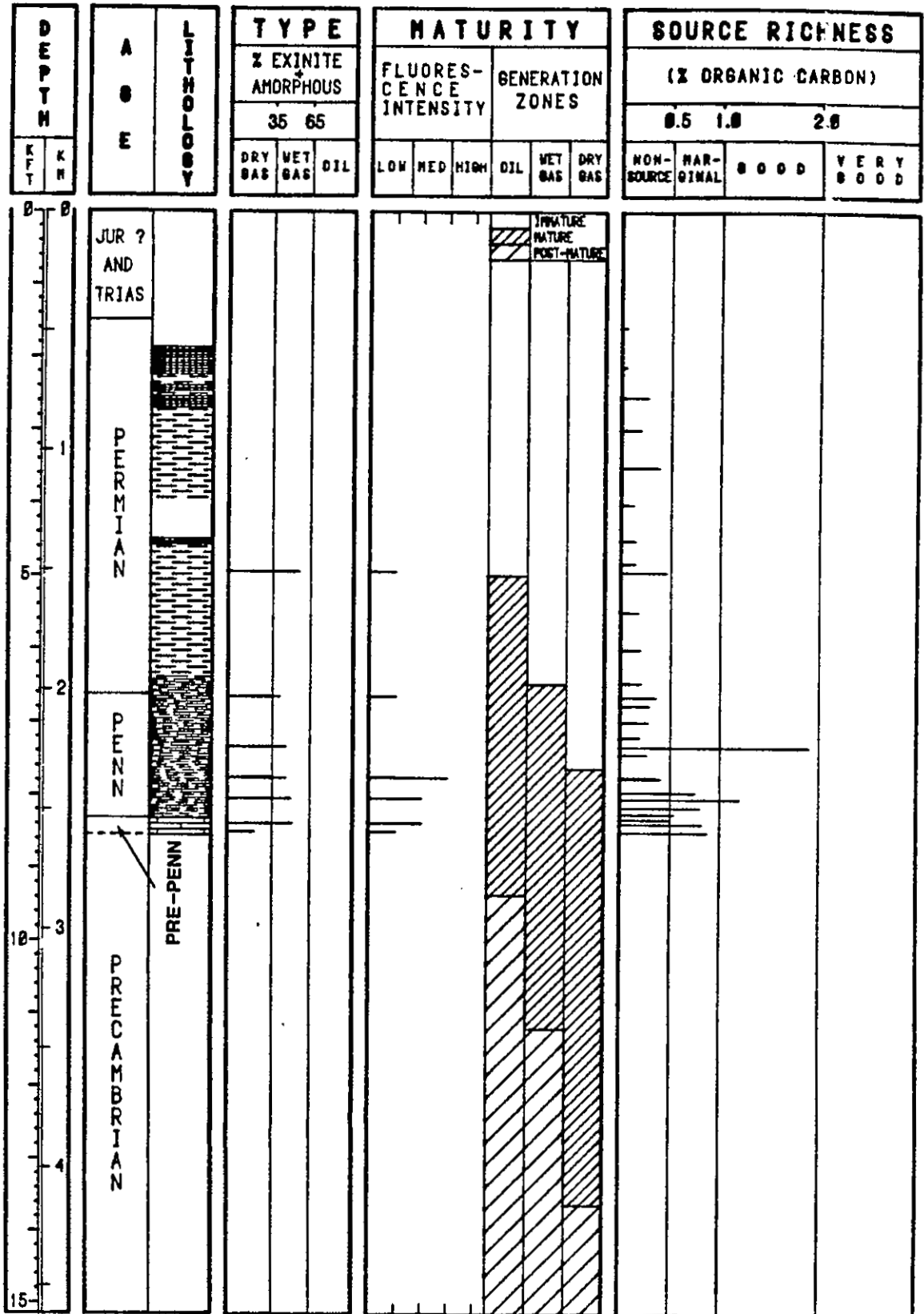


FIGURE A.5 Summary plots showing kerogen types, maturity and source richness.

AMOCO BLACKBURN FARMS

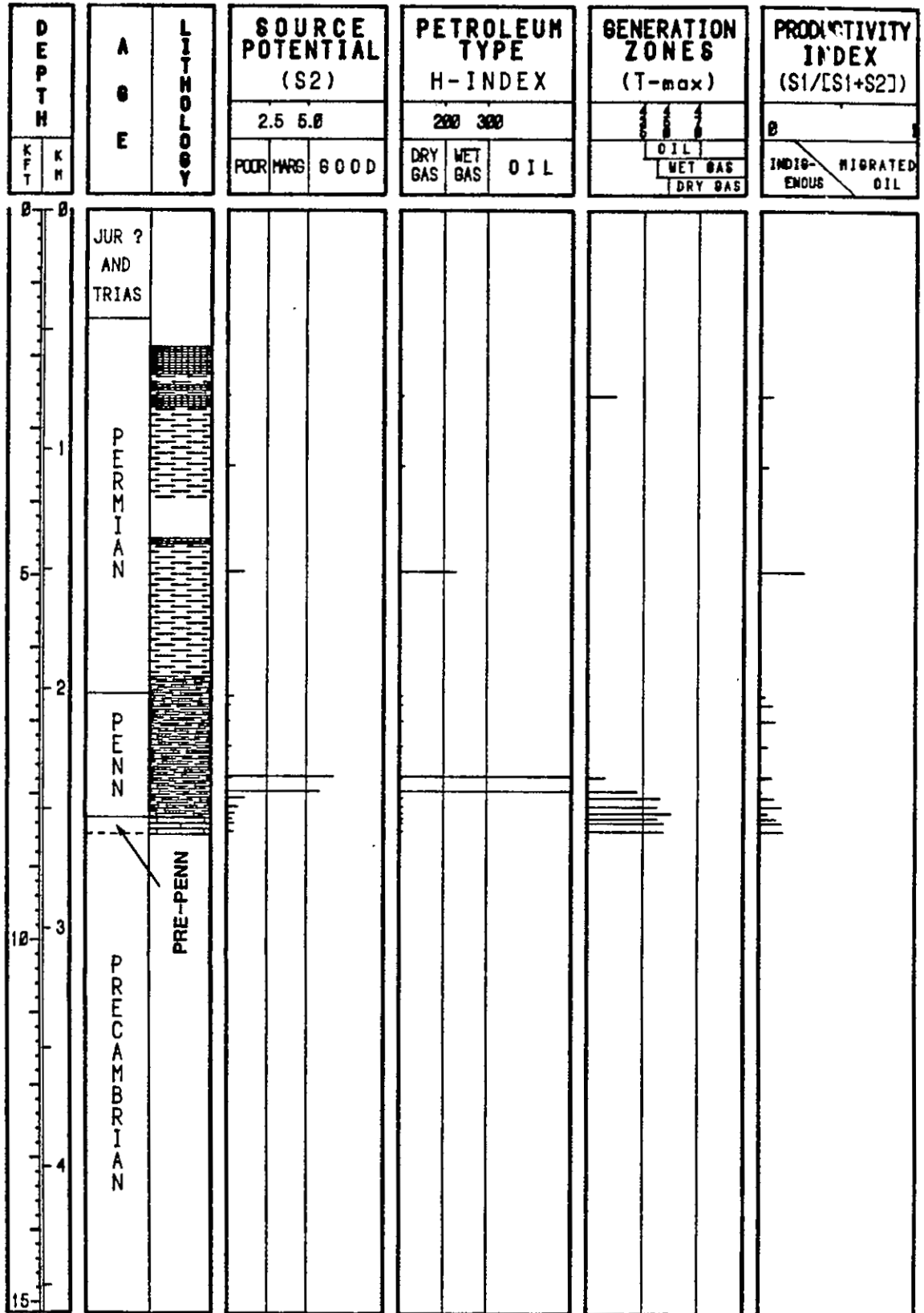


FIGURE A.6 Summary plots of Rock-Eval pyrolysis data.

AMOCO BLACKBURN FARMS

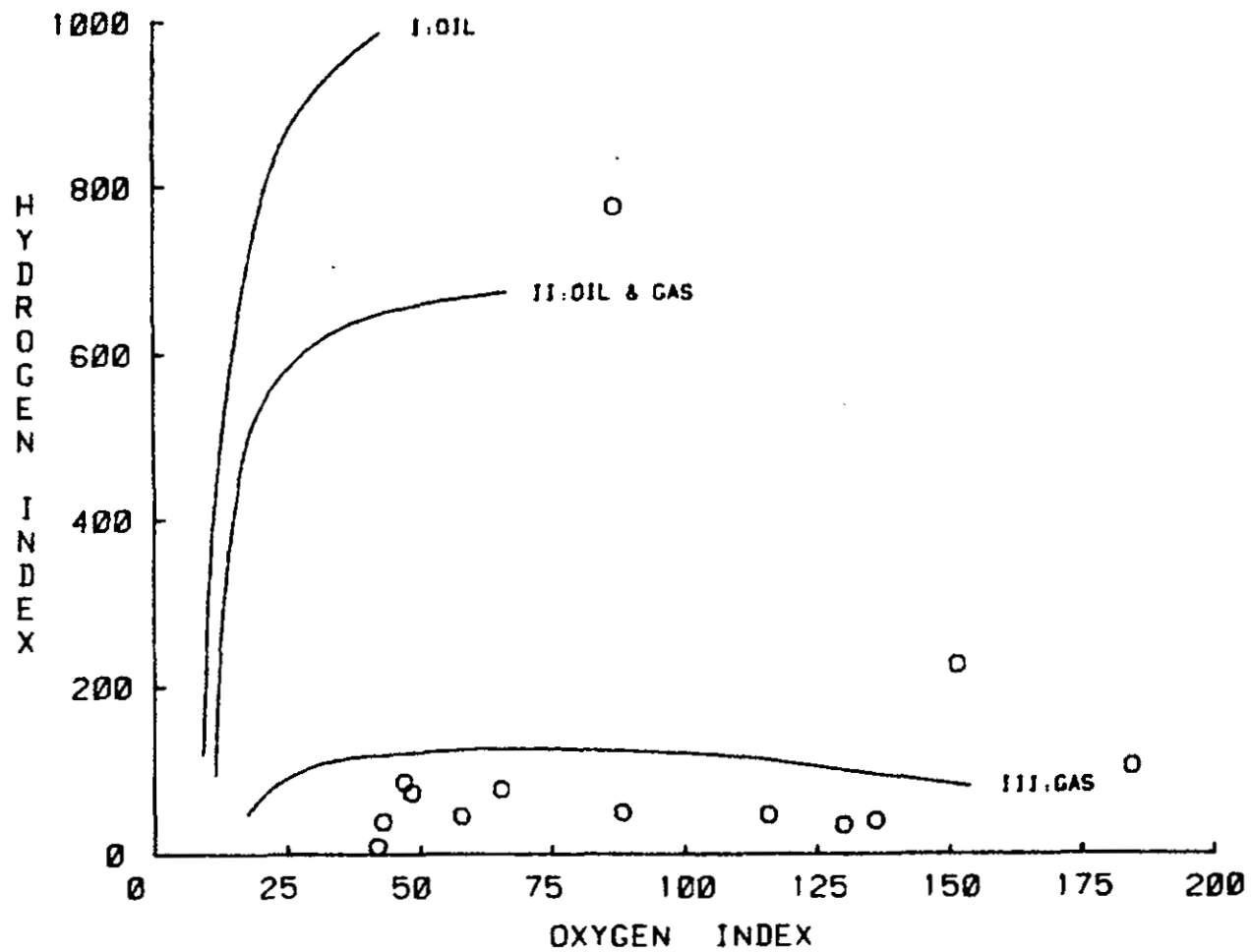


FIGURE A.7 Kerogen type determination from Rock-Eval pyrolysis data.

AMOCO BLACKBURN FARMS

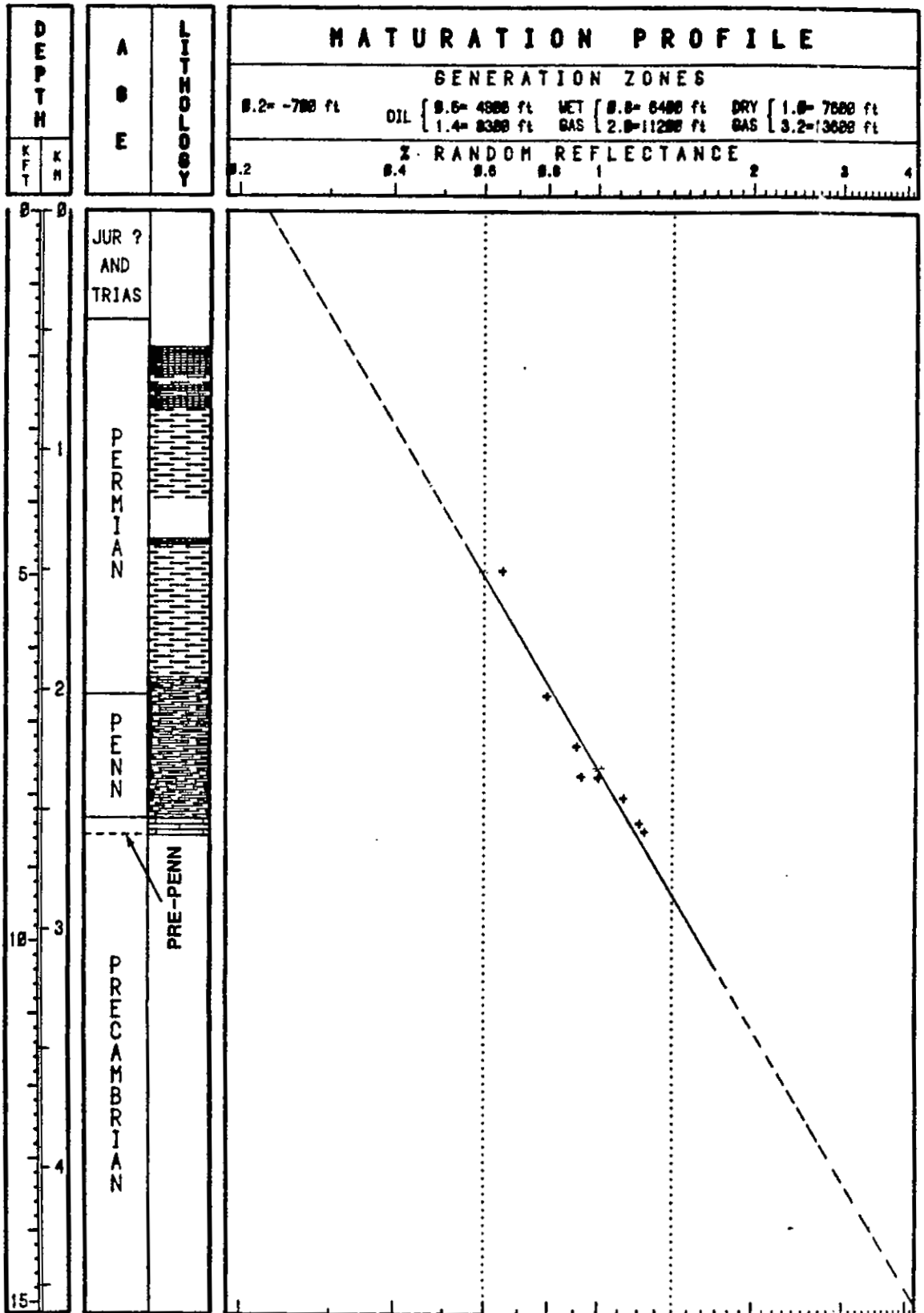


FIGURE A.8 Maturation profile based on vitrinite reflectance data.

SUNRAY, #1 BRISCOE

SUNRAY #1 IRA J. BRISCOE

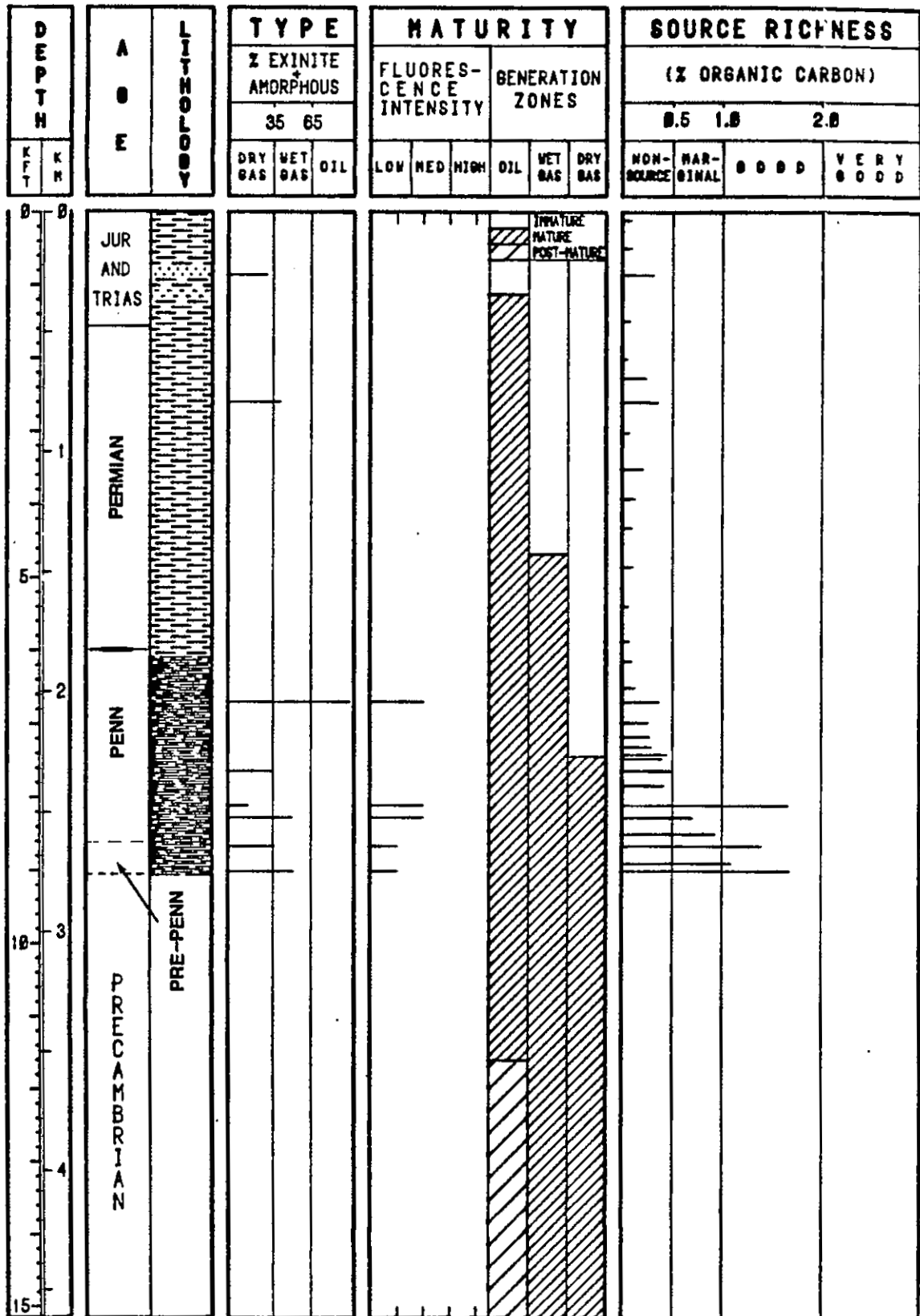
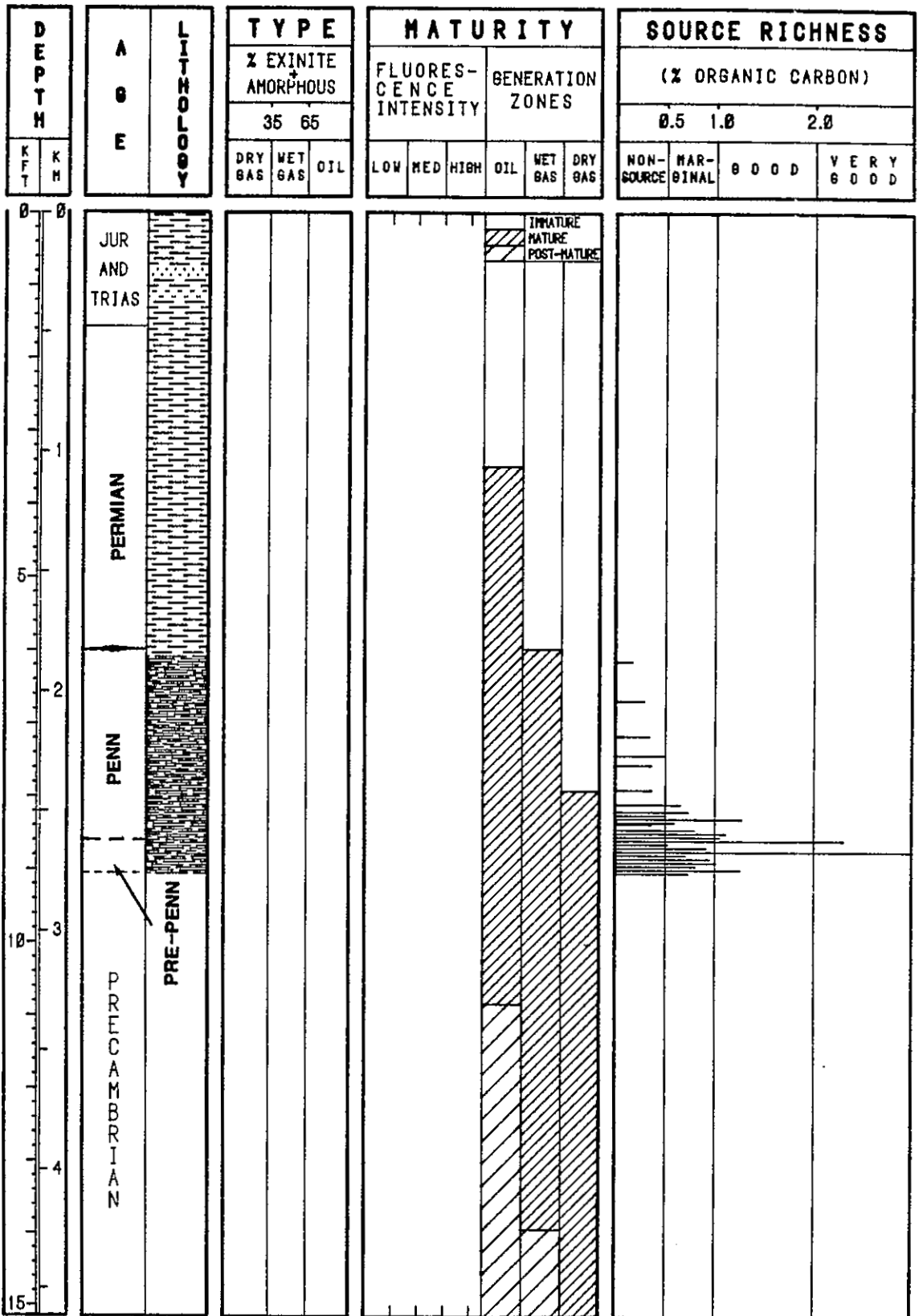


FIGURE A.9 Summary plots showing kerogen types, maturity and source richness.

BRISCOE #1 (SUN)



NON RR(US) DATA

FIGURE A.10 Summary plots showing kerogen types, maturity and source richness.

SUNRAY #1 IRA J. BRISCOE

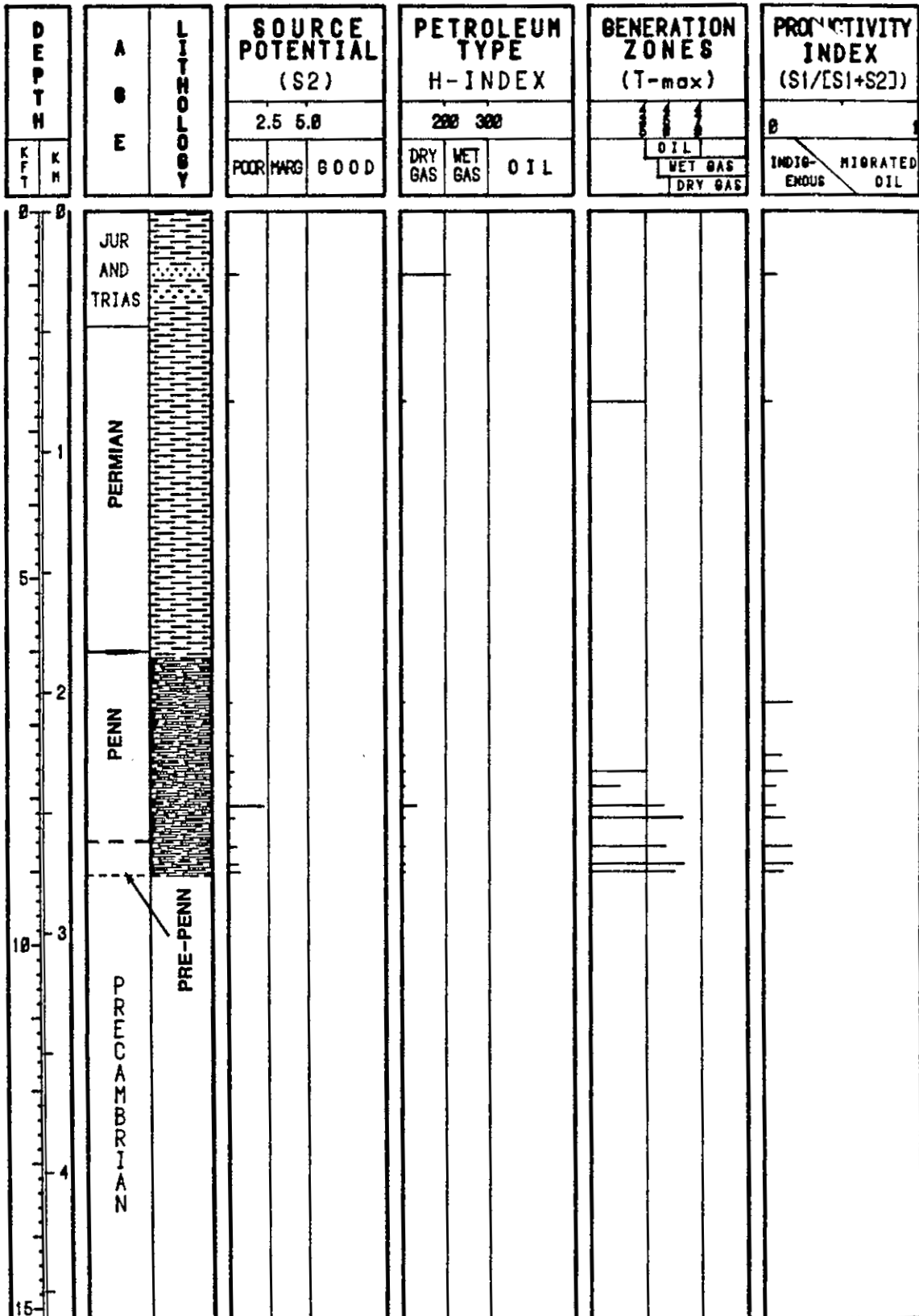
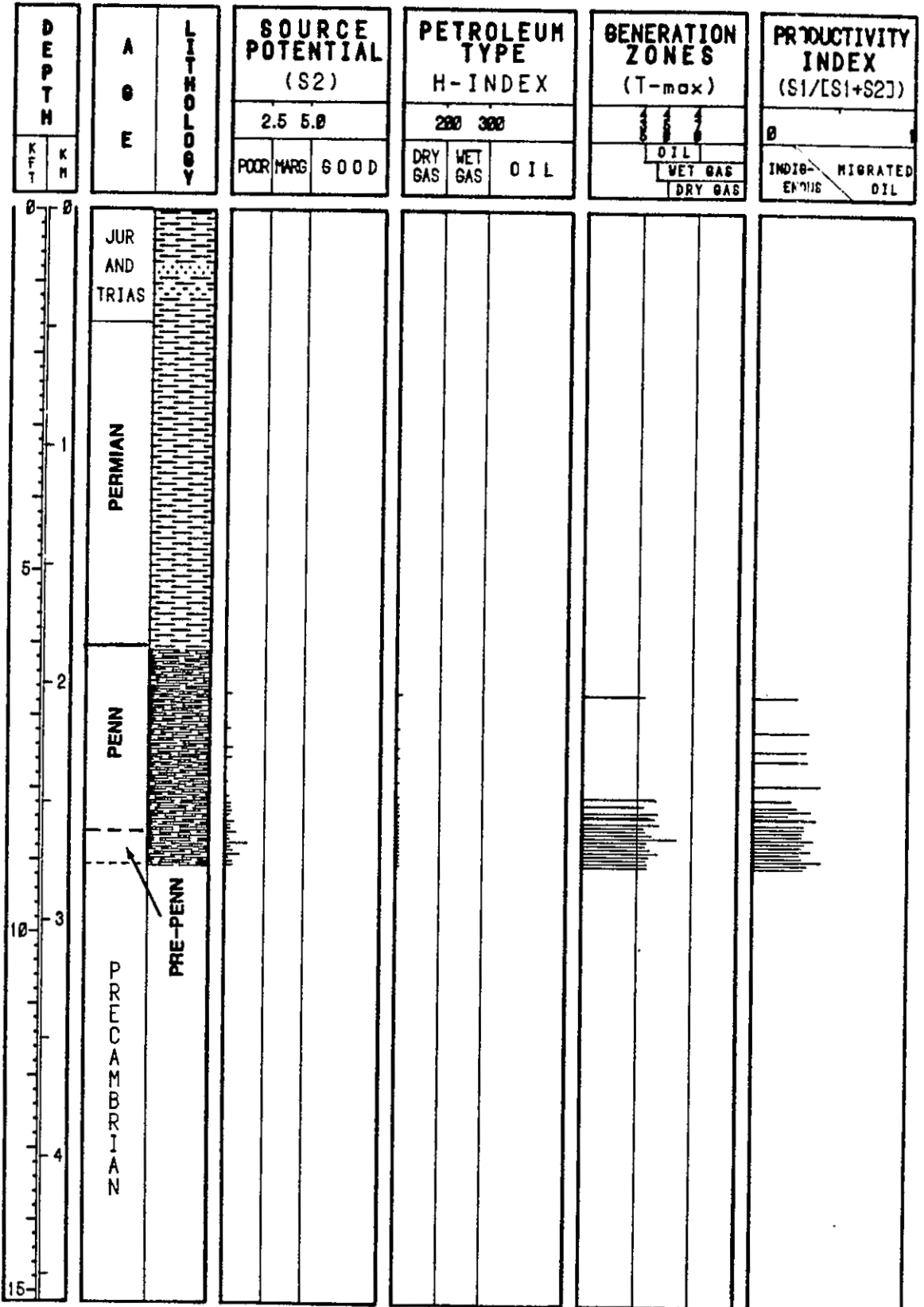


FIGURE A.11 Summary plots of Rock-Eval pyrolysis data.

BRISCOE #1 (SUN)



NON RR(US) DATA

FIGURE A.12 Summary plots of Rock-Eval pyrolysis data.

SUNRAY #1 IRA J. BRISCOE

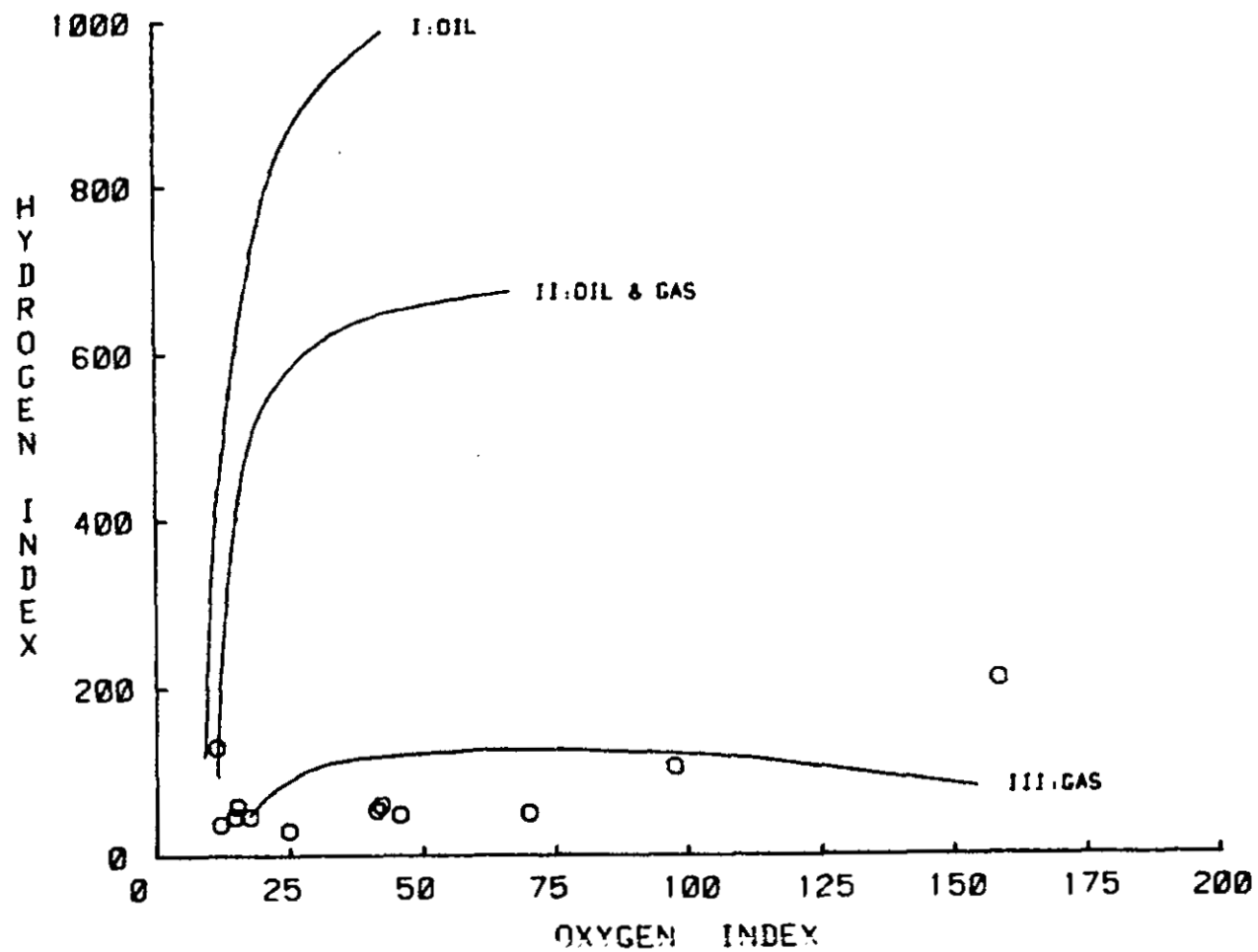
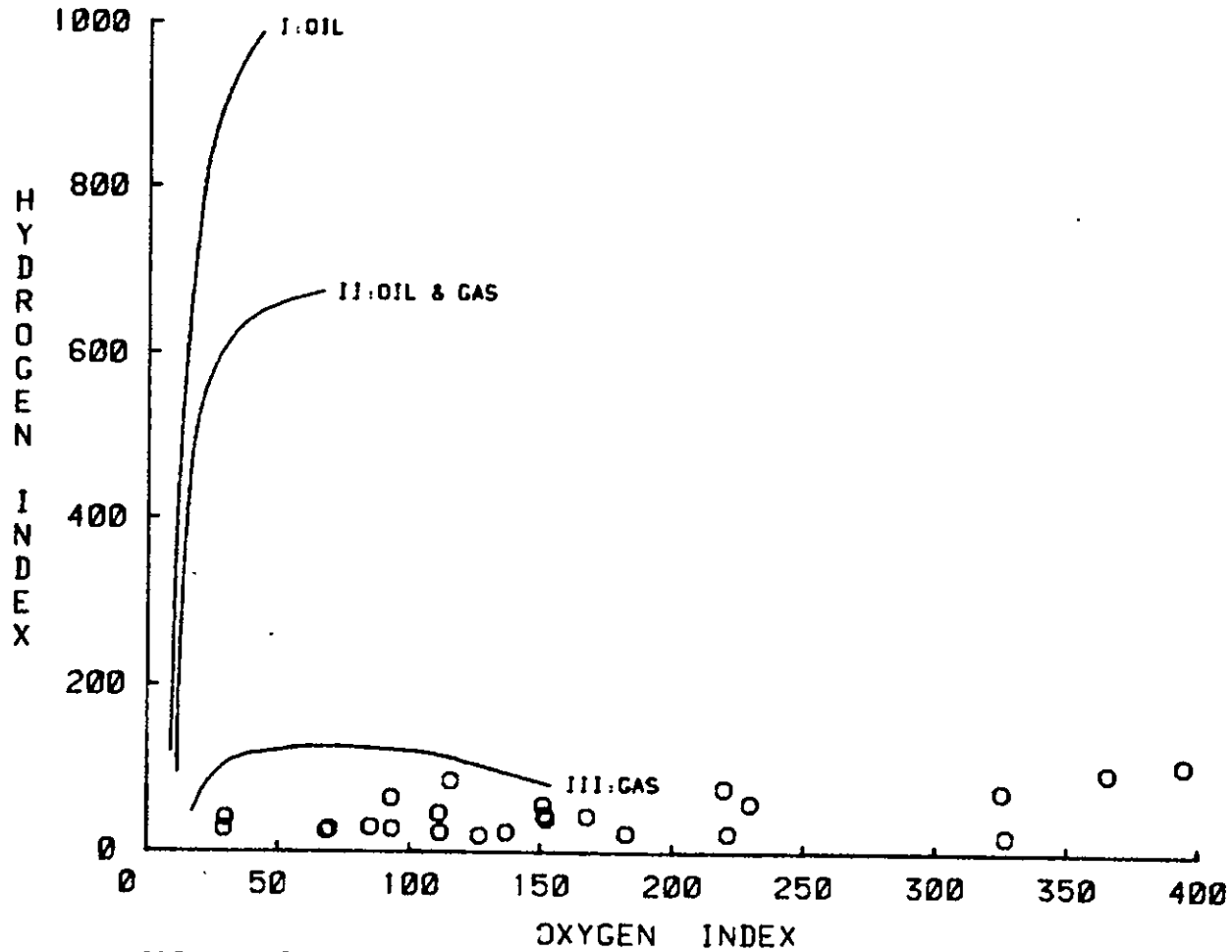


FIGURE A.13 Kerogen type determination from Rock-Eval pyrolysis data.

BRISCOE #1 (SUN)



NON RR(US) DATA

FIGURE A.14 Kerogen type determination from Rock-Eval pyrolysis data.

SUNRAY #1 IRA J. BRISCOE

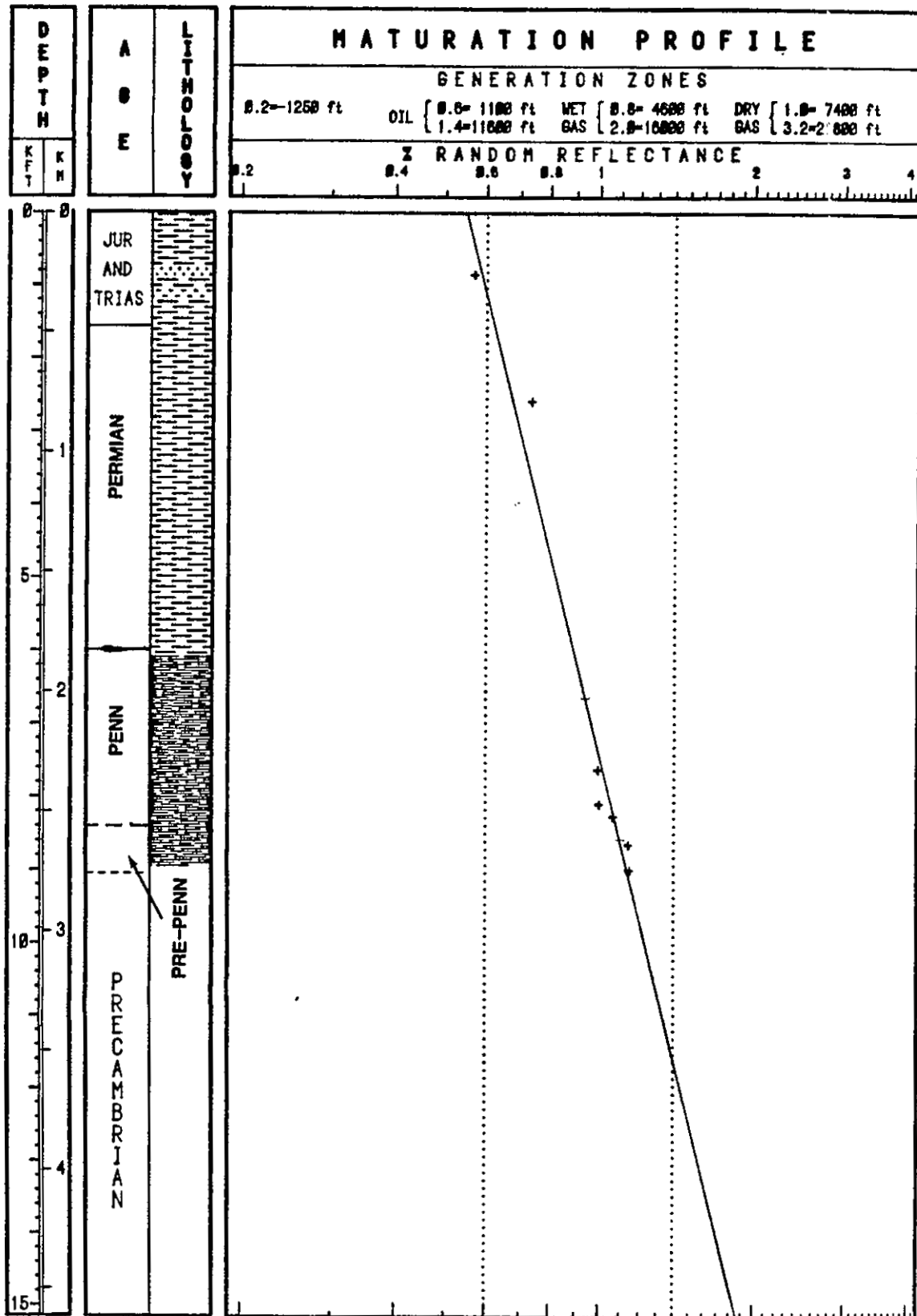
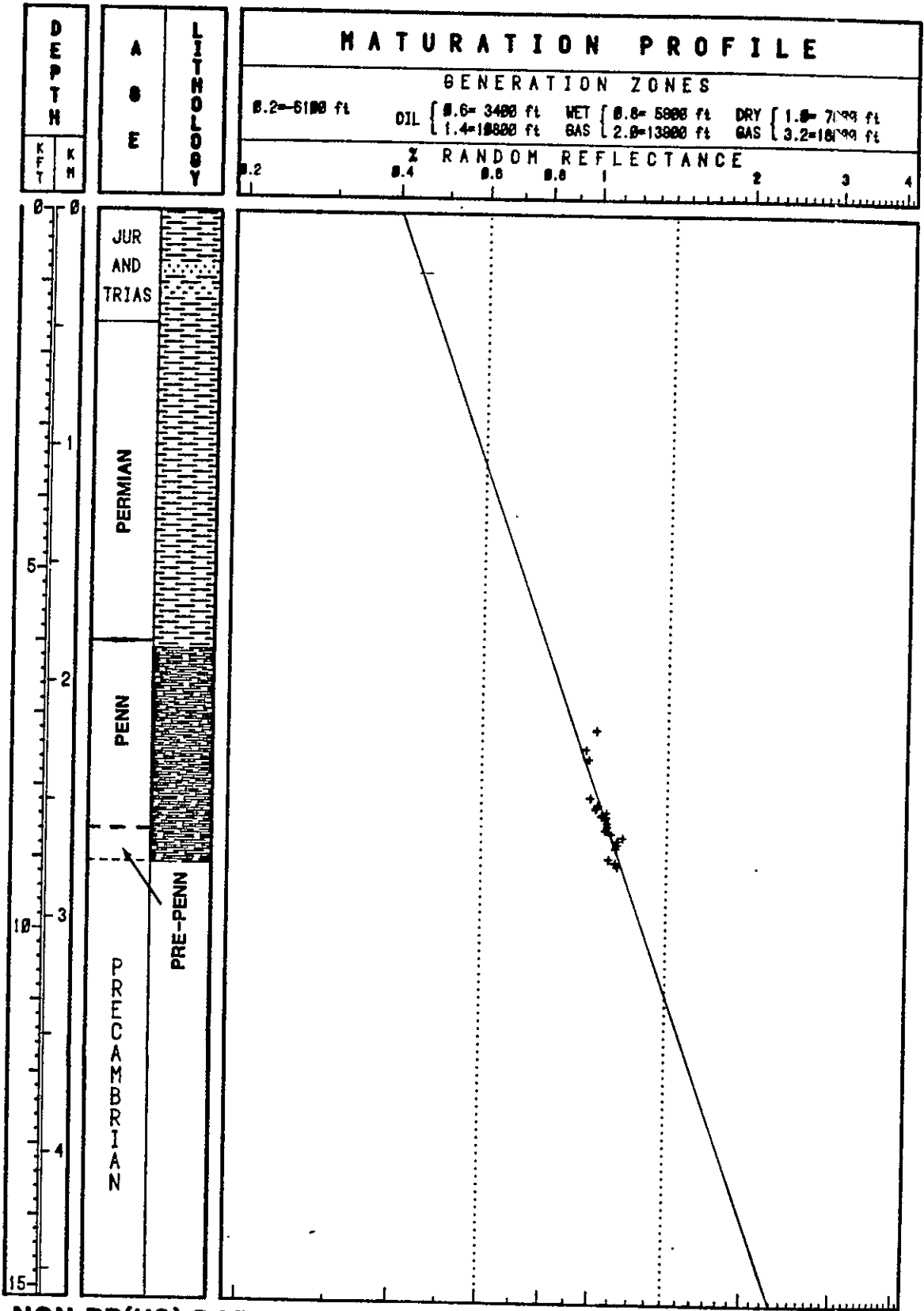


FIGURE A.15 Maturation profile based on vitrinite reflectance data.

BRISCOE (SUN)

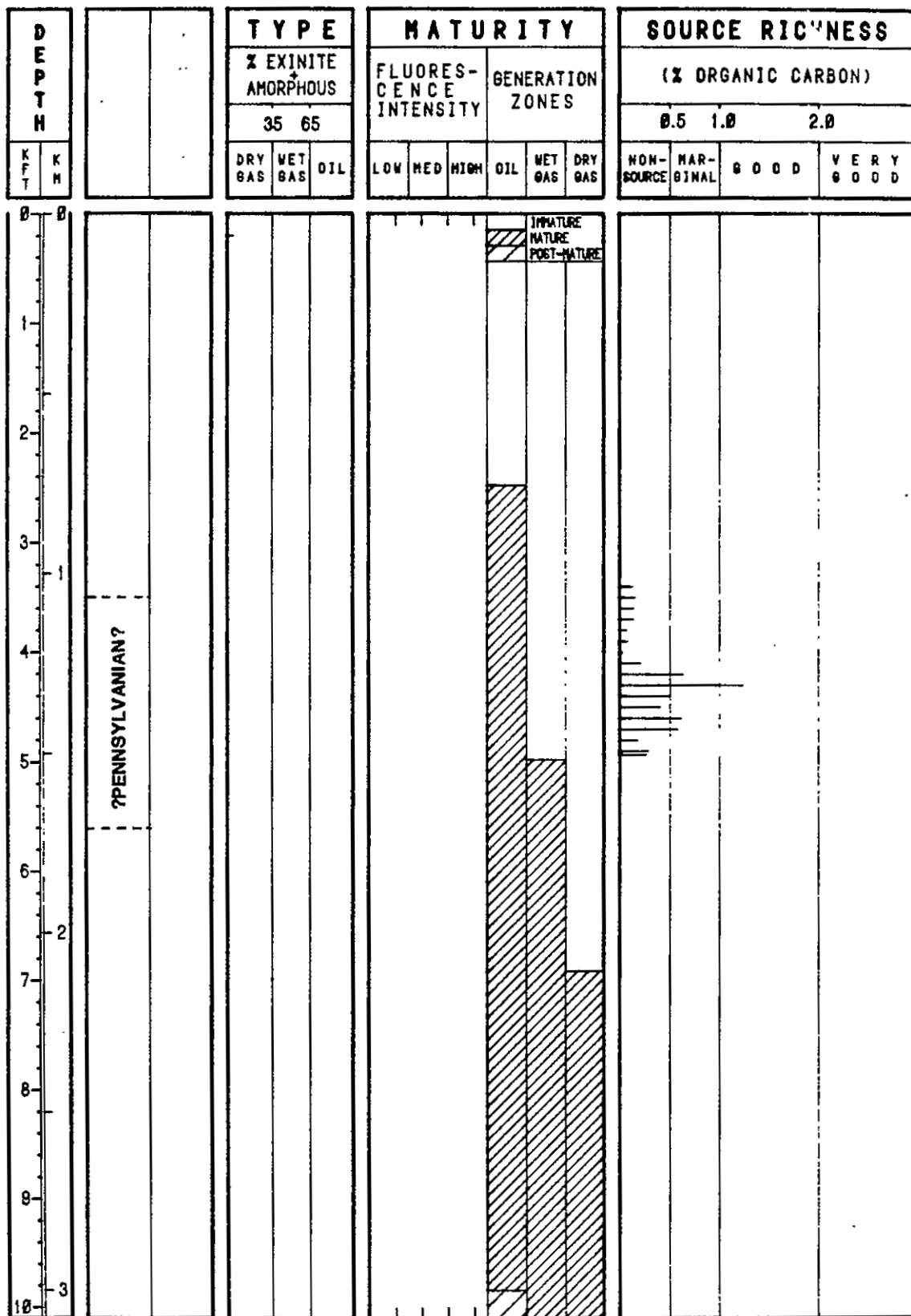


NON RR(US) DATA

FIGURE A.16 Maturation profile based on vitrinite reflectance data.

PURETEX, #1 CHAPPEL RANCH

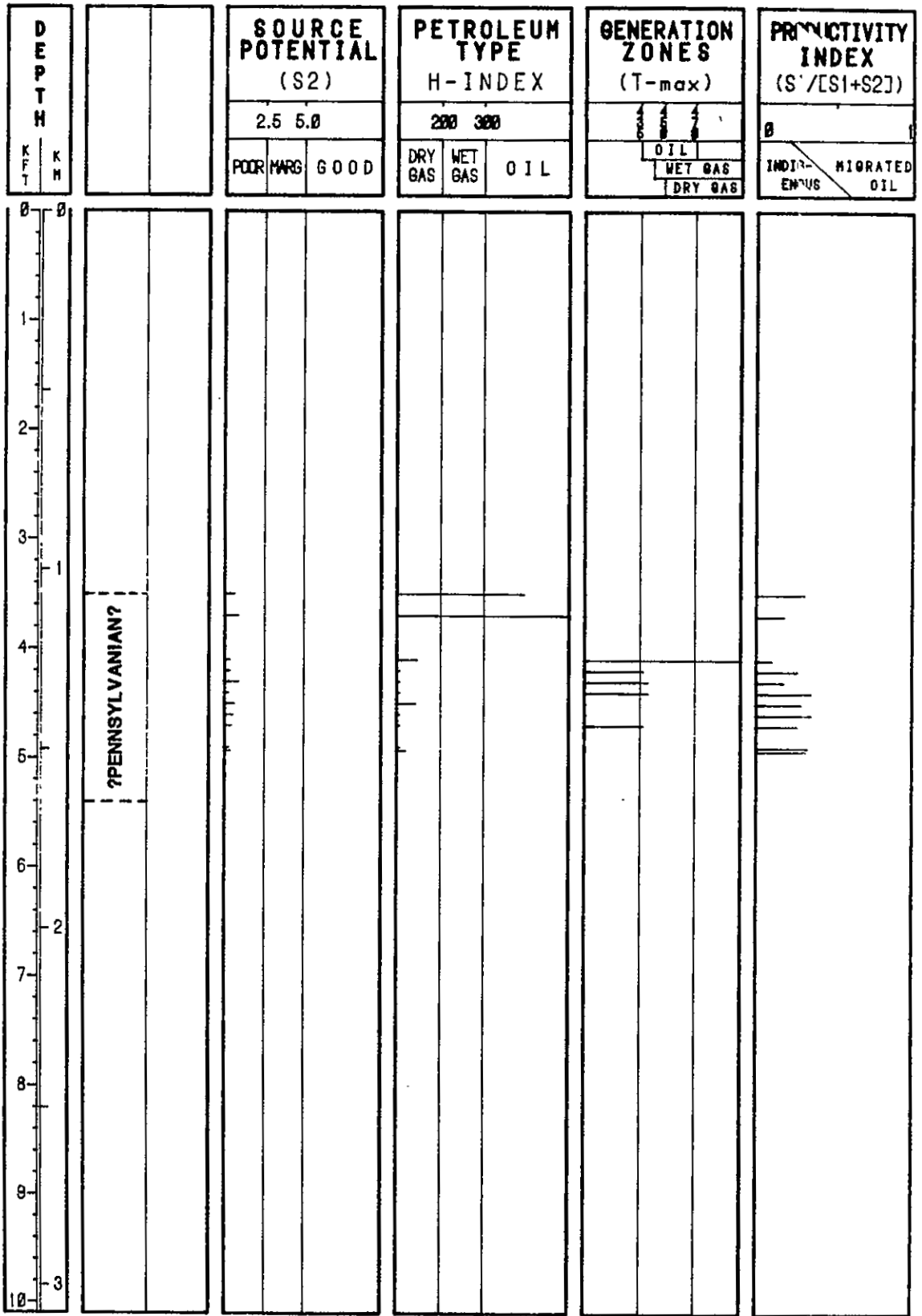
PURETEX CHAPPEL RANCH (SUN)



NON RR(US) DATA

FIGURE A.17 Summary plots showing kerogen types, maturity and source richness.

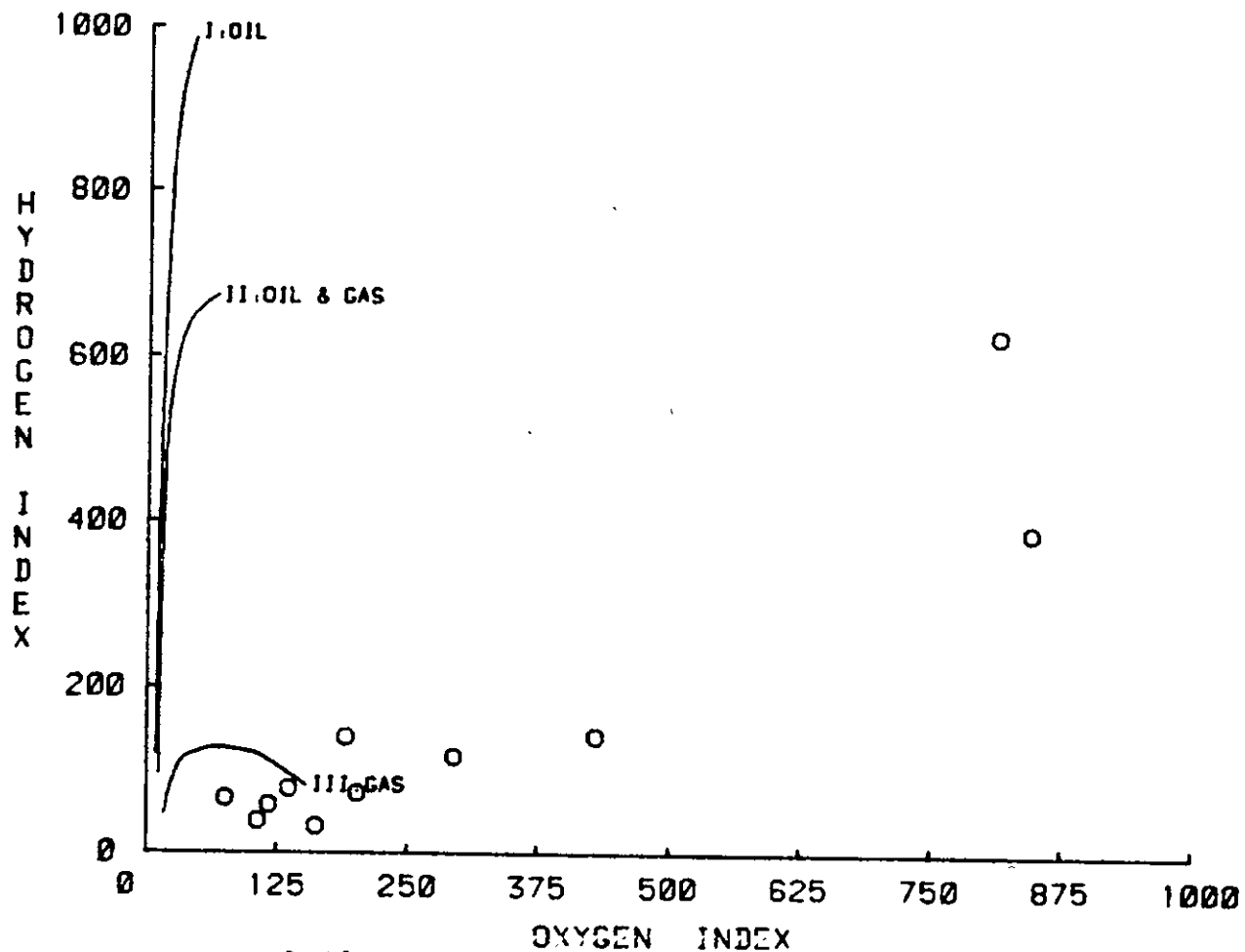
PURETEX CHAPPEL RANCH (SUN)



NON RR(US) DATA

FIGURE A.18 Summary plots of Rock-Eval pyrolysis data.

PURETEX CHAPPEL RANCH (SUN)



NON RR(US) DATA

FIGURE A.19 Kerogen type determination from Rock-Eval pyrolysis data.

PURETEX CHAPPEL RANCH (SUN)

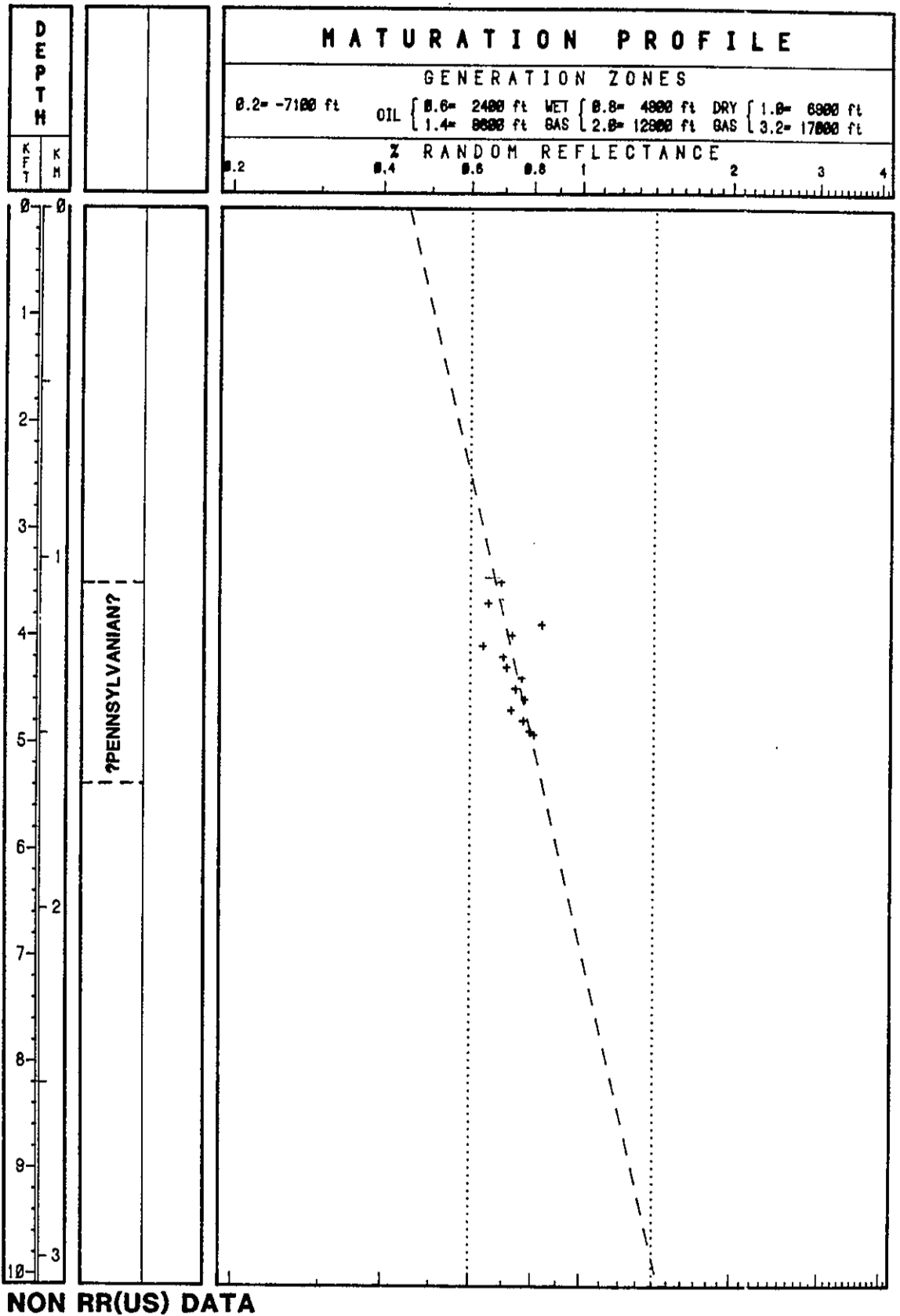
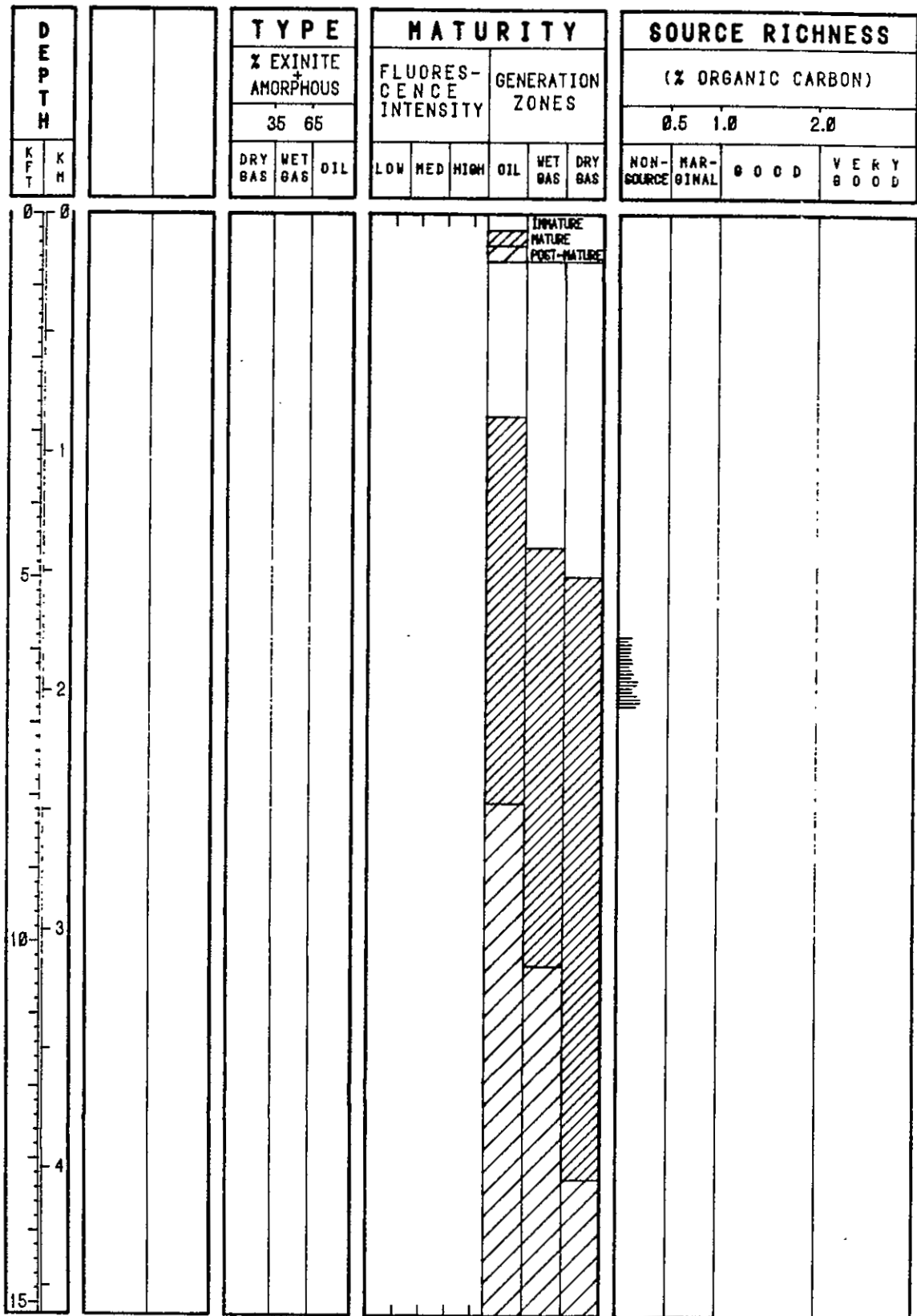


FIGURE A.20 Maturation profile based on vitrinite reflectance data.

STANOLIND, #1 FULLER

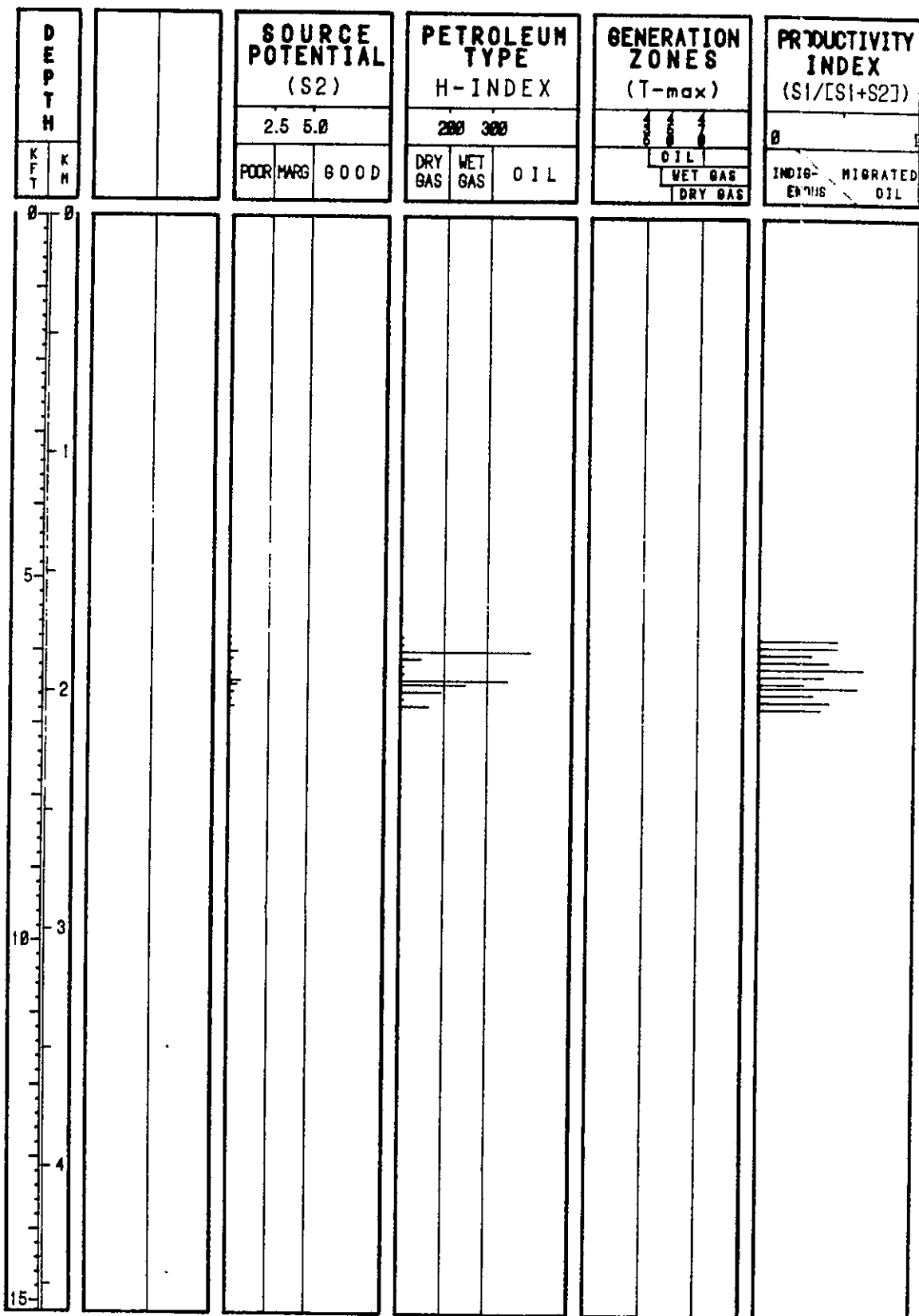
FULLER #1 (SUN)



NON RR(US) DATA

FIGURE A.21 Summary plots showing kerogen types, maturity and source richness.

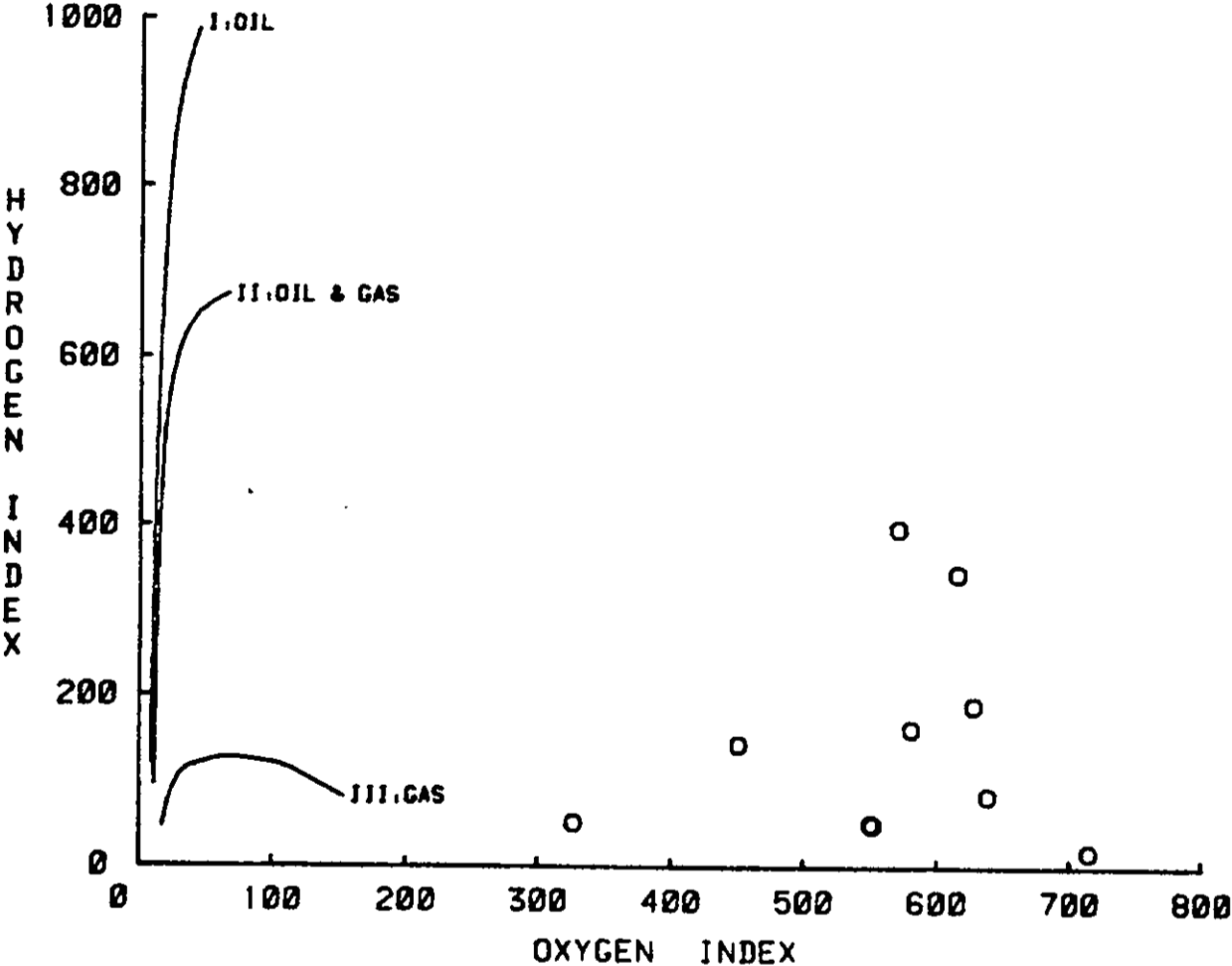
FULLER #1 (SUN)



NON RR(US) DATA

FIGURE A.22 Summary plots of Rock-Eval pyrolysis data.

FULLER #1 (SUN)



NON RR(US) DATA

FIGURE A.23 Kerogen type determination from Rock-Eval pyrolysis data.

FULLER #1 (SUN)

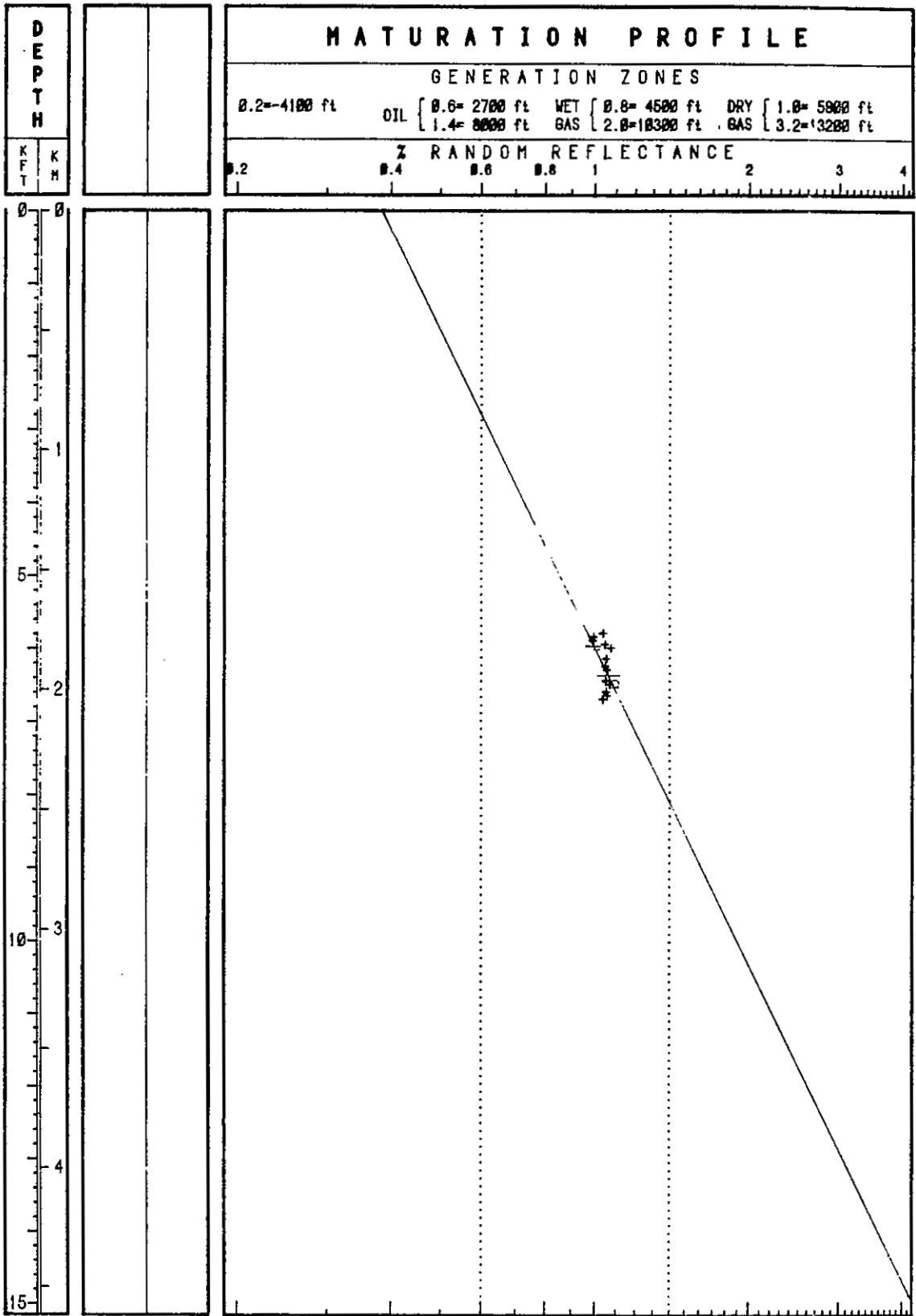


FIGURE A.24 Maturation profile based on vitrinite reflectance data.

GREEN ESTATE, #1 FRANKLIN, ASTON, AND FAIR

GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

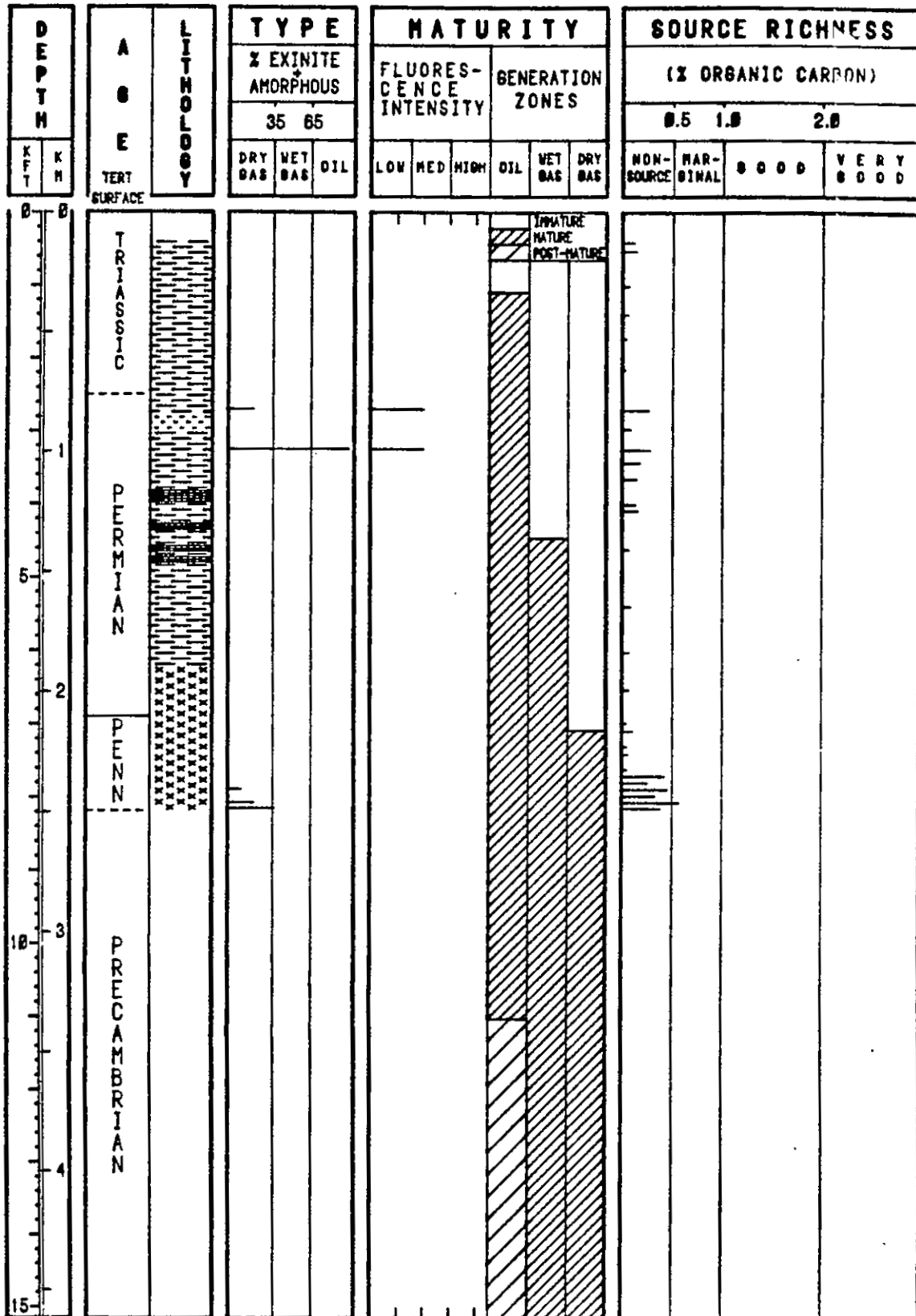


FIGURE A.25 Summary plots showing kerogen types, maturity and source richness.

GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

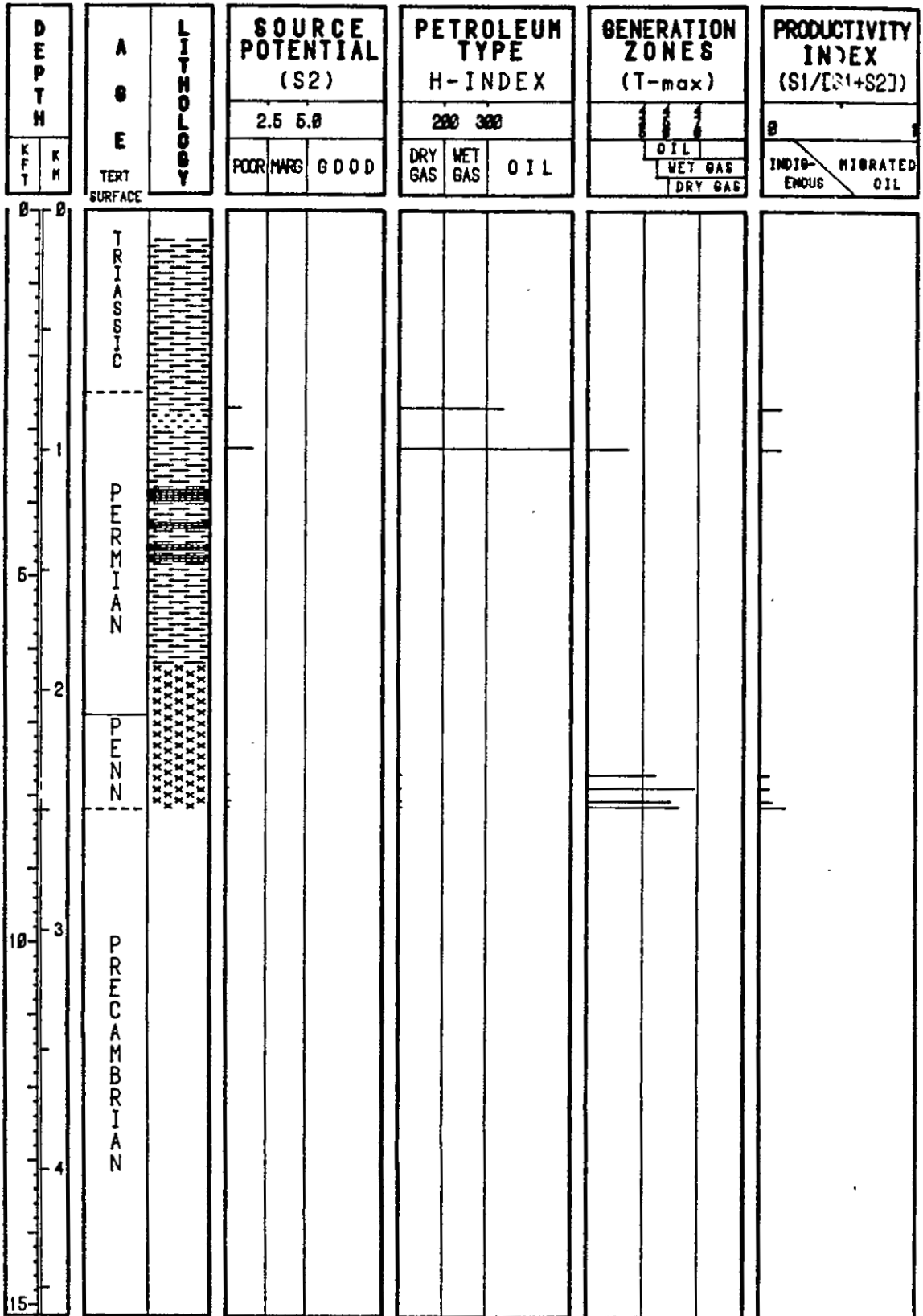


FIGURE A.26 Summary plots of Rock-Eval pyrolysis data.

GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

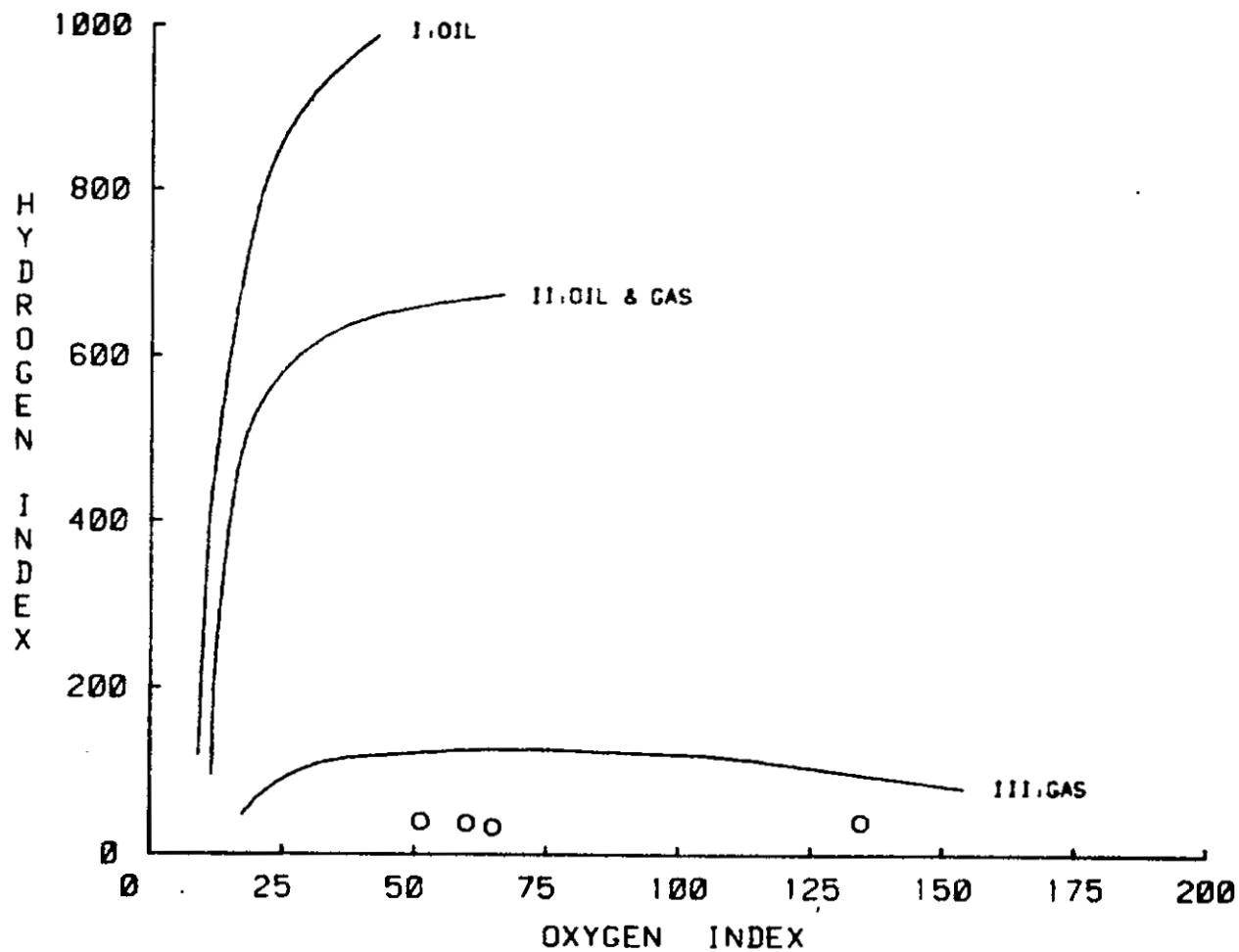


FIGURE A.27 Kerogen type determination from Rock-Eval pyrolysis data.

GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

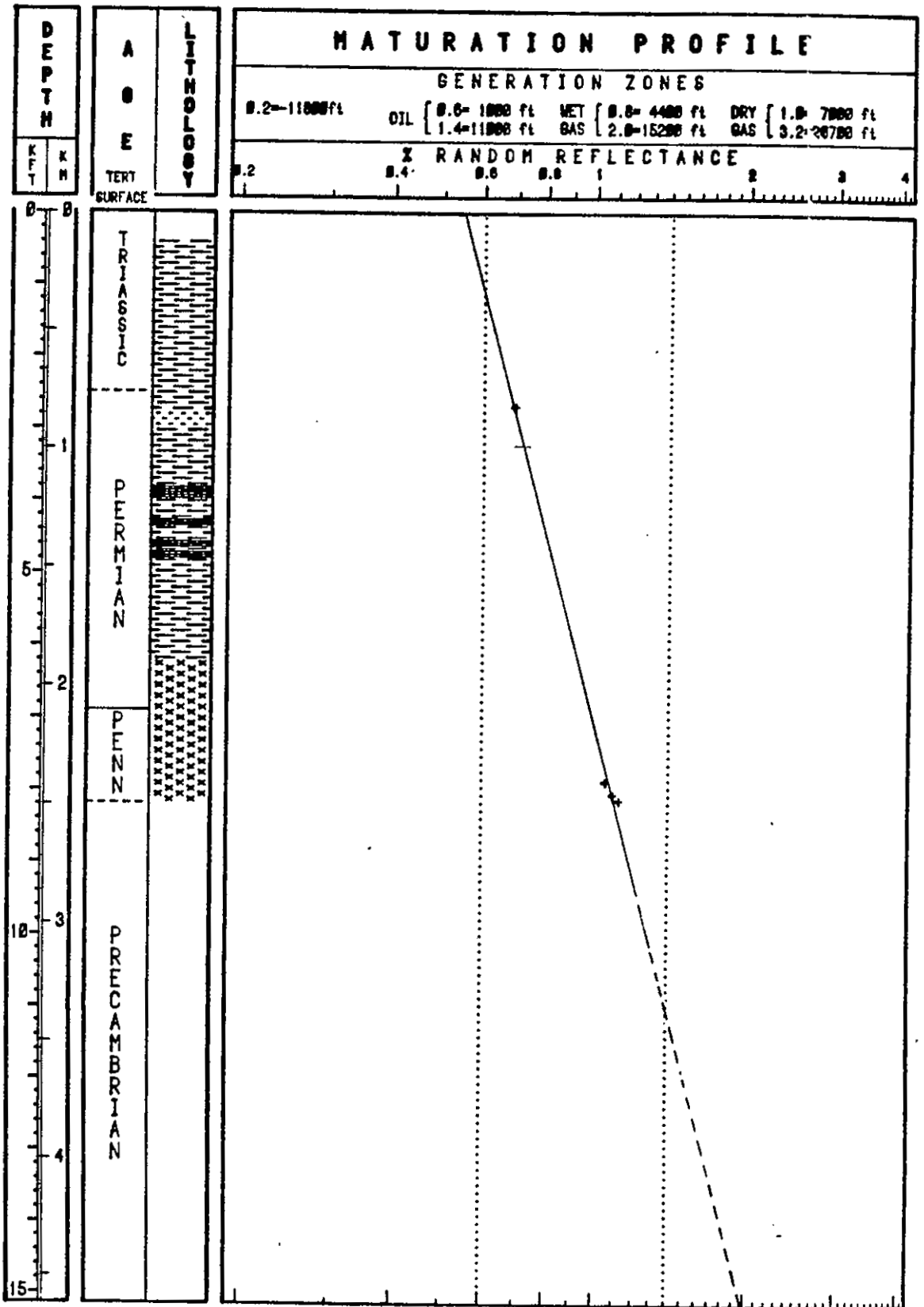


FIGURE A.28 Maturation profile based on vitrinite reflectance data.

HUSKY, #1 HANCHETT STATE

HUSKY #1 HANCHETT STATE

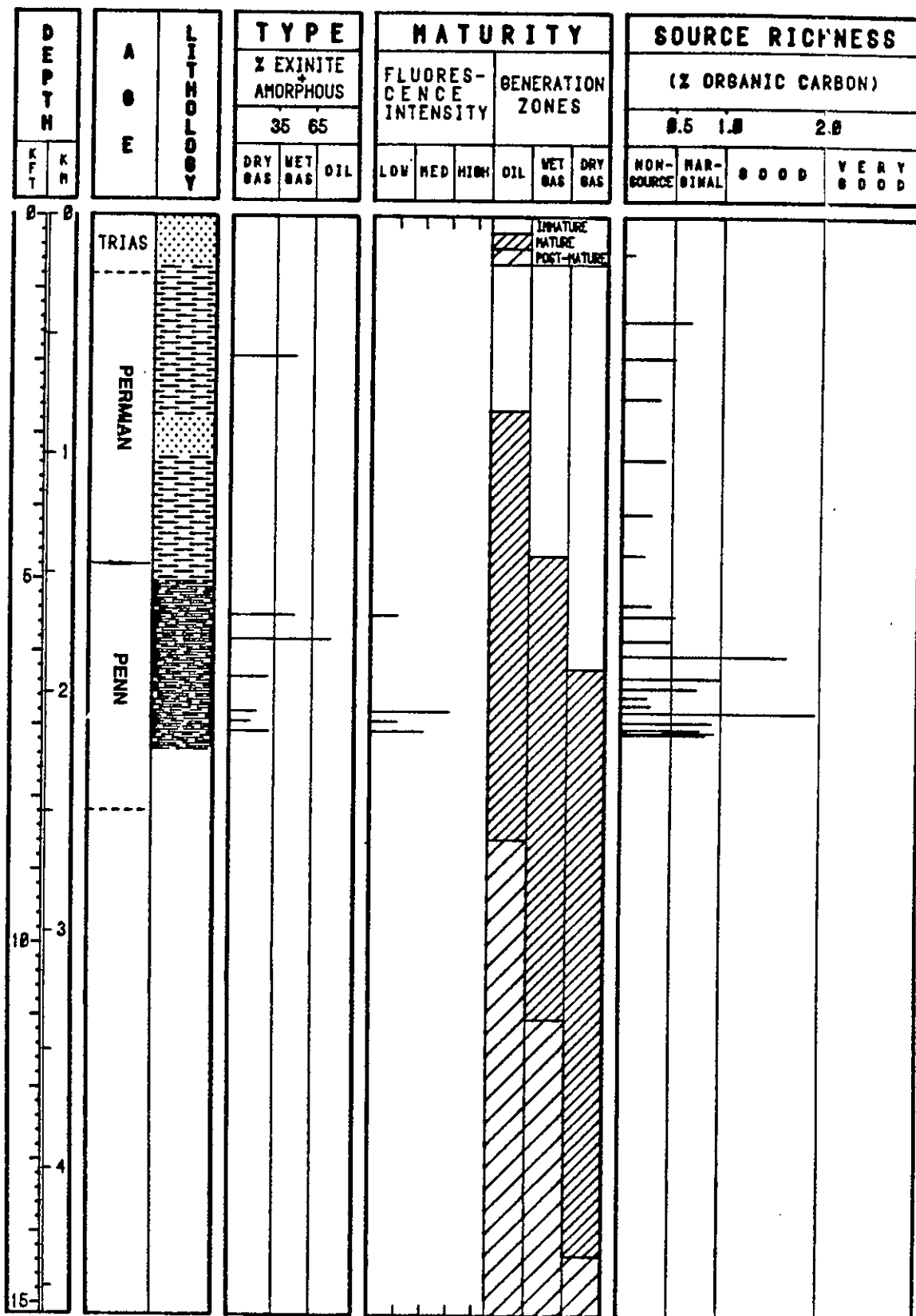
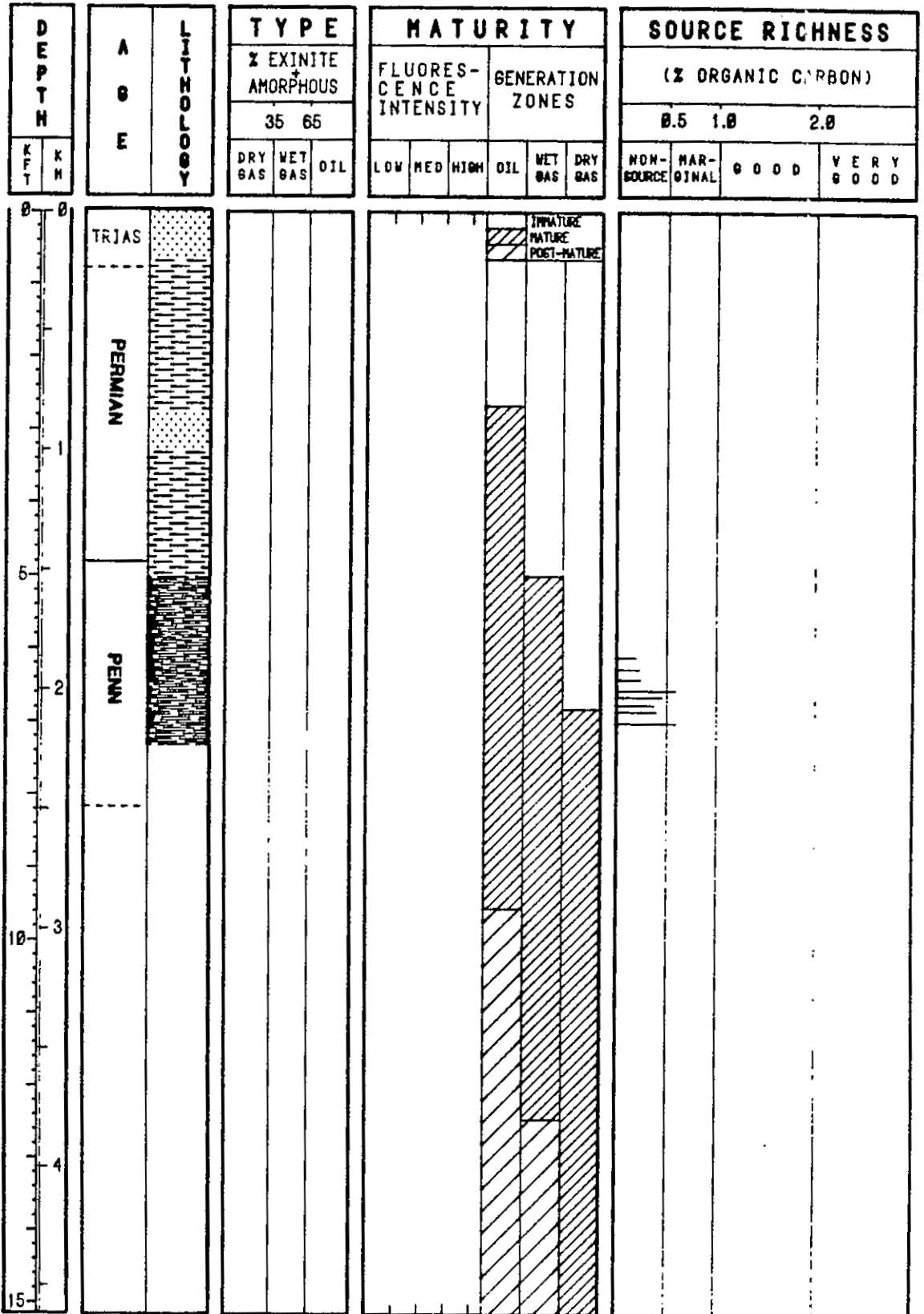


FIGURE A.29 Summary plots showing kerogen types, maturity and source richness.

HANCHETT STATE (SUN)



NON RR(US) DATA

FIGURE A.30 Summary plots showing kerogen types, maturity and source richness.

HUSKY #1 HANCHETT STATE

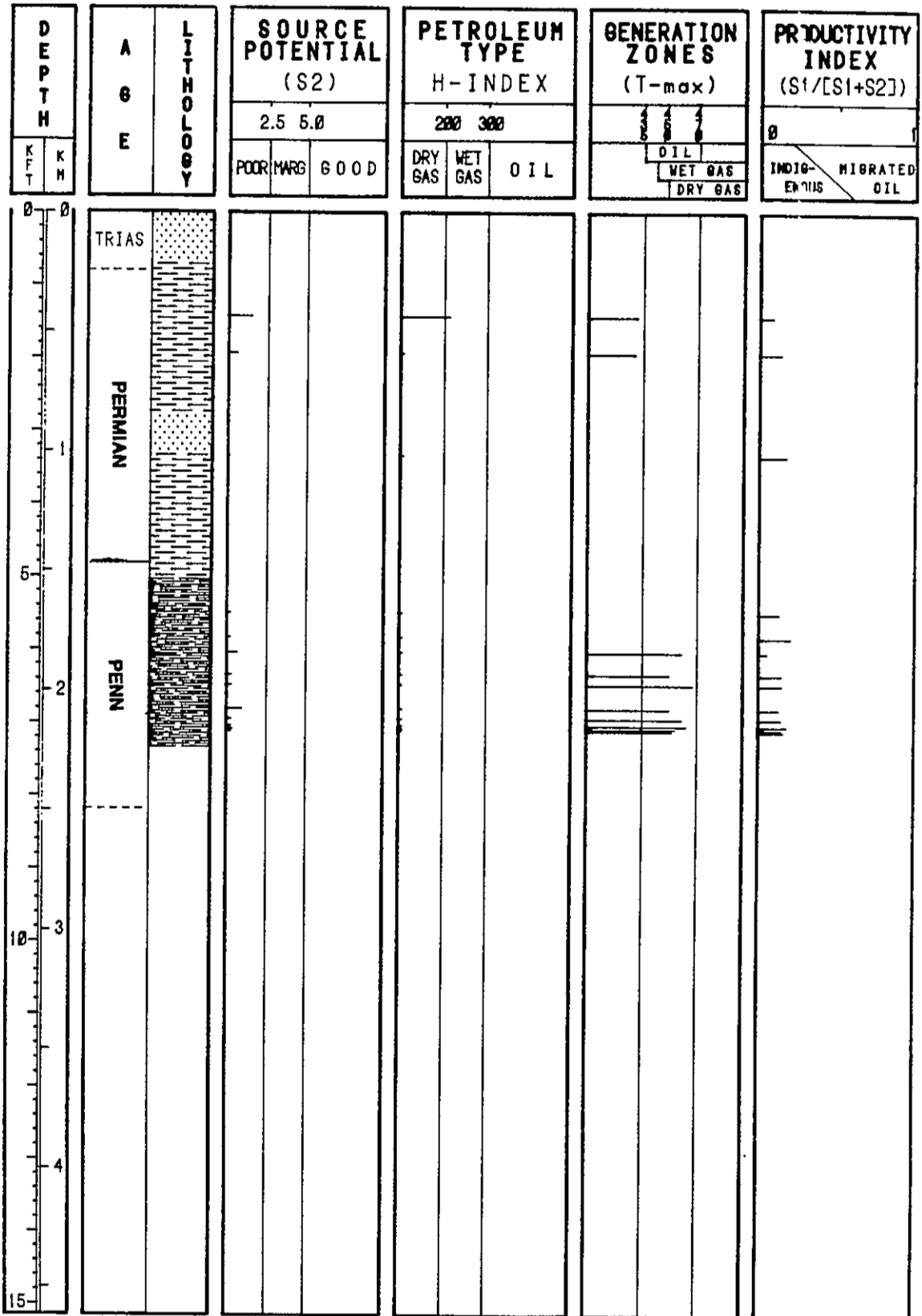
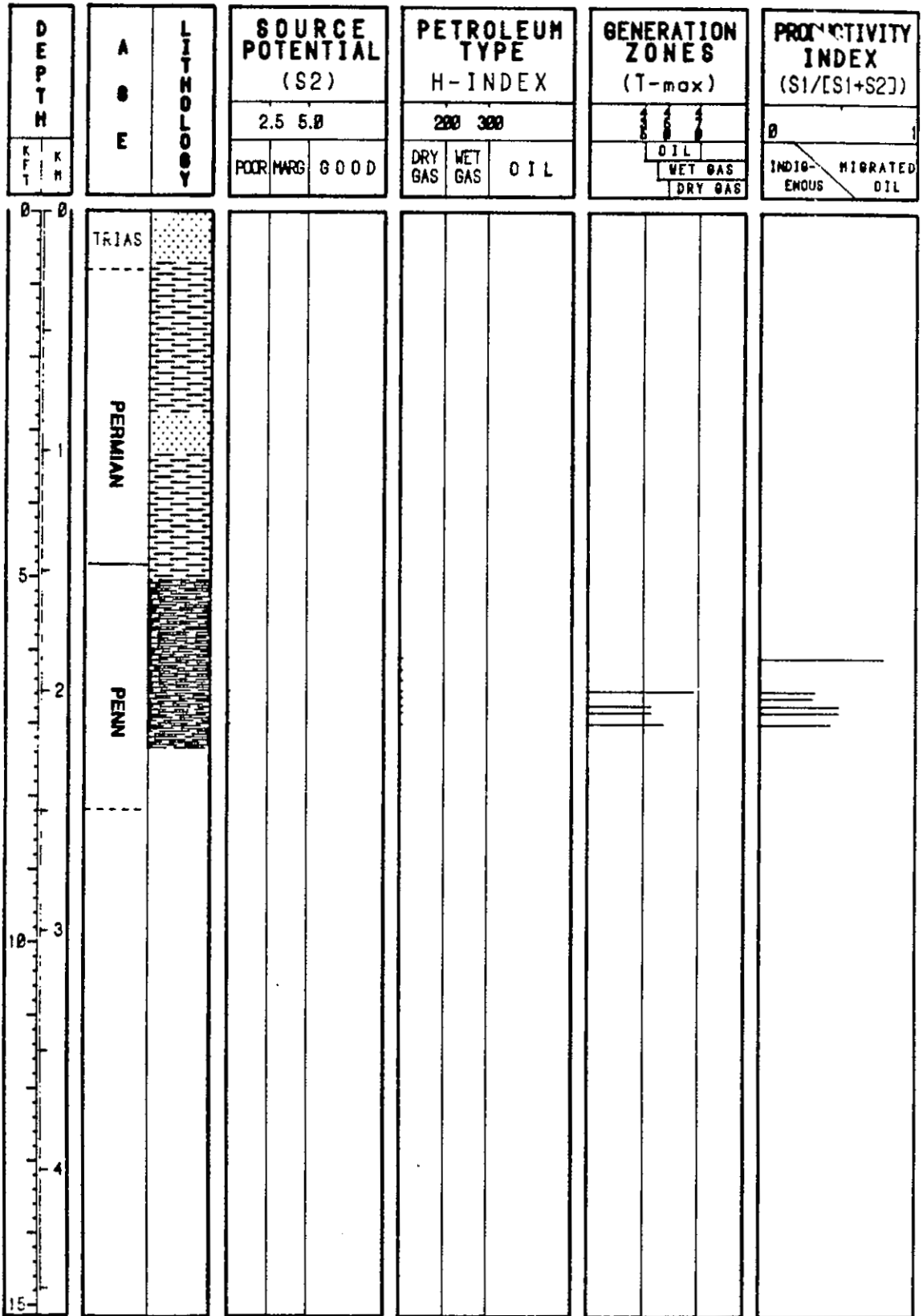


FIGURE A.31 Summary plots of Rock-Eval pyrolysis data.

HANCHETT STATE (SUN)



NON RR(US) DATA

FIGURE A.32 Summary plots of Rock-Eval pyrolysis data.

HUSKY #1 HANCHETT STATE

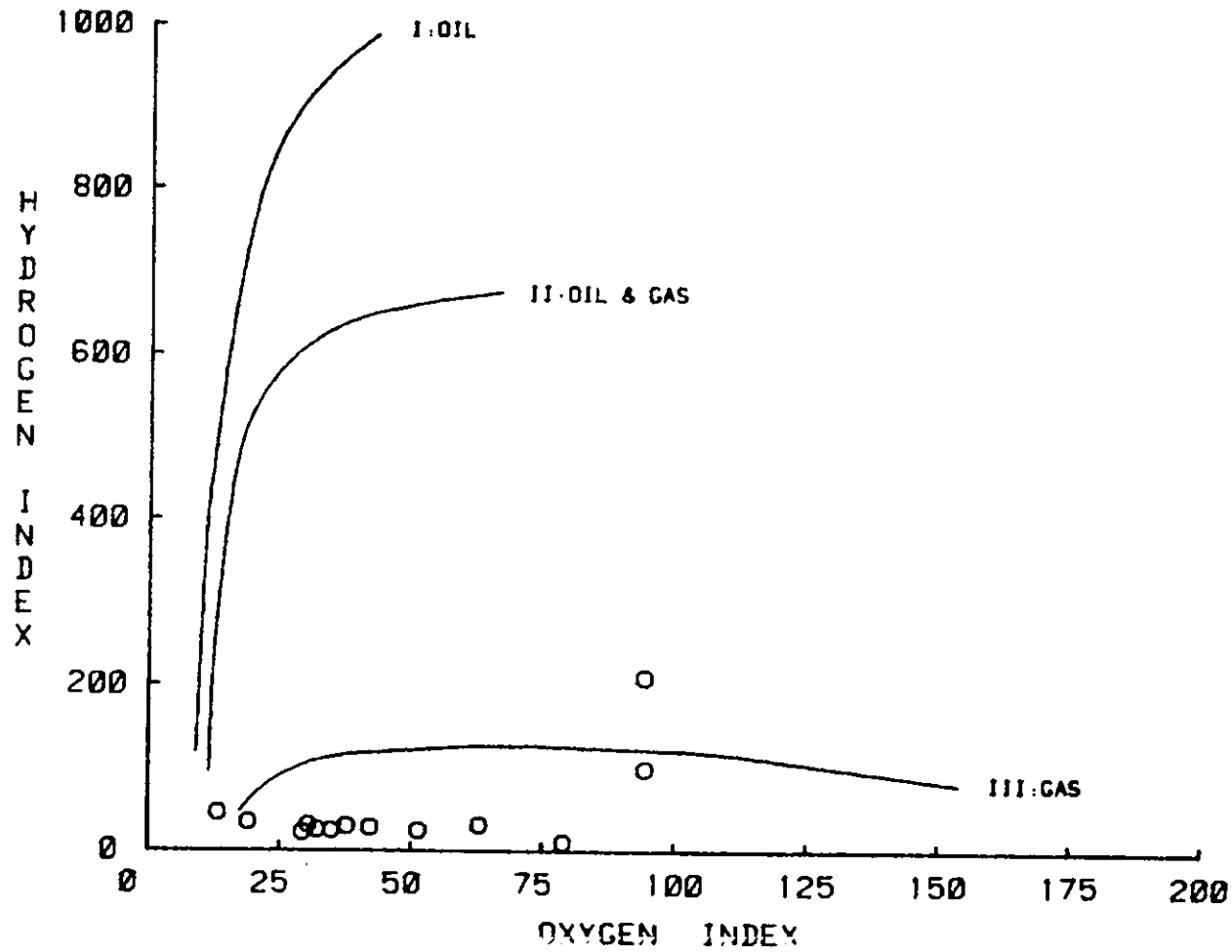


FIGURE A.33 Kerogen type determination from Rock-Eval pyrolysis data.

HUSKY #1 HANCHETT STATE

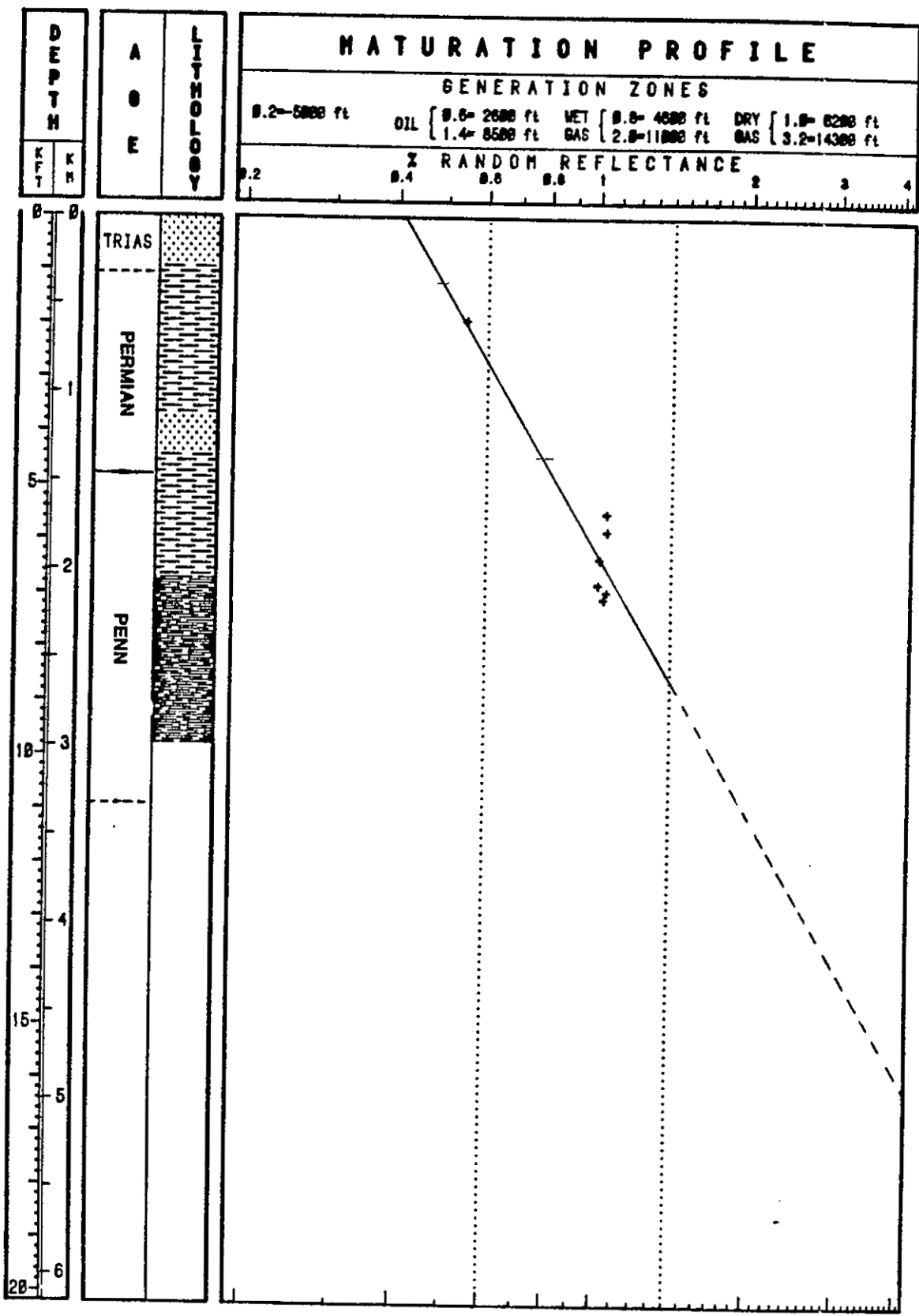
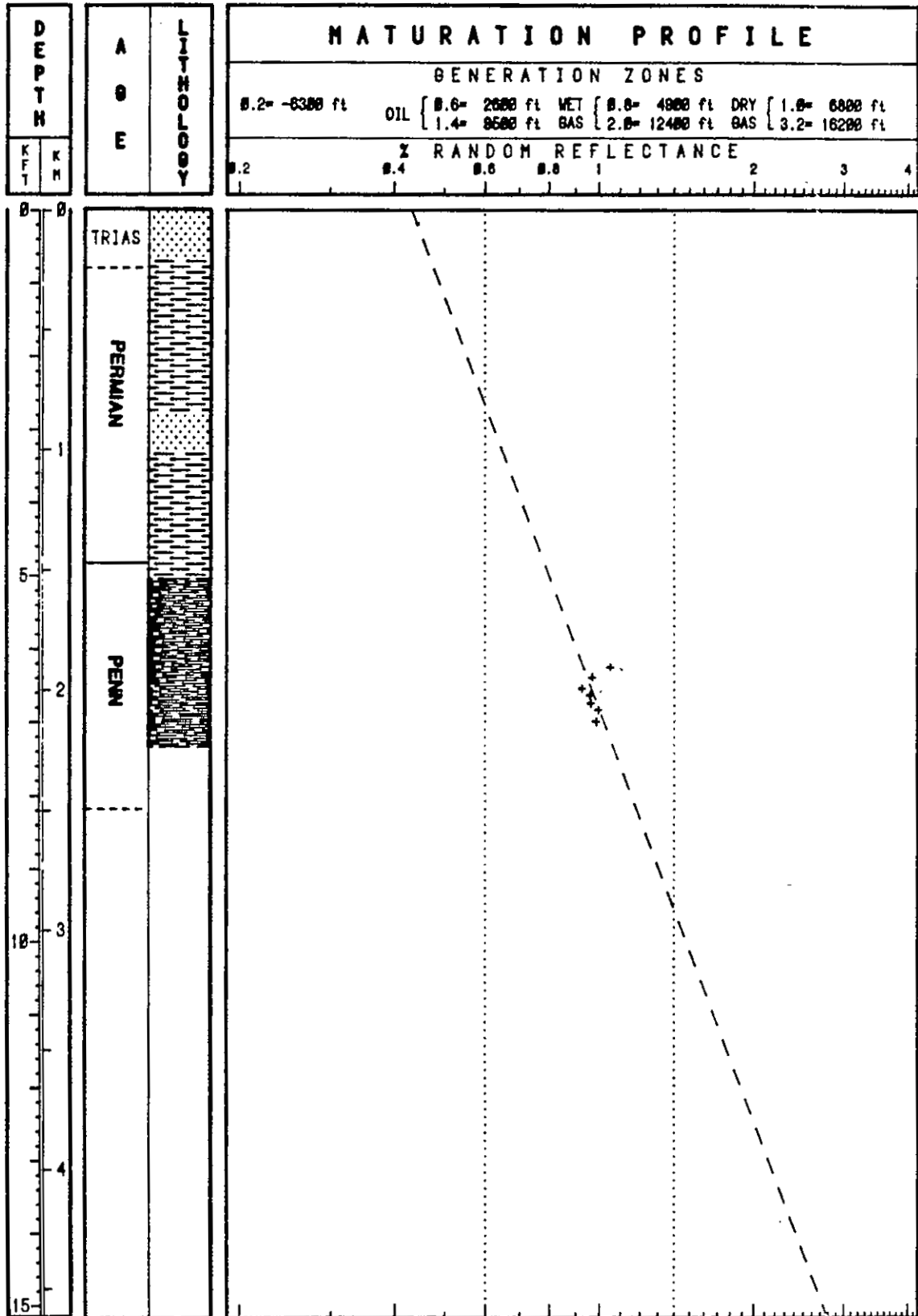


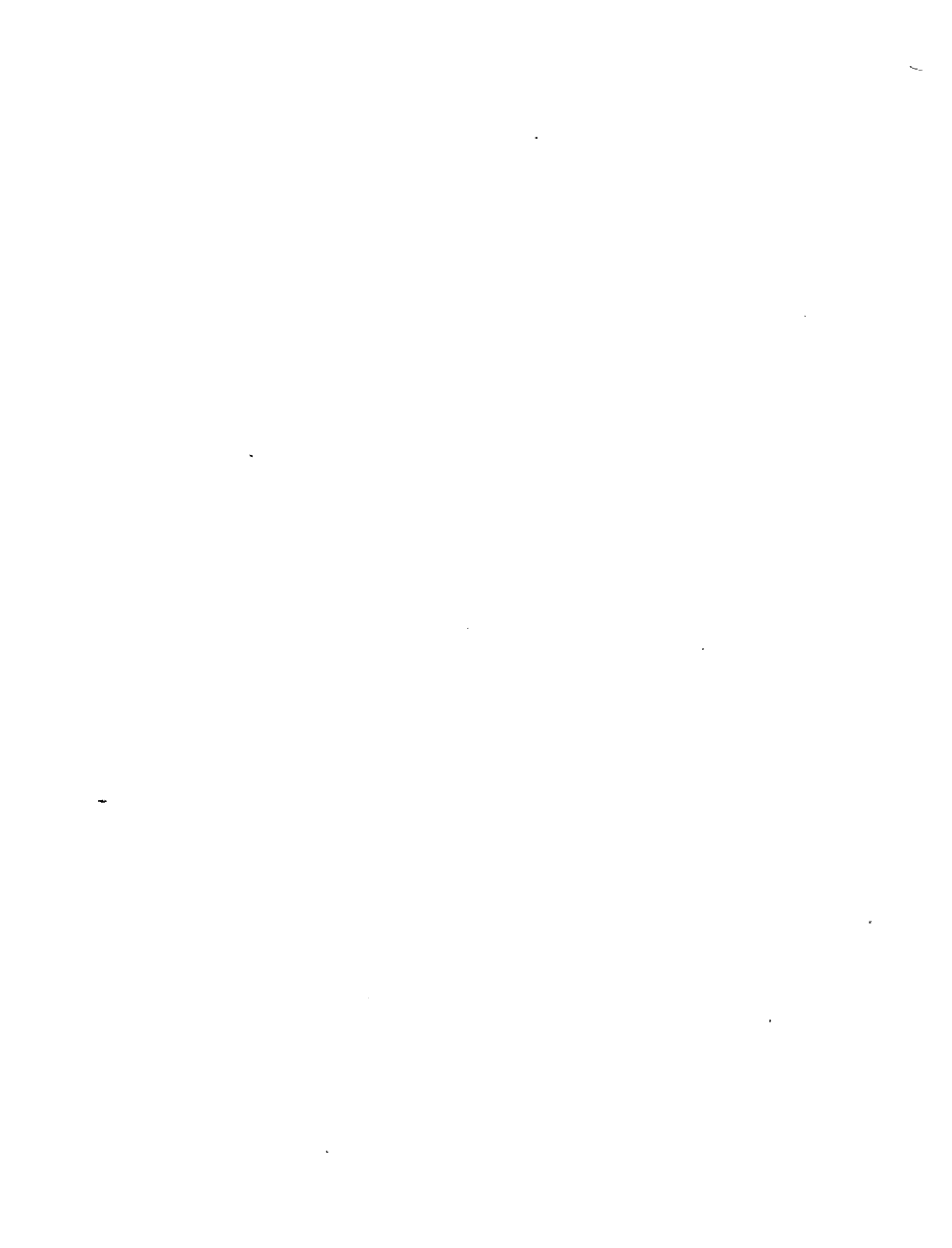
FIGURE A.34 Maturation profile based on vitrinite reflectance data.

HANCHETT STATE (SUN)



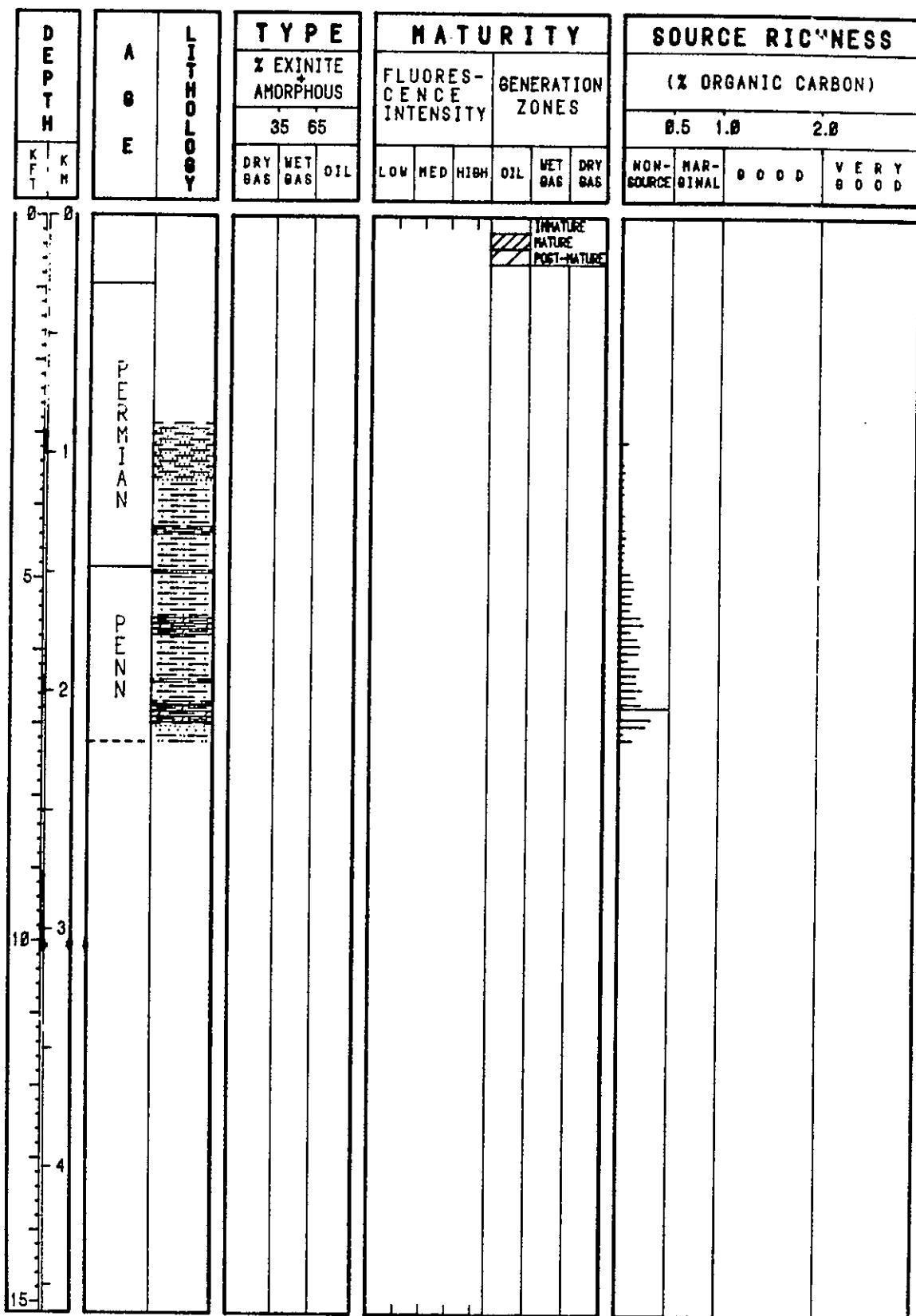
NON RR(US) DATA

FIGURE A.35 Maturation profile based on vitrinite reflectance data.



TRANS PECOS, #1 LATIGO RANCH

LATIGO RANCH

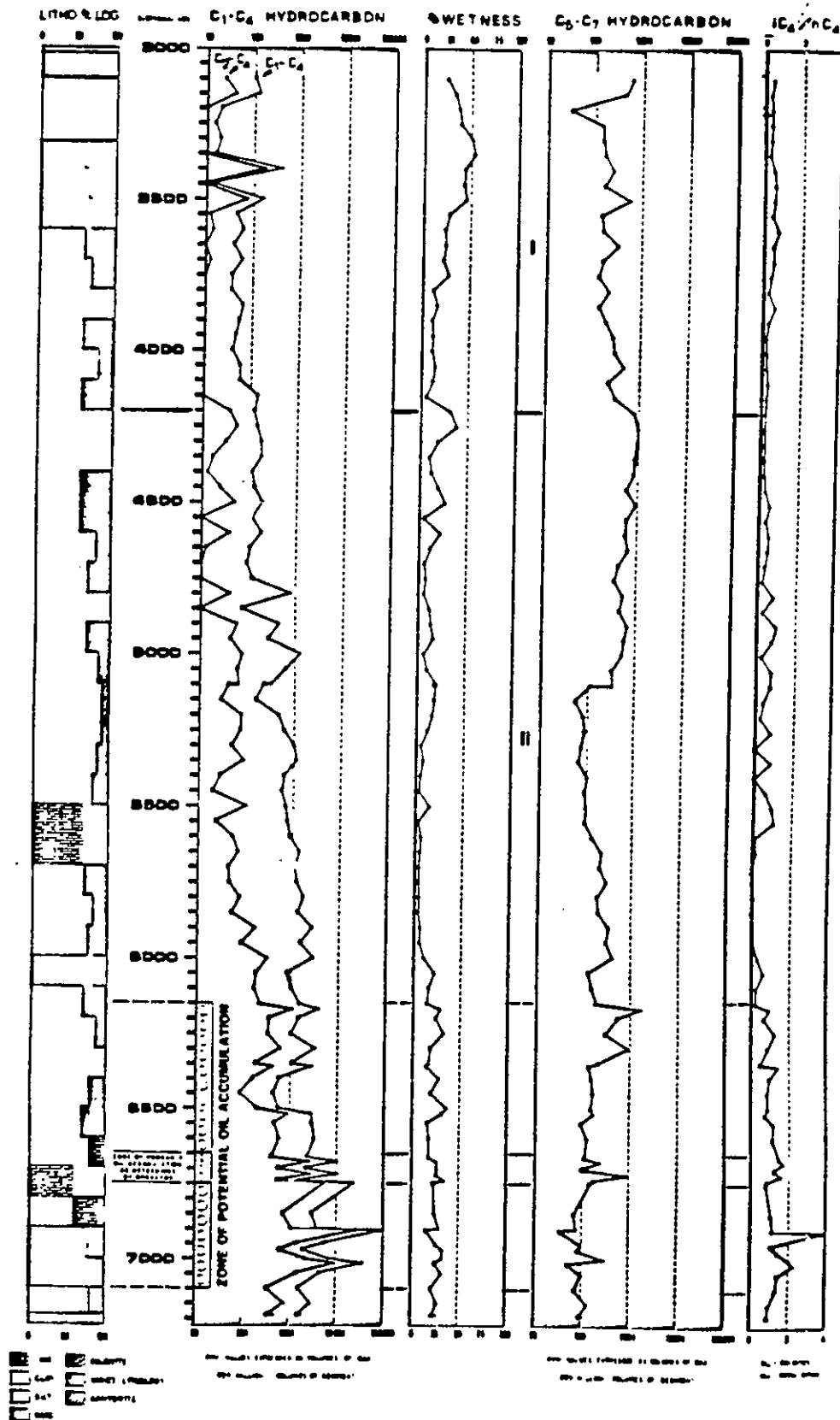


NON RR(US) DATA

FIGURE A.36 Summary plots showing kerogen types, maturity and source richness.

LATIGO RANCH SUMMARY OF ORGANIC ANALYSES

C₁-C₇ HYDROCARBON



NON RR(US) DATA

FIGURE A.38 Summary of organic analyses - C₁-C₇ hydrocarbon. A-57

LATIGO RANCH

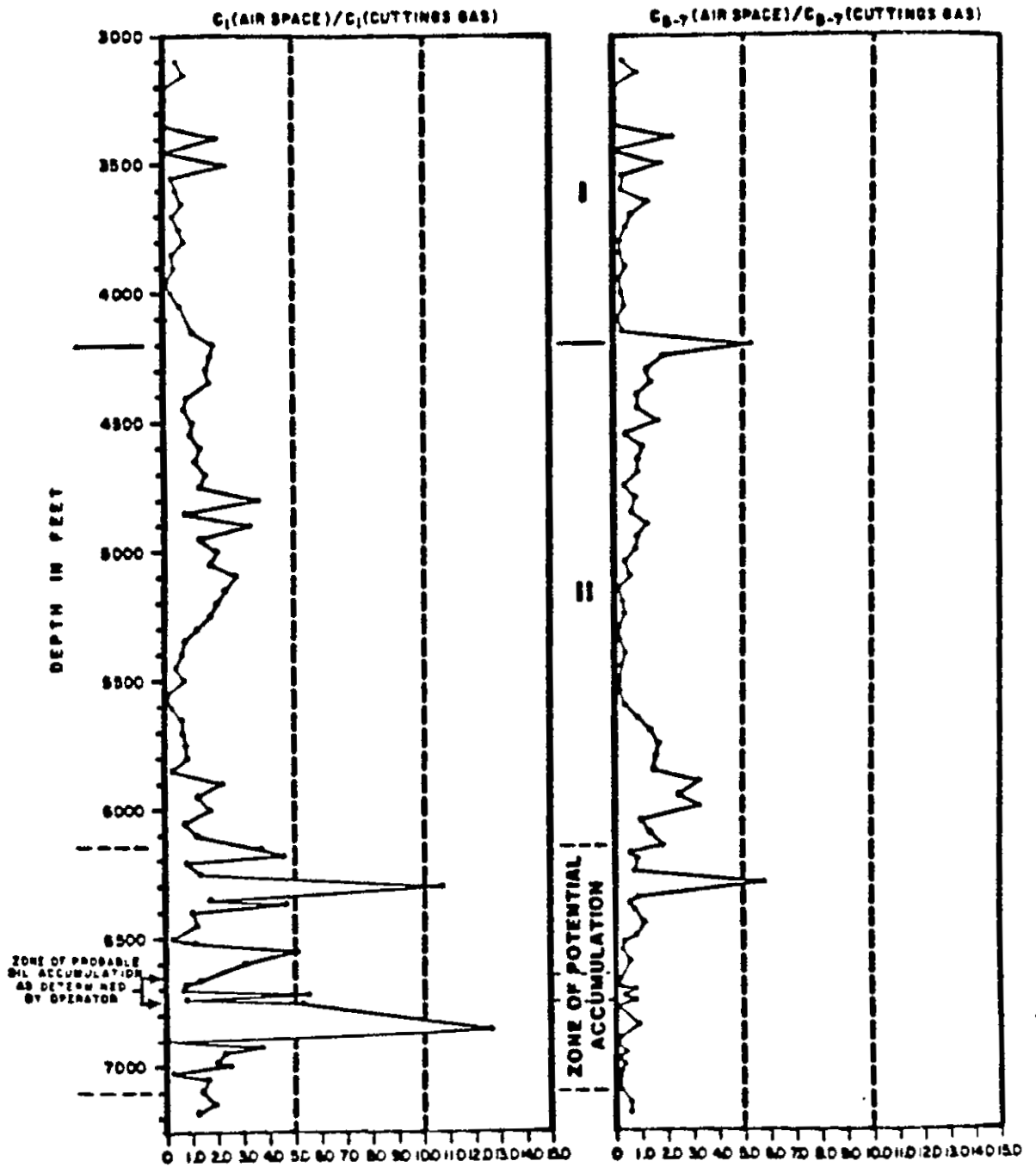


FIGURE A.39 Summary of carbon data.

NON RR(US) DATA

GENERAL CRUDE, #1 SIMPSON

GENERAL CRUDE #1 SIMPSON

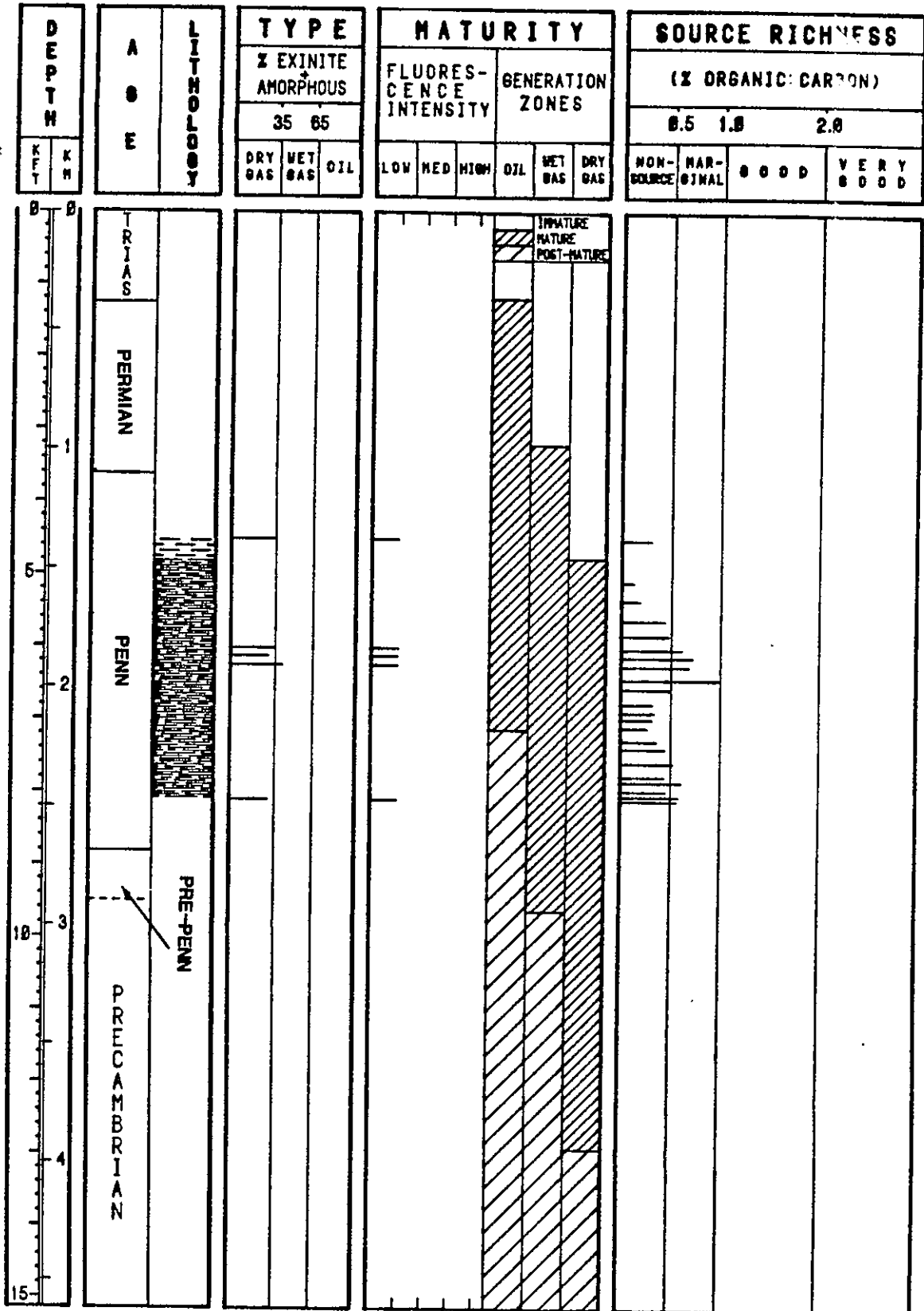


FIGURE A.40 Summary plots showing kerogen types, maturity and source richness.

GENERAL CRUDE #1 SIMPSON

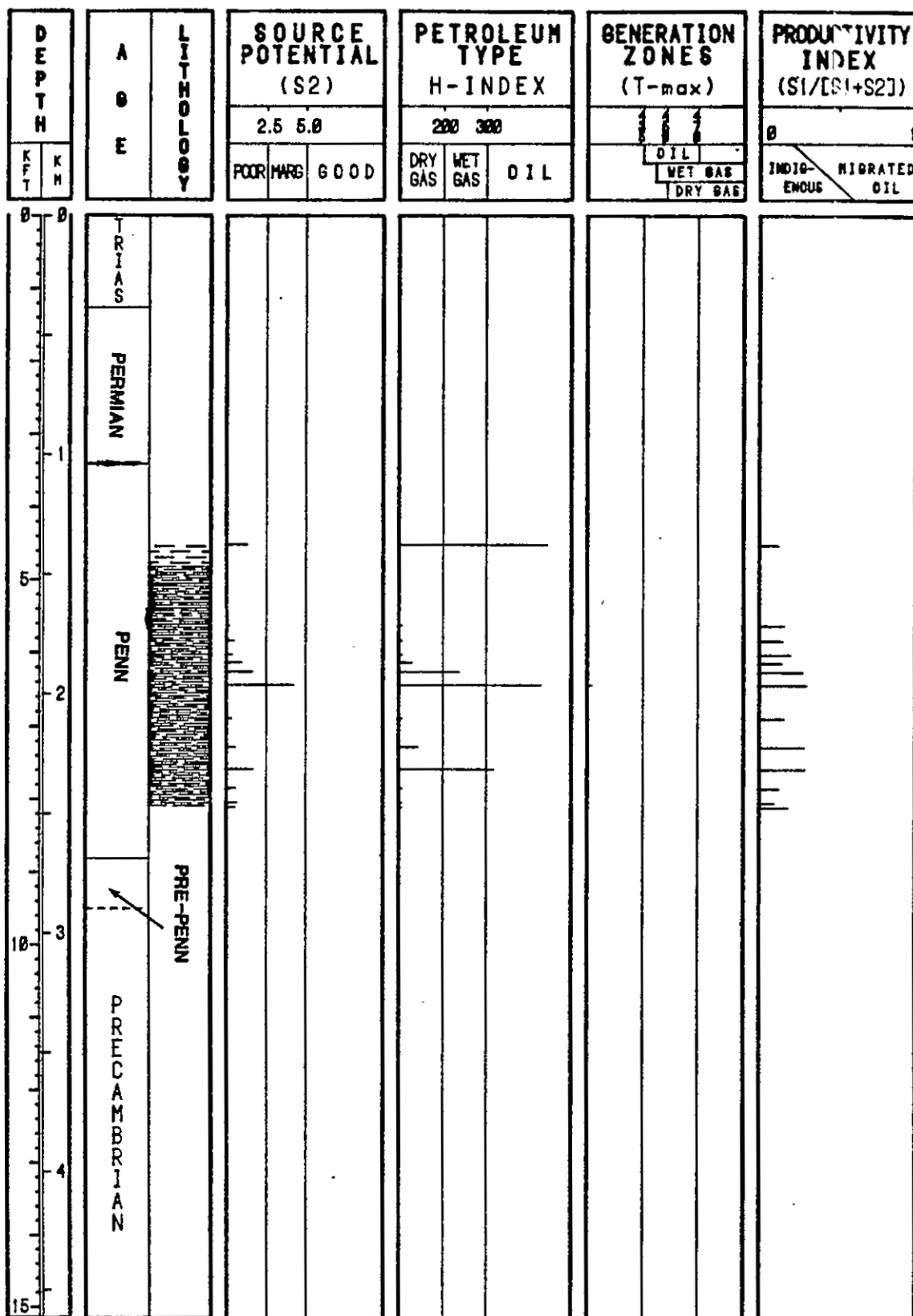


FIGURE A.41 Summary plots of Rock-Eval pyrolysis data.

GENERAL CRUDE #1 SIMPSON

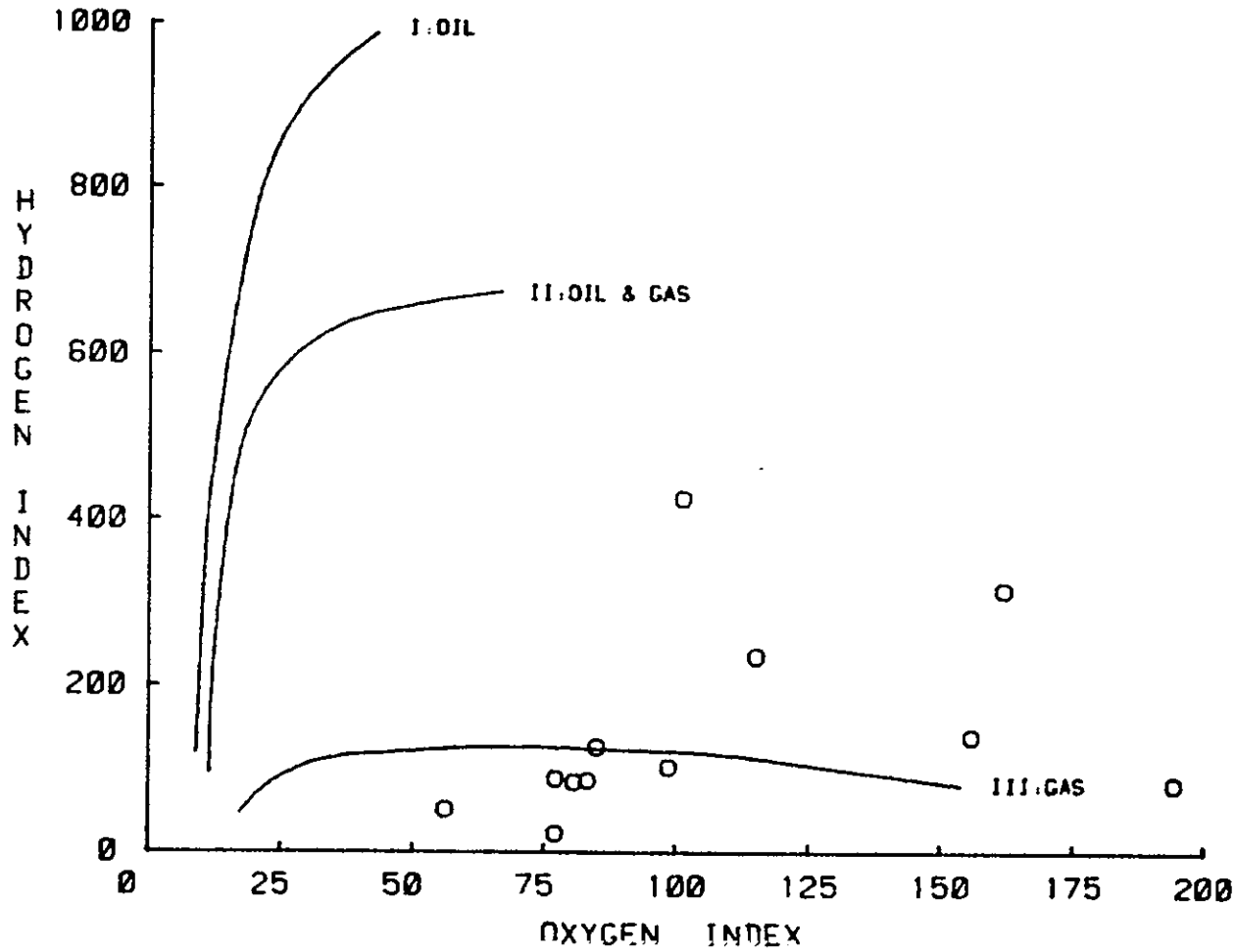


FIGURE A.42 Kerogen type determination from Rock-Eval pyrolysis data.

GENERAL CRUDE #1 SIMPSON

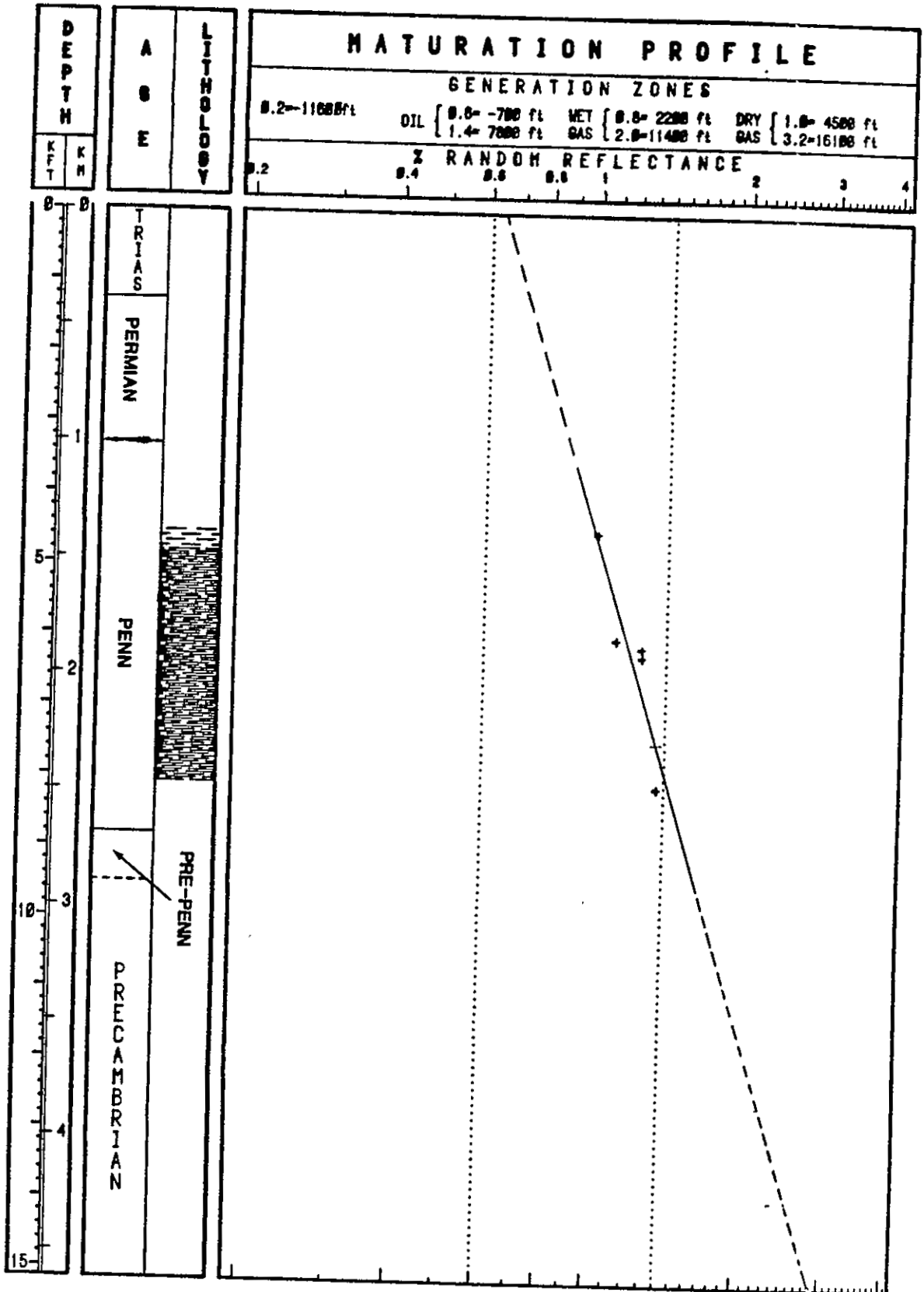


FIGURE A.43 Maturation profile based on vitrinite reflectance data.

YATES PETROLUEM CORP., #1 T-4 CATTLE CO.

YATES #1 T.4. CATTLE CO.

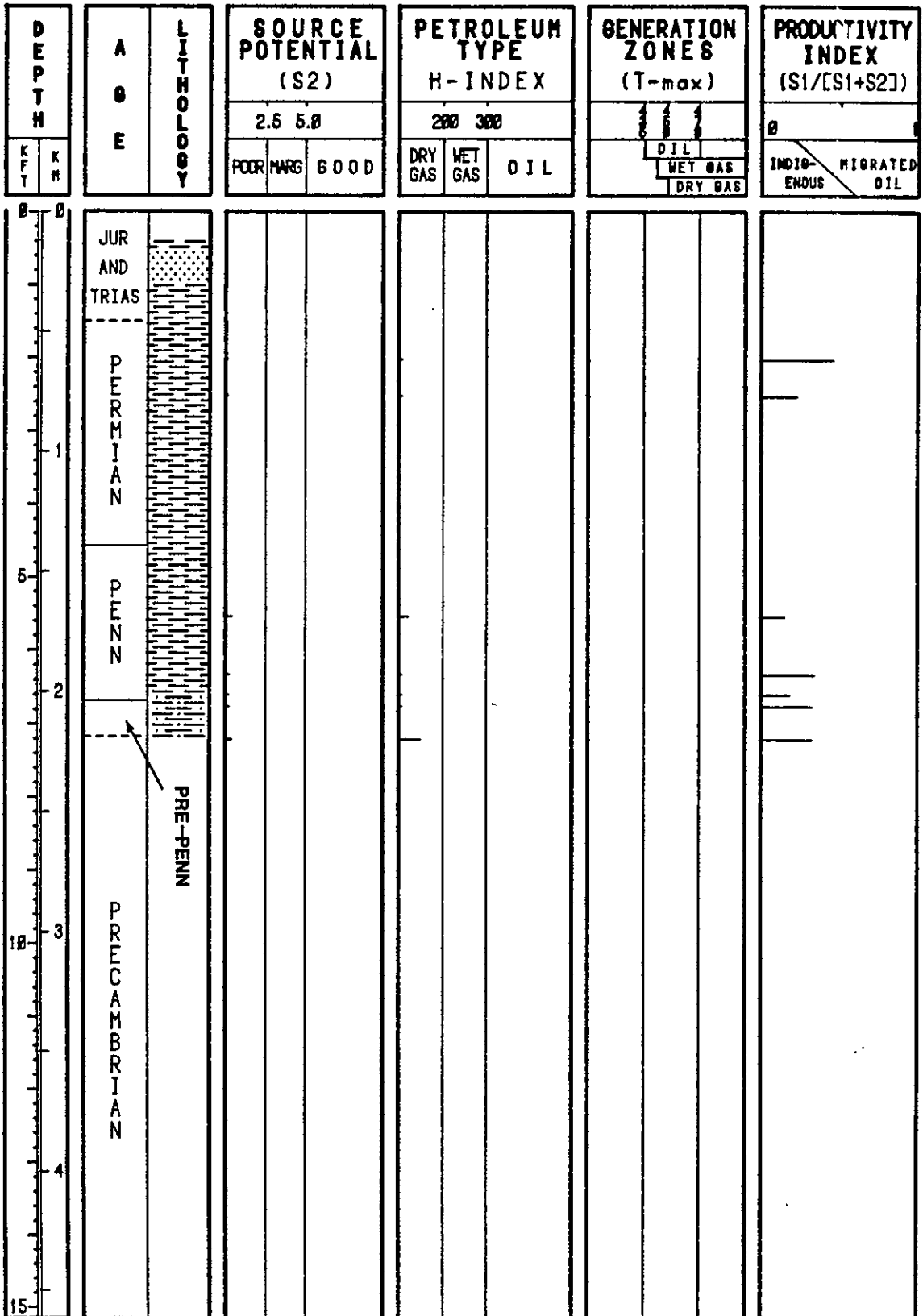


FIGURE A.45 Summary plots of Rock-Eval pyrolysis data.

YATES #1 T.H. CATTLE CO.

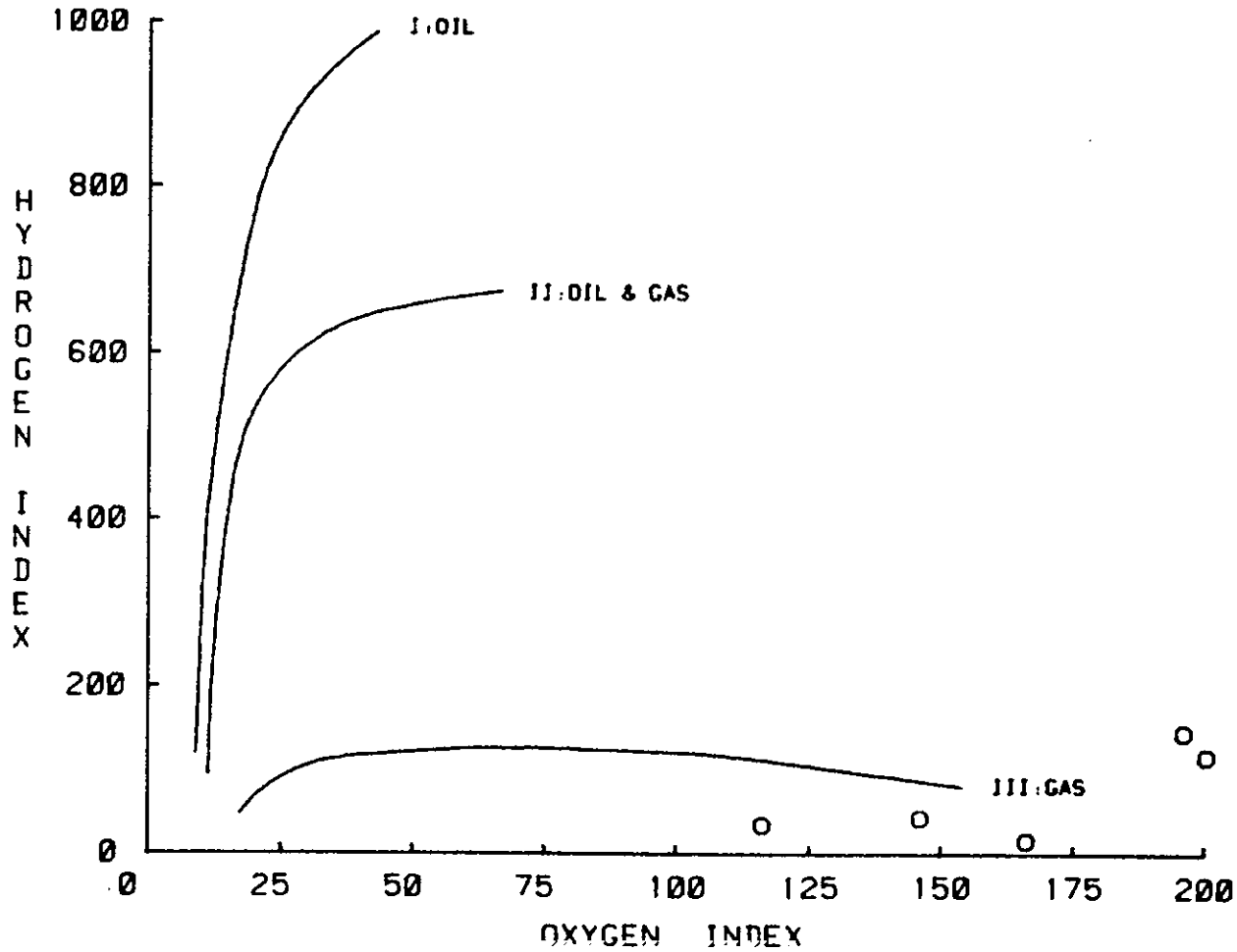


FIGURE A.46 Kerogen type determination from Rock-Eval pyrolysis data.

YATES #1 T.4. CATTLE CO.

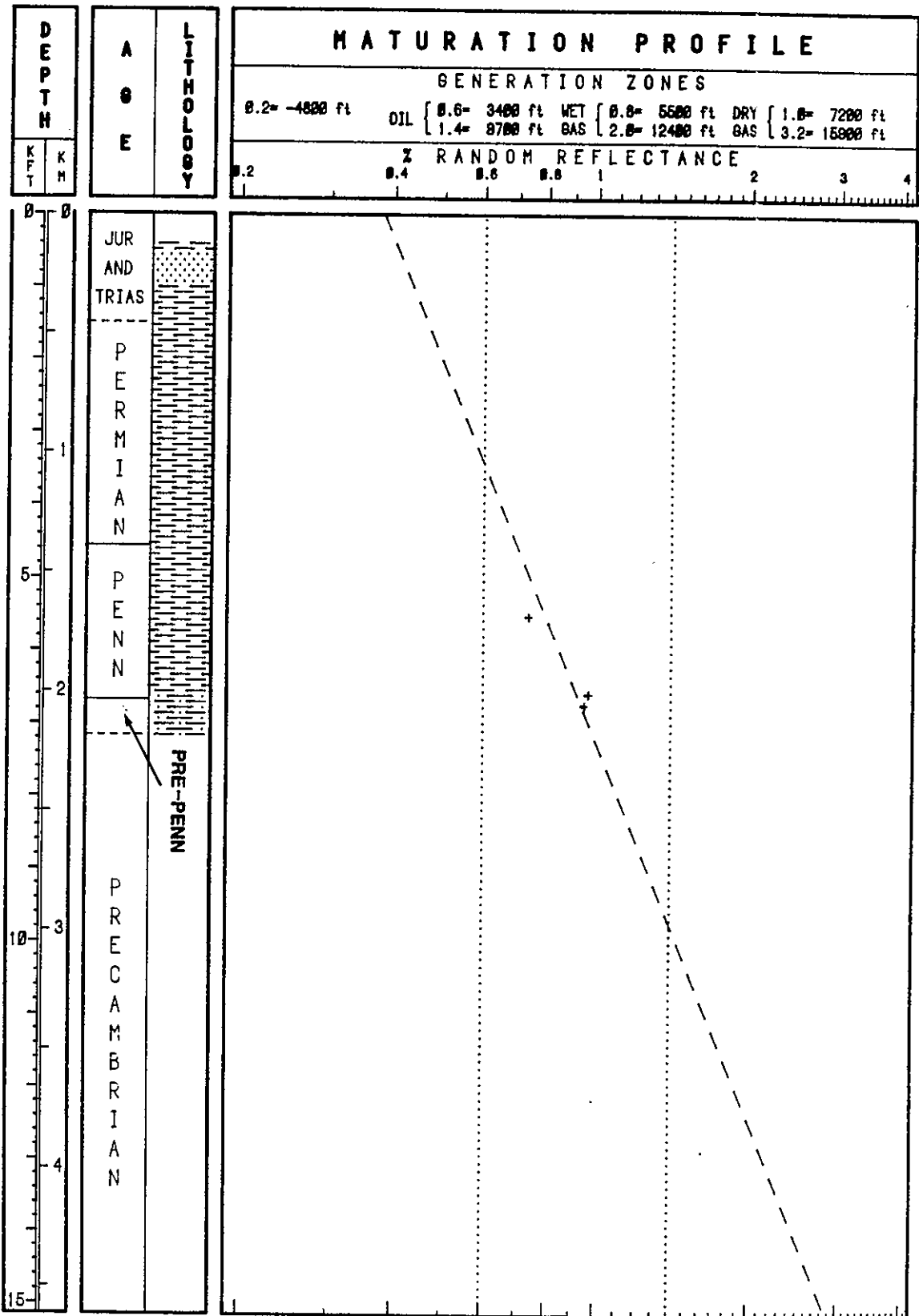


FIGURE A.47 Maturation profile based on vitrinite reflectance data.

TABLES

AMOCO, #1 G.C. BAKER

TABLE A.1

LITHOLOGIC DESCRIPTION

AMOCO PRODUCTION

#1 G.C. BAKER

210- 660'	Mudstone, reddish brown
700- 790'	Sandstone, fine-grained, light brown
790-1,900'	Mudstone, reddish brown, some light greenish gray mudstone, trace of lime mudstone and gypsum below 1,390
1,900-2,420'	Gypsum and dolomudstone, light gray
2,420-2,790'	Limestone, dolomudstone and gypsum, med. to dark gray
2,790-2,910'	Mudstone, light gray, some limestone and gypsum
2,940-2,980'	Halite, v. light gray to pink
3,000-3,340'	Mudstone, light reddish brown
3,370-3,380'	Halite, light pink
3,400-3,440'	Mudstone, light reddish brown
3,460-3,470'	Halite, pinkish
3,490-3,540'	Mudstone, reddish brown Trace of halite
3,560-3,600'	Halite pinkish
3,620-3,840'	Mudstone, reddish brown
3,860-4,390'	Mudstone, light reddish brown Trace of gypsum Trace of dark gray mudstone
4,410-6,280	Mudstone, reddish brown Trace of gypsum Some medium gray mudstone Trace quartz sand
6,280-6,970'	Mudstone, medium to dark gray, some light brownish red Some coarse quartz grains Trace of pink feldspar - granite wash
6,970-7,060'	Granite wash Trace of dark gray mudstone
7,080-7,700'	Mudstone, medium dark gray, some light brownish red Some granite wash
7,700-8,180'	Mudstone, dark gray and reddish brown Sandstone, medium
8,200-8,330'	Mudstone, dark gray, reddish brown Trace of granite

TABLE A.2

TOTAL ORGANIC CARBON DATA

AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION				DATA	SAMPLE IDENTIFICATION				DATA
RRUS	DEPTH	(Feet)		TOC%	RRUS	DEPTH	(Feet)		TOC%
1001	230	:	210- 250	0.05	1016	5720	:	5700- 5740	0.06
1002	520	:	500- 540	0.08	1017	6335	:	6300- 6370	0.20
1003	1020	:	1000- 1040	0.07	1018	6470	:	6450- 6490	0.23
1004	1530	:	1510- 1550	0.03	1019	6770	:	6750- 6790	0.23
1005	1860	:	1840- 1880	0.09	1020	7100	:	7080- 7120	0.31
1006	2455	:	2420- 2490	0.25	1021	7220	:	7170- 7270	0.27
1007	2650	:	2630- 2670	0.20	1022	7370	:	7340- 7400	0.36
1008	2855	:	2820- 2890	0.08	1023	7510	:	7490- 7530	0.29
1009	3040	:	3000- 3080	0.16	1024	7705	:	7670- 7740	0.31
1010	3420	:	3400- 3440	0.10	1025	7810	:	7790- 7830	0.37
1011	3820	:	3800- 3840	0.05	1026	7915	:	7880- 7950	0.42
1012	4120	:	4100- 4140	0.24	1027	8050	:	8030- 8070	1.21
1013	4280	:	4260- 4300	0.16	1028	8150	:	8120- 8180	0.88
1014	4720	:	4700- 4740	0.04	1029	8310	:	8290- 8330	0.44
1015	5240	:	5220- 5260	0.05					

TABLE A.3

ROCK-EVAL PYROLYSIS RAW DATA

AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1006	2455	: 2420- 2490	0.040	0.200	0.300	0.667	0.167	437
1012	4120	: 4100- 4140	0.070	0.450	0.680	0.662	0.135	---
1018	6470	: 6450- 6490	0.220	0.470	0.150	3.133	0.319	---
1020	7100	: 7080- 7120	0.060	0.240	0.340	0.706	0.200	409
1022	7370	: 7340- 7400	0.020	0.110	0.290	0.379	0.154	---
1024	7705	: 7670- 7740	0.050	0.250	0.250	1.000	0.167	---
1025	7810	: 7790- 7830	0.050	0.150	0.350	0.429	0.250	408
1026	7915	: 7880- 7950	0.060	0.190	0.280	0.679	0.240	---
1027	8050	: 8030- 8070	0.200	0.940	0.330	2.848	0.175	451
1028	8150	: 8120- 8180	0.080	0.330	0.250	1.320	0.195	462
1029	8310	: 8290- 8330	0.070	0.200	0.340	0.588	0.259	---

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.4

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
1006	2455	: 2420- 2490	80	120	0.25
1012	4120	: 4100- 4140	188	283	0.24
1018	6470	: 6450- 6490	204	65	0.23
1020	7100	: 7080- 7120	77	110	0.31
1022	7370	: 7340- 7400	31	81	0.36
1024	7705	: 7670- 7740	81	81	0.31
1025	7810	: 7790- 7830	41	95	0.37
1026	7915	: 7880- 7950	45	67	0.42
1027	8050	: 8030- 8070	78	27	1.21
1028	8150	: 8120- 8180	37	28	0.88
1029	8310	: 8290- 8330	45	77	0.44

TABLE A.5

VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

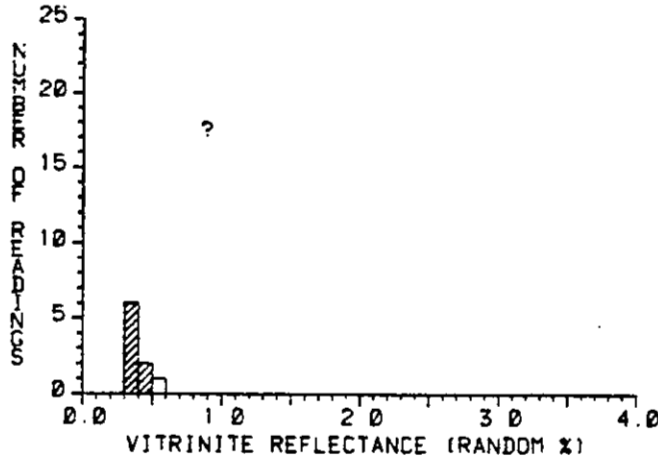
AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

r

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
1006	2455	: 2420- 2490	0.37	55	0	30	15	Low	0.25
1012	4120	: 4100- 4140	----	tr	0	tr	0	None	0.24
1018	6470	: 6450- 6490	1.09	35	0	35	30	None	0.23
1022	7370	: 7340- 7400	1.14	45	0	30	25	None	0.36
1025	7810	: 7790- 7830	1.14	50	0	30	20	None	0.37
1027	8050	: 8030- 8070	1.18	30	tr	50	20	Low	1.21
1028	8150	: 8120- 8180	1.19	50	0	30	20	None	0.88
1029	8310	: 8290- 8330	----	0	0	0	0	None	0.44

AMOCO #1 G.C. BAKER



RRUS No. : 1306
 ID : CTGS.
 DEPTH : 2345.0 Ft
 : 775.7 M

* = Ro MATURITY
 * VALUES : 8
 MEAN : 0.37
 STD DEV : 0.03
 MEDIAN : 0.38
 MODE : 0.35

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

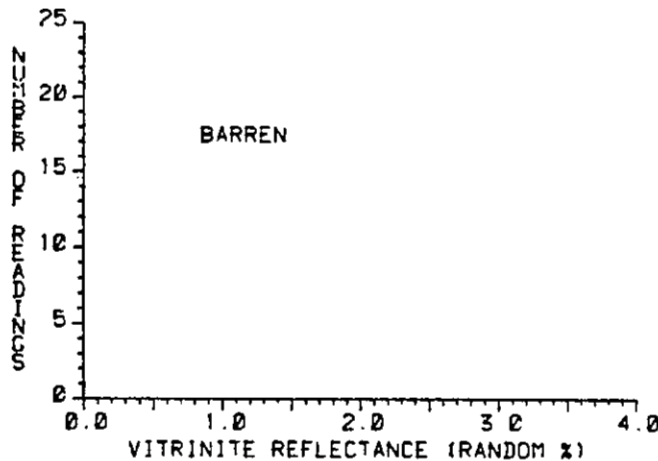
ORDERED REFLECTANCE VALUES:

- *0.32
- *0.33
- *0.36
- *0.37
- *0.38
- *0.38
- *0.40
- *0.40
- 0.51

KEROGEN DESCRIPTION

Amorphous : 55 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 15 %
 Back Fluor : Low
 Bitumen : Small
 Coke : None

AMOCO #1 G.C. BAKER



RRUS No . 1012
 ID : CTGS.
 DEPTH : 3770.0 Ft
 : 1148.1 M
 MEAN : N.D.

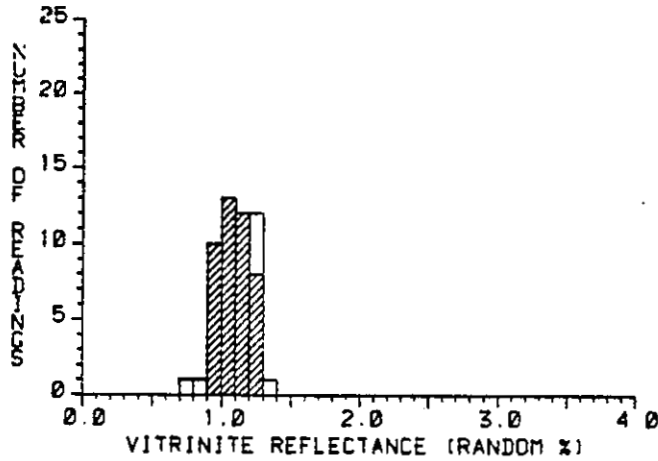
HISTOGRAM:
 Range 0- 4%
 Increment 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION
 Amorphous : 1r %
 Exinite : 0 %
 Vitrinite : 1r %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

AMOCO #1 G.C. BAKER



RRUS No. : 1018
 ID : CTGS.
 DEPTH : 6620.0 Ft
 : 2017.8 M

* = Ro MATURITY

* VALUES : 43

MEAN : 1.09
 STD DEV : 0.10
 MEDIAN : 1.09
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

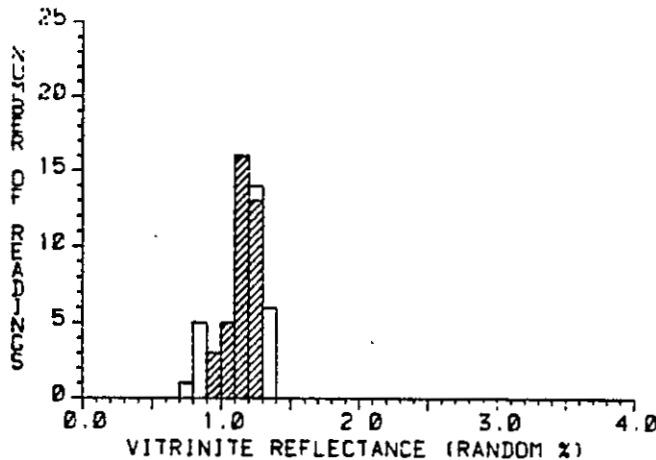
ORDERED REFLECTANCE VALUES:

0.75	*0.98	*1.07	*1.14	*1.22
0.82	*0.99	*1.08	*1.14	*1.23
*0.90	*1.01	*1.08	*1.15	*1.24
*0.93	*1.02	*1.09	*1.16	*1.24
*0.94	*1.05	*1.09	*1.18	*1.25
*0.94	*1.05	*1.11	*1.18	1.27
*0.94	*1.06	*1.11	*1.18	1.29
*0.95	*1.06	*1.12	*1.20	1.29
*0.97	*1.07	*1.13	*1.21	1.29
*0.98	*1.07	*1.14	*1.21	1.33

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 0 %
 Vitrinite : 35 %
 Inertinite : 30 %
 Back Fluor : None
 Bitumen : None
 Coke : 1r

AMOCO #1 G.C. BAKER



RRUS No. : 1022
 ID : CTGS.
 DEPTH : 7435.0 Ft
 : 2266.2 M

* = Ro MATURITY

* VALUES : 37

MEAN : 1.14
 STD DEV : 0.09
 MEDIAN : 1.15
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

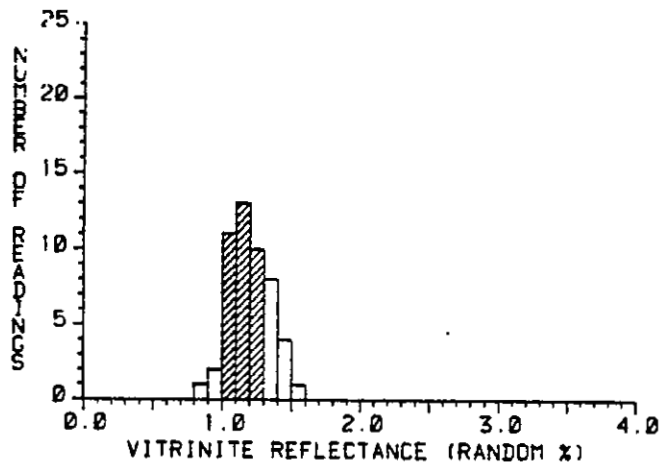
ORDERED REFLECTANCE VALUES:

0.79	*1.01	*1.12	*1.21	*1.26
0.80	*1.04	*1.12	*1.21	*1.27
0.81	*1.08	*1.12	*1.21	*1.27
0.85	*1.09	*1.13	*1.22	1.29
0.87	*1.10	*1.15	*1.23	1.30
0.87	*1.10	*1.15	*1.24	1.30
*0.92	*1.11	*1.15	*1.25	1.32
*0.95	*1.11	*1.17	*1.25	1.32
*0.96	*1.11	*1.17	*1.26	1.32
*1.01	*1.11	*1.19	*1.26	1.39

KEROGEN DESCRIPTION

Amorphous : 45 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 25 %
 Back Fluor : None
 Bitumen : 1r
 Coke : 1r

AMOCO #1 G.C. BAKER



RRUS No. : 1025
 ID : CTGS.
 DEPTH : 7310.0 F1
 : 2390.5 M

* = Ro MATURITY

VALUES : 34
 MEAN : 1.14
 STD DEV : 0.09
 MEDIAN : 1.16
 MODE : 1.15

HISTOGRAM:
 Range 0- 4%
 Increment: 0.10%

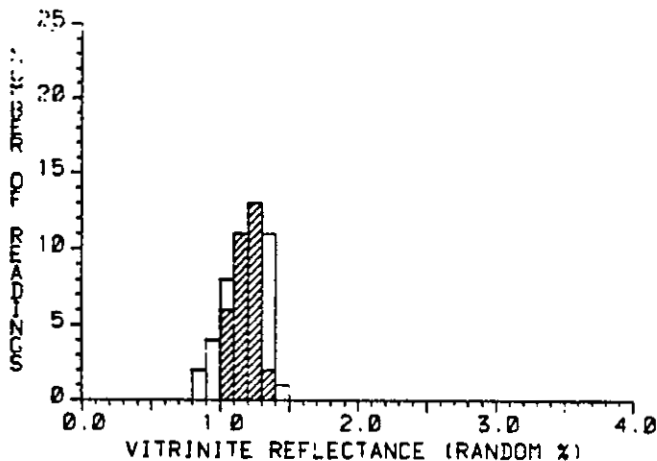
ORDERED REFLECTANCE VALUES

0.82	*1.04	*1.16	*1.24	1.36
0.95	*1.04	*1.17	*1.24	1.36
0.97	*1.07	*1.17	*1.25	1.38
*1.00	*1.09	*1.17	*1.27	1.38
*1.02	*1.10	*1.18	*1.27	1.39
*1.02	*1.10	*1.18	*1.27	1.40
*1.02	*1.11	*1.19	*1.28	1.41
*1.02	*1.12	*1.20	1.32	1.41
*1.03	*1.14	*1.22	1.32	1.48
*1.04	*1.15	*1.24	1.34	1.52

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 20 %
 Back Fluor : None
 Bitumen : None
 Coke : None

AMOCO #1 G.C. BAKER



RRUS No. : 1027
 ID : CTGS.
 DEPTH : 8030.0 F1
 : 2453.6 M

* = Ro MATURITY

VALUES : 32
 MEAN : 1.18
 STD DEV : 0.08
 MEDIAN : 1.18
 MODE : 1.25

HISTOGRAM:
 Range 0- 4%
 Increment: 0.10%

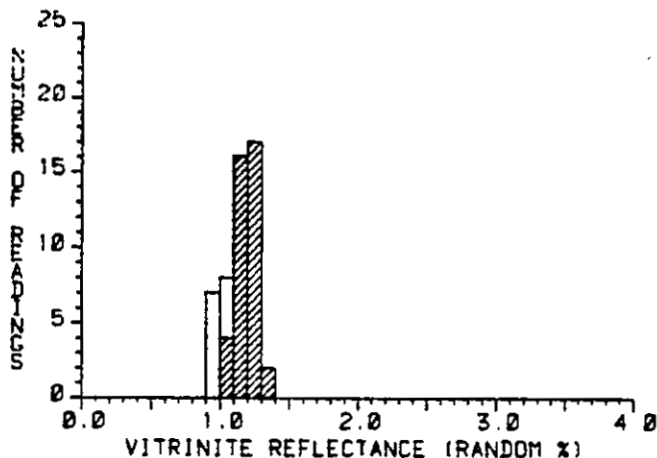
ORDERED REFLECTANCE VALUES

0.84	*1.06	*1.16	*1.23	1.33
0.87	*1.06	*1.18	*1.24	1.33
0.94	*1.06	*1.18	*1.25	1.34
0.99	*1.08	*1.19	*1.27	1.34
0.99	*1.10	*1.19	*1.27	1.34
0.99	*1.12	*1.20	*1.27	1.35
1.00	*1.13	*1.20	*1.27	1.36
1.02	*1.13	*1.22	*1.28	1.36
*1.04	*1.14	*1.23	*1.30	1.38
*1.05	*1.14	*1.23	*1.30	1.40

KEROGEN DESCRIPTION

Amorphous : 30 %
 Exinite : 1r %
 Vitrinite : 50 %
 Inertinite : 20 %
 Back Fluor : Low
 Bitumen : 1r
 Coke : None

AMOCO #1 G.C. BAKER



RRUS No. : 1028
 ID : CTGS.
 DEPTH : 8150.0 F1
 : 2184.1 M

* = Ro MATURITY
 # VALUES : 39
 MEAN : 1.19
 STD DEV : 0.07
 MEDIAN : 1.19
 MODE : 1.25

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

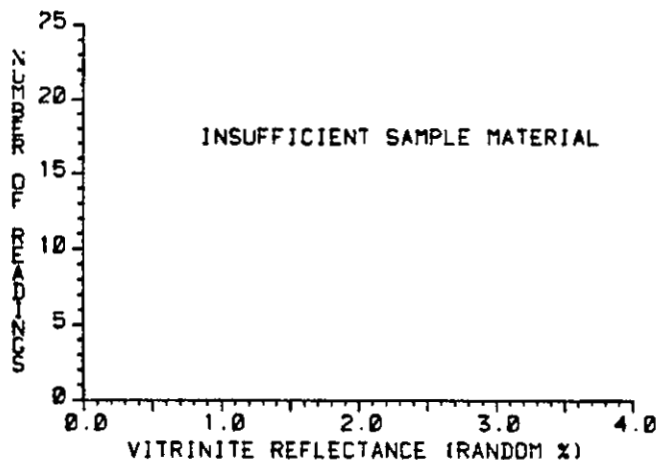
ORDERED REFLECTANCE VALUES:

0.96	1.05	*1.13	*1.19	*1.25
0.96	*1.08	*1.14	*1.20	*1.26
0.97	*1.08	*1.14	*1.20	*1.26
0.97	*1.08	*1.15	*1.20	*1.27
0.99	*1.09	*1.17	*1.21	*1.27
0.99	*1.10	*1.17	*1.22	*1.29
0.99	*1.10	*1.17	*1.23	*1.29
1.00	*1.12	*1.18	*1.23	*1.29
1.02	*1.12	*1.18	*1.24	*1.30
1.06	*1.12	*1.19	*1.25	*1.31

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 20 %
 Back Fluor : None
 Bitumen : None
 Coke : None

AMOCO #1 G.C. BAKER



RRUS No. : 1029
 ID : CTGS.
 DEPTH : 8210.0 F1
 : 2532.4 M

MEAN : N D

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

TABLE A.6

COMPOSITION OF SOURCE ROCK EXTRACT

AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
1027	8050	: 8030- 8070	548	46.0	16.7	37.3
1028	8150	: 8120- 8180	243	44.0	13.3	42.7

TABLE A.7

SUMMARY TABLE SHOWING SELECTED PARAMETERS OF OIL SAMPLES

AMOCO #1 G.C. BAKER

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	----
1027	8050	: 8030- 8070	0.045	46.0	0.47	0.59	0.59	----
1028	8150	: 8120- 8180	0.028	44.0	0.44	0.53	0.83	----

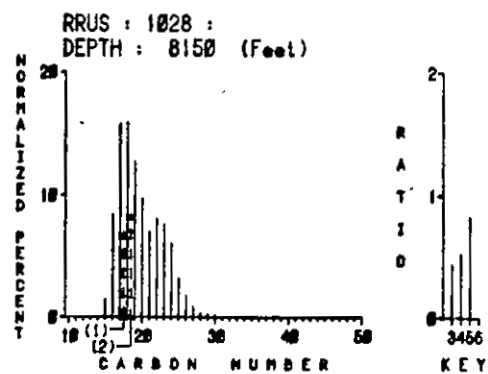
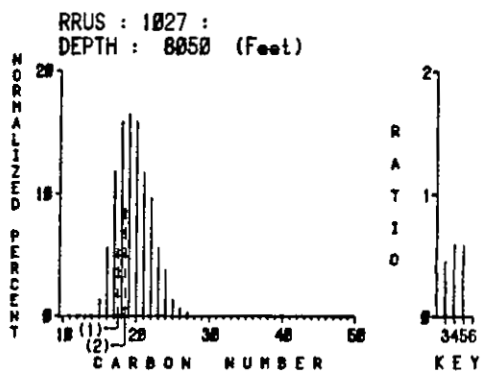
TABLE A.8

HEAVY HYDROCARBONS NORMALIZED TO 100%

AMOCO #1 C.C. BAKER

Project No. : RRUS/845/M/807/4

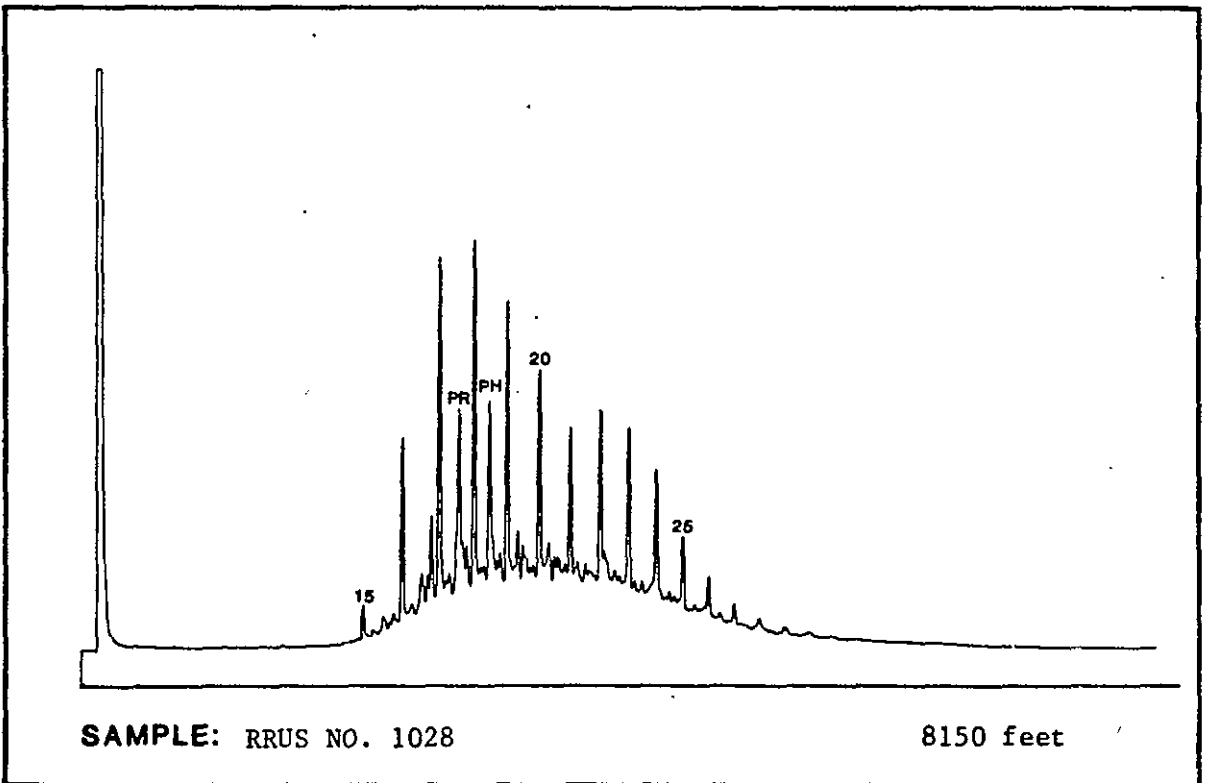
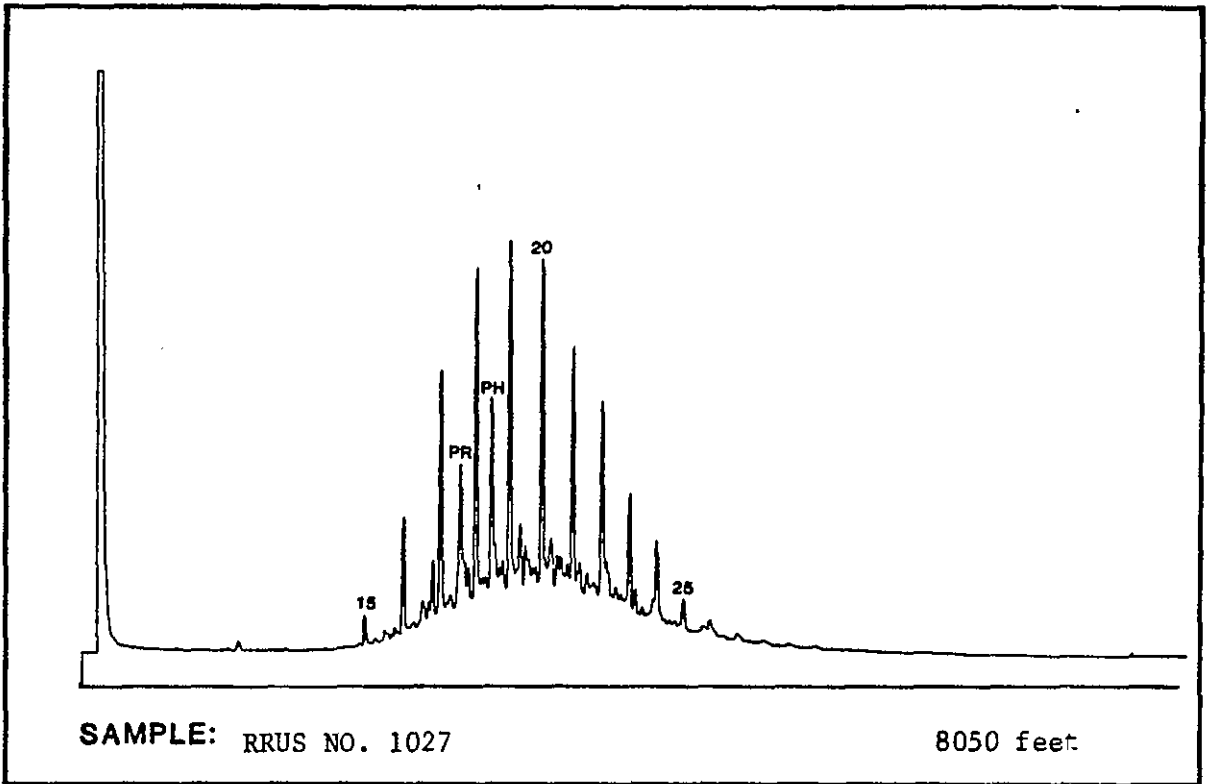
SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
1027	8050	: 8030- 8070	1.40	5.60	11.80	15.80	16.40	15.80	11.70
1028	8150	: 8120- 8180	1.50	8.40	15.80	15.90	12.80	9.70	7.10
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
1027	8050	: 8030- 8070	9.60	5.60	3.90	1.40	0.70	0.30	0.00
1028	8150	: 8120- 8180	8.10	7.70	6.10	3.30	1.80	0.90	0.40
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
1027	8050	: 8030- 8070	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1028	8150	: 8120- 8180	0.30	0.20	0.00	0.00	0.00	0.00	0.00
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH
1027	8050	: 8030- 8070	0.00	0.00	0.00	0.00	0.00	5.50	9.40
1028	8150	: 8120- 8180	0.00	0.00	0.00	0.00	0.00	7.00	8.40



AMOCO #1 G.C. BAKER

1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

NORMALIZED DISTRIBUTION OF n-ALKANES



GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS

AMOCO, # 1 BLACKBURN FARMS

TABLE A.9

LITHOLOGIC DESCRIPTION

AMOCO

#1 BLACKBURN FARMS

1,500-1,860'	Mudstone?
1,890-1,900'	Halite, lt. pink
1,920-1,980'	Claystone, reddish brown
1,980-2,230'	Halite, lt. pink Some claystone Some anhydrite
2,250-2,260'	Claystone, lt. gray and pink; anhydrite
2,280-2,320'	Claystone, reddish brown
2,340-2,410'	Claystone, green-gray (some reddish brown) Some anhydrite
2,430-2,500'	Halite, lt. pink
2,520-2,560'	Claystone, reddish brown and green-gray anhydrite
2,580-2,710'	Halite, lt. pink
2,730-3,960'	Claystone, reddish brown (some green)
3,980-4,530'	Halite, lt. pink Some claystone, reddish brown Some anhydrite
4,550-4,680'	Claystone, reddish brown
4,700-4,740'	Halite, lt. pink Some claystone, reddish brown
4,760-4,920'	Claystone, reddish brown
4,940-4,950'	Lst., gray Shale Trace of qtz., feldspar Anhydrite
5,000-6,390'	Claystone, reddish brown
6,410-7,370'	Claystone, brown Anhydrite Shales, dark Traces of granite wash
7,400-8,200'	Claystone, reddish brown Shale, dark Anhydrite
8,200-8,290'	Claystone, reddish brown and gray Shale, dark Anhydrite
8,310-8,580'	Lst., gray Anhydrite

TABLE A.10

TOTAL ORGANIC CARBON DATA

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH (Feet)		TOC%	RRUS	DEPTH (Feet)		TOC%
1201	1580	: 1560- 1600	: 0.05	1215	6990	: 6970- 7010	: 0.27
1202	2120	: 2100- 2140	: 0.04	1216	7200	: 7180- 7220	: 0.19
1203	2540	: 2520- 2560	: 0.26	1217	7335	: 7300- 7370	: 1.90
1204	2985	: 2980- 2990	: 0.19	1218	7435	: 7430- 7440	: 0.26
1205	3505	: 3500- 3510	: 0.38	1219	7750	: 7580- 7920	: 0.35
1206	4015	: 4010- 4020	: 0.12	1220	7765	: 7730- 7800	: 0.40
1207	4510	: 4490- 4530	: 0.14	1221	7955	: 7920- 7990	: 0.75
1208	4825	: 4820- 4830	: 0.14	1222	8045	: 8010- 8080	: 1.20
1209	4945	: 4940- 4950	: 0.45	1223	8165	: 8130- 8200	: 0.80
1210	5495	: 5490- 5500	: 0.17	1224	8255	: 8220- 8290	: 0.54
1211	6005	: 6000- 6010	: 0.19	1225	8330	: 8310- 8350	: 0.50
1212	6460	: 6440- 6480	: 0.20	1226	8390	: 8370- 8410	: 0.82
1213	6650	: 6600- 6700	: 0.35	1227	8505	: 8490- 8520	: 0.87
1214	6770	: 6750- 6790	: 0.28				

TABLE A.11

ROCK-EVAL PYROLYSIS RAW DATA

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1203	2540	: 2520- 2560	0.010	0.130	0.300	0.433	0.071	417
1205	3505	: 3500- 3510	0.020	0.410	0.700	0.586	0.047	---
1209	4945	: 4940- 4950	0.390	1.030	0.680	1.515	0.275	---
1213	6650	: 6600- 6700	0.010	0.360	0.890	0.404	0.027	---
1214	6770	: 6750- 6790	0.010	0.120	0.380	0.316	0.077	---
1215	6990	: 6970- 7010	0.010	0.100	0.350	0.286	0.091	---
1217	7335	: 7300- 7370	0.010	0.210	0.790	0.266	0.045	---
1219	7750	: 7580- 7920	---	---	---	---	---	---
1220	7765	: 7730- 7800	0.020	0.260	0.870	0.299	0.071	411
1221	7955	: 7920- 7990	0.040	5.830	0.650	8.969	0.007	431
1222	8045	: 8010- 8080	0.100	1.070	0.560	1.911	0.085	446
1223	8165	: 8130- 8200	0.100	0.640	0.520	1.231	0.135	444
1224	8255	: 8220- 8290	0.020	0.410	0.260	1.577	0.047	453
1225	8330	: 8310- 8350	0.030	0.260	0.440	0.591	0.103	444
1226	8390	: 8370- 8410	0.060	0.390	0.470	0.830	0.133	448
1227	8505	: 8490- 8520	0.060	0.360	0.370	0.973	0.143	448

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.12

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
1203	2540	: 2520- 2560	50	115	0.26
1205	3505	: 3500- 3510	108	184	0.38
1209	4945	: 4940- 4950	229	151	0.45
1213	6650	: 6600- 6700	103	254	0.35
1214	6770	: 6750- 6790	43	136	0.28
1215	6990	: 6970- 7010	37	130	0.27
1217	7335	: 7300- 7370	11	42	1.90
1219	7750	: 7580- 7920	1920	891	0.35
1220	7765	: 7730- 7800	65	217	0.40
1221	7955	: 7920- 7990	777	87	0.75
1222	8045	: 8010- 8080	89	47	1.20
1223	8165	: 8130- 8200	80	65	0.80
1224	8255	: 8220- 8290	76	48	0.54
1225	8330	: 8310- 8350	52	88	0.50
1226	8390	: 8370- 8410	48	57	0.82
1227	8505	: 8490- 8520	41	43	0.87

TABLE A.13

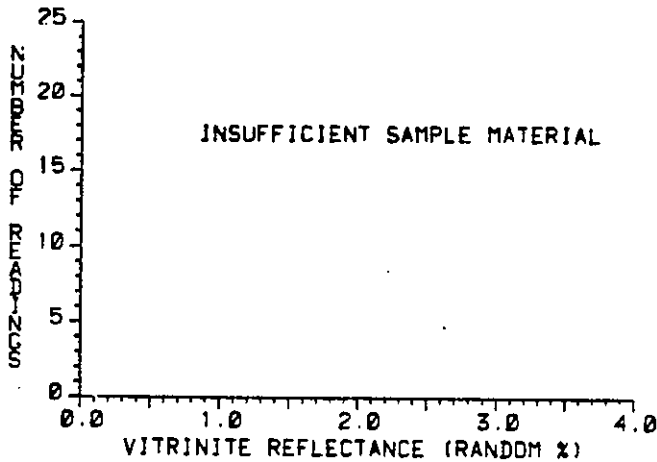
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
1205	3505	: 3500- 3510	----	0	0	0	0	None	0.38
1209	4945	: 4940- 4950	0.65	55	tr	30	15	Low	0.45
1213	6650	: 6600- 6700	0.80	40	tr	35	25	Low	0.35
1217	7335	: 7300- 7370	0.91	45	tr	40	15	None	1.90
1219	7750	: 7580- 7920	0.93	35	tr	50	15	Low	0.35
1220	7765	: 7730- 7800	1.00	45	tr	35	20	High	0.40
1221	7955	: 7920- 7990	----	0	0	0	0	None	0.75
1222	8045	: 8010- 8080	1.12	45	5	35	15	Med	1.20
1226	8390	: 8370- 8410	1.20	50	tr	40	10	Med	0.82
1227	8505	: 8490- 8520	1.23	20	tr	60	20	Low	0.87

AMOCO BLACKBURN FARMS



RRUS No. : 1205
 ID : CTCS.
 DEPTH : 3505.0 F1
 : 1068.3 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 2.10%

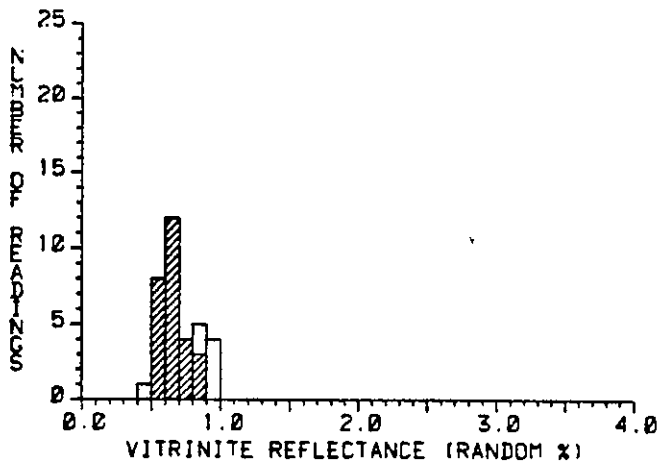
ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

AMOCO BLACKBURN FARMS



RRUS No. : 1209
 ID : CTCS
 DEPTH : 4045.0 F1
 : 1507.2 M

* = Ro MATURITY

VALUES : 27

MEAN : 0.65
 STD DEV : 0.10
 MEDIAN : 0.65
 MODE : 0.65

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

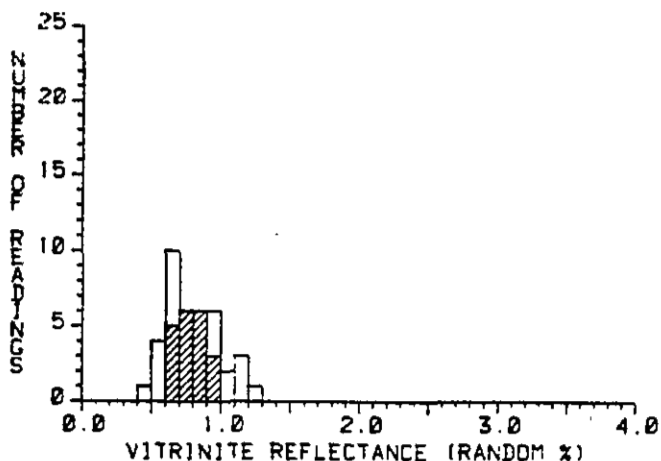
0.42 *0.60 *0.68 0.90
 *0.50 *0.61 *0.72 0.95
 *0.52 *0.64 *0.73 0.95
 *0.53 *0.64 *0.75 0.97
 *0.54 *0.65 *0.78
 *0.55 *0.65 *0.82
 *0.56 *0.65 *0.83
 *0.56 *0.66 *0.85
 *0.50 *0.67 0.89
 *0.60 *0.68 0.89

KEROGEN DESCRIPTION

Amorphous : 55 %
 Exinite : 1%
 Vitrinite : 30 %
 Inertinite : 15 %

Back Fluor : Low
 Bitumen : Med
 Coke : 1%

AMOCO BLACKBURN FARMS



RRUS No. : 1213
 ID : CTGS.
 DEPTH : 6635.0 F;
 : 2071.5 M

* = Ro MATURITY
 * VALUES : 20
 MEAN : 0.78
 STD DEV : 0.10
 MEDIAN : 0.79
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

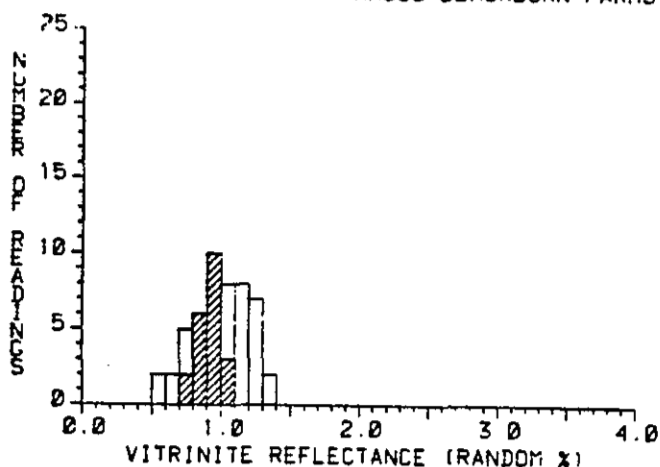
ORDERED REFLECTANCE VALUES:

0.49	*0.63	*0.79	0.96
0.50	*0.64	*0.82	0.98
0.55	*0.65	*0.86	0.99
0.58	*0.66	*0.86	1.00
0.59	*0.67	*0.87	1.03
0.60	*0.70	*0.88	1.12
0.60	*0.73	*0.88	1.12
0.60	*0.73	*0.90	1.19
0.60	*0.74	*0.92	1.25
0.61	*0.79	*0.93	

KEROGEN DESCRIPTION

Amorphous : 40 %
 Exinite : 1r %
 Vitrinite : 35 %
 Inertinite : 25 %
 Back Fluor : Low
 Bitumen : Med
 Coke : 1r

AMOCO BLACKBURN FARMS



RRUS No. : 1217
 ID : CTGS.
 DEPTH : 9335.0 F;
 : 2845.3 M

* = Ro MATURITY
 * VALUES : 21
 MEAN : 0.91
 STD DEV : 0.07
 MEDIAN : 0.92
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

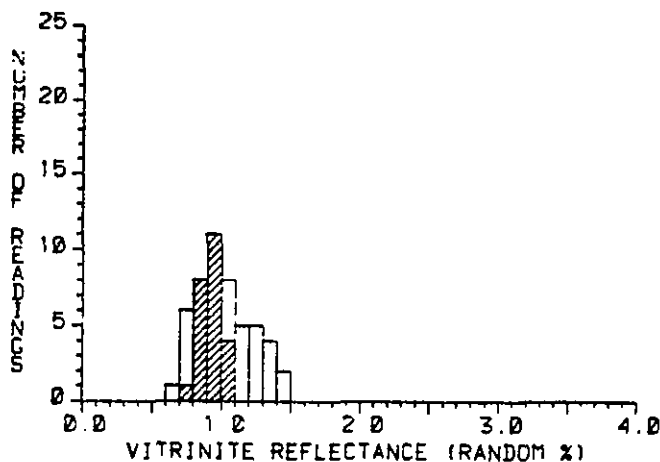
ORDERED REFLECTANCE VALUES:

0.56	*0.83	*0.93	1.05	1.17
0.59	*0.85	*0.94	1.09	1.21
0.63	*0.85	*0.95	1.09	1.26
0.69	*0.86	*0.98	1.10	1.26
0.71	*0.89	*0.99	1.11	1.26
0.73	*0.90	*1.01	1.12	1.26
0.74	*0.91	*1.01	1.12	1.28
*0.78	*0.92	*1.02	1.14	1.29
*0.79	*0.93	1.04	1.14	1.30
*0.80	*0.93	1.04	1.16	1.30

KEROGEN DESCRIPTION

Amorphous : 45 %
 Exinite : 1r %
 Vitrinite : 40 %
 Inertinite : 15 %
 Back Fluor : None
 Bitumen : Smb;
 Coke : Smb;

AMOCO BLACKBURN FARMS



RRUS No. : 1219
 ID : CTGS.
 DEPTH : 7600.0 Ft
 : 2316.5 M

* = Ro MATURITY
 # VALUES : 24
 MEAN : 0.93
 STD DEV : 0.07
 MEDIAN : 0.95
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

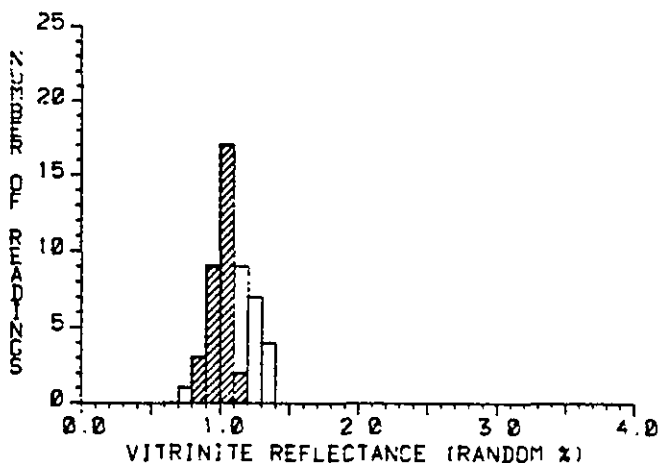
ORDERED REFLECTANCE VALUES

0.66	*0.85	*0.96	1.07	1.22
0.71	*0.86	*0.97	1.08	1.23
0.72	*0.88	*0.97	1.09	1.29
0.74	*0.88	*0.98	1.09	1.29
0.75	*0.89	*0.99	1.10	1.30
0.77	*0.91	*0.99	1.14	1.32
*0.79	*0.93	*1.02	1.16	1.34
*0.81	*0.94	*1.02	1.17	1.35
*0.82	*0.95	*1.03	1.18	1.44
*0.83	*0.95	*1.03	1.21	1.46

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 1r %
 Vitrinite : 50 %
 Inertinite : 15 %
 Back Fluor : Low
 Bitumen : Small
 Coke : 1r

AMOCO BLACKBURN FARMS



RRUS No. : 1220
 ID : CTGS.
 DEPTH : 7765.0 Ft
 : 2366.8 M

* = Ro MATURITY
 # VALUES : 31
 MEAN : 1.00
 STD DEV : 0.07
 MEDIAN : 1.01
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

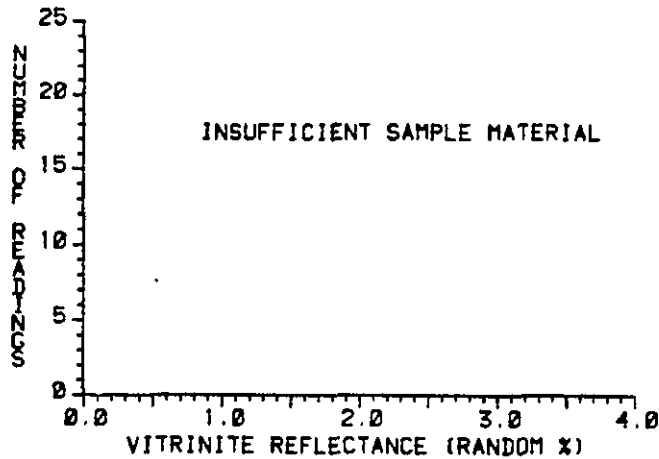
ORDERED REFLECTANCE VALUES:

0.79	*0.94	*1.03	*1.10	1.22
*0.86	*0.98	*1.03	*1.10	1.22
*0.87	*0.99	*1.04	1.13	1.23
*0.88	*1.00	*1.04	1.14	1.26
*0.91	*1.01	*1.06	1.14	1.27
*0.92	*1.01	*1.07	1.16	1.29
*0.92	*1.01	*1.08	1.18	1.32
*0.94	*1.02	*1.08	1.18	1.32
*0.94	*1.02	*1.08	1.19	1.32
*0.94	*1.02	*1.09	1.20	1.37

KEROGEN DESCRIPTION

Amorphous : 45 %
 Exinite : 1r %
 Vitrinite : 35 %
 Inertinite : 20 %
 Back Fluor : High
 Bitumen : Small
 Coke : 1r

AMOCO BLACKBURN FARMS



RRUS No. : 1221
 ID : CTGS.
 DEPTH : 7955.0 F1
 : 2424.7 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

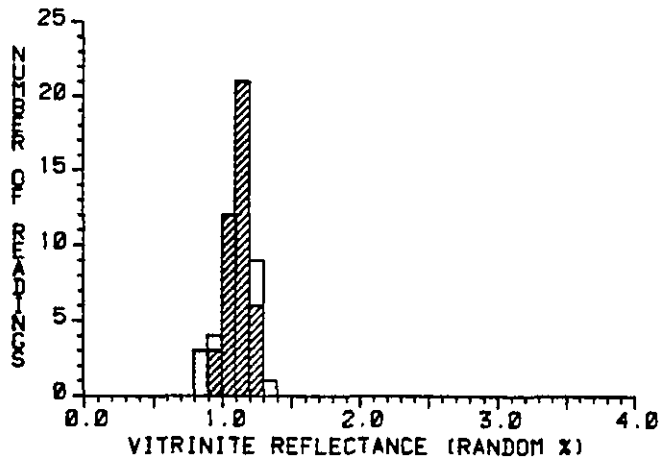
ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Exin Fluor : None
 Bitumen : None
 Coke : None

AMOCO BLACKBURN FARMS



RRUS No. : 1222
 ID : CTGS.
 DEPTH : 8045.0 F1
 : 2452.1 M

* = Ro MATURITY

* VALUES : 42

MEAN : 1.12
 STD DEV : 0.07
 MEDIAN : 1.13
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

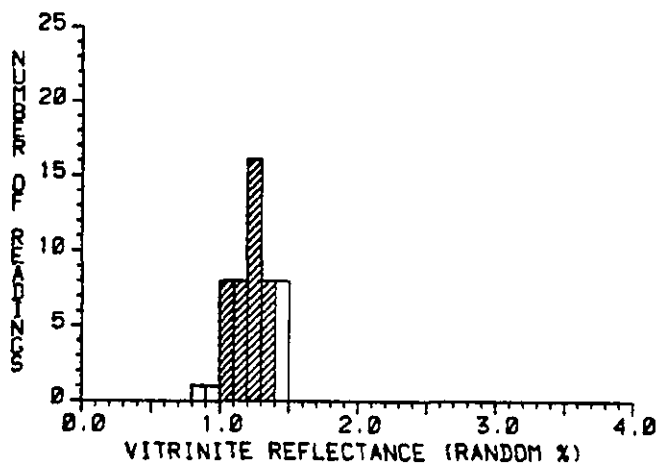
0.84	*1.04	*1.10	*1.16	*1.20
0.87	*1.05	*1.11	*1.16	*1.20
0.89	*1.06	*1.11	*1.16	*1.21
0.90	*1.06	*1.12	*1.16	*1.22
*0.96	*1.07	*1.13	*1.17	*1.23
*0.99	*1.08	*1.13	*1.18	*1.25
*0.99	*1.09	*1.15	*1.18	1.27
*1.00	*1.09	*1.15	*1.19	1.27
*1.01	*1.09	*1.15	*1.19	1.28
*1.03	*1.10	*1.16	*1.19	1.32

KEROGEN DESCRIPTION

Amorphous : 45 %
 Exinite : 5 %
 Vitrinite : 35 %
 Inertinite : 15 %

Exin Fluor : Med
 Bitumen : 1r
 Coke : None

AMOCO BLACKBURN FARMS



RRUS No. : 1226
 ID : CTGS.
 DEPTH : 8370.0 F1
 : 2557.3 M

* = Ro MATURITY

* VALUES : 40

MEAN : 1.20
 STD DEV : 0.11
 MEDIAN : 1.21
 MODE : 1.25

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

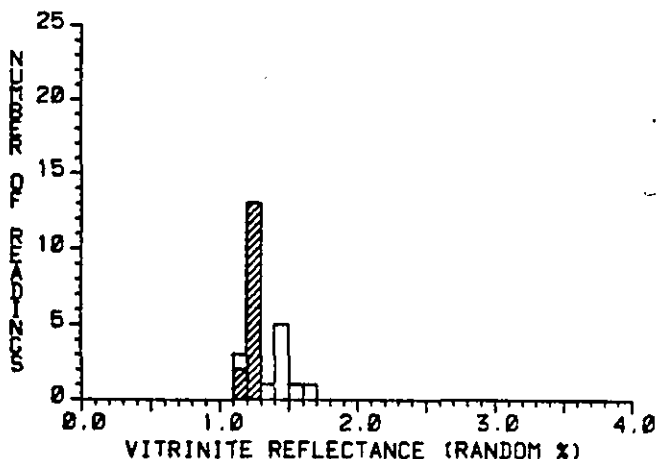
ORDERED REFLECTANCE VALUES:

0.89	*1.10	*1.20	*1.28	*1.37
0.94	*1.14	*1.21	*1.28	*1.38
*1.00	*1.14	*1.21	*1.29	1.40
*1.01	*1.15	*1.21	*1.29	1.42
*1.02	*1.17	*1.22	*1.32	1.43
*1.03	*1.18	*1.22	*1.33	1.43
*1.06	*1.18	*1.22	*1.33	1.43
*1.06	*1.19	*1.23	*1.34	1.44
*1.07	*1.20	*1.23	*1.36	1.47
*1.09	*1.20	*1.25	*1.36	1.49

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 1r %
 Vitrinite : 40 %
 Inertinite : 10 %
 Exin Fluor : Med
 Bitumen : None
 Coke : 1r

AMOCO BLACKBURN FARMS



RRUS No. : 1227
 ID : CTGS.
 DEPTH : 8525.0 F1
 : 2582.3 M

* = Ro MATURITY

* VALUES : 15

MEAN : 1.23
 STD DEV : 0.04
 MEDIAN : 1.22
 MODE : 1.25

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

1.12	*1.25	1.44
*1.16	*1.26	1.47
*1.19	*1.28	1.55
*1.20	*1.28	1.60
*1.20	*1.28	
*1.21	1.35	
*1.22	1.41	
*1.22	1.43	
*1.24	1.43	

KEROGEN DESCRIPTION

Amorphous : 20 %
 Exinite : 1r %
 Vitrinite : 60 %
 Inertinite : 20 %
 Exin Fluor : Low
 Bitumen : None
 Coke : None

TABLE A.14

COMPOSITION OF SOURCE ROCK EXTRACT

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
1219	7750	: 7580- 7920	475	41.8	14.6	43.6
1221	7955	: 7920- 7990	399	48.5	14.6	36.9
1222	8045	: 8010- 8080	220	36.1	16.8	47.1

TABLE A.15

SUMMARY TABLE SHOWING SELECTED PARAMETERS
OF OIL SAMPLES

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	
1219	7750	: 7580- 7920	0.136	41.8	0.40	0.34	1.11	1.25
1221	7955	: 7920- 7990	0.053	48.5	0.40	0.39	1.41	1.12
1222	8045	: 8010- 8080	0.018	36.1	0.49	0.42	1.47	----

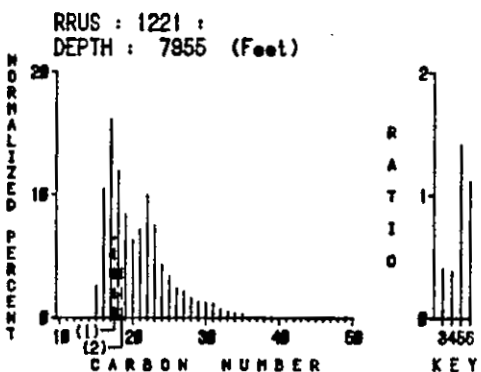
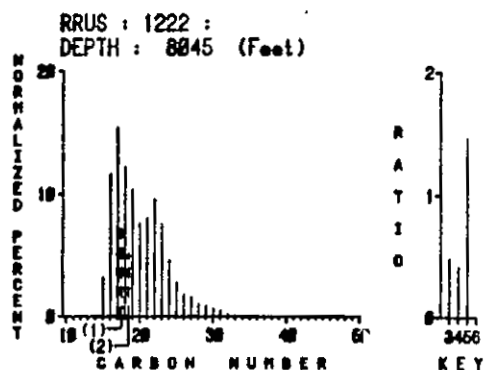
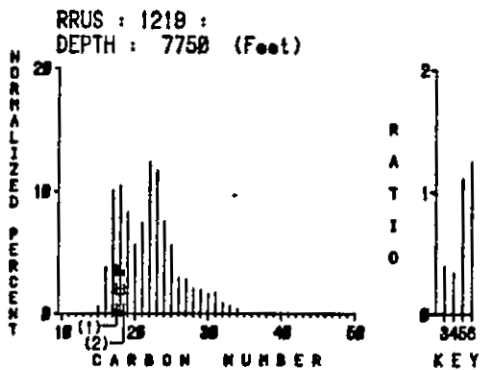
TABLE A.16

HEAVY HYDROCARBONS NORMALIZED TO 100%

AMOCO BLACKBURN FARMS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
1219	7750	: 7580- 7920	0.60	3.80	10.10	10.50	8.40	5.70	7.50
1221	7955	: 7920- 7990	2.60	10.50	16.10	11.90	8.40	6.30	7.20
1222	8045	: 8010- 8080	3.20	11.60	15.40	12.20	10.40	7.60	8.10
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
1219	7750	: 7580- 7920	12.40	11.80	7.60	5.70	3.00	2.90	2.10
1221	7955	: 7920- 7990	9.90	7.50	4.30	3.40	2.40	2.20	1.60
1222	8045	: 8010- 8080	9.60	7.60	4.60	2.80	1.80	1.60	1.00
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
1219	7750	: 7580- 7920	2.00	1.60	1.80	0.90	0.70	0.40	0.00
1221	7955	: 7920- 7990	1.40	1.20	1.20	0.70	0.50	0.40	0.30
1222	8045	: 8010- 8080	0.90	0.60	0.50	0.20	0.10	0.00	0.00
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH
1219	7750	: 7580- 7920	0.00	0.00	0.00	0.00	0.00	4.00	3.60
1221	7955	: 7920- 7990	0.00	0.00	0.00	0.00	0.00	6.50	4.60
1222	8045	: 8010- 8080	0.00	0.00	0.00	0.00	0.00	7.50	5.10

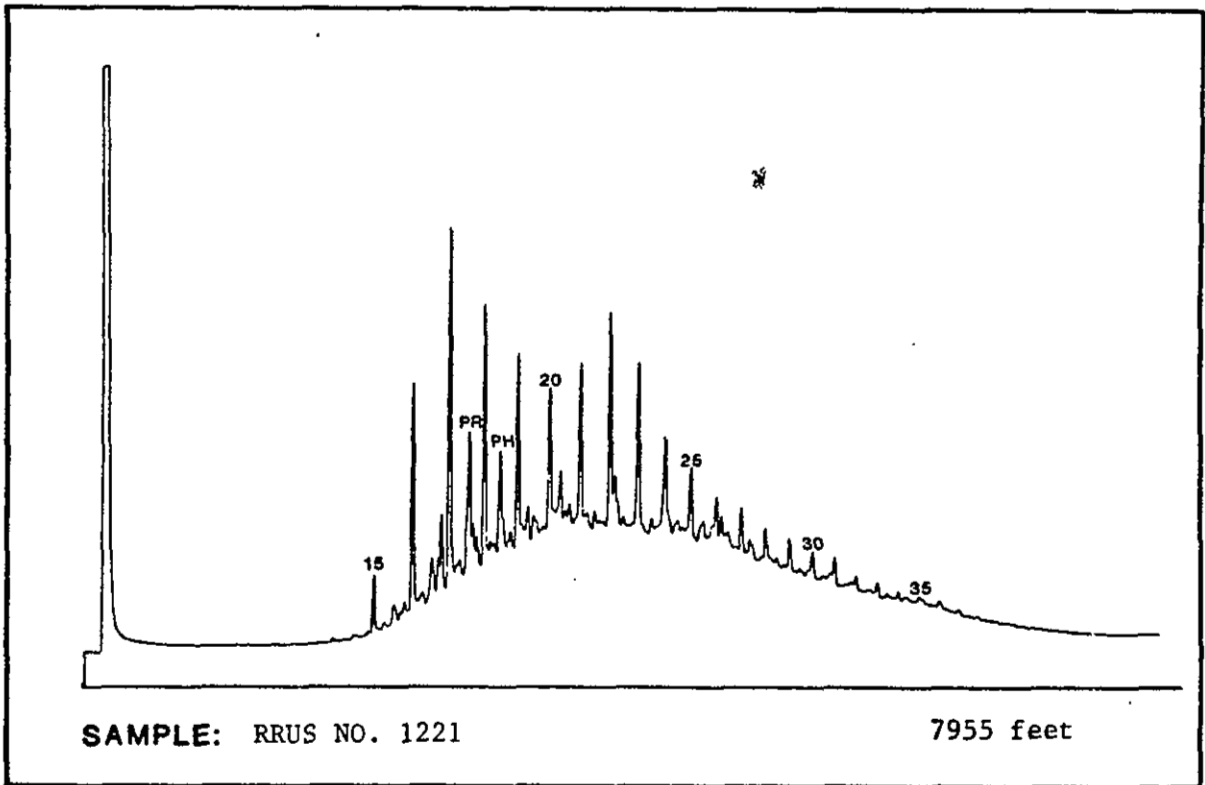
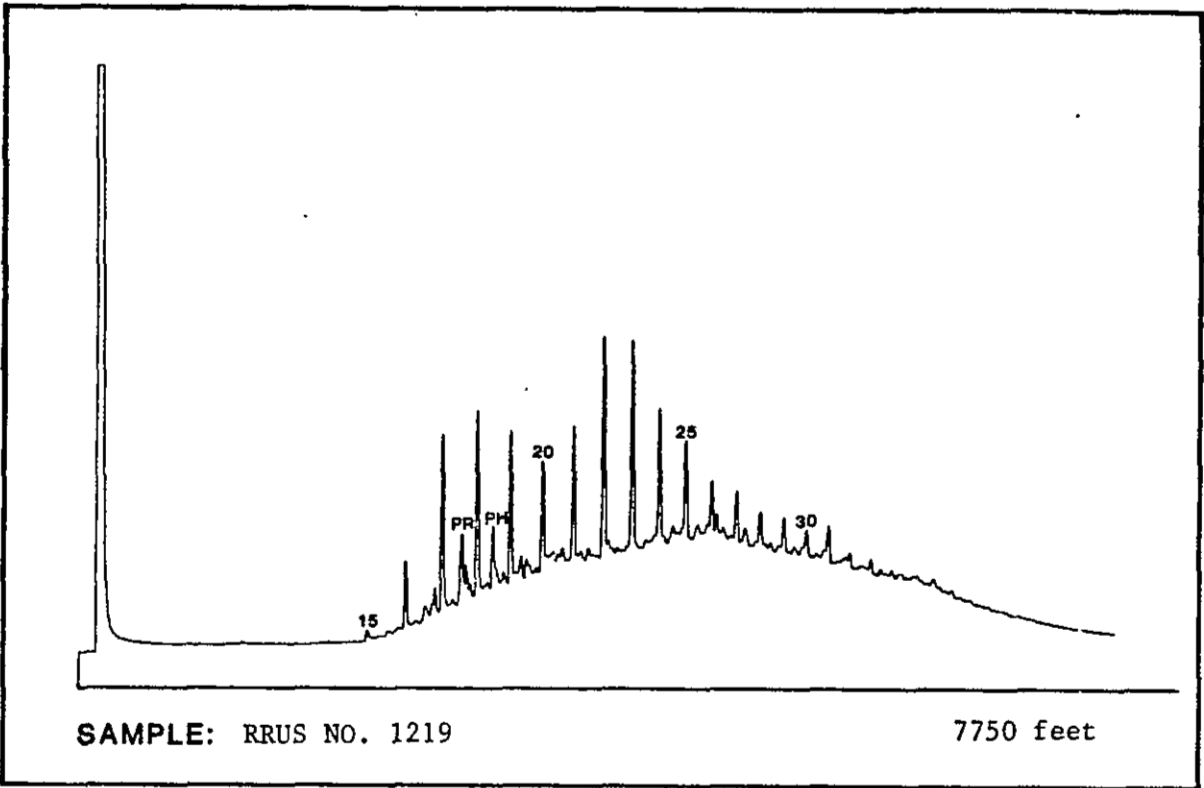


AMOCO BLACKBURN FARMS

- 1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
- 2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

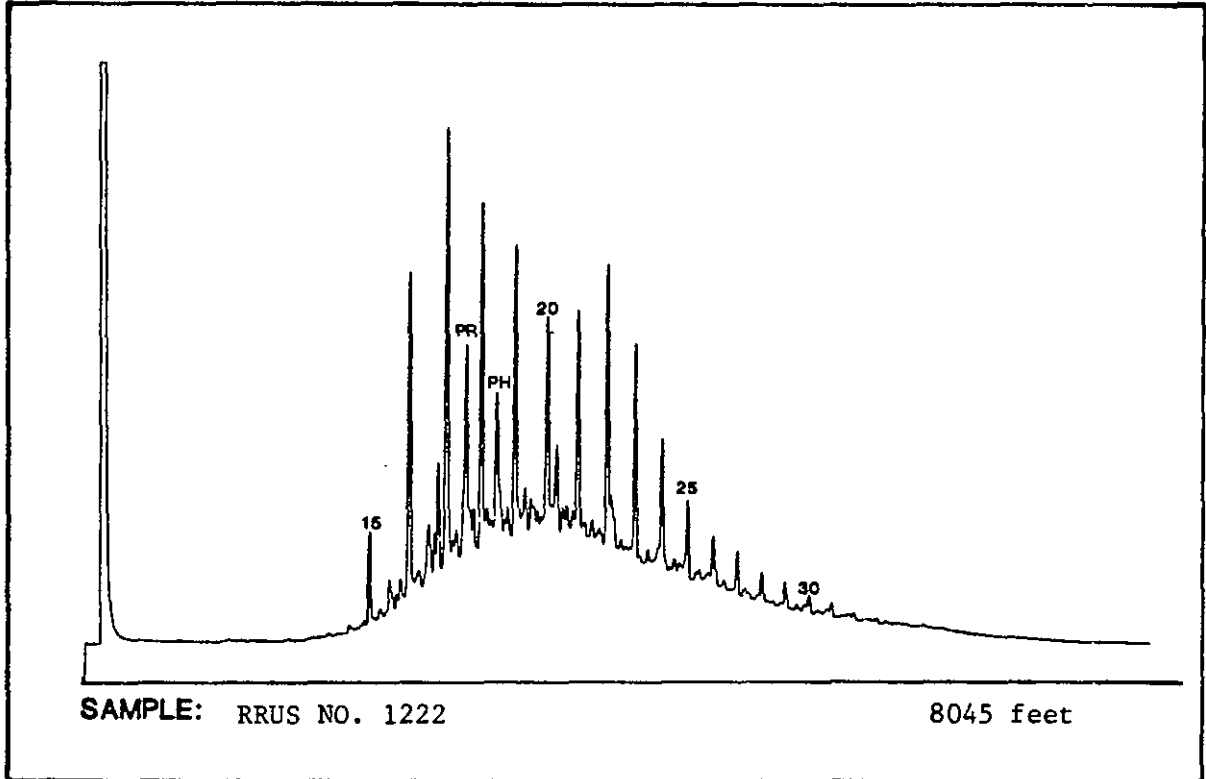
NORMALIZED DISTRIBUTION OF n-ALKANES

BLACKBURN FARMS



GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS

BLACKBURN FARMS



GAS CHROMATOGRAMS OF C15+ SATURATE HYDROCARBONS

SUNRAY, #1 BRISCOE

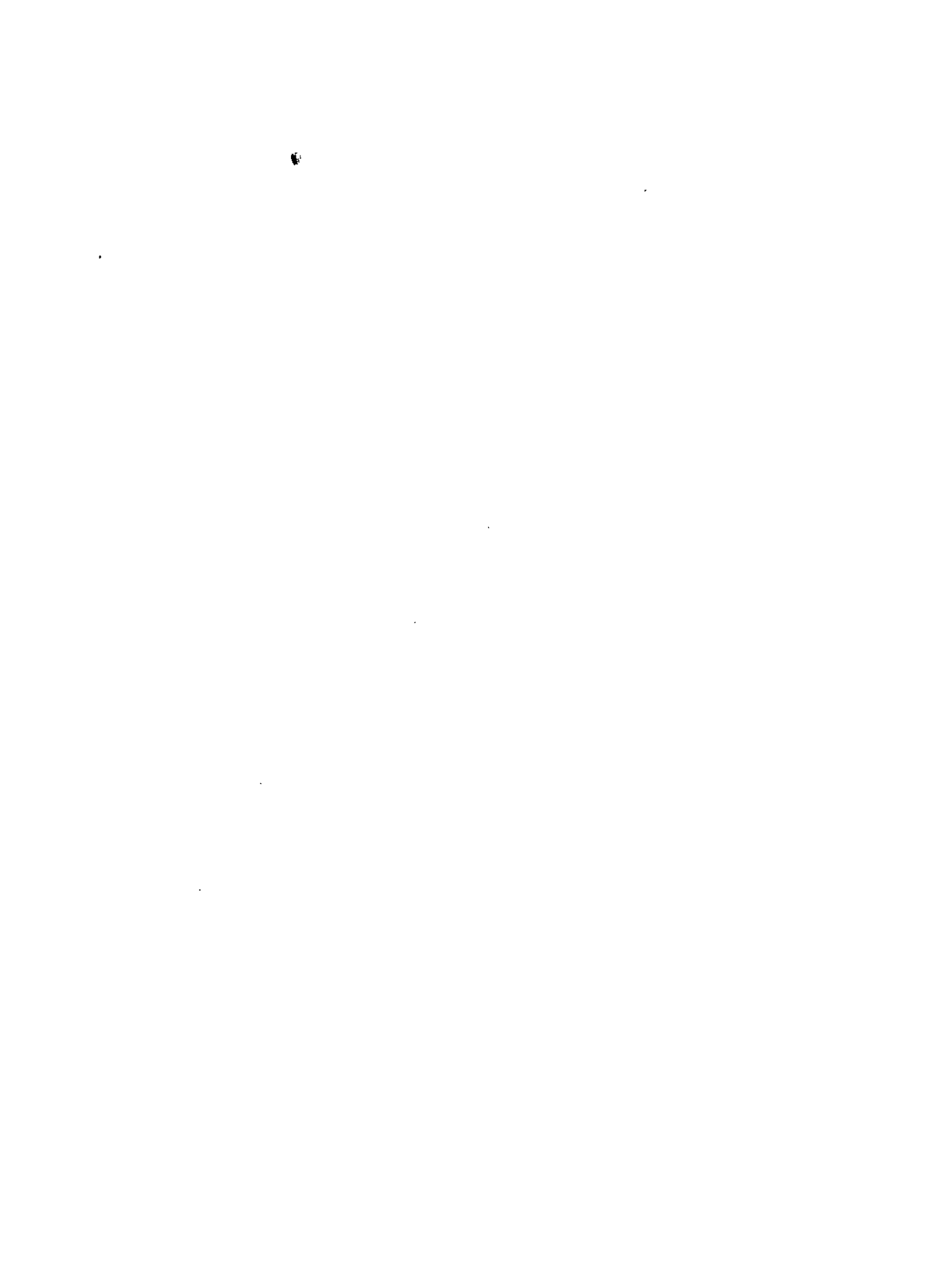


TABLE A.17

LITHOLOGIC DESCRIPTION

SUNRAY MIDCONTINENT
#1 BRISCOE

0- 730'	Claystone, reddish brown (some green) Lst. clasts - abundant in part
750- 880'	Sst., greenish, calc. cement, poorly sorted
900-1,060'	Claystone, reddish brown
1,080-1,180'	Slst., lt. brown
1,200-1,300'	Claystone, reddish brown
1,320-1,390'	Claystone, reddish brown, green
1,410-1,670'	Claystone, reddish brown (some purple)
1,690-1,785'	Claystone, reddish brown Anhydrite (increasing)
1,810-2,225'	Claystone, reddish brown (some purple) (some green) Anhydrite
2,250-2,315'	Claystone, green, purple
2,340-2,550'	Claystone, reddish brown, anhydrite
2,580-2,615'	Claystone, green
2,640-4,940'	Claystone, reddish brown (some green) Anhydrite
4,970-5,035'	Mudstone, dark reddish brown Increasing anhydrite
5,060-5,275'	Mudstone, dark reddish brown Granite wash
5,300-5,395'	Mudstone, dark reddish brown (some green)
5,420-5,515'	Mudstone, dark reddish brown Granite wash abundant
5,540-5,575'	Mudstone, dark reddish brown (some green)
5,600-6,085'	Mudstone, dark reddish brown (some green) Granite wash, abundant in part
6,110-7,585'	Mudstone, dark reddish brown (some green) Granite wash Dark shale
7,610-9,045'	Dark shale increasing Some granite wash Some dark reddish brown mudstone Anhydrite

TABLE A.18

TOTAL ORGANIC CARBON DATA

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
1101	110	: 90- 130	: 0.08	1116	6508	: 6505- 6510	: 0.12
1102	495	: 470- 520	: 0.09	1117	6698	: 6680- 6715	: 0.36
1103	860	: 840- 880	: 0.31	1118	6983	: 6950- 7015	: 0.25
1104	1490	: 1470- 1510	: 0.07	1119	7173	: 7120- 7225	: 0.27
1105	2005	: 1990- 2020	: 0.04	1120	7313	: 7280- 7345	: 0.28
1106	2268	: 2250- 2285	: 0.23	1121	7418	: 7400- 7435	: 0.44
1107	2598	: 2580- 2615	: 0.35	1122	7473	: 7420- 7525	: 0.39
1108	3018	: 3000- 3035	: 0.06	1123	7638	: 7605- 7670	: 0.48
1109	3518	: 3500- 3535	: 0.20	1124	7838	: 7820- 7855	: 0.41
1110	3923	: 3920- 3925	: 0.12	1125	8108	: 8090- 8125	: 1.66
1111	4323	: 4310- 4335	: 0.09	1126	8273	: 8240- 8305	: 0.70
1112	4853	: 4850- 4855	: 0.10	1127	8498	: 8480- 8515	: 0.93
1113	5393	: 5390- 5395	: 0.05	1128	8663	: 8630- 8695	: 1.39
1114	5873	: 5870- 5875	: 0.06	1129	8903	: 8870- 8935	: 1.09
1115	6147	: 6140- 6154	: 0.09	1130	9010	: 8990- 9030	: 1.68

TABLE A.19

TOTAL ORGANIC CARBON DATA

BRISCOE #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION		DATA	SAMPLE IDENTIFICATION		DATA
RRUS	DEPTH (Feet)	TOC%	RRUS	DEPTH (Feet)	TOC%
3321	6145	0.16	3311	8500	1.11
3322	6680	0.28	3312	8550	1.04
3301	7160	0.34	3313	8600	2.30
3302	7425	0.50	3314	8650	0.52
3303	7560	0.36	3315	8700	0.91
3323	7900	0.36	3316	8750	3.22
3304	8100	0.65	3317	8800	0.70
3305	8200	0.73	3324	8850	0.95
3306	8250	0.50	3325	8900	1.01
3307	8300	1.27	3318	8950	0.80
3308	8350	0.59	3319	9000	1.25
3309	8370	0.36	3320	9050	0.73
3310	8450	0.79			

NON RR(US) DATA

TABLE A.20

ROCK-EVAL PYROLYSIS RAW DATA

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1103	860	: 840- 880	0.060	0.660	0.490	1.347	0.083	---
1107	2598	: 2580- 2615	0.020	0.380	0.340	1.118	0.050	435
1117	6698	: 6680- 6715	0.040	0.190	0.250	0.760	0.174	---
1121	7418	: 7400- 7435	0.030	0.250	0.180	1.389	0.107	---
1123	7638	: 7605- 7670	0.050	0.300	0.200	1.500	0.143	435
1124	7838	: 7820- 7855	0.010	0.130	0.100	1.300	0.071	418
1125	8108	: 8090- 8125	0.160	2.190	0.180	12.167	0.068	446
1126	8273	: 8240- 8305	0.050	0.340	0.120	2.833	0.128	458
1128	8663	: 8630- 8695	0.100	0.480	0.420	1.143	0.172	447
1129	8903	: 8870- 8935	0.120	0.550	0.160	3.438	0.179	459
1130	9010	: 8990- 9030	0.090	0.670	0.160	4.188	0.118	453

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.21

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
1103	860	: 840- 880	213	158	0.31
1107	2598	: 2580- 2615	109	97	0.35
1117	6698	: 6680- 6715	53	69	0.36
1121	7418	: 7400- 7435	57	41	0.44
1123	7638	: 7605- 7670	62	42	0.48
1124	7838	: 7820- 7855	32	24	0.41
1125	8108	: 8090- 8125	132	11	1.66
1126	8273	: 8240- 8305	49	17	0.70
1128	8663	: 8630- 8695	35	30	1.39
1129	8903	: 8870- 8935	50	15	1.09
1130	9010	: 8990- 9030	40	10	1.68

TABLE A.22

ROCK-EVAL PYROLYSIS RAW DATA

BRISCOE #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1,S2,S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
3322	6680		0.120	0.310	1.100	0.282	0.279	439
3301	7160		0.140	0.260	1.100	0.236	0.350	---
3302	7425		0.200	0.400	1.090	0.367	0.333	---
3303	7560		0.190	0.360	1.310	0.275	0.345	---
3323	7900		0.060	0.080	1.170	0.068	0.429	---
3304	8100		0.060	0.190	0.440	0.432	0.240	446
3305	8200		0.120	0.310	1.100	0.282	0.279	439
3306	8250		0.180	0.310	1.140	0.272	0.367	---
3307	8300		0.100	0.350	0.850	0.412	0.222	448
3308	8350		0.130	0.270	0.980	0.276	0.325	443
3309	8370		0.060	0.090	0.790	0.114	0.400	446
3310	8450		0.250	0.530	0.720	0.736	0.321	449
3311	8500		0.140	0.290	1.500	0.193	0.326	439
3312	8550		0.140	0.310	0.950	0.326	0.311	440
3313	8600		0.300	0.670	0.640	1.047	0.309	444
3314	8650		0.080	0.130	0.940	0.138	0.381	460
3315	8700		0.110	0.230	1.000	0.230	0.324	441
3316	8750		0.600	1.370	0.910	1.505	0.305	440
3317	8800		0.190	0.330	1.050	0.314	0.365	443
3324	8850		0.190	0.460	1.040	0.442	0.292	448
3325	8900		0.390	0.890	1.150	0.774	0.305	442
3318	8950		0.130	0.170	1.000	0.170	0.433	440
3319	9000		0.210	0.400	1.040	0.385	0.344	441
3320	9050		0.200	0.430	1.090	0.394	0.317	441

--- REPRESENTS AN INDETERMINABLE VALUE
NON RR(US) DATA

TABLE A.23

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

BRISCOE #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO ₂ /gm TOC)	(%)
3322	6680		111	393	0.28
3301	7160		76	324	0.34
3302	7425		80	218	0.50
3303	7560		100	364	0.36
3323	7900		22	325	0.36
3304	8100		29	68	0.65
3305	8200		42	151	0.73
3306	8250		62	228	0.50
3307	8300		28	67	1.27
3308	8350		46	166	0.59
3309	8370		25	219	0.36
3310	8450		67	91	0.79
3311	8500		26	135	1.11
3312	8550		30	91	1.04
3313	8600		29	28	2.30
3314	8650		25	181	0.52
3315	8700		25	110	0.91
3316	8750		43	28	3.22
3317	8800		47	150	0.70
3324	8850		48	109	0.95
3325	8900		88	114	1.01
3318	8950		21	125	0.80
3319	9000		32	83	1.25
3320	9050		59	149	0.73

NON RR(US) DATA

TABLE A.24

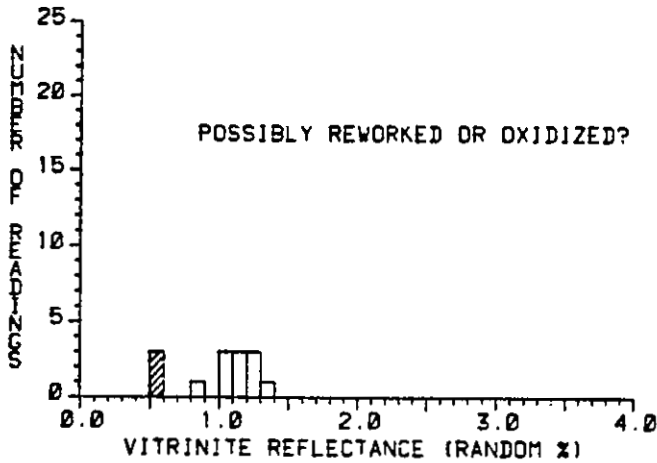
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
1103	860	: 840- 880	0.57	30	0	65	5	None	0.31
1107	2598	: 2580- 2615	0.73	40	tr	25	35	None	0.35
1117	6698	: 6680- 6715	---	95	tr	tr	5	Med	0.36
1123	7638	: 7605- 7670	0.99	35	0	40	25	None	0.48
1125	8108	: 8090- 8125	1.00	10	5	50	35	Med	1.66
1126	8273	: 8240- 8305	1.06	50	0	30	20	Med	0.70
1128	8663	: 8630- 8695	1.14	35	tr	30	35	Low	1.39
1130	9010	: 8990- 9030	1.14	50	tr	30	20	Low	1.68

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1103
 ID : CTGS.
 DEPTH : 800.0 Ft
 : 243.8 M

* = Ro MATURITY

VALUES : 3

MEAN : 0.57
 STD DEV : 0.00
 MEDIAN : 0.57
 MODE : 0.55

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

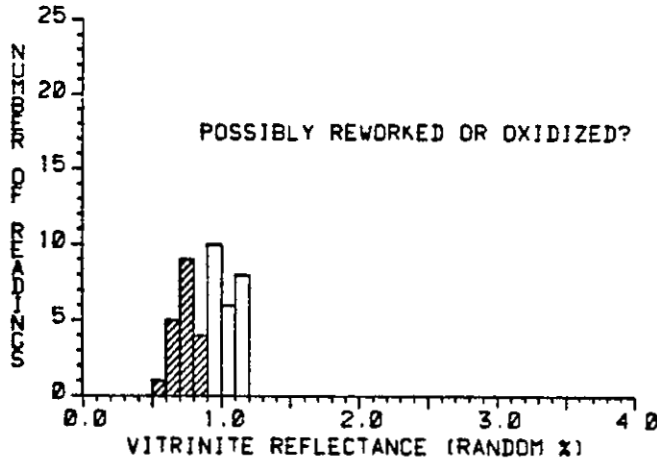
*0.56	1.20
*0.57	1.23
*0.57	1.28
0.83	1.31
1.00	
1.08	
1.08	
1.10	
1.11	
1.14	

KEROGEN DESCRIPTION

Amorphous : 30 %
 Exinite : 0 %
 Vitrinite : 65 %
 Inertinite : 5 %

Back Fluor. : None
 Bitumen : 1r
 Coke : Small

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1107
 ID : CTGS.
 DEPTH : 2432.5 Ft
 : 741.4 M

* = Ro MATURITY

VALUES : 19

MEAN : 0.73
 STD DEV : 0.07
 MEDIAN : 0.74
 MODE : 0.75

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

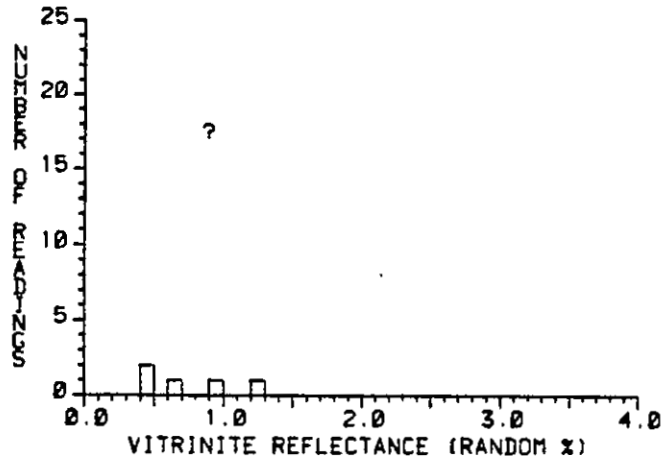
*0.59	*0.74	0.91	1.01	1.16
*0.62	*0.74	0.93	1.01	1.18
*0.64	*0.76	0.94	1.05	1.19
*0.67	*0.77	0.96	1.07	
*0.68	*0.79	0.97	1.09	
*0.69	*0.81	0.97	1.10	
*0.72	*0.83	0.97	1.11	
*0.73	*0.85	0.98	1.11	
*0.73	*0.85	0.99	1.12	
*0.74	0.90	1.00	1.13	

KEROGEN DESCRIPTION

Amorphous : 40 %
 Exinite : 1r %
 Vitrinite : 25 %
 Inertinite : 35 %

Back Fluor. : None
 Bitumen : 1r
 Coke : 1r

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1117
 ID : CTGS.
 DEPTH : 6847.5 Ft
 : 2087.1 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

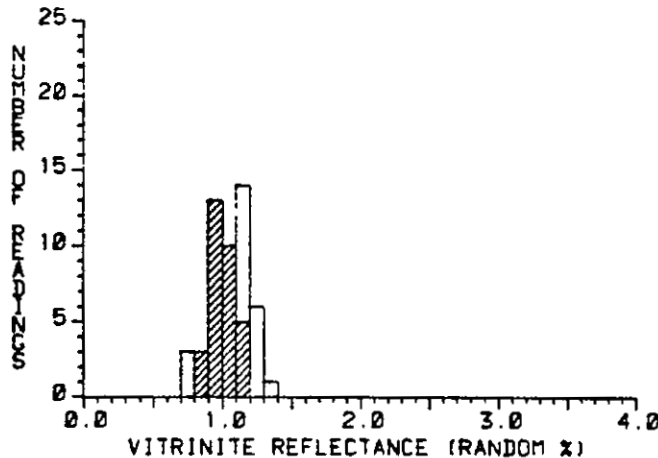
ORDERED REFLECTANCE VALUES:

0.41
 0.47
 0.61
 0.83
 1.26

KEROGEN DESCRIPTION

Amorphous : 95 %
 Exinite : 1r %
 Vitrinite : 1r %
 Inertinite : 5 %
 Back Fluor : Med
 Bitumen : 1r
 Coke : None

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1123
 ID : CTGS.
 DEPTH : 7730.0 Ft
 : 2356.1 M

* = Ro MATURITY

* VALUES : 31
 MEAN : 0.99
 STD DEV : 0.07
 MEDIAN : 0.98
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

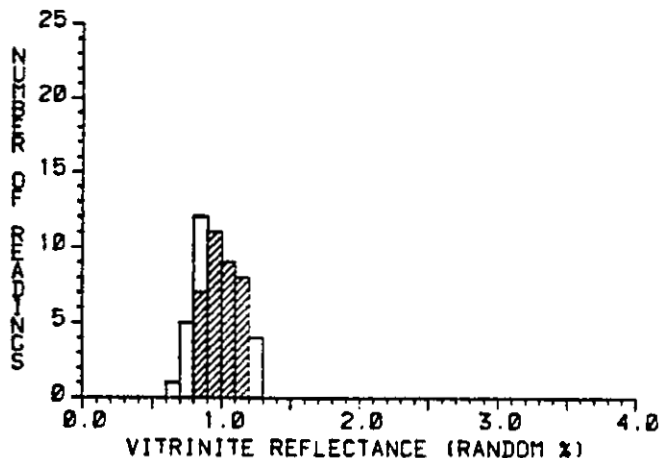
ORDERED REFLECTANCE VALUES:

0.74	*0.92	*1.00	*1.10	1.17
0.76	*0.92	*1.02	*1.10	1.18
0.79	*0.95	*1.03	*1.11	1.18
*0.88	*0.95	*1.03	*1.11	1.21
*0.89	*0.96	*1.03	1.14	1.23
*0.89	*0.96	*1.06	1.15	1.24
*0.90	*0.97	*1.06	1.16	1.26
*0.91	*0.97	*1.07	1.16	1.27
*0.91	*0.98	*1.08	1.16	1.27
*0.91	*1.00	*1.10	1.16	1.32

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 0 %
 Vitrinite : 40 %
 Inertinite : 25 %
 Back Fluor : None
 Bitumen : 1r
 Coke : 1r

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1125
 ID : CTGS.
 DEPTH : 8107.5 Ft
 : 2471.2 M

* = Ro MATURITY
 # VALUES : 35
 MEAN : 1.00
 STD DEV : 0.11
 MEDIAN : 0.98
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

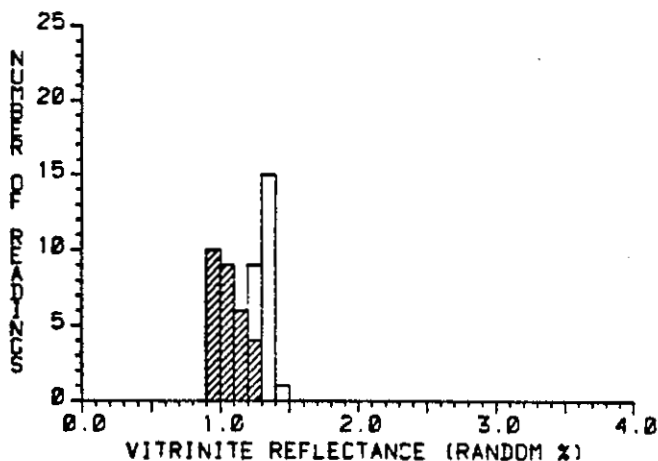
ORDERED REFLECTANCE VALUES:

0.67	0.82	*0.91	*1.02	*1.14
0.70	*0.84	*0.91	*1.03	*1.15
0.72	*0.85	*0.92	*1.04	*1.15
0.74	*0.85	*0.93	*1.05	*1.16
0.75	*0.86	*0.94	*1.06	*1.17
0.77	*0.87	*0.95	*1.07	*1.18
0.80	*0.88	*0.96	*1.09	1.20
0.80	*0.89	*0.97	*1.09	1.20
0.82	*0.90	*0.98	*1.10	1.23
0.82	*0.91	*1.00	*1.10	1.23

KEROGEN DESCRIPTION

Amorphous : 10 %
 Exinite : 5 %
 Vitrinite : 50 %
 Inertinite : 35 %
 Back Fluor : Med
 Bitumen : Med
 Coke : Small

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1126
 ID : CTGS.
 DEPTH : 8272.5 Ft
 : 2521.5 M

* = Ro MATURITY
 # VALUES : 29
 MEAN : 1.06
 STD DEV : 0.10
 MEDIAN : 1.04
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

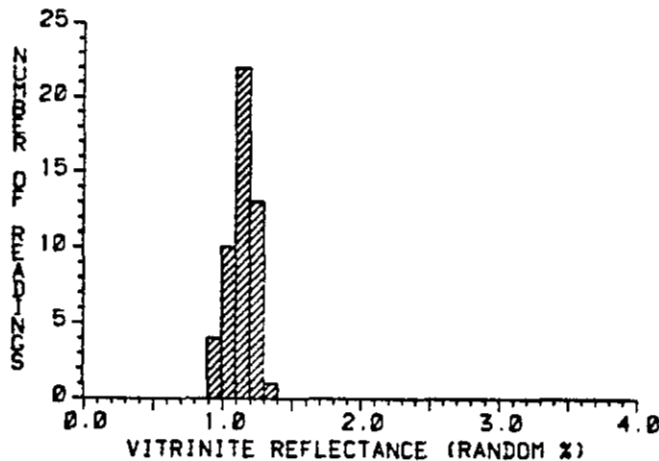
ORDERED REFLECTANCE VALUES:

*0.92	*1.01	*1.13	1.26	1.33
*0.94	*1.01	*1.14	1.27	1.35
*0.95	*1.02	*1.15	1.29	1.36
*0.97	*1.02	*1.17	1.29	1.37
*0.97	*1.04	*1.17	1.30	1.38
*0.97	*1.04	*1.22	1.32	1.38
*0.98	*1.06	*1.22	1.32	1.38
*0.98	*1.09	*1.23	1.32	1.38
*0.99	*1.09	*1.24	1.33	1.38
*0.99	*1.13	1.26	1.33	1.41

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 20 %
 Back Fluor : Med
 Bitumen : Small
 Coke : None

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1128
 ID : CTGS.
 DEPTH : 8562.5 Ft
 : 2540.3 M

* = Ro MATURITY
 # VALUES : 50
 MEAN : 1.14
 STD DEV : 0.09
 MEDIAN : 1.16
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

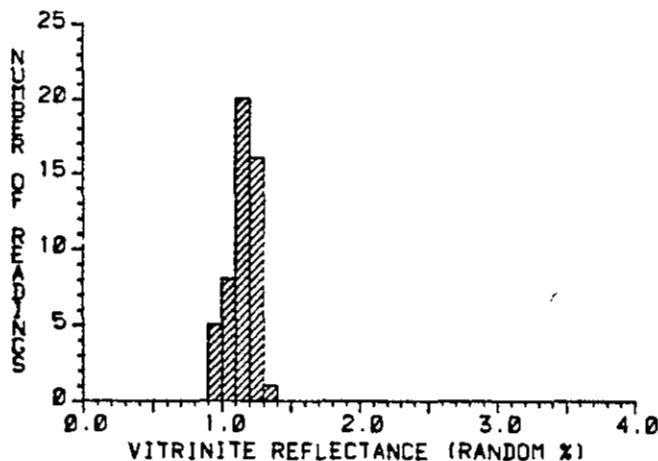
ORDERED REFLECTANCE VALUES:

*0.01	*1.06	*1.12	*1.18	*1.23
*0.04	*1.08	*1.13	*1.18	*1.24
*0.04	*1.08	*1.14	*1.18	*1.24
*0.08	*1.08	*1.15	*1.18	*1.24
*1.02	*1.10	*1.16	*1.18	*1.25
*1.02	*1.10	*1.16	*1.19	*1.26
*1.02	*1.10	*1.17	*1.20	*1.27
*1.02	*1.10	*1.17	*1.20	*1.27
*1.04	*1.11	*1.18	*1.20	*1.29
*1.04	*1.11	*1.18	*1.22	*1.31

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 1r %
 Vitrinite : 30 %
 Inertinite : 35 %
 Back Fluor : Low
 Bitumen : Small
 Coke : 1r

SUNRAY #1 IRA J. BRISCOE



RRUS No. : 1130
 ID : CTGS.
 DEPTH : 9010.0 Ft
 : 2746.2 M

* = Ro MATURITY
 # VALUES : 50
 MEAN : 1.14
 STD DEV : 0.10
 MEDIAN : 1.15
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

*0.01	*1.05	*1.13	*1.19	*1.24
*0.04	*1.06	*1.13	*1.19	*1.25
*0.06	*1.08	*1.13	*1.19	*1.26
*0.07	*1.11	*1.15	*1.20	*1.27
*0.07	*1.11	*1.15	*1.20	*1.27
*1.00	*1.12	*1.15	*1.21	*1.27
*1.01	*1.12	*1.17	*1.21	*1.28
*1.02	*1.12	*1.18	*1.23	*1.28
*1.02	*1.12	*1.18	*1.23	*1.28
*1.04	*1.12	*1.18	*1.24	*1.30

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 1r %
 Vitrinite : 30 %
 Inertinite : 20 %
 Back Fluor : Low
 Bitumen : 1r
 Coke : 1r

TABLE A.25

VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

BRISCOE #1 (SUN)

Project No. : RRUS/B45/M/80714

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
3301	7160		1.01	0	0	0	0	None	0.34
3302	7425		0.96	0	0	0	0	None	0.50
3303	7560		0.97	0	0	0	0	None	0.36
3304	8100		0.98	0	0	0	0	None	0.65
3305	8200		1.02	0	0	0	0	None	0.73
3306	8250		1.01	0	0	0	0	None	0.50
3307	8300		1.06	0	0	0	0	None	1.27
3308	8350		1.04	0	0	0	0	None	0.59
3309	8370		1.06	0	0	0	0	None	0.36
3310	8450		1.06	0	0	0	0	None	0.79
3311	8500		1.06	0	0	0	0	None	1.11
3312	8550		1.06	0	0	0	0	None	1.04
3313	8600		1.08	0	0	0	0	None	2.30
3314	8650		1.14	0	0	0	0	None	0.52
3315	8700		1.11	0	0	0	0	None	0.91
3316	8750		1.11	0	0	0	0	None	3.22
3317	8800		1.11	0	0	0	0	None	0.70
3318	8950		1.07	0	0	0	0	None	0.80
3319	9000		1.10	0	0	0	0	None	1.25
3320	9050		1.11	0	0	0	0	None	0.73

NON RR(US) DATA

VITRINITE REFLECTANCE DATA SUMMARY

NO.1 BRISCOE - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
7160	90	Organic material abundant in broken-up small pieces. Some mineral matter present.
7425	97	Slight shift in R_0 range may be attributed to influx of less mature organic material, which may be cave.
7560	81	Amount of organic material slightly smaller.
8100	93	Organic material scattered with mixed populations. Some material may be cave. Mineral matter abundant.
8200	94	Shift of R_0 range due to introduction of less mature material, which may be cave. Mineral matter still present.
8250	114	No significant change.
8300	101	R_0 profile similar to that established at 7560.
8350	90	R_0 profile similar to that of sample 8250.

TABLE A.26

VITRINITE REFLECTANCE DATA SUMMARY

NO.1 BRISCOE - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
8370	94	Mean R_o and standard deviation indicate that the material present is similar to that recorded at 7425.
8450	77	R_o profile reverts back to that of sample 8300.
8500	95	Sample appears to have less mixed assemblage than previous samples. Material shows one distinct peak.
8550	92	R_o mean slightly higher due to influx of more mature material. No other significant change.
8660	102	R_o range wide, scattered material with mixed populations. Some material may be cave.
8650	100	R_o profile similar to that of sample 8370.
8700	103	R_o range is wide due to mixed populations in sample.
8750	102	R_o profile similar to that of sample 8650.

VITRINITE REFLECTANCE DATA SUMMARY

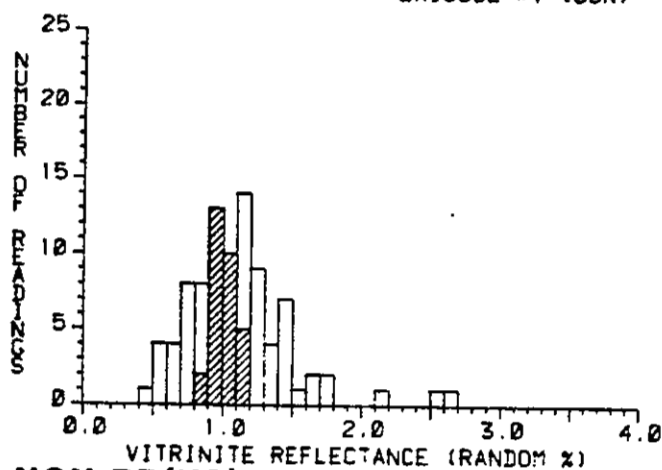
NO.1 BRISCOE - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
8800	100	R_0 profile reverts to that of sample 8500.
8950	74	R_0 material less than previous samples.
9000	84	Sample has less mixed assemblage of material.
9050	87	Slight shift in R_0 mean due to influx of less mature material. No other significant change.

BRISCOE #1 (SUN)



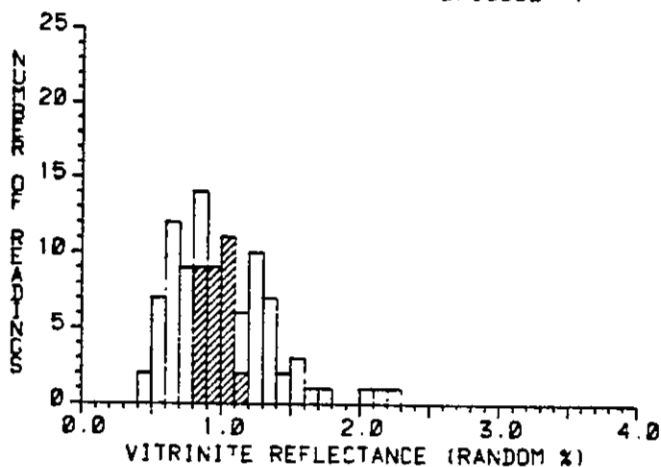
NON RR(US) DATA

RRUS No. : 3301
 ID : CTGS.
 DEPTH : 7160.0 F1
 : 2182.4 M

* = Ro MATURITY
 # VALUES : 30
 MEAN : 1.01
 STD DEV : 0.07
 MEDIAN : 1.00
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

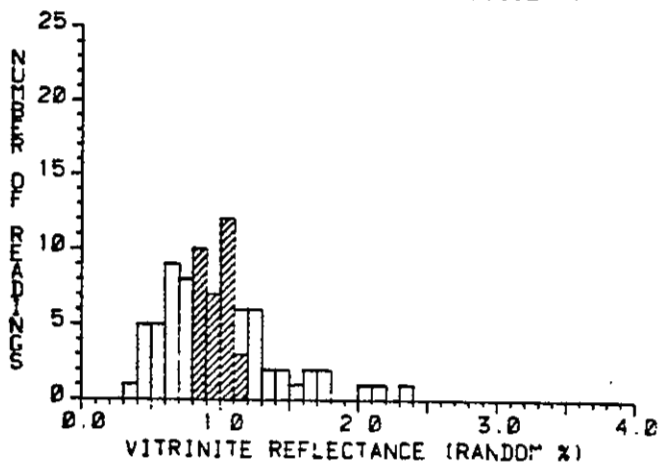


RRUS No. : 3302
 ID : CTGS.
 DEPTH : 7425.0 F1
 : 2233.1 M

* = Ro MATURITY
 # VALUES : 31
 MEAN : 0.96
 STD DEV : 0.08
 MEDIAN : 0.95
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

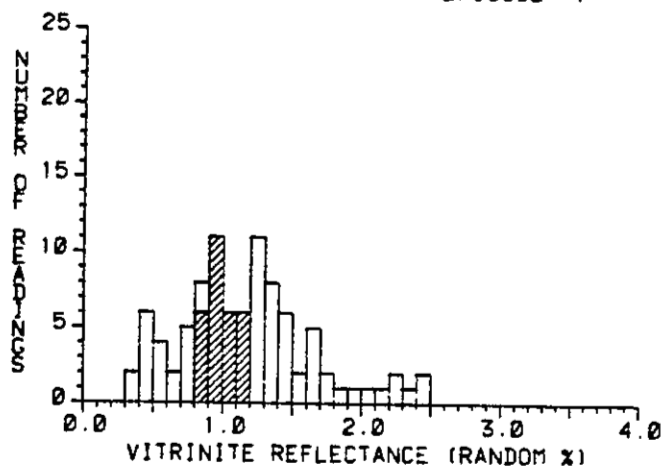


RRUS No. : 3303
 ID : CTGS.
 DEPTH : 7560.0 F1
 : 2304.3 M

* = Ro MATURITY
 # VALUES : 32
 MEAN : 0.97
 STD DEV : 0.09
 MEDIAN : 0.99
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1



RRUS No. : 3304

ID : CTGS.

DEPTH : 8100.0 F1
: 2468.9 M

* = Ro MATURITY

VALUES : 29

MEAN : 0.98

STD DEV : 0.09

MEDIAN : 0.97

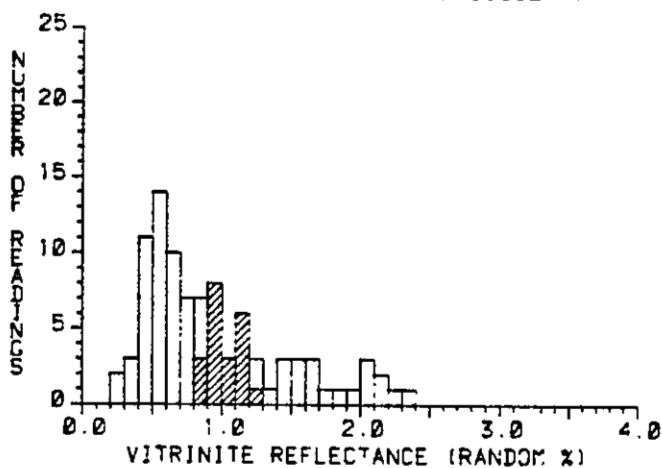
MODE : 0.95

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

BRISCOE #1



RRUS No. : 3305

ID : CTGS.

DEPTH : 8200.0 F1
: 2499.4 M

* = Ro MATURITY

VALUES : 21

MEAN : 1.02

STD DEV : 0.11

MEDIAN : 0.99

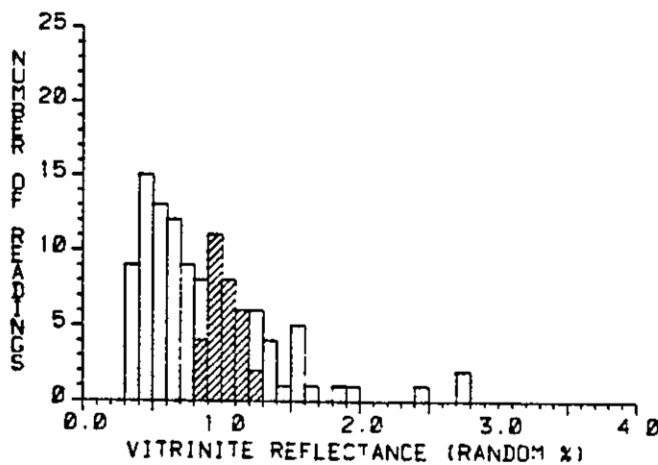
MODE : 0.95

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

BRISCOE #1



RRUS No. : 3306

ID : CTGS.

DEPTH : 8250.0 F1
: 2514.6 M

* = Ro MATURITY

VALUES : 31

MEAN : 1.01

STD DEV : 0.10

MEDIAN : 1.00

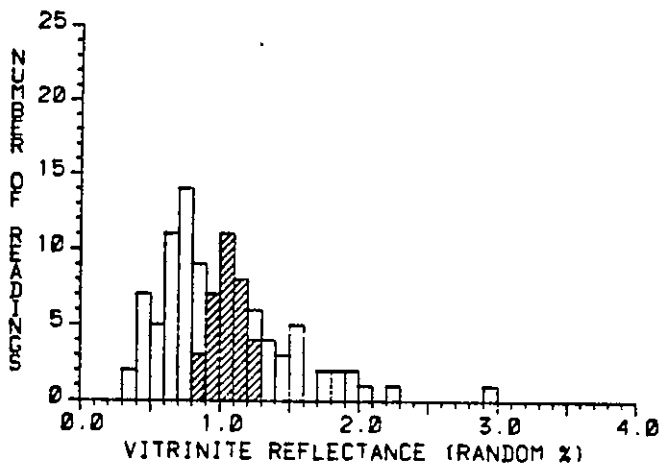
MODE : 0.95

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

BRISCOE #1



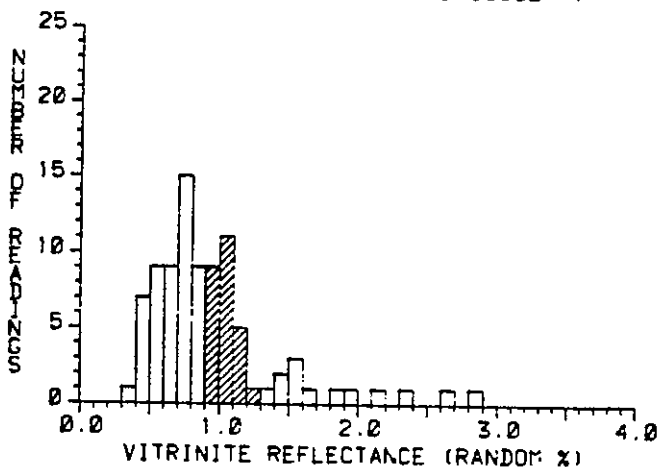
RRUS No. : 3307
 ID : CTGS.
 DEPTH : 8300.0 F1
 : 2529.8 M

* = Ro MATURITY

VALUES : 33
 MEAN : 1.06
 STD DEV : 0.11
 MEDIAN : 1.06
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1



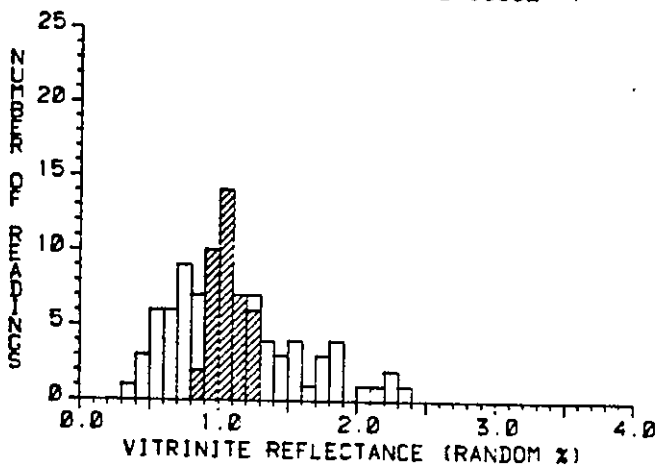
RRUS No. : 3378
 ID : CTGS.
 DEPTH : 8350.0 F1
 : 2545.1 M

* = Ro MATURITY

VALUES : 26
 MEAN : 1.04
 STD DEV : 0.09
 MEDIAN : 1.05
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1



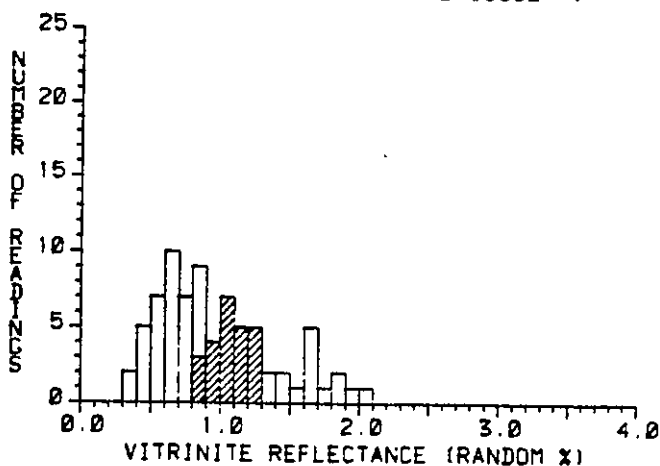
RRUS No. : 3309
 ID : CTGS.
 DEPTH : 8370.0 F1
 : 2551.2 M

* = Ro MATURITY

VALUES : 39
 MEAN : 1.06
 STD DEV : 0.11
 MEDIAN : 1.04
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

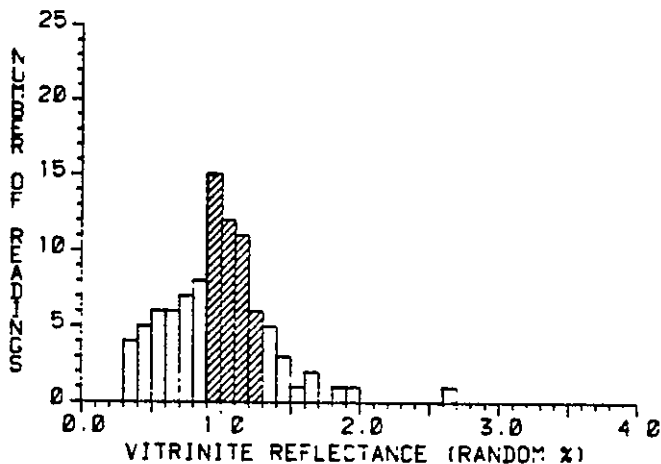


RRUS No. : 3310
 ID : CTGS.
 DEPTH : 8450.0 F1
 : 2575.6 M

* = Ro MATURITY
 * VALUES : 24
 MEAN : 1.06
 STD DEV : 0.12
 MEDIAN : 1.08
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

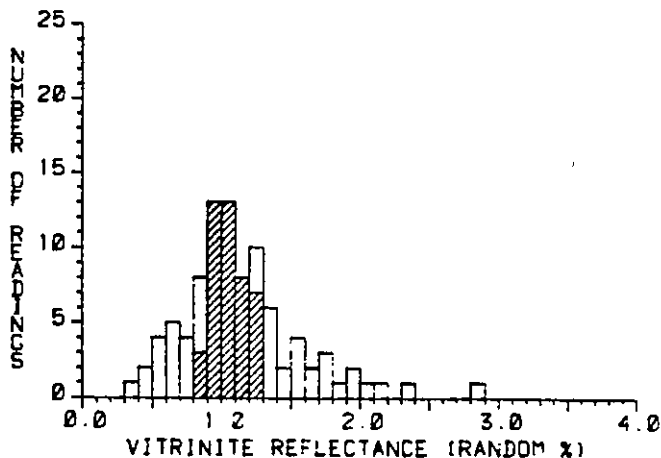


RRUS No. : 3311
 ID : CTGS.
 DEPTH : 8500.0 F1
 : 2590.8 M

* = Ro MATURITY
 * VALUES : 44
 MEAN : 1.06
 STD DEV : 0.11
 MEDIAN : 1.05
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

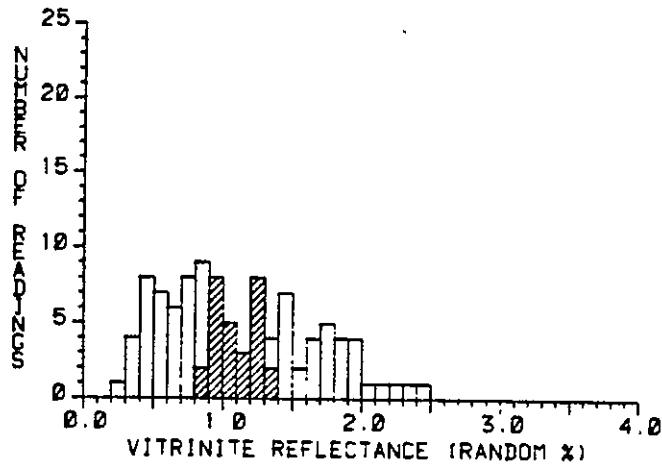


RRUS No. : 3312
 ID : CTGS.
 DEPTH : 8550.0 F1
 : 2606.0 M

* = Ro MATURITY
 * VALUES : 44
 MEAN : 1.06
 STD DEV : 0.11
 MEDIAN : 1.06
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

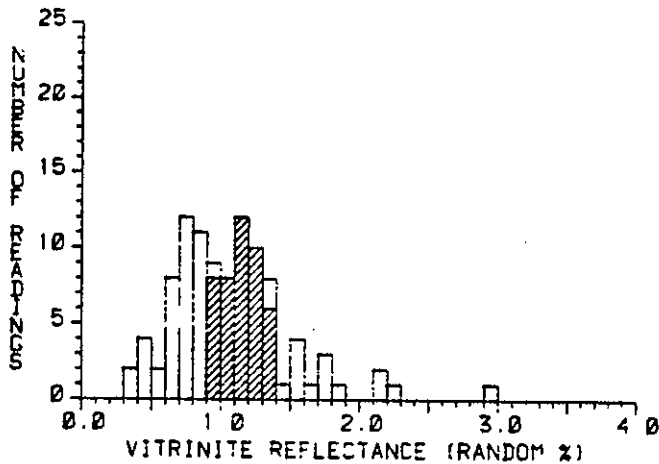


RRUS No. : 3313
 ID : CTGS.
 DEPTH : 8600.0 F1
 : 2621.3 M

* = Ro MATURITY
 # VALUES : 28
 MEAN : 1.08
 STD DEV : 0.14
 MEDIAN : 1.08
 MODE : 1.25

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

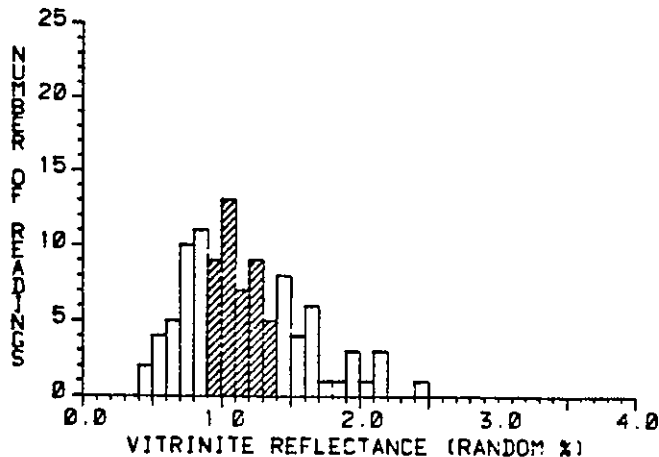


RRUS No : 3314
 ID : CTGS.
 DEPTH : 8650.0 F1
 : 2636.5 M

* = Ro MATURITY
 # VALUES : 44
 MEAN : 1.14
 STD DEV : 0.13
 MEDIAN : 1.15
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1

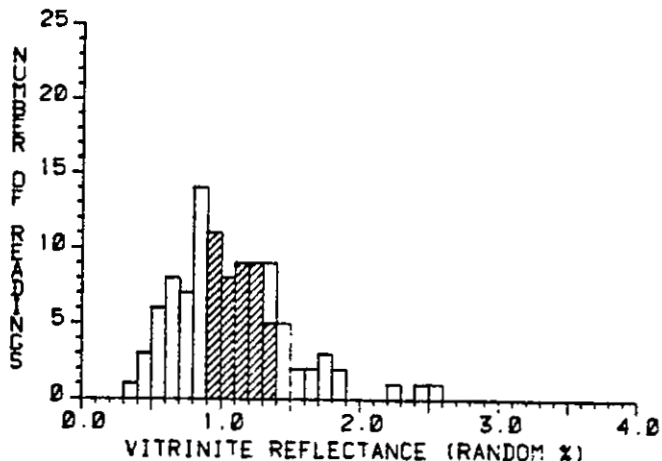


RRUS No. : 3315
 ID : CTGS
 DEPTH : 8700.0 F1
 : 2651.8 M

* = Ro MATURITY
 # VALUES : 43
 MEAN : 1.11
 STD DEV : 0.13
 MEDIAN : 1.08
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1 (SUN)



RRUS No. : 3316
ID : CTGS.

DEPTH : 8750.0 F1
: 2667.0 M

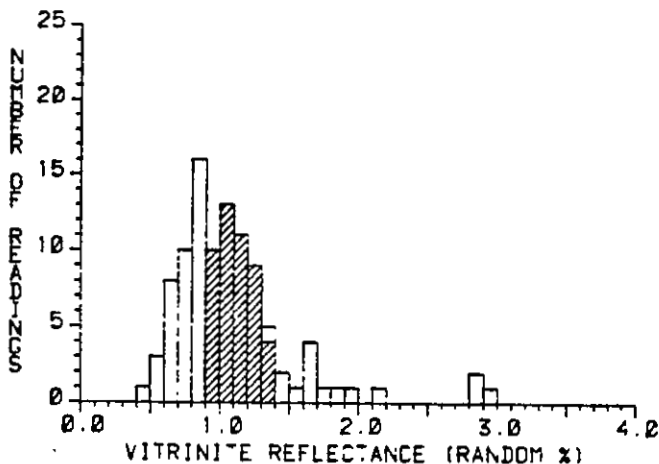
* = Ro MATURITY

VALUES : 42

MEAN : 1.11
STD DEV : 0.14
MEDIAN : 1.11
MODE : 0.95

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

BRISCOE #1 (SUN)



RRUS No 3317
ID : CTGS

DEPTH : 8500.0 F1
: 2682.2 M

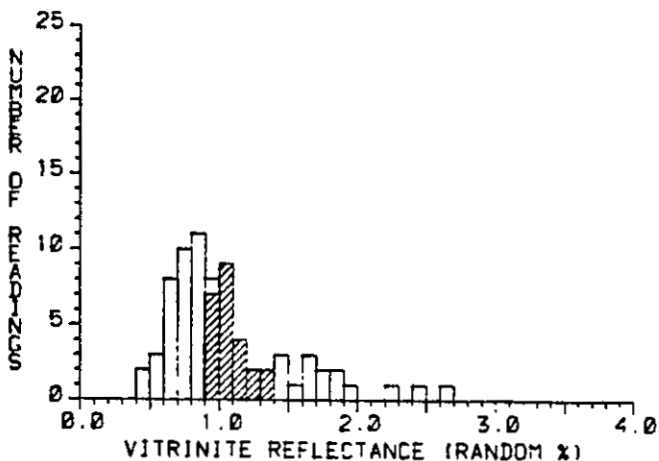
* = Ro MATURITY

VALUES : 47

MEAN : 1.11
STD DEV : 0.12
MEDIAN : 1.10
MODE : 1.05

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

BRISCOE #1 (SUN)



RRUS No. : 3318
ID : CTGS.

DEPTH : 8950.0 F1
: 2728.0 M

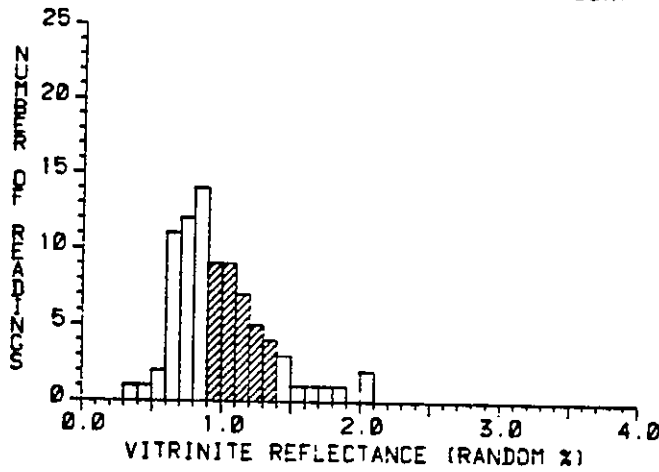
* = Ro MATURITY

VALUES : 24

MEAN : 1.07
STD DEV : 0.12
MEDIAN : 1.02
MODE : 1.05

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

BRISCOE #1 (SUN)

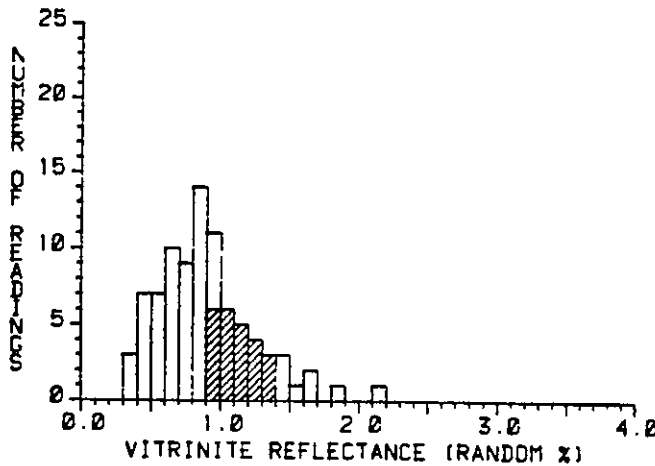


RRUS No. : 3319
 ID : CTGS.
 DEPTH : 9000.0 F1
 : 2743.2 M

* = Ro MATURITY
 * VALUES : 34
 MEAN : 1.10
 STD DEV : 0.13
 MEDIAN : 1.07
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

BRISCOE #1 (SUN)



RRUS No. : 3320
 ID : CTGS.
 DEPTH : 9050.0 F1
 : 2758.4 M

* = Ro MATURITY
 * VALUES : 24
 MEAN : 1.11
 STD DEV : 0.12
 MEDIAN : 1.11
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
						Thermal Maturation Increases →										
						<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
						Oil and Gas Generation					Dry Gas Only					
6145	-	B	S	Structured	64	-	-	-	1	-	30	16	4	4	9	3.2
				Nonstructured	36	-	-	-	-	-	9	11	11	5	-	3.2-3.7
6680	T	P	S+	Structured	47	-	-	-	-	-	18	13	-	3	13	3.2+5.0
				Nonstructured	53	-	-	-	-	-	39	14	-	-	-	3.2
7160	T	P	S-	Structured	60	-	-	-	-	-	5	11	5	11	28	3.5+5.0
				Nonstructured	40	-	-	-	4	-	24	12	-	-	-	3.2
7425	T	P	S+	Structured	37	-	-	-	-	-	11	10	3	6	8	3.2-3.5
				Nonstructured	63	-	-	-	4	-	24	31	5	1	-	3.2-3.5
7560	T	P	S+	Structured	51	-	-	-	-	-	2	16	5	7	21	3.5+5.0
				Nonstructured	49	-	-	-	-	-	12	28	9	-	-	3.5
7900	T	M	M	Structured	61	-	-	-	-	-	8	9	10	15	19	4.0-5.0
				Nonstructured	39	-	-	-	-	-	15	8	14	-	-	3.2-3.7
8100	T	M	M	Structured	64	-	-	-	-	1	14	5	5	6	33	3.2+5.0
				Nonstructured	36	-	-	-	-	4	18	14	-	-	-	3.2-3.5
8200	T	M	S	Structured	49	-	-	-	-	7	-	21	7	2	12	3.5
				Nonstructured	51	-	-	-	-	3	16	28	4	-	-	3.2-3.5
8250	T	P	S	Structured	67	-	-	-	3	7	12	17	5	4	19	3.5+5.0
				Nonstructured	33	-	-	-	2	1	10	15	5	-	-	3.5
8300	T	P	M	Structured	70	-	-	-	-	-	13	26	5	11	15	3.5+5.0
				Nonstructured	30	-	-	-	-	-	14	11	5	-	-	3.2-3.5
8350	T	P	M	Structured	61	-	-	-	-	4	14	15	6	9	13	3.2-3.5+5.0
				Nonstructured	39	-	-	-	-	-	17	15	7	-	-	3.2-3.5

*M=Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

NO.1 BRISCOE - Tucumcari Basin

VISUAL KEROGEN DATA SUMMARY

P. Burbridge

NON RR(U.S.) DATA

Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
						————— Thermal Maturation Increases —————>										
						<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
					Oil and Gas Generation					Dry Gas Only						
8370	T	M	S	Structured	50	-	-	-	-	-	2	21	5	3	19	3.5+5.0
				Nonstructured	50	-	-	-	-	-	-	29	19	-	2	3.5
8450	T	P	M	Structured	87	-	-	-	5	27	17	19	2	5	12	3.0-3.5
				Nonstructured	13	-	-	-	-	-	5	7	1	-	-	3.5
8500	T	M	M	Structured	44	-	-	-	-	1	5	12	6	9	11	3.5+5.0
				Nonstructured	56	-	-	-	-	-	22	18	13	3	-	3.2-3.5
8550	T	P	M	Structured	67	-	-	-	-	-	22	8	3	7	27	3.2+5.0
				Nonstructured	33	-	-	-	-	-	12	7	11	3	-	3.2-3.7
8600	T	P	M	Structured	49	-	-	-	-	-	12	11	6	6	14	3.2+5.0
				Nonstructured	51	-	-	-	-	-	3	18	13	11	6	3.5-3.7
8650	T	P	M	Structured	46	-	-	-	-	-	15	13	6	8	4	3.2-3.5
				Nonstructured	54	-	-	-	-	-	6	18	14	13	3	3.5-4.0
8700	T	P	S	Structured	46	-	-	-	-	-	7	11	8	7	13	3.5+5.0
				Nonstructured	54	-	-	-	-	-	13	7	18	13	3	3.2-4.0
8750	T	P	M	Structured	27	-	-	-	-	-	4	7	4	3	9	3.5+5.0
				Nonstructured	73	-	-	-	-	-	27	37	9	-	-	3.5
8800	T	P	S	Structured	26	-	-	-	-	-	6	7	3	2	8	3.5+5.0
				Nonstructured	74	-	-	-	-	-	19	38	17	-	-	3.5
8850	T	P	S	Structured	66	-	-	-	-	-	3	35	6	3	19	3.5+5.0
				Nonstructured	34	-	-	-	-	-	-	14	16	4	-	3.2-3.5
8900	T	P	S	Structured	90	-	-	-	-	-	35	18	4	12	21	3.2+5.0
				Nonstructured	10	-	-	-	-	-	-	7	3	-	-	3.5

*M=Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

NO.1 BRISCOE - Tucumcari Basin

VISUAL KEROGEN DATA SUMMARY



P. Burbridge

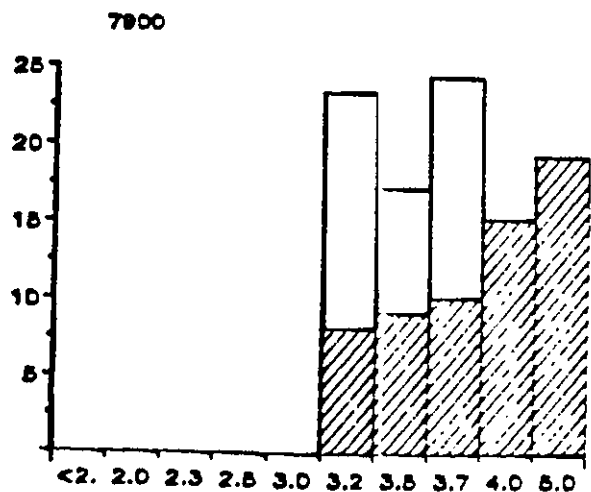
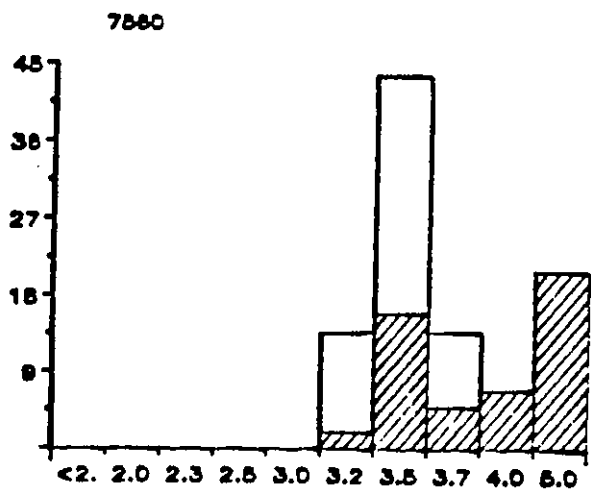
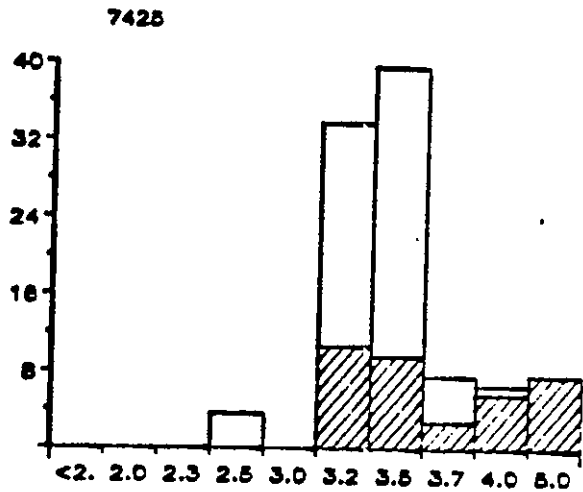
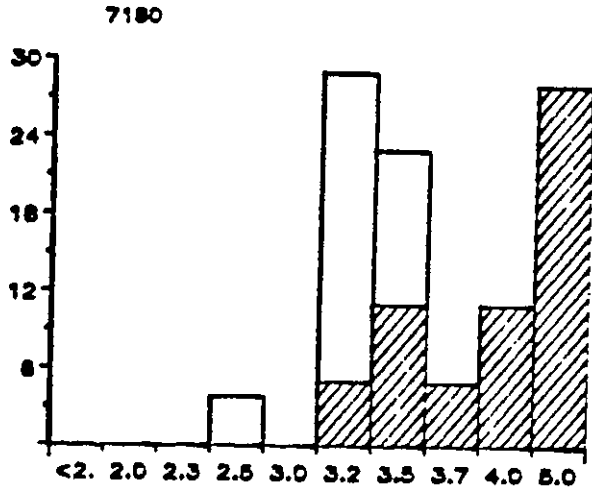
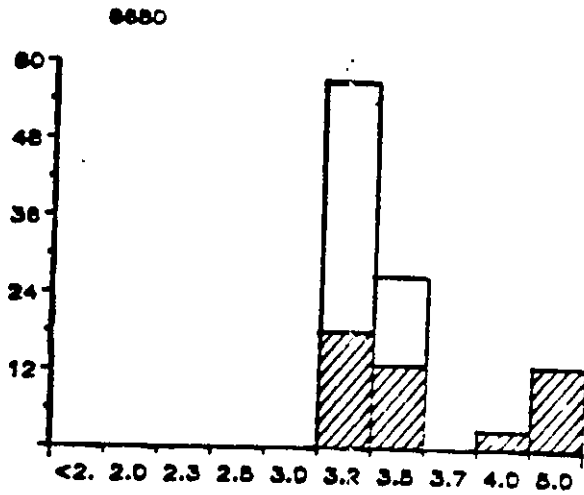
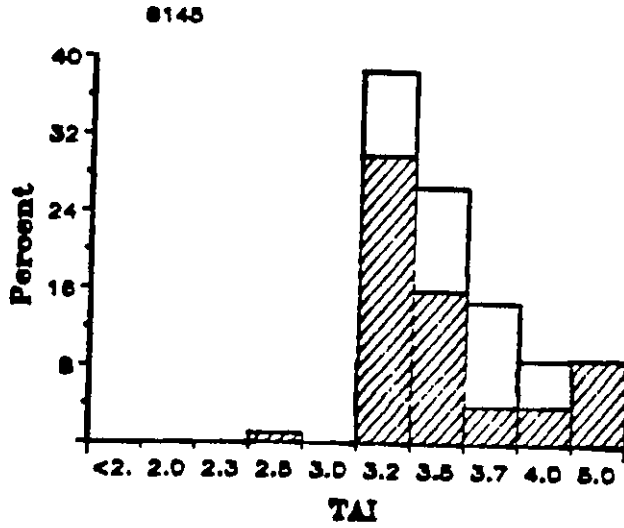
NON RR(U.S.) DATA

Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
						Thermal Maturation Increases →										
						<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
					Oil and Gas Generation					Dry Gas Only						
9000	T	P	M	Structured	40	-	-	-	-	-	12	8	-	5	15	3.2+5.0
				Nonstructured	60	-	-	-	-	-	31	25	4	-	-	3.2-3.5
9050	T	P	M	Structured	72	-	-	-	-	-	32	17	3	6	14	3.2+5.0
				Nonstructured	28	-	-	-	-	-	13	7	6	2	-	3.2
9100	T	P	M	Structured	71	-	-	-	1	2	31	22	2	4	9	3.2-3.5
				Nonstructured	29	-	-	-	-	-	11	15	3	-	-	3.2-3.5

*M=Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

No.1 BRISCOE

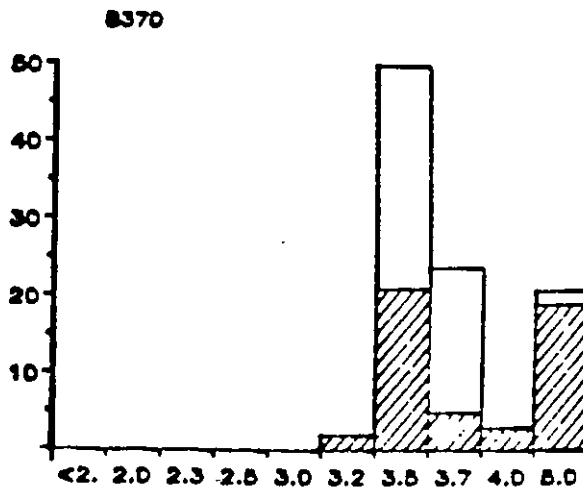
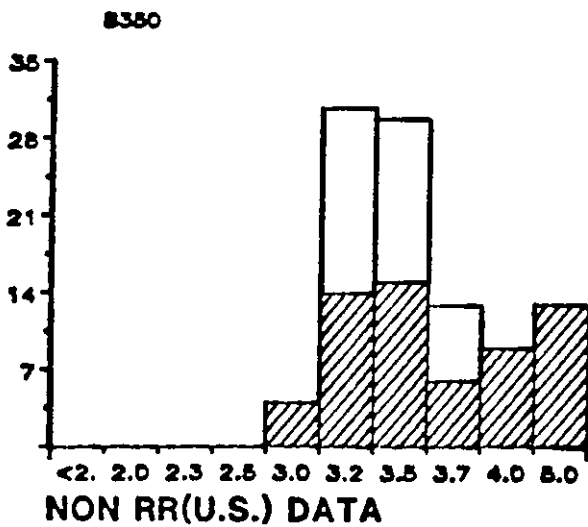
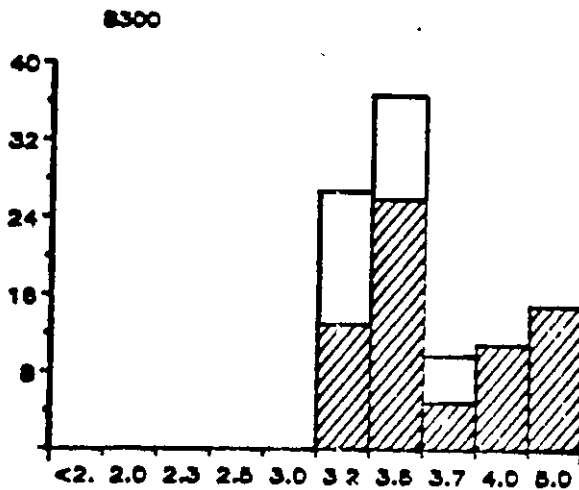
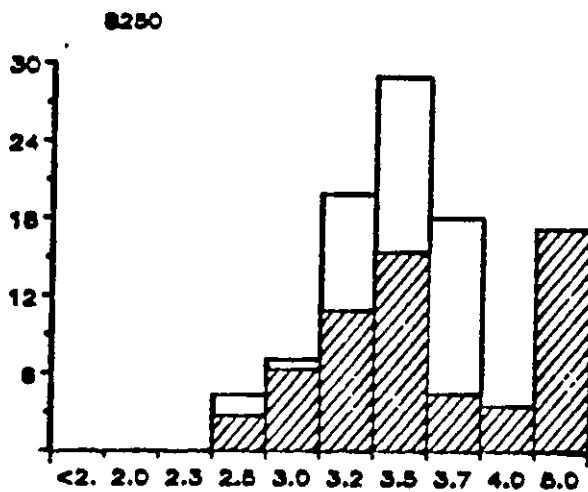
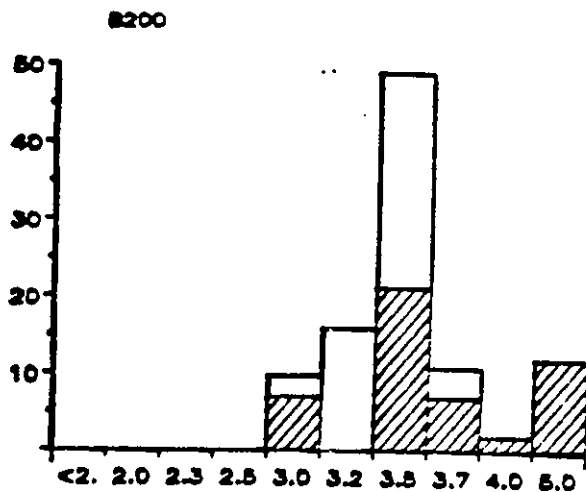
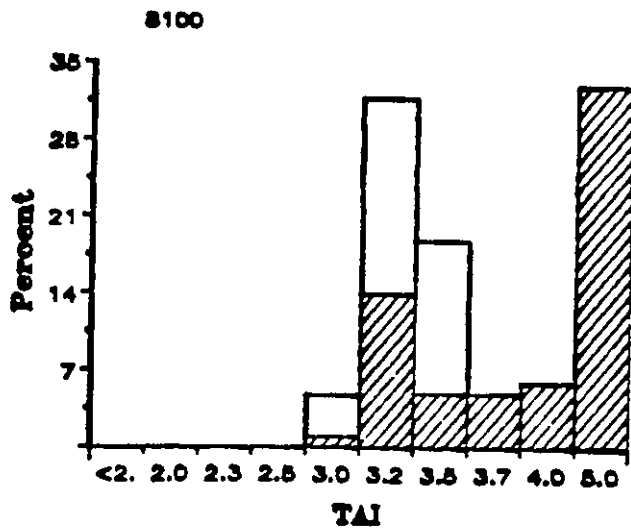
 Structured Kerogen Data
 Non-Structured Kerogen Data



NON RR(U.S.) DATA

No.1 BRISCOE

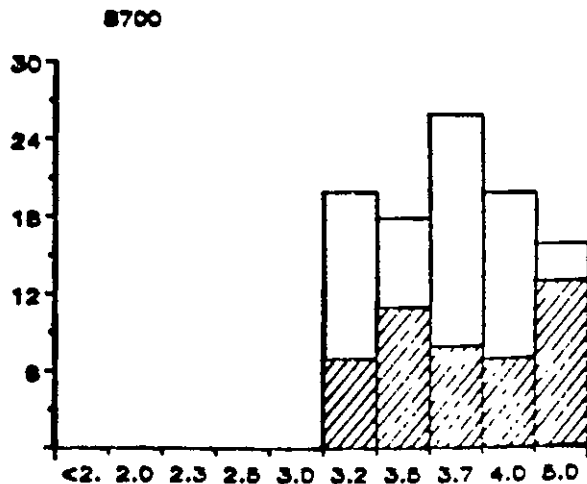
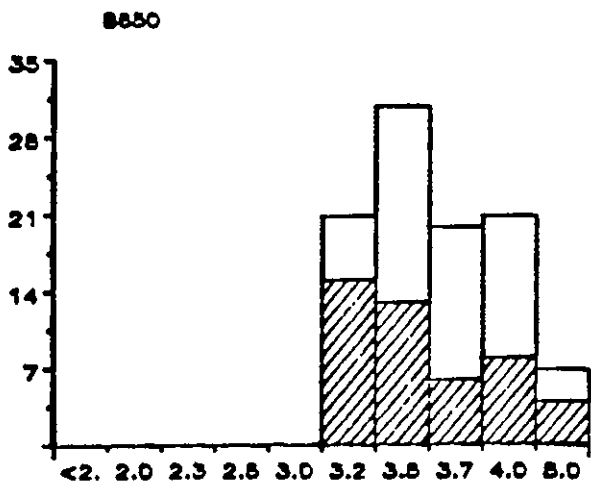
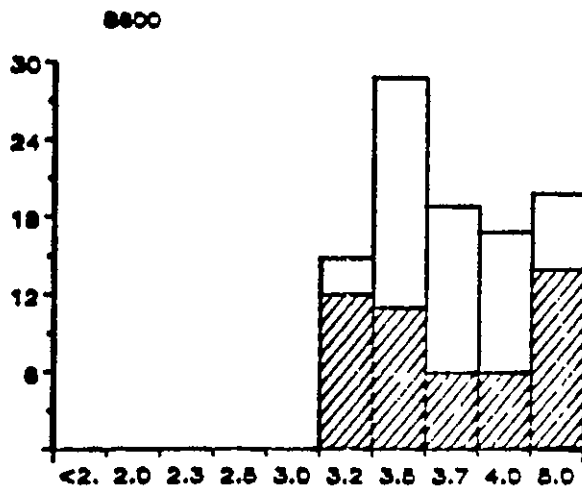
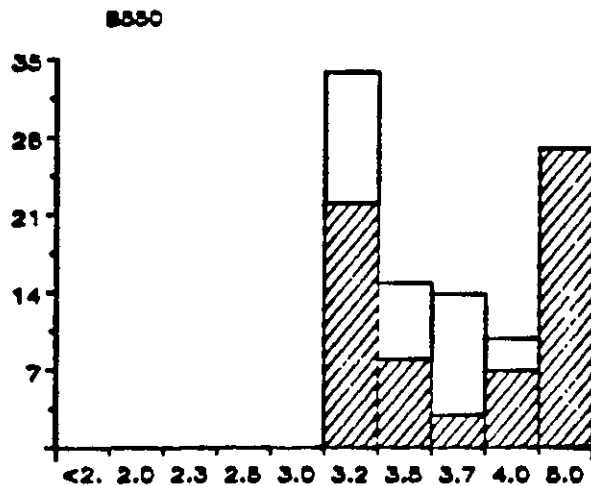
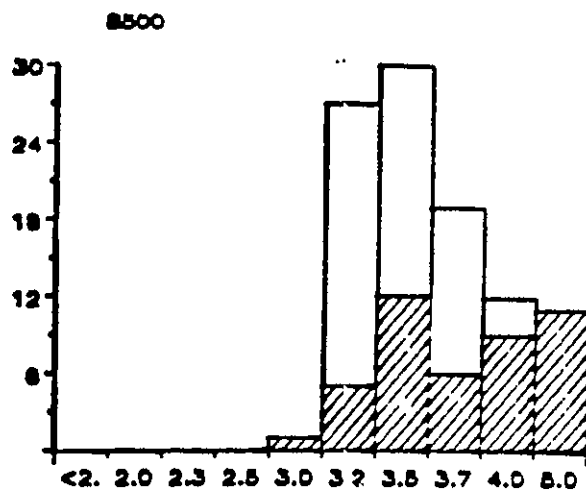
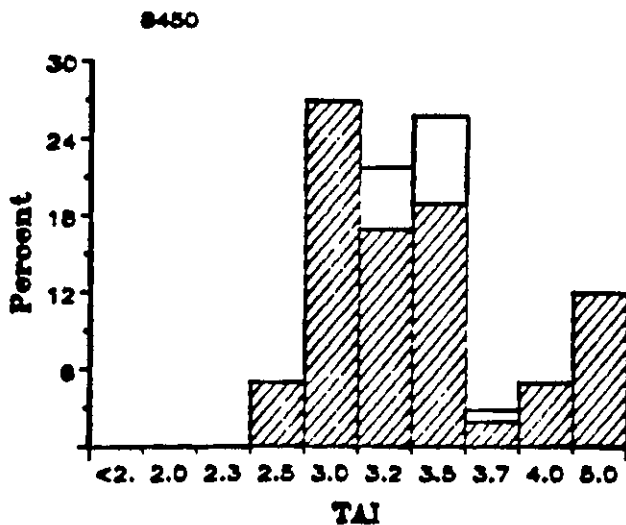
Structured Kerogen Data
 Non-Structured Kerogen Data



NON RR(U.S.) DATA

No.1 BRISCOE

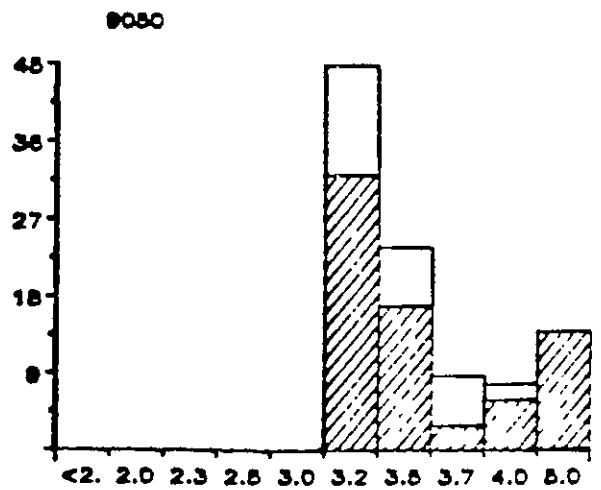
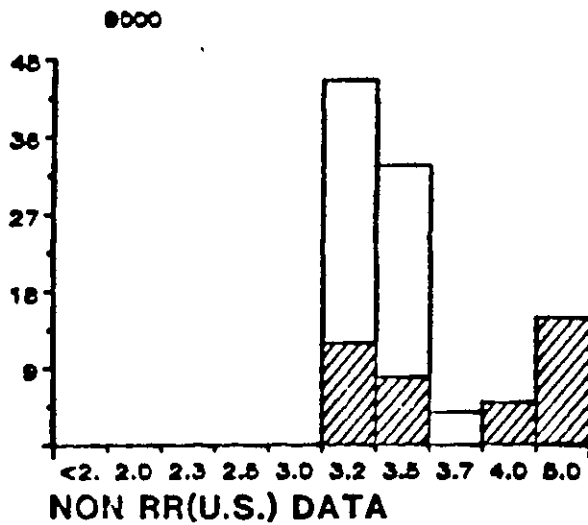
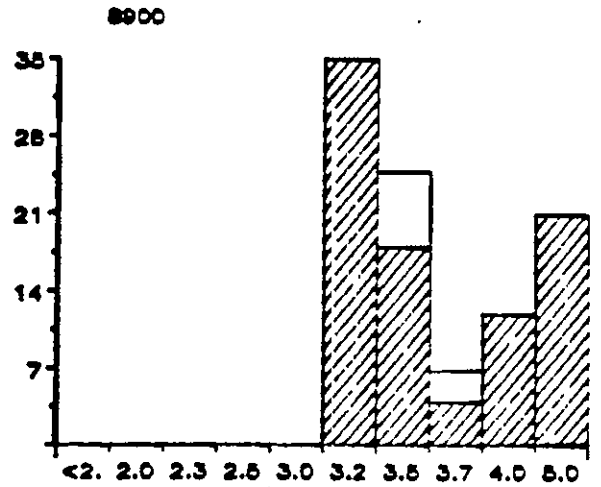
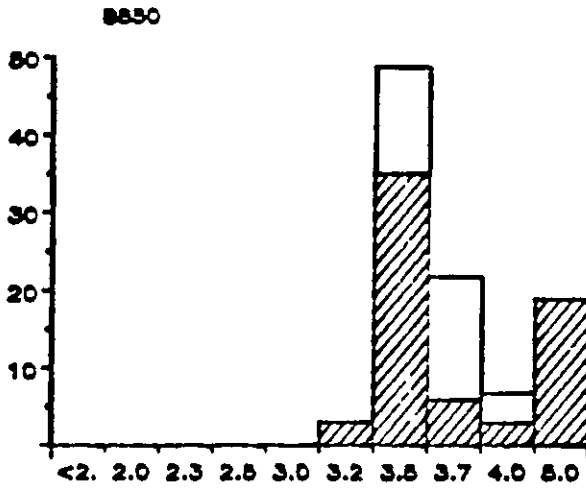
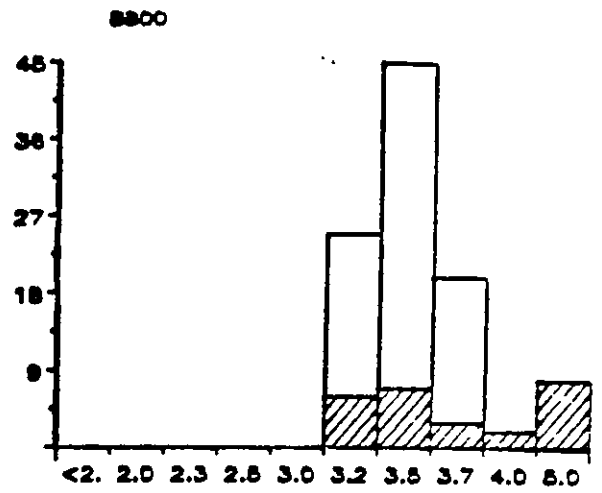
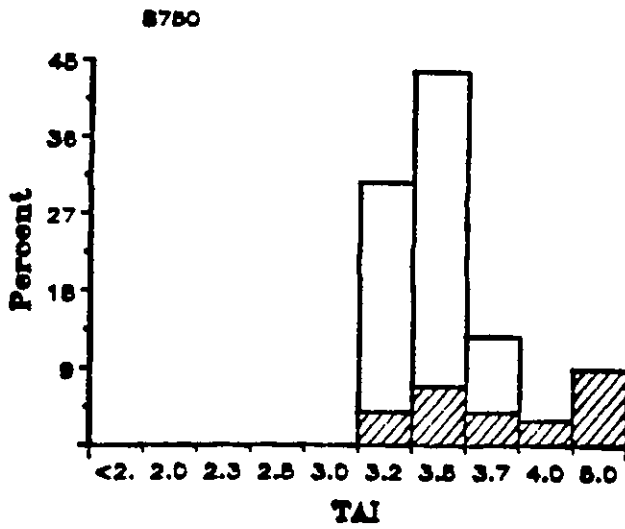
▨ Structured Kerogen Data
 □ Non-Structured Kerogen Data



NON RR(U.S.) DATA

No.1 BRISCOE

Structured Kerogen Data
 Non-Structured Kerogen Data



No. 1 BRISCOE

- ▨ Structured Kerogen Data
- Non-Structured Kerogen Data

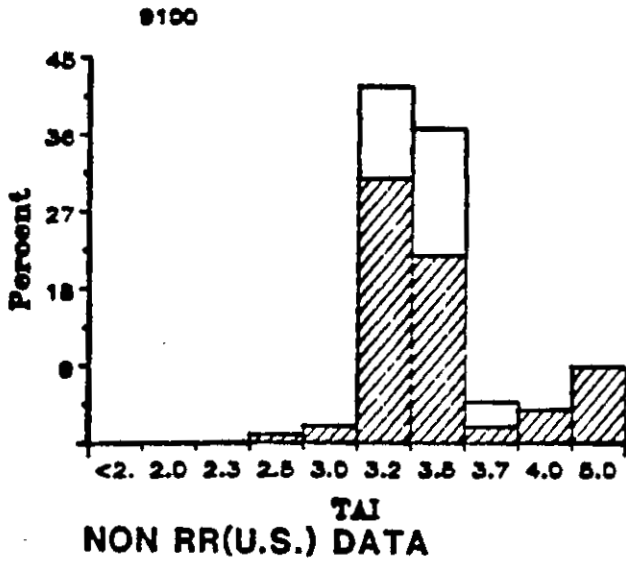


TABLE A.28

COMPOSITION OF SOURCE ROCK EXTRACT

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
1125	8108	: 8090- 8125	456	22.8	29.2	48.0
1130	9010	: 8990- 9030	220	40.5	13.9	45.6

TABLE A.29

SUMMARY TABLE SHOWING SELECTED PARAMETERS
OF OIL SAMPLES

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	
1125	8108	: 8090- 8125	0.027	22.8	0.51	0.41	1.29	0.90
1130	9010	: 8990- 9030	0.013	40.5	0.41	0.38	1.17	----

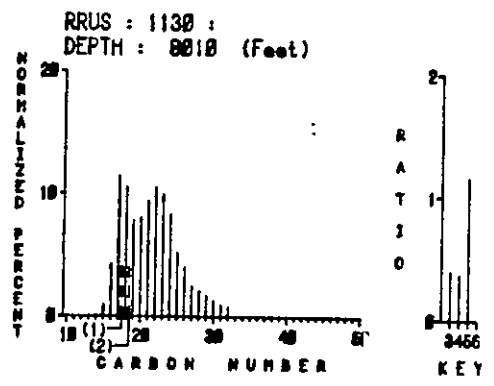
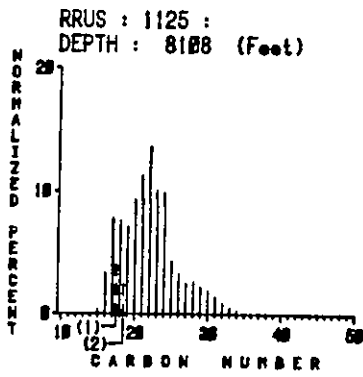
TABLE A.30

HEAVY HYDROCARBONS NORMALIZED TO 100%

SUNRAY #1 IRA J. BRISCOE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
1125	8108	: 8090- 8125	0.30	3.30	7.80	7.60	7.10	9.30	11.30
1130	9010	: 8990- 9030	1.00	4.20	11.50	10.50	7.90	8.00	9.40
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
1125	8108	: 8090- 8125	13.60	10.10	9.90	4.30	3.30	2.50	2.60
1130	9010	: 8990- 9030	10.50	10.00	8.30	5.20	4.00	2.50	2.10
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
1125	8108	: 8090- 8125	2.20	1.90	1.40	0.90	0.50	0.30	0.00
1130	9010	: 8990- 9030	1.80	1.30	1.00	0.80	0.00	0.00	0.00
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH
1125	8108	: 8090- 8125	0.00	0.00	0.00	0.00	0.00	4.00	3.10
1130	9010	: 8990- 9030	0.00	0.00	0.00	0.00	0.00	4.70	4.00

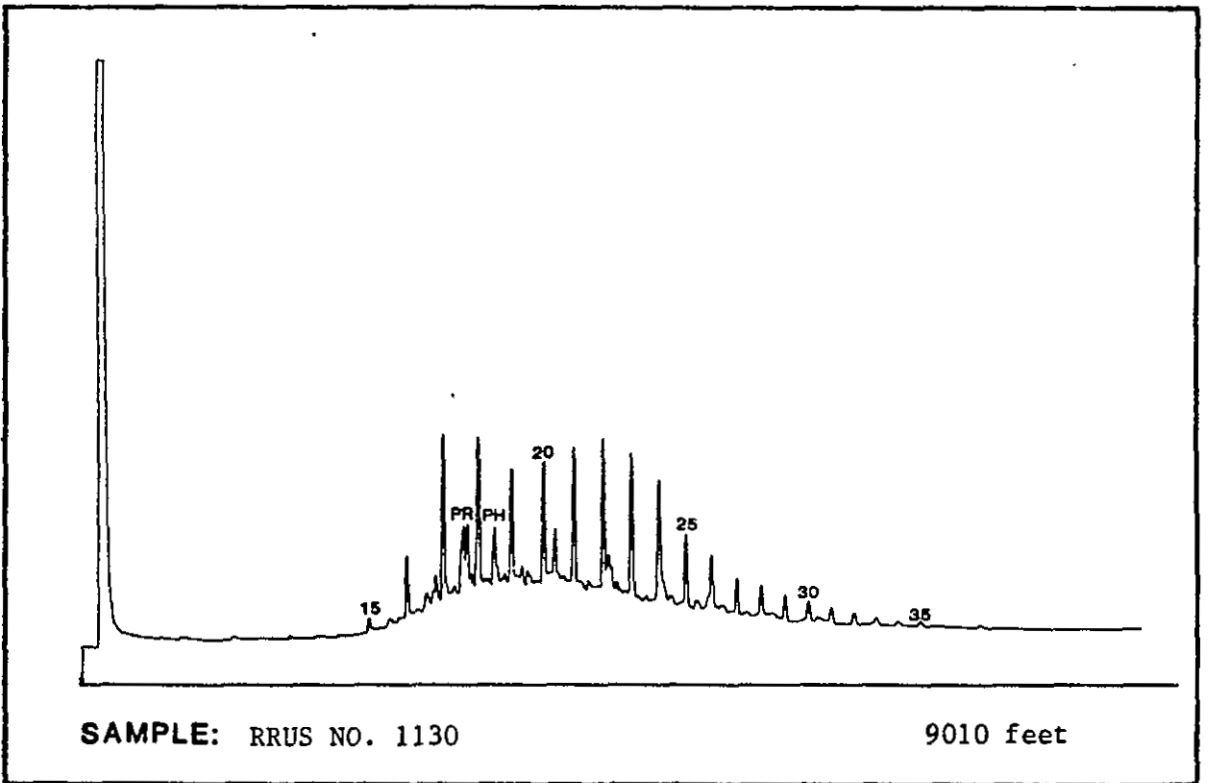
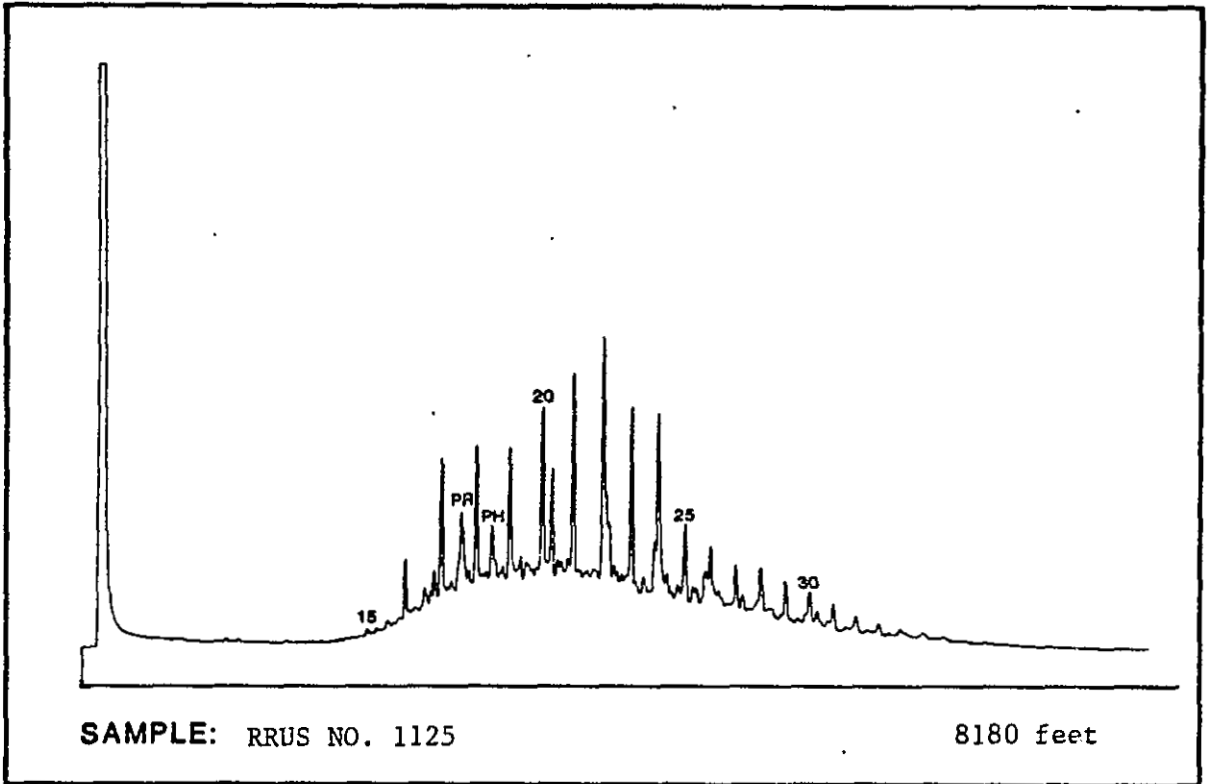


SUNRAY #1 IRA J. BRISCOE

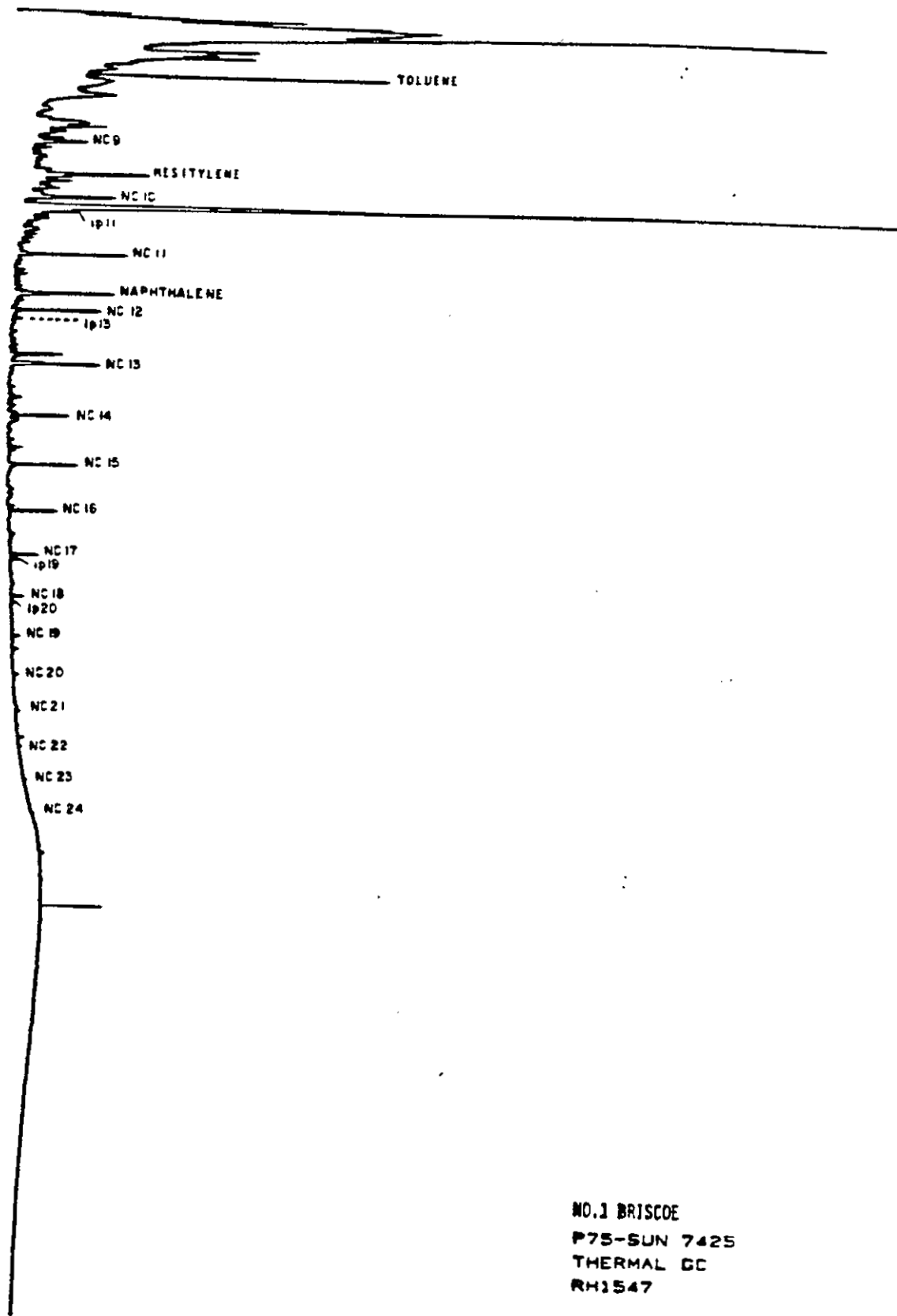
- 1=100xPristane/Total
- 2=100xPhytane/Total
- 3=Pristane/n-C-17
- 4=Phytane/n-C-18
- 5=Pristane/Phytane
- 6=Carbon Pref.Index

NORMALIZED DISTRIBUTION OF n-ALKANES

IRA BRISCOE

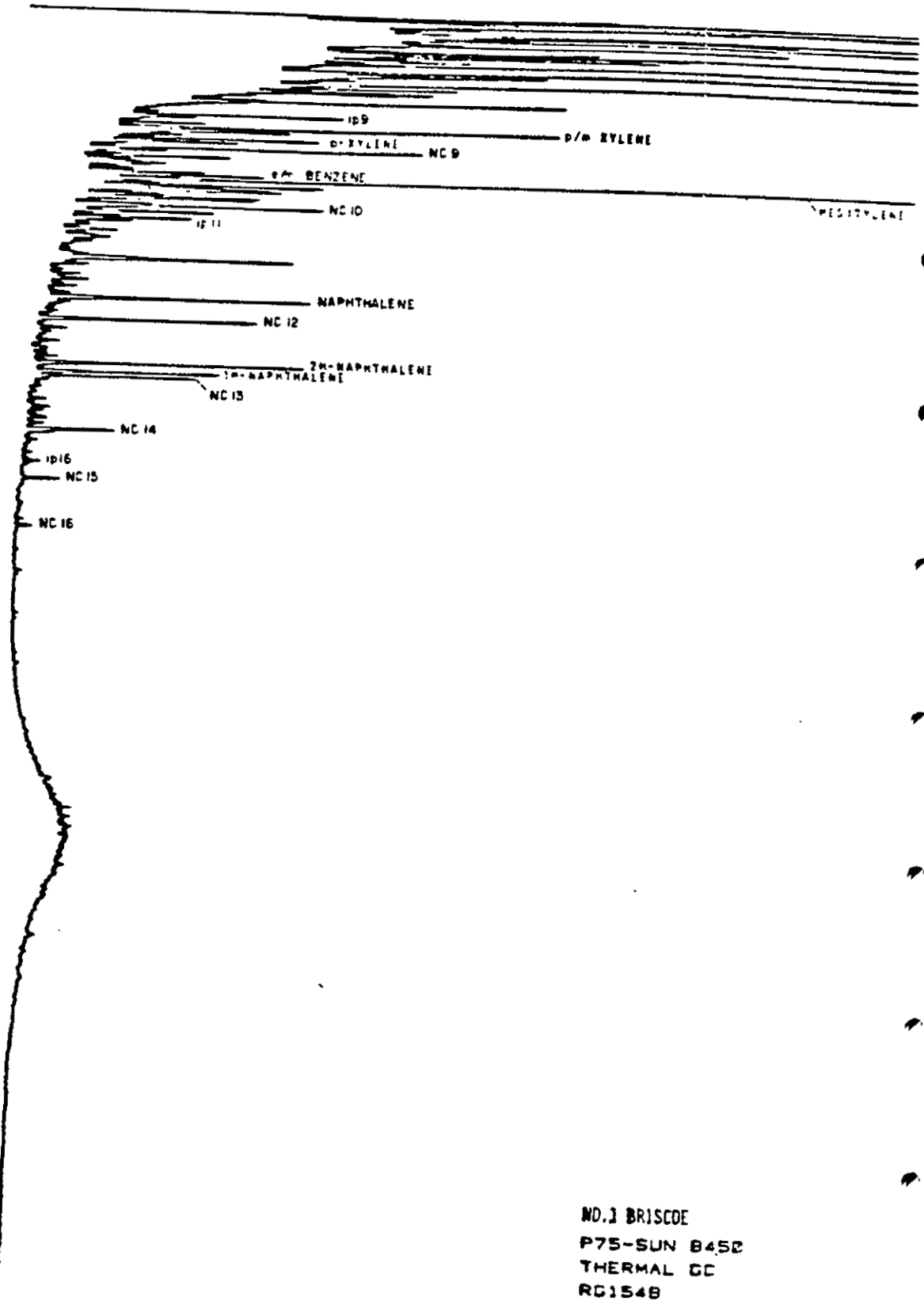


GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS



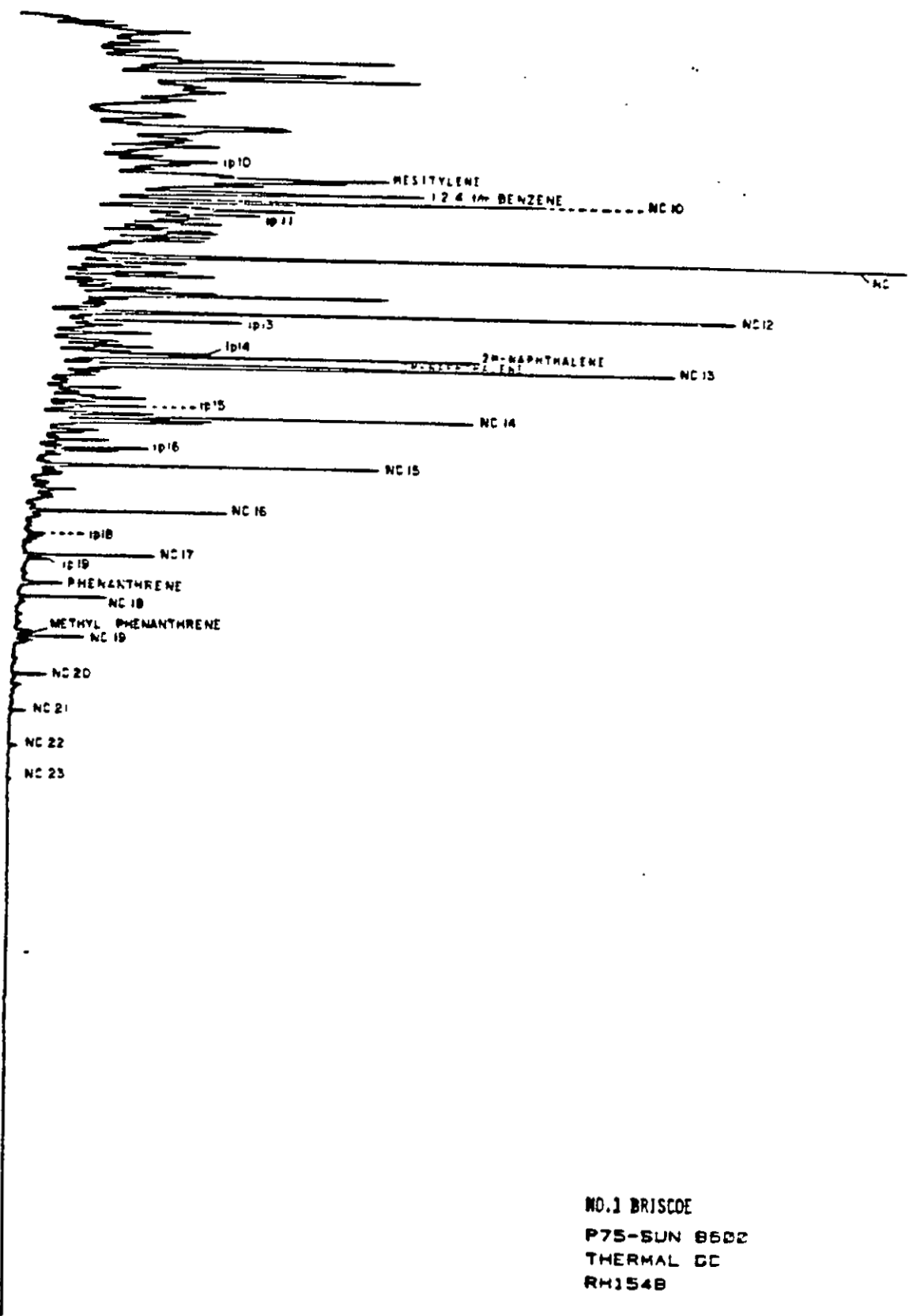
NO. 1 BRISCOE
P75-SUN 7425
THERMAL GC
RH1547

NON RR(U.S.) DATA



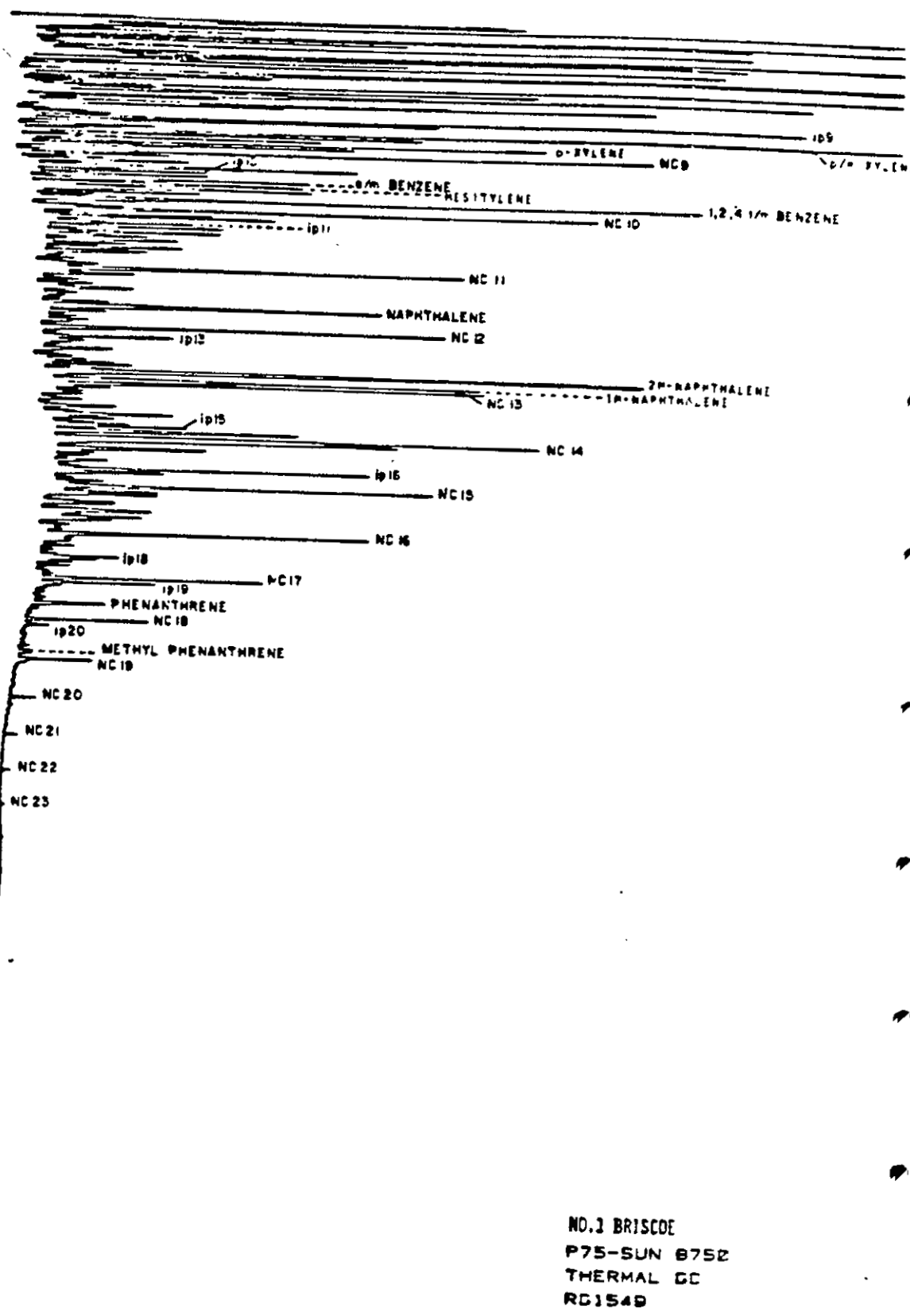
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P75-SUN 8452
THERMAL GC
RG1548

NON RR(U.S.)DATA

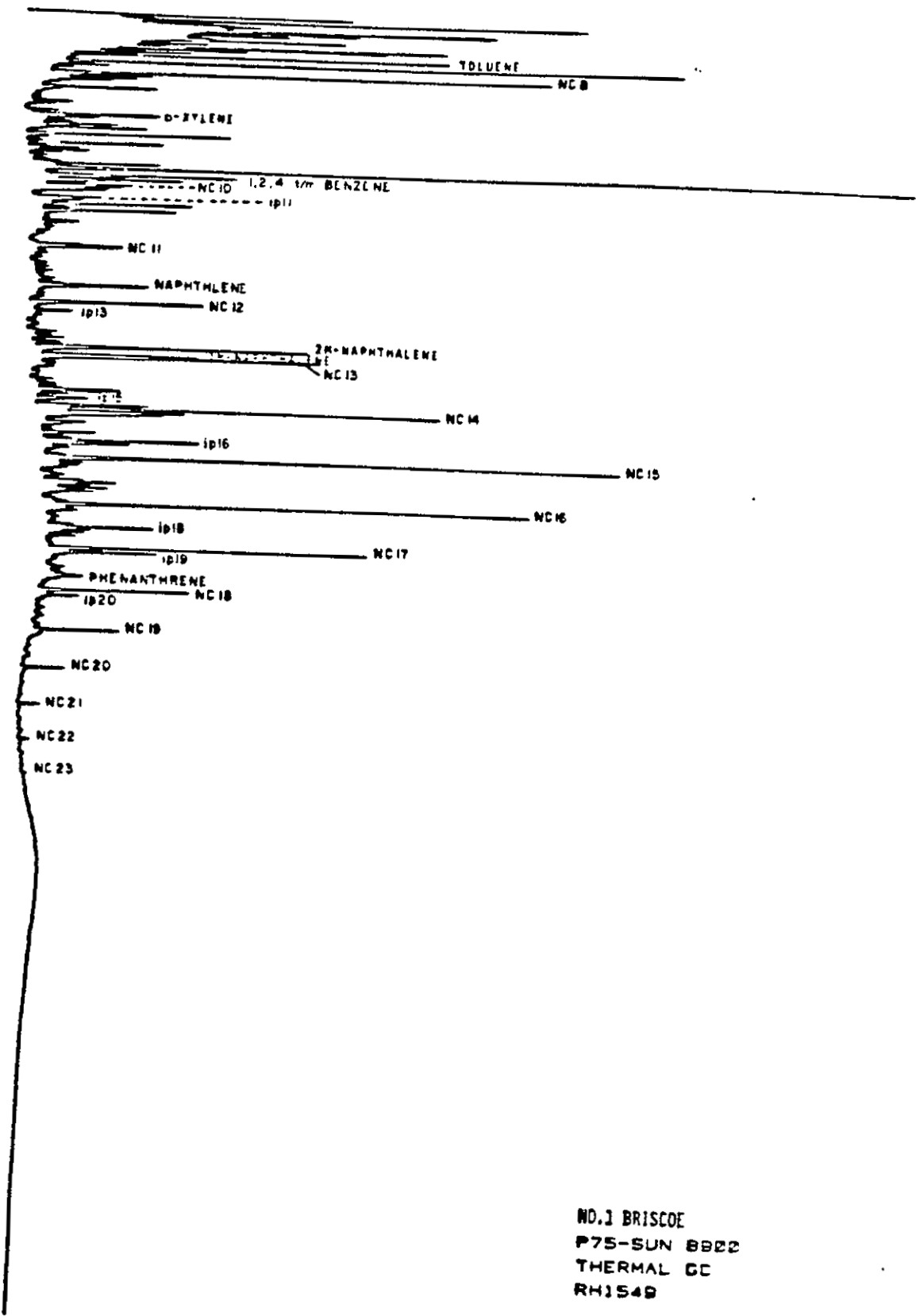


NO.1 BRISCOE
 P75-SUN 8602
 THERMAL GC
 RM154B

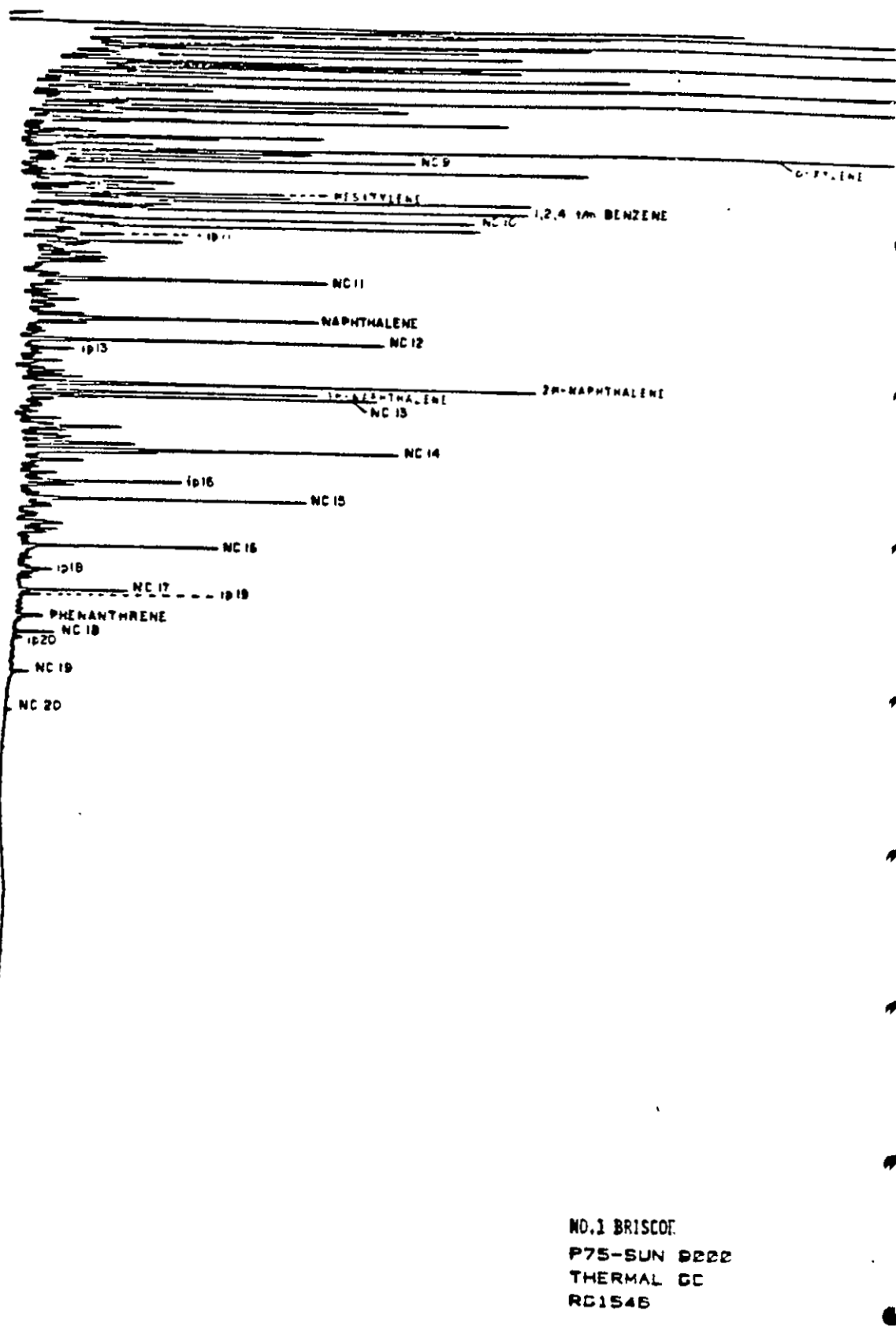
NON RR(U.S.)DATA



NO. 1 BRISCOE
 P75-SUN 8752
 THERMAL GC
 RG1549



NO.1 BRISCOE
 P75-SUN 8822
 THERMAL GC
 RH1549



NO.1 BRISCOE
 P75-SUN 9222
 THERMAL GC
 RC1546

NON RR(U.S.)DATA

PURETEX, #1 CHAPPEL RANCH

TABLE A.31

TOTAL ORGANIC CARBON DATA
 PURETEX CHAPPEL RANCH (SUN)
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
3015	3400		0.12	3007	4300		1.23
3001	3500		0.15	3008	4400		0.49
3016	3600		0.13	3009	4500		0.40
3002	3700		0.13	3010	4600		0.61
3017	3800		0.06	3011	4700		0.58
3003	3900		0.07	3012	4800		0.17
3004	4000		0.02	3013	4900		0.28
3005	4100		0.20	3014	4930		0.26
3006	4200		0.63				

NON RR(US) DATA

TABLE A.32

ROCK-EVAL PYROLYSIS RAW DATA

PURETEX CHAPPEL RANCH (SUN)

Project No : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
3001	3500		0.260	0.590	1.260	0.468	0.306	348
3002	3700		0.170	0.820	1.050	0.781	0.172	361
3005	4100		0.030	0.290	0.850	0.341	0.094	536
3006	4200		0.090	0.260	0.640	0.406	0.257	437
3007	4300		0.170	0.840	0.870	0.966	0.168	440
3008	4400		0.090	0.170	0.770	0.221	0.346	440
3009	4500		0.220	0.570	0.740	0.770	0.278	352
3010	4600		0.260	0.490	0.800	0.612	0.347	348
3011	4700		0.120	0.350	0.650	0.538	0.255	437
3013	4900		0.100	0.210	0.550	0.382	0.323	354
3014	4930		0.140	0.310	0.750	0.413	0.311	354

NON RR(US) DATA

TABLE A.33

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

PURETEX CHAPPEL RANCH (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
3001	3500		393	840	0.15
3002	3700		631	808	0.13
3005	4100		145	425	0.20
3006	4200		41	102	0.63
3007	4300		68	71	1.23
3008	4400		35	157	0.49
3009	4500		142	185	0.40
3010	4600		80	131	0.61
3011	4700		60	112	0.58
3013	4900		75	196	0.28
3014	4930		119	288	0.26

NON RR(US) DATA

TABLE A.34

VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

PURETEX CHAPPEL RANCH (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Flucr	%
3001	3500		0.69	0	0	0	0	None	0.15
3002	3700		0.65	0	0	0	0	None	0.13
3003	3900		0.83	0	0	0	0	None	0.07
3004	4000		0.73	0	0	0	0	None	0.02
3005	4100		0.63	0	0	0	0	None	0.20
3006	4200		0.70	0	0	0	0	None	0.63
3007	4300		0.71	0	0	0	0	None	1.23
3008	4400		0.76	0	0	0	0	None	0.49
3009	4500		0.74	0	0	0	0	None	0.40
3010	4600		0.77	0	0	0	0	None	0.61
3011	4700		0.72	0	0	0	0	None	0.58
3012	4800		0.76	0	0	0	0	None	0.17
3013	4900		0.79	0	0	0	0	None	0.28
3014	4930		0.80	0	0	0	0	None	0.26

NON RR(US) DATA

VITRINITE REFLECTANCE DATA SUMMARY

No. 1 CHAPPEL RANCH - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
3400	--	Barren.
3500	14	Insufficient data for valid R_0 mean.
3600	--	Barren.
3700	13	Insufficient data for valid R_0 mean.
3800	--	Barren.
3900	20	Organic material very marginal. Mixed populations. R_0 mean may not be valid due to amount.
4000	52	R_0 range narrow due to amount and maturity of material. Organic debris and large gritty sand grains present.
4100	83	R_0 range is wide with mixed populations. Some of the more mature organic material may be cave, and appears to be thermally altered. Mineral matter is abundant.

TABLE A.35

VITRINITE REFLECTANCE DATA SUMMARY

NO.1 CHAPPEL RANCH - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
4200	86	R_0 profile is similar to that established at 4000 with an influx of more mature material, making R_0 range appear wider.
4300	87	R_0 profile shows no significant change other than a very slight influx of more mature organic material.
4400	74	R_0 profile reverts to that established at 4000. Mineral matter still present.
4500	70	No significant change.
4600	94	No significant change.
4700	63	Slight change in R_0 may be attributed to material which may be cave. Very slight influx of oxidized material.
4900	70	Mean R_0 and standard deviation indicate that the material present is similar to that recorded at 4500.

VITRINITE REFLECTANCE DATA SUMMARY

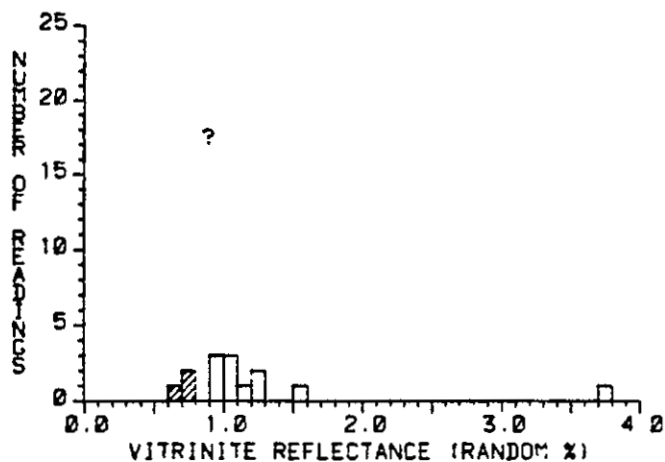
NO.1 CHAPPEL RANCH - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
4900	78	Mean R_0 is higher due to slight influx of more mature organic material. Organic debris is present.
4930	80	No significant change in R_0 profile.

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3001
ID : CTGS.

DEPTH : 3500.0 F1
: 1066.8 M

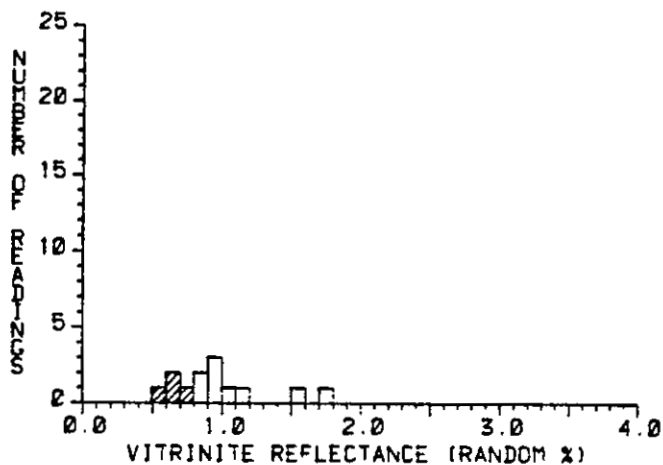
* = Ro MATURITY

VALUES : 3

MEAN : 0.69
STD DEV : 0.07
MEDIAN : 0.71
MODE : 0.75

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3002
ID : CTGS.

DEPTH : 3700.0 F1
: 1127.8 M

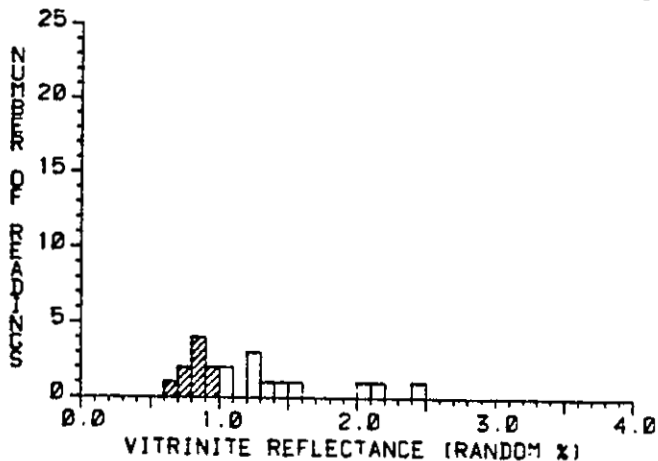
* = Ro MATURITY

VALUES : 4

MEAN : 0.65
STD DEV : 0.07
MEDIAN : 0.69
MODE : 0.65

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3003
ID : CTGS.

DEPTH : 3000.0 F1
: 1188.7 M

* = Ro MATURITY

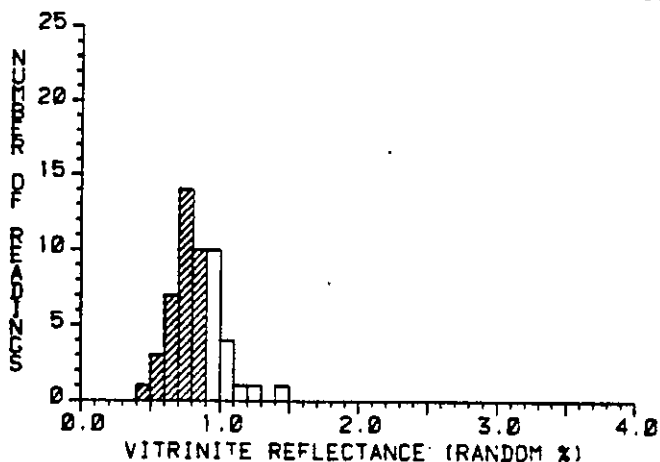
VALUES : 9

MEAN : 0.83
STD DEV : 0.09
MEDIAN : 0.87
MODE : 0.85

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

NON RR(US) DATA

PURETEX CHAPPEL RANCH (SUN)

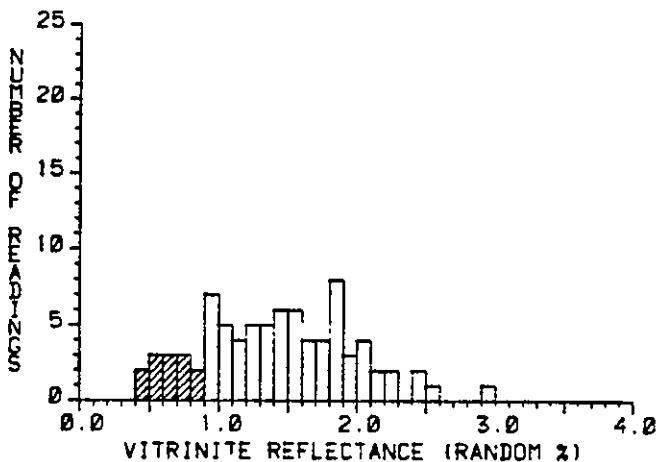


RRUS No. : 3304
 ID : CTGS.
 DEPTH : 4700.0 F1
 : 1210.2 M

* = Ro MATURITY
 # VALUES : 35
 MEAN : 0.73
 STD DEV : 0.10
 MEDIAN : 0.72
 MODE : 0.75

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)

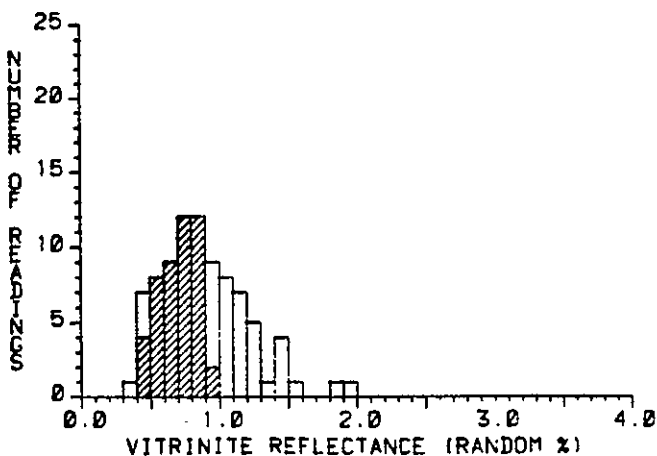


RRUS No. : 3305
 ID : CTGS.
 DEPTH : 4100.0 F1
 : 1249.7 M

* = Ro MATURITY
 # VALUES : 13
 MEAN : 0.63
 STD DEV : 0.13
 MEDIAN : 0.66
 MODE : 0.75

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



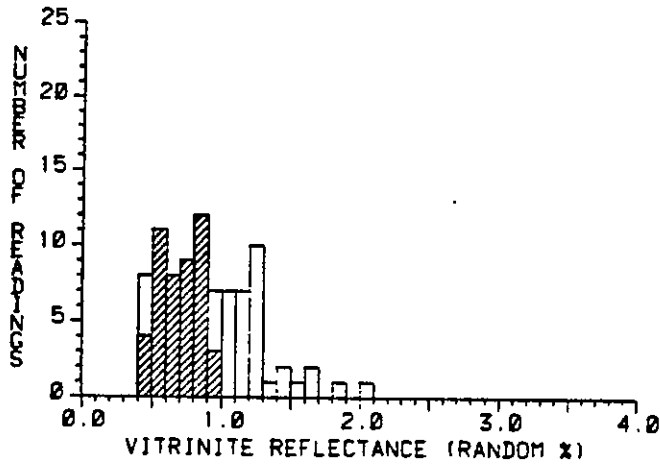
RRUS No. : 3306
 ID : CTGS.
 DEPTH : 4200.0 F1
 : 1280.2 M

* = Ro MATURITY
 # VALUES : 47
 MEAN : 0.70
 STD DEV : 0.13
 MEDIAN : 0.71
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3007
ID : CTGS.

DEPTH : 4300.0 F1
: 1310.6 M

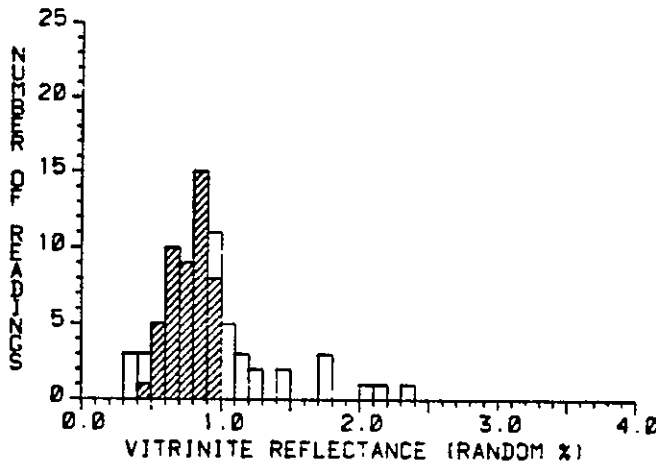
* = Ro MATURITY

VALUES : 47

MEAN : 0.71
STD DEV : 0.14
MEDIAN : 0.72
MODE : 0.85

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3078
ID : CTGS.

DEPTH : 4430.0 F1
: 1341.1 M

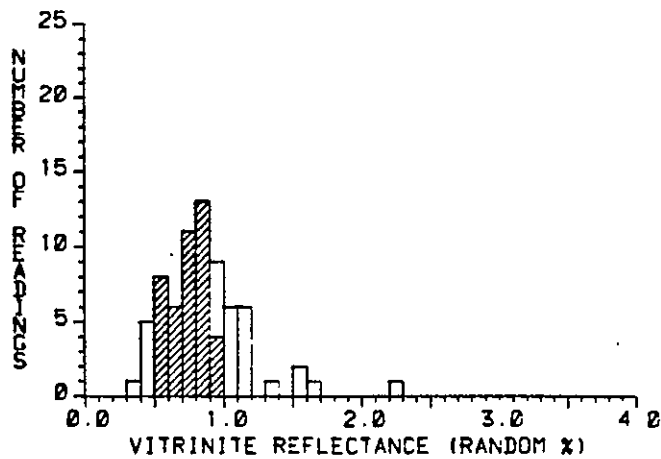
* = Ro MATURITY

VALUES : 48

MEAN : 0.76
STD DEV : 0.13
MEDIAN : 0.79
MODE : 0.85

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3009
ID : CTGS.

DEPTH : 4500.0 F1
: 1371.6 M

* = Ro MATURITY

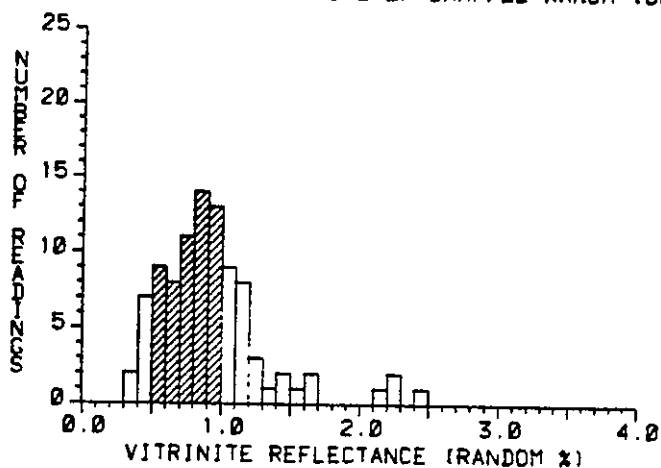
VALUES : 42

MEAN : 0.74
STD DEV : 0.13
MEDIAN : 0.76
MODE : 0.85

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

NON RR(US) DATA

PURETEX CHAPPEL RANCH (SUN)

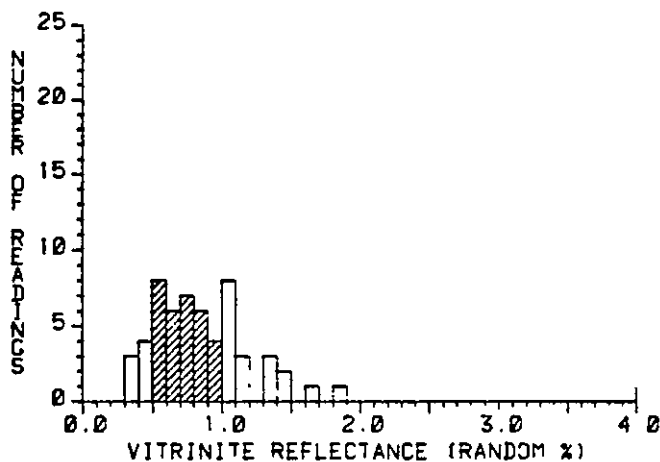


RRUS No. : 3010
 ID : CTGS.
 DEPTH : 4600.0 Ft
 : 1402.1 M

* = Ro MATURITY
 # VALUES : 55
 MEAN : 0.77
 STD DEV : 0.14
 MEDIAN : 0.79
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)

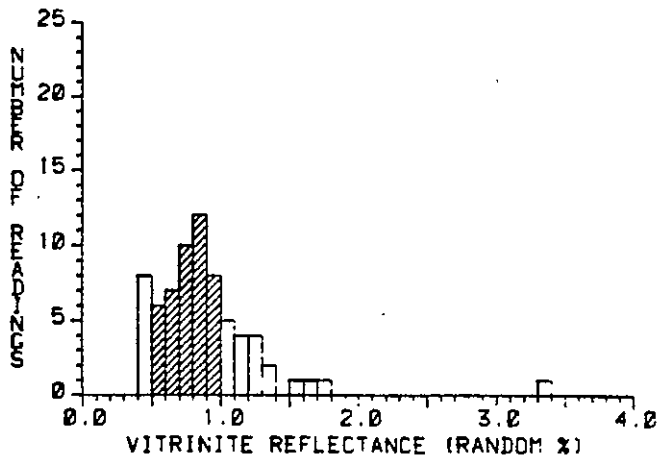


RRUS No. : 3011
 ID : CTGS
 DEPTH : 4700.0 Ft
 : 1432.6 M

* = Ro MATURITY
 # VALUES : 31
 MEAN : 0.72
 STD DEV : 0.14
 MEDIAN : 0.71
 MODE : 0.55

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



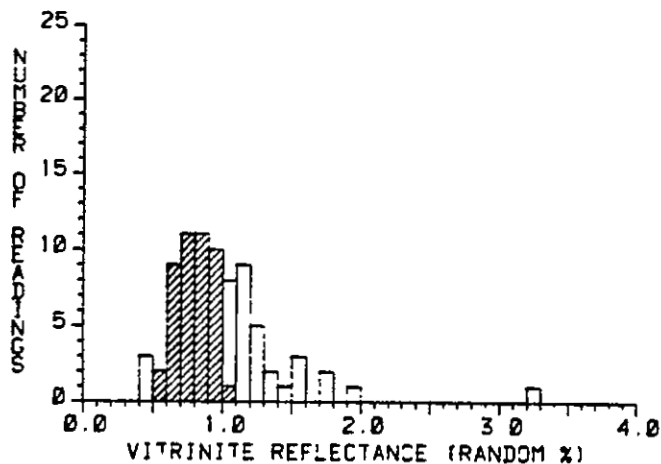
RRUS No. : 3012
 ID : CTGS.
 DEPTH : 4800.0 Ft
 : 1453.0 M

* = Ro MATURITY
 # VALUES : 43
 MEAN : 0.76
 STD DEV : 0.13
 MEDIAN : 0.79
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3013
 ID : CTGS.
 DEPTH : 4900.0 Ft
 : 1493.5 M

* = Ro MATURITY

VALUES : 44

MEAN : 0.79

STD DEV : 0.13

MEDIAN : 0.80

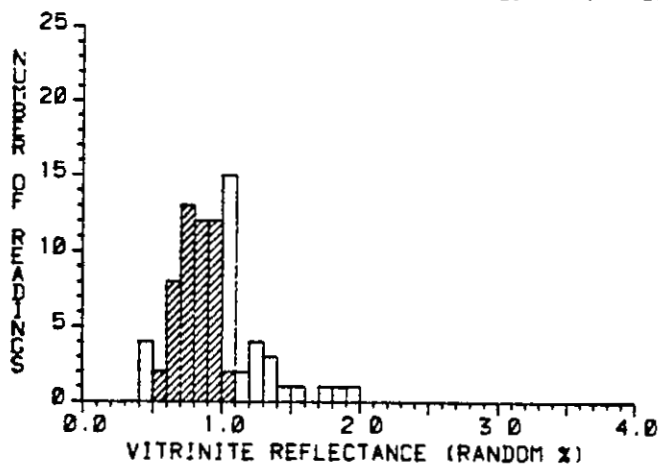
MODE : 0.85

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

PURETEX CHAPPEL RANCH (SUN)



RRUS No. : 3014
 ID : CTGS.
 DEPTH : 4930.0 Ft
 : 1502.7 M

* = Ro MATURITY

VALUES : 49

MEAN : 0.80

STD DEV : 0.12

MEDIAN : 0.81

MODE : 0.75

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

NON RR(US) DATA

CHAPPEL RANCH

VISUAL KEROGEN DATA SUMMARY

Pat Burbridge

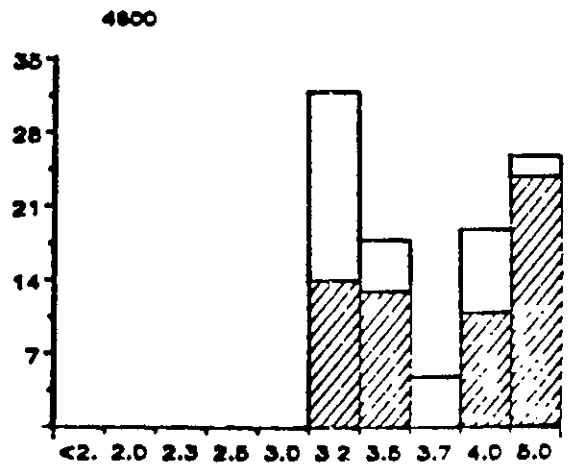
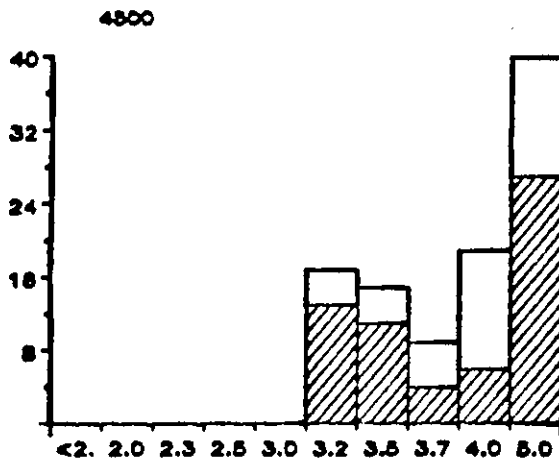
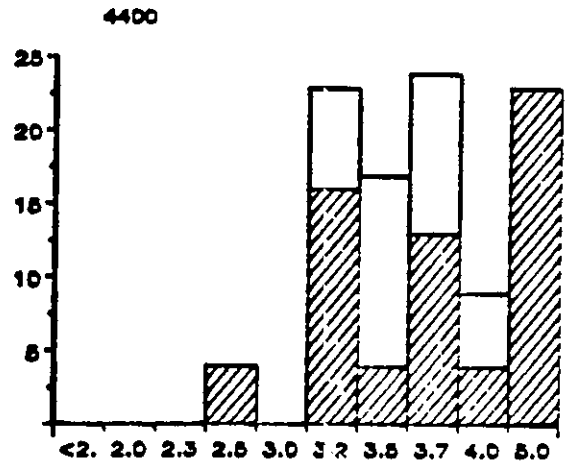
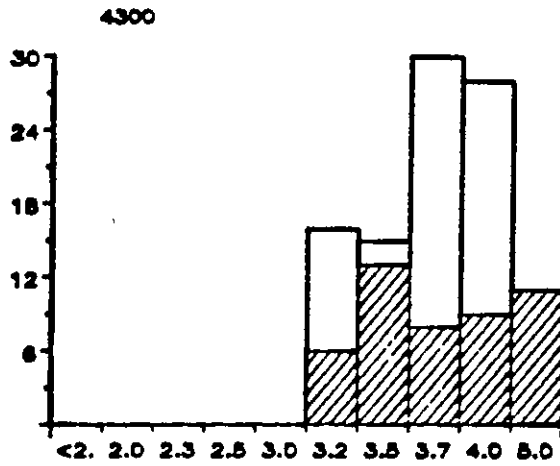
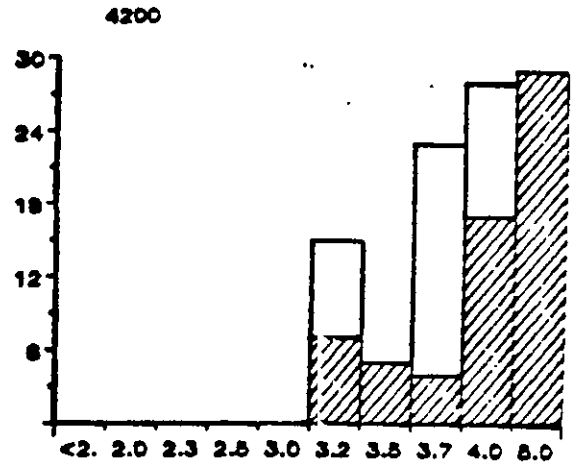
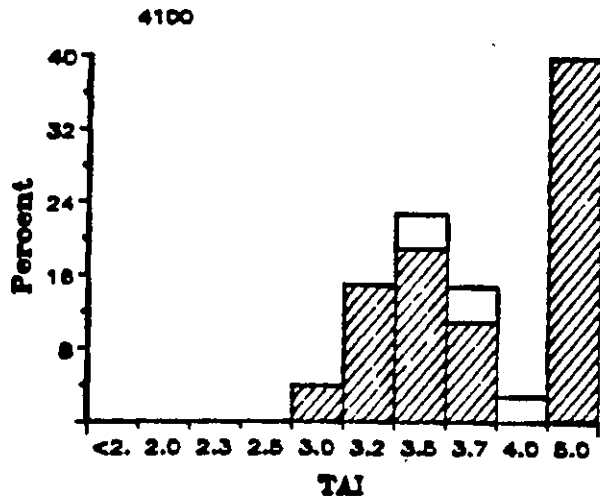
NON RR(U.S.) DATA	Sample	Depositional Environment**	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
							————— Thermal Maturation Increases —————>										
							<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
							Oil and Gas Generation					Dry Gas Only					
4100	T	P	S	Structured	89	-	-	-	-	4	15	19	11	-	40	3.5+5.0	
				Nonstructured	11	-	-	-	-	-	4	4	3	-	-	3.5-4.0	
4200	T	P	S	Structured	62	-	-	-	-	-	7	5	4	17	29	4.0-5.0	
				Nonstructured	38	-	-	-	-	-	8	-	19	11	-	3.7	
4300	T	P	S	Structured	47	-	-	-	-	-	6	13	8	9	11	3.5+5.0	
				Nonstructured	53	-	-	-	-	-	10	2	22	19	-	3.7-4.0	
4400	T	P	S	Structured	64	-	-	-	4	-	16	4	13	4	23	3.2+5.0	
				Nonstructured	36	-	-	-	-	-	7	13	11	5	-	3.5-3.7	
4500	T	P	S	Structured	61	-	-	-	-	-	13	11	4	6	27	3.2+5.0	
				Nonstructured	39	-	-	-	-	-	4	4	5	13	13	4.0-5.0	
4600	T	P	S	Structured	62	-	-	-	-	-	14	13	-	11	24	3.2-3.5+5.0	
				Nonstructured	38	-	-	-	-	-	18	5	5	8	2	3.2	
4700	T	P	S	Structured	69	-	-	-	4	-	9	9	6	23	18	4.0-5.0	
				Nonstructured	31	-	-	-	-	-	4	11	3	7	6	3.5	
4800	T	P	S	Structured	62	-	-	-	-	-	6	24	7	3	22	3.5+5.0	
				Nonstructured	38	-	-	-	4	-	4	10	10	5	5	3.5-3.7	
4900	T	P	S	Structured	53	-	-	-	-	-	10	9	2	5	27	3.2-3.5+5.0	
				Nonstructured	47	-	-	-	4	-	5	9	17	10	2	3.5-3.7	
4930	T	P	S	Structured	83	-	-	-	-	-	22	17	3	19	22	3.2+5.0	
				Nonstructured	17	-	-	-	-	-	10	7	-	-	-	3.2	

TABLE A.36

*M=Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

CHAPPEL RANCH No.1

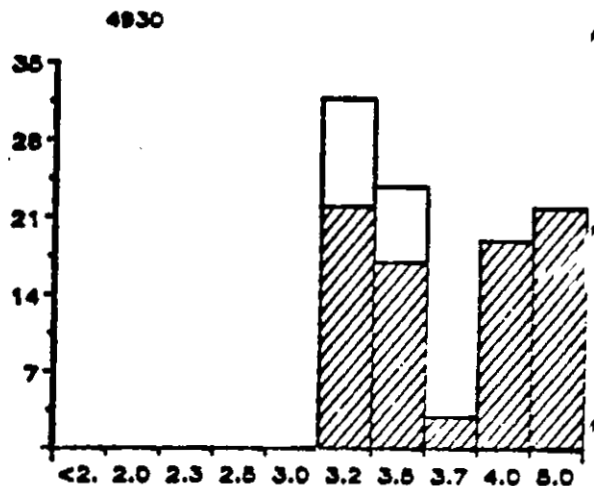
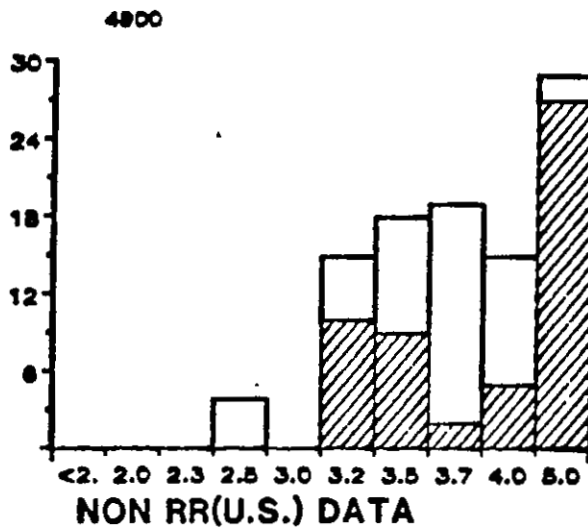
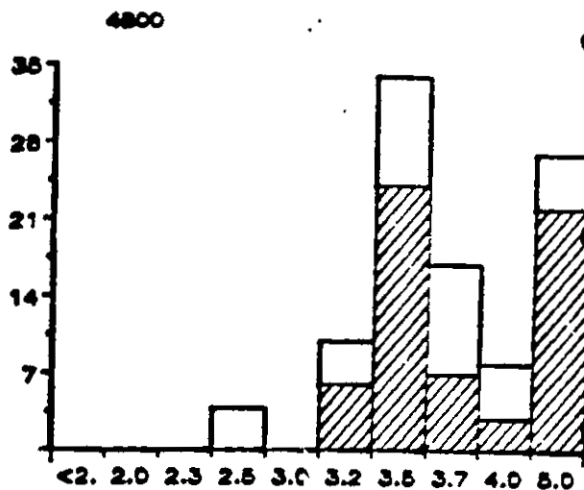
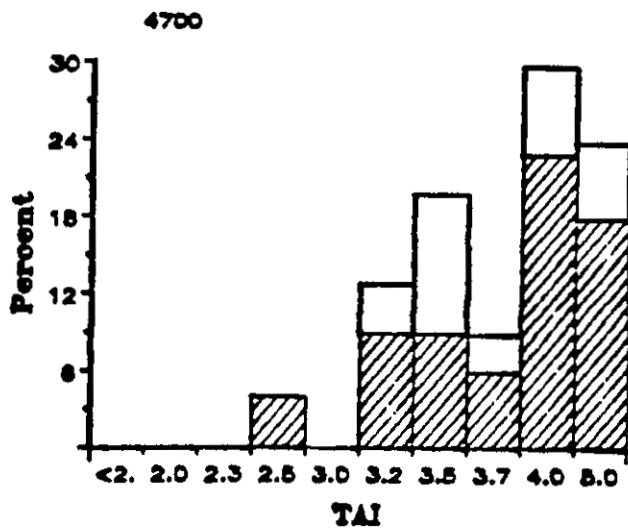
Structured Kerogen Data
 Non-Structured Kerogen Data

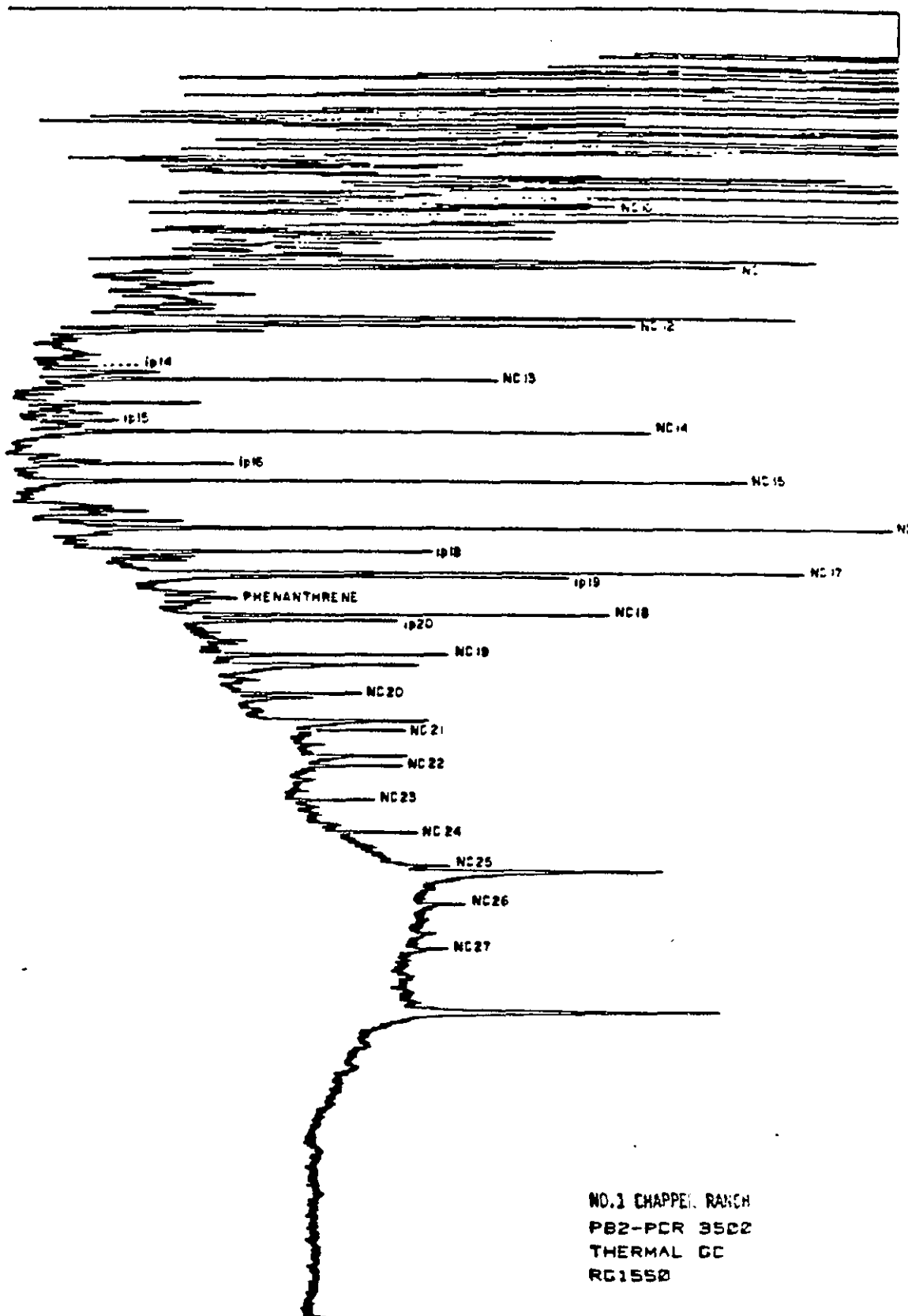


NON RR(U.S.) DATA

CHAPPEL RANCH No.1

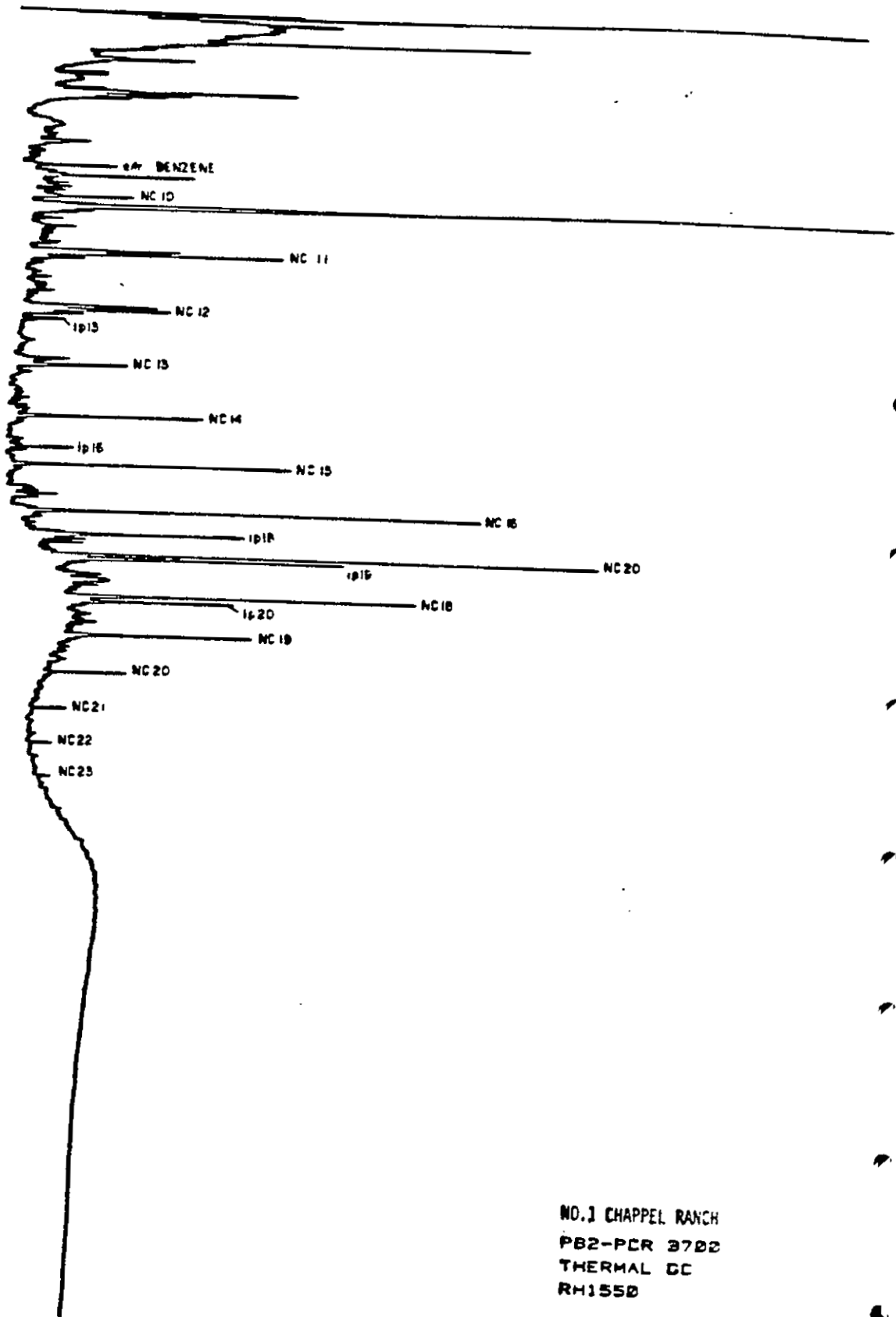
Structured Kerogen Data
 Non-Structured Kerogen Data





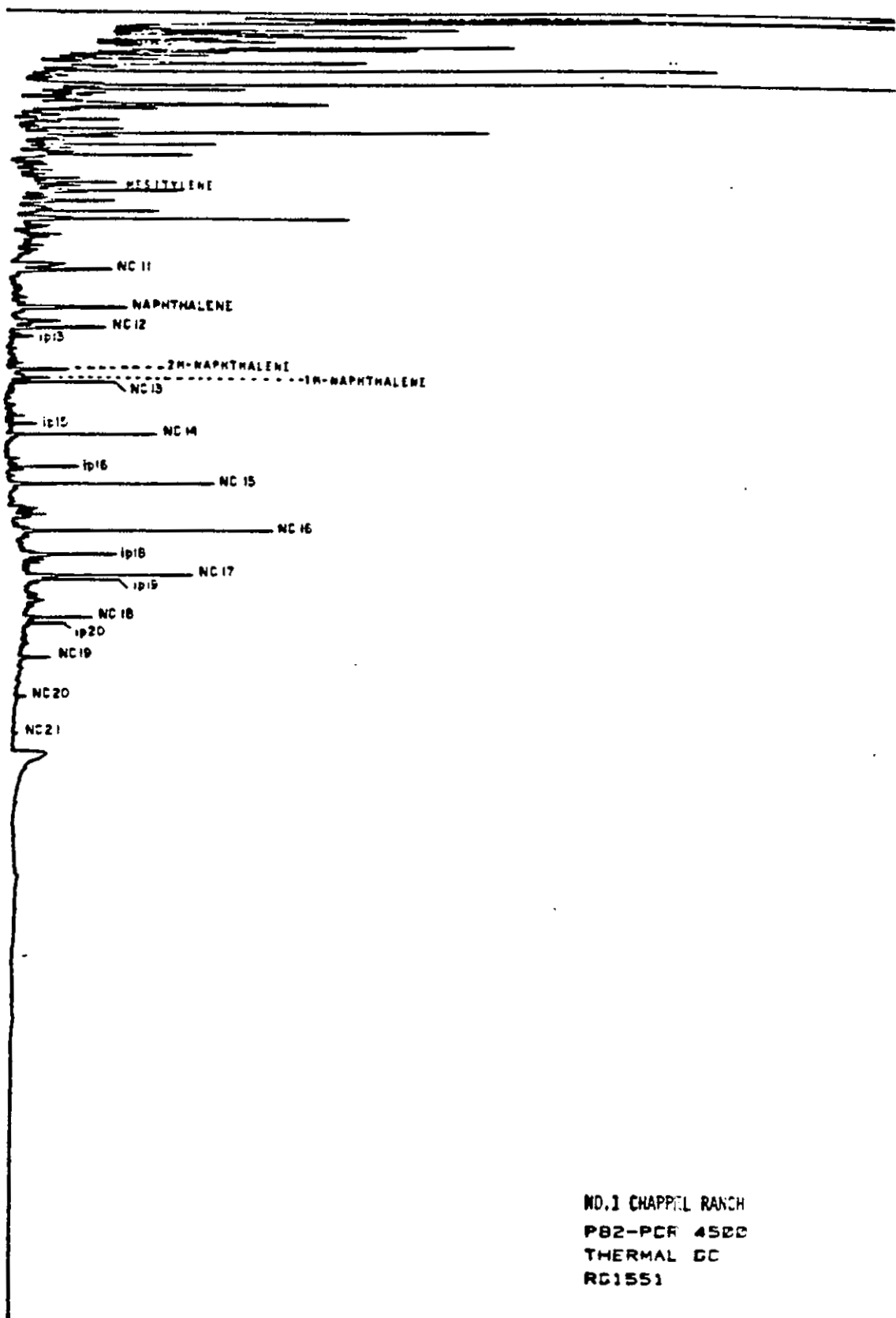
NO.1 CHAPPEL RANCH
PB2-PCR 3502
THERMAL GC
RC1550

NON RR(U.S.) DATA



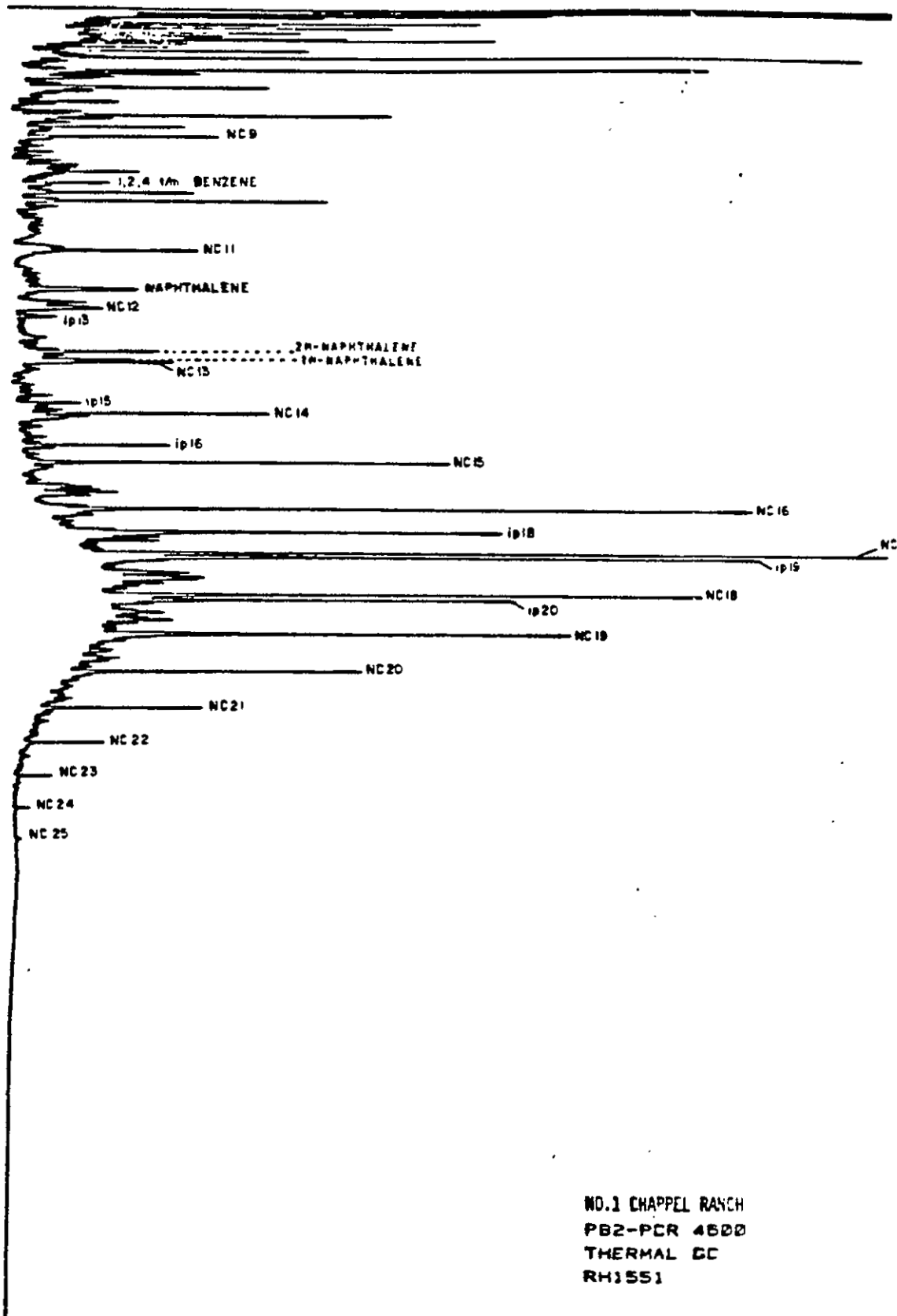
NO.1 CHAPPEL RANCH
 PB2-PCR 3702
 THERMAL GC
 RH155B

NON RR(U.S.) DATA



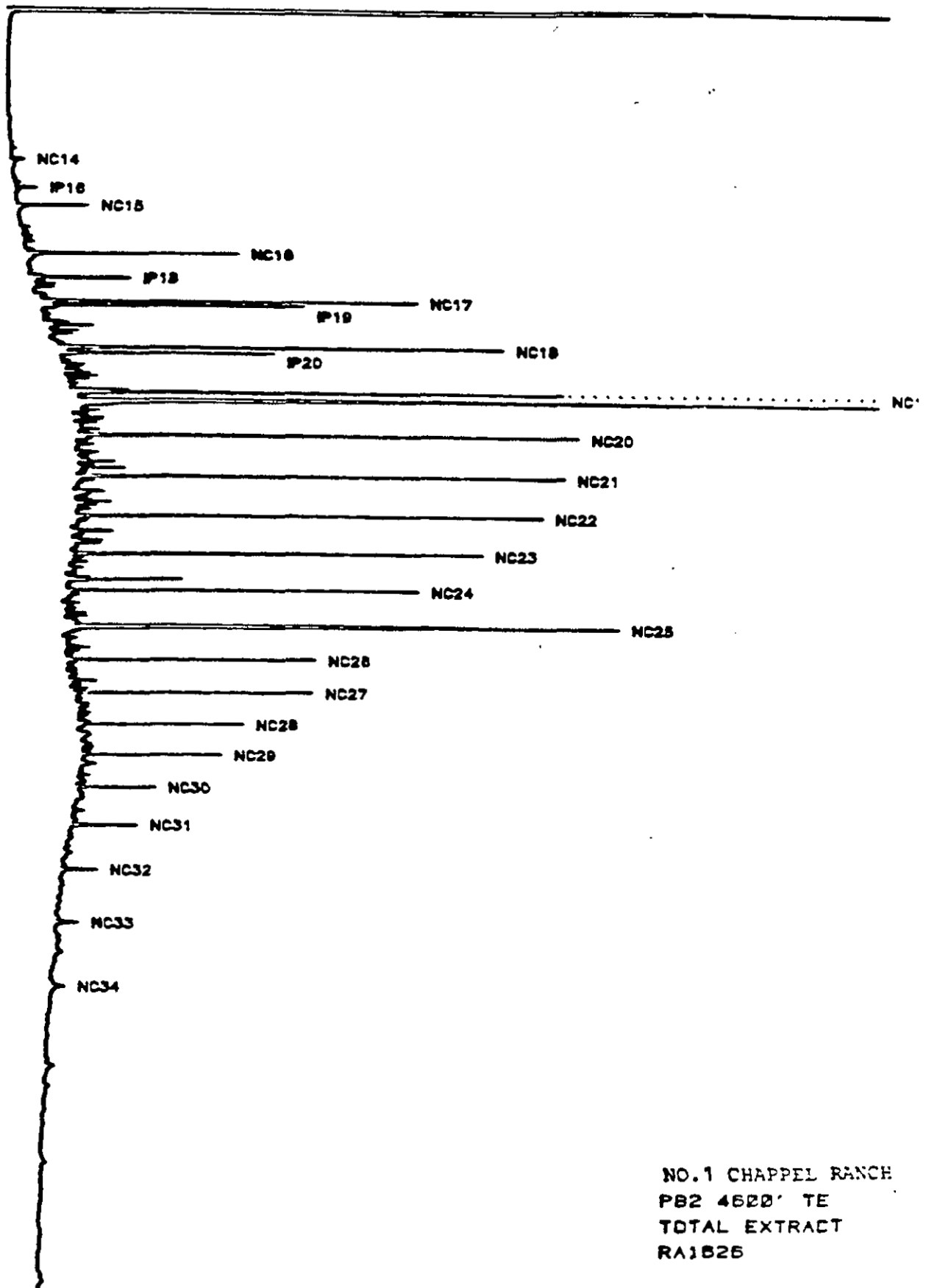
NO. 1 CHAPPEL RANCH
PB2-PCR 4500
THERMAL GC
RG1551

NON RR(U.S.) DATA



NO.1 CHAPPEL RANCH
 PB2-PCR 4500
 THERMAL GC
 RH1551

NON RR(U.S.) DATA



NON RR(U.S.) DATA

No.1 CHAPPEL RANCH

SAMPLE P82 4600' TE
 RAW FILE RA1626

AREA 3

N-PARAFFIN HYDROCARBONS	19.43
ISOPRENOID HYDROCARBONS	2.63
OTHER RESOLVED C5 - C35 HYDROCARBONS	41.64
UNRESOLVED C5 - C35 HYDROCARBONS	36.29

NAME	AREA 3	NAME	AREA 3
NC14	.10	NC23	5.85
IP16	.38	NC24	5.00
NC15	1.30	NC25	14.18
NC16	3.42	NC26	3.57
IP18	2.44	NC27	3.42
NC17	5.55	NC28	2.51
IP19	4.38	NC29	2.15
NC18	6.90	NC30	1.47
IP20	4.73	NC31	1.77
NC19	7.26	NC32	.97
EC20	7.62	NC33	.90
NC21	7.17	NC34	.47
NC22	6.47		

NON RR(US) DATA

STANOLIND, #1 FULLER

TABLE A.37

TOTAL ORGANIC CARBON DATA

FULLER #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION		DATA	SAMPLE IDENTIFICATION		DATA
RRUS	DEPTH (Feet)	TOC%	RRUS	DEPTH (Feet)	TOC%
3101	5800	0.13	3108	6300	0.15
3102	5850	0.09	3117	6350	0.12
3103	5900	0.13	3118	6400	0.19
3104	5950	0.12	3109	6450	0.18
3105	6000	0.12	3110	6500	0.13
3114	6050	0.10	3119	6550	0.13
3115	6100	0.13	3111	6600	0.18
3106	6150	0.14	3112	6650	0.21
3116	6200	0.10	3113	6700	0.21
3107	6250	0.12	3120	6750	0.17

NON RR(US) DATA

TABLE A.38

ROCK-EVAL PYROLYSIS RAW DATA

FULLER #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
3101	5800		0.070	0.070	0.420	0.167	0.500	350
3103	5900		0.070	0.070	0.710	0.099	0.500	358
3105	6000		0.240	0.480	0.680	0.706	0.333	---
3115	6100		0.150	0.190	0.580	0.328	0.441	---
3116	6200		0.040	0.020	0.710	0.028	0.667	---
3108	6300		0.090	0.130	0.950	0.137	0.409	---
3118	6400		0.260	0.660	1.160	0.569	0.283	---
3109	6450		0.760	0.450	2.840	0.158	0.628	366
3119	6550		0.130	0.250	0.810	0.309	0.342	---
3112	6650		0.090	0.110	1.150	0.096	0.450	---
3120	6750		0.180	0.280	0.980	0.286	0.391	---

NON RR(US) DATA

TABLE A.39

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

FULLER #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
3101	5800		54	323	0.13
3103	5900		54	546	0.13
3105	6000		400	567	0.12
3115	6100		146	446	0.13
3116	6200		20	710	0.10
3108	6300		87	633	0.15
3118	6400		347	611	0.19
3109	6450		250	1578	0.18
3119	6550		192	623	0.13
3112	6650		52	548	0.21
3120	6750		165	576	0.17

--- REPRESENTS AN INDETERMINABLE VALUE

NON RR(US) DATA

TABLE A.40

VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

FULLER #1 (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
3101	5800		1.04	0	0	0	0	None	0.13 <i>Heav</i>
3102	5850		0.99	0	0	0	0	None	0.09
3103	5900		0.99	0	0	0	0	None	0.13 <i>↑</i>
3104	5950		1.05	0	0	0	0	None	0.12 <i>↓</i>
3105	6000		1.07	0	0	0	0	None	0.12 <i>Heav</i>
3106	6150		1.05	0	0	0	0	None	0.14 <i>Coar</i>
3107	6250		1.05	0	0	0	0	None	0.12 <i>Coar</i>
3108	6300		1.05	0	0	0	0	None	0.15 <i>Straw</i>
3109	6450		1.05	0	0	0	0	None	0.18
3110	6500		1.07	0	0	0	0	None	0.13 <i>↑</i>
3111	6600		1.05	0	0	0	0	None	0.18 <i>↓</i>
3112	6650		1.05	0	0	0	0	None	0.21
3113	6700		1.04	0	0	0	0	None	0.21 <i>Straw</i>

NON RR(US) DATA

VITRINITE REFLECTANCE DATA SUMMARY

NO.1 FULLER - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
5800	87	Organic material small, scattered pieces. Large sand grains present.
5850	53	Slight shift in R_0 profile may be attributed to an influx of less mature organic material. Amount of organic material has decreased slightly.
5900	38	Amount of organic material is moderate. Mean R_0 and standard deviation do not differ significantly from previous samples.
5950	55	R_0 range narrow. test may be cave or second cycle. Organic debris present.
6000	82	R_0 profile is similar to that established at 5800, with a very slight influx of less mature organic material.
6050	--	No sample residue left after acid maceration.

TABLE A.41

VITRINITE REFLECTANCE DATA SUMMARY

NO.1 FULLER - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
6100	--	No sample residue left after acid maceration.
6150	67	R ₀ profile indicates an influx of less mature organic material, with some mixed populations. Organic material excluded by
6200	--	No sample residue left after acid maceration.
6250	53	Shift in R ₀ profile may be attributed to an influx of less mature organic material.
6300	93	R ₀ profile reverts to that established at 6150 with mixed populations.
6350	--	No sample residue left after acid maceration.
6400	--	No sample residue left after acid maceration.
6450	100	R ₀ profile similar to that of sample 6300. Mineral matter is abundant.

VITRINITE REFLECTANCE DATA SUMMARY

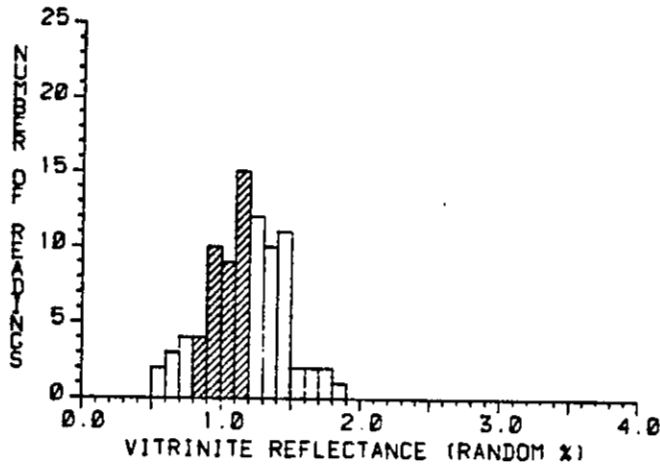
NO. 1 FULLER - Tucumcari Basin

J. L. Martinez

NON RR(U.S.) DATA

SAMPLE	POINTS READ	COMMENTS
6500	82	No significant change.
6550	--	No sample residue left after acid maceration.
6600	96	R ₀ profile similar to that of sample 6500.
6650	100	No significant change.
6700	96	No significant change.
6750	--	No sample residue left after acid maceration.

FULLER #1 (SUN)



RRUS No. : 3101
ID : CTGS.

DEPTH : 5800.0 F1
: 1767.8 M

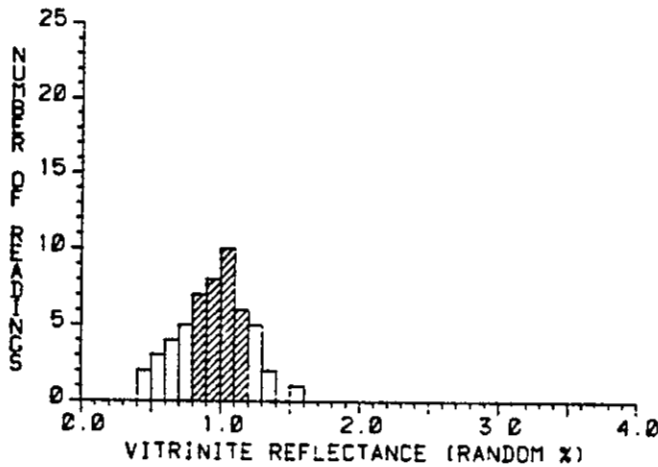
* = Ro MATURITY

* VALUES : 30

MEAN : 1.04
STD DEV : 0.11
MEDIAN : 1.05
MODE : 1.15

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

FULLER #1 (SUN)



RRUS No. : 3102
ID : CTGS.

DEPTH : 5850.0 F1
: 1783.1 M

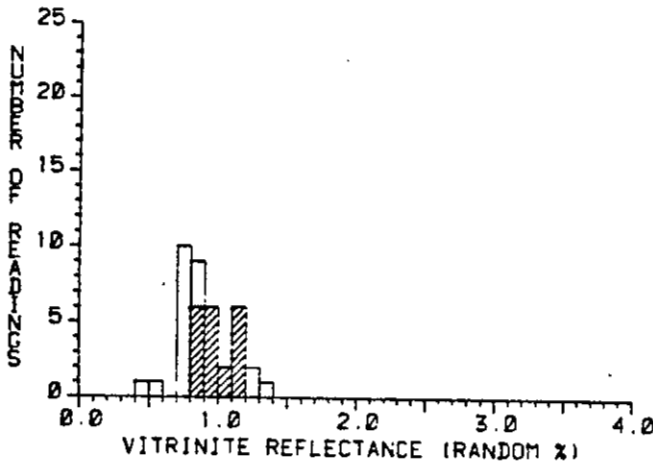
* = Ro MATURITY

* VALUES : 31

MEAN : 0.99
STD DEV : 0.11
MEDIAN : 1.00
MODE : 1.05

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

FULLER #1 (SUN)



RRUS No. : 3103
ID : CTGS.

DEPTH : 5900.0 F1
: 1798.3 M

* = Ro MATURITY

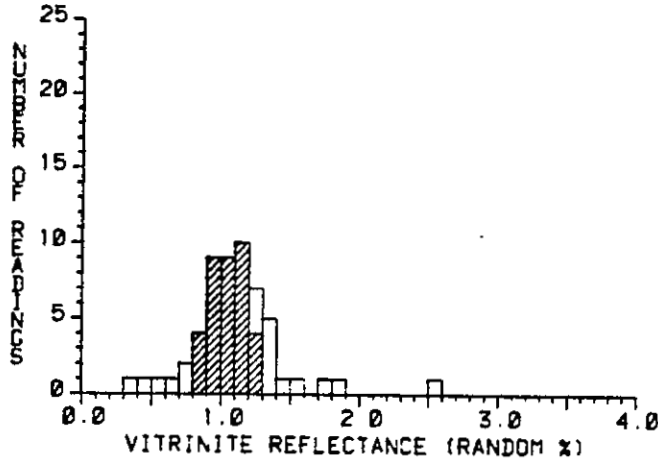
* VALUES : 20

MEAN : 0.99
STD DEV : 0.12
MEDIAN : 0.96
MODE : 1.15

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

NON RR(US) DATA

FULLER #1 (SUN)



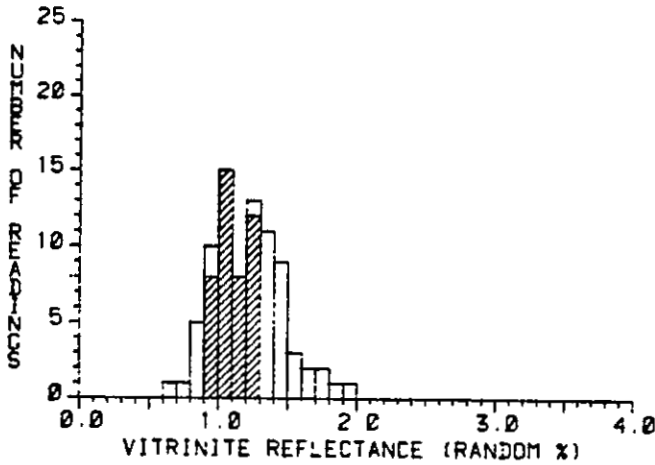
RRUS No. : 3104
 ID : CTGS
 DEPTH : 5950.0 F1
 : 1813.6 M

* = Ro MATURITY

VALUES : 36
 MEAN : 1.05
 STD DEV : 0.12
 MEDIAN : 1.06
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)



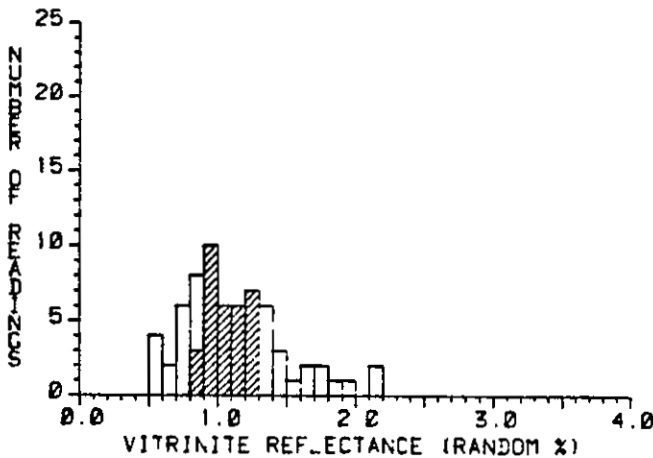
RRUS No. : 3105
 ID : CTGS
 DEPTH : 6800.0 F1
 : 2072.6 M

* = Ro MATURITY

VALUES : 43
 MEAN : 1.10
 STD DEV : 0.10
 MEDIAN : 1.08
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)



RRUS No. : 3106
 ID : CTGS
 DEPTH : 6150.0 F1
 : 1874.5 M

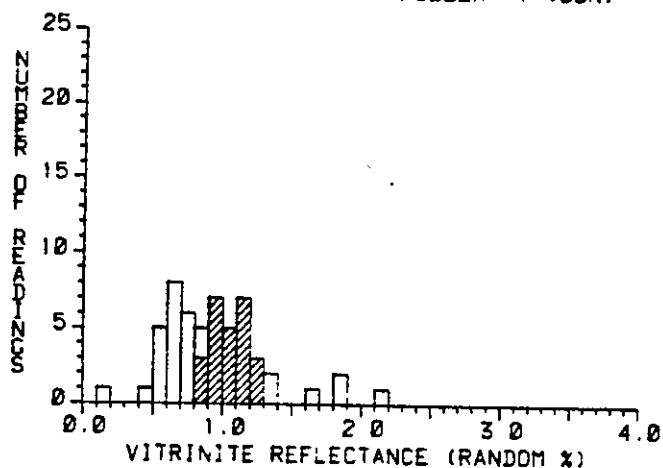
* = Ro MATURITY

VALUES : 32
 MEAN : 1.05
 STD DEV : 0.12
 MEDIAN : 1.05
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

FULLER #1 (SUN)

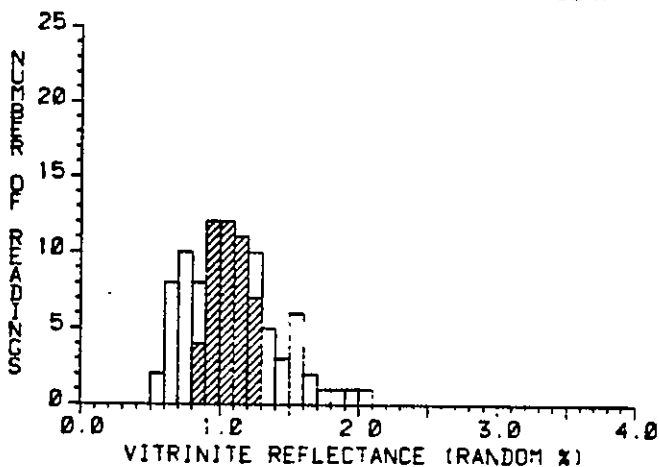


RRUS No. : 3107
 ID : CTGS.
 DEPTH : 6250.0 F1
 : 1205.0 M

* = Ro MATURITY
 # VALUES : 25
 MEAN : 1.05
 STD DEV : 0.12
 MEDIAN : 1.01
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)

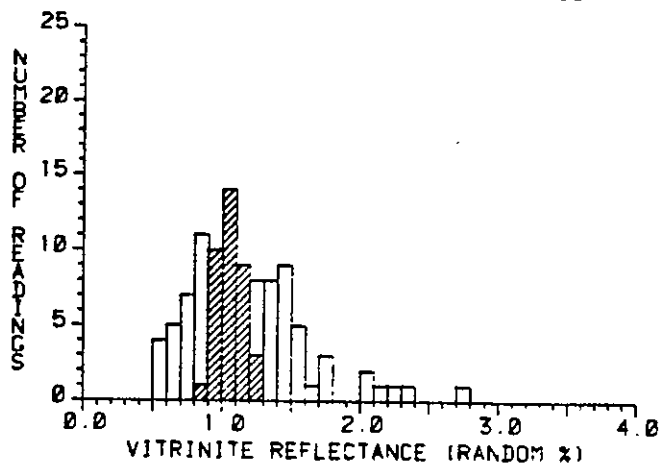


RRUS No. : 3108
 ID : CTGS.
 DEPTH : 6300.0 F1
 : 1620.2 M

* = Ro MATURITY
 # VALUES : 46
 MEAN : 1.05
 STD DEV : 0.11
 MEDIAN : 1.06
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)



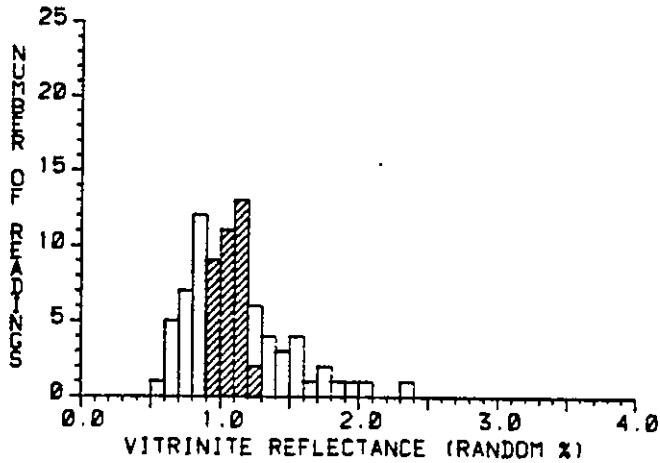
RRUS No. : 3109
 ID : CTGS.
 DEPTH : 6450.0 F1
 : 1966.0 M

* = Ro MATURITY
 # VALUES : 37
 MEAN : 1.05
 STD DEV : 0.09
 MEDIAN : 1.04
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

FULLER #1 (SUN)

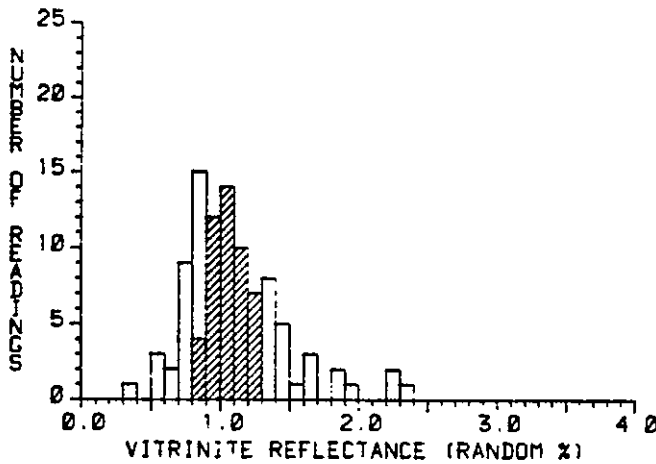


RRUS No. : 3110
 ID : CTGS.
 DEPTH : 6590.0 F1
 : 1791.2 M

* = Ro MATURITY
 # VALUES : 35
 MEAN : 1.07
 STD DEV : 0.09
 MEDIAN : 1.08
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)

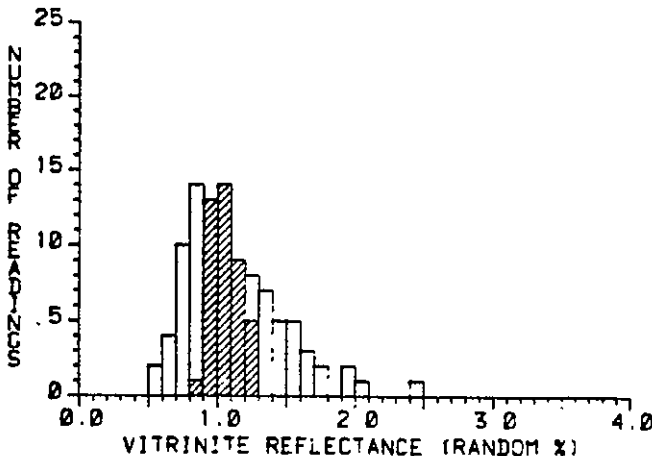


RRUS No. : 3111
 ID : CTGS.
 DEPTH : 6600.0 F1
 : 2011.7 M

* = Ro MATURITY
 # VALUES : 47
 MEAN : 1.05
 STD DEV : 0.11
 MEDIAN : 1.04
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

FULLER #1 (SUN)



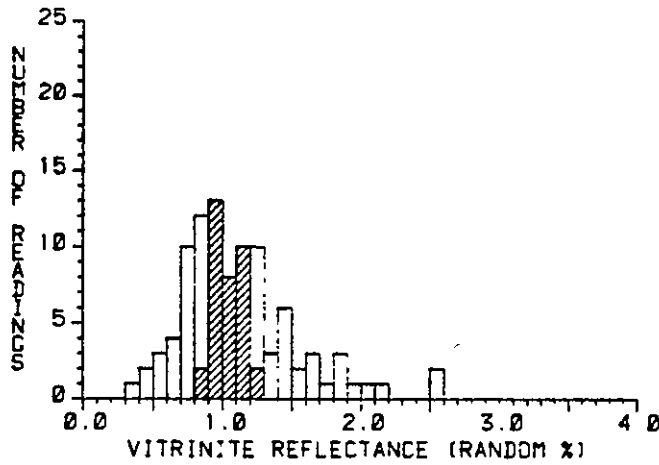
RRUS No. : 3112
 ID : CTGS.
 DEPTH : 6650.0 F1
 : 2026.9 M

* = Ro MATURITY
 # VALUES : 42
 MEAN : 1.05
 STD DEV : 0.10
 MEDIAN : 1.04
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

FULLER #1 (SUN)



NON RR(US) DATA

RRUS No. : 3113
ID : CTGS.

DEPTH : 6700.0 F1
 : 2042.2 M

* = Ro MATURITY

VALUES : 35

MEAN : 1.04

STD DEV : 0.10

MEDIAN : 1.03

MODE : 0.95

HISTOGRAM:

Range: 0- 4%

Increment: 0.10%

NON RR(U.S.) DATA

NO.1 FULLER - Tucumcari Basin

VISUAL, KEROGEN DATA SUMMARY

P. Burbridge

Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
						Thermal Maturation Increases →										
						<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
Oil and Gas Generation					Dry Gas Only											
5800	-	B	T	Structured	55	-	-	-	-	-	2	3	8	13	30	5.0
				Nonstructured	45	-	-	-	-	-	24	21	-	-	-	3.2-3.5
5850	-	B	T	Structured	56	-	-	-	-	-	12	11	5	8	20	3.2+5.0
				Nonstructured	44	-	-	-	-	-	17	21	4	2	-	3.2-3.5
5900	-	B	B	Structured	-	-	-	-	-	-	-	-	-	-	-	Barren
				Nonstructured	-	-	-	-	-	-	-	-	-	-	-	-
5950	-	B	T	Structured	71	-	-	-	-	-	5	9	6	10	41	5.0
				Nonstructured	29	-	-	-	3	-	11	13	2	-	-	3.2-3.5
6000	-	B	T	Structured	74	-	-	-	-	-	14	23	3	12	22	3.5+5.0
				Nonstructured	26	-	-	-	-	-	13	13	-	-	-	3.2-3.5
6050	-	B	T	Structured	35	-	-	-	-	-	-	5	2	7	21	5.0
				Nonstructured	65	-	-	-	-	-	2	32	21	10	-	3.5-3.7
6100	-	B	S	Structured	28	-	-	-	-	-	4	6	2	9	7	3.5+4.0
				Nonstructured	72	-	-	-	-	-	12	44	10	6	-	3.5
6150	-	T	S	Structured	83	-	-	-	-	-	8	17	13	18	27	3.5+5.0
				Nonstructured	17	-	-	-	-	-	7	7	3	-	-	3.2-3.5
6200	-	T	S+	Structured	56	-	-	-	-	-	16	21	1	-	18	3.5+5.0
				Nonstructured	44	-	-	-	-	-	19	25	-	-	-	3.5
6250	-	T	M	Structured	55	-	-	-	-	-	13	15	3	9	15	3.5+5.0
				Nonstructured	45	-	-	-	3	-	24	15	3	-	-	3.2-3.5
6300	-	T	S	Structured	86	-	-	-	-	-	13	31	4	8	30	3.5+5.0
				Nonstructured	14	-	-	-	-	-	8	2	4	-	-	3.2

*M=Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

TABLE A.42

NO.1 FULLER - Tucumcari Basin

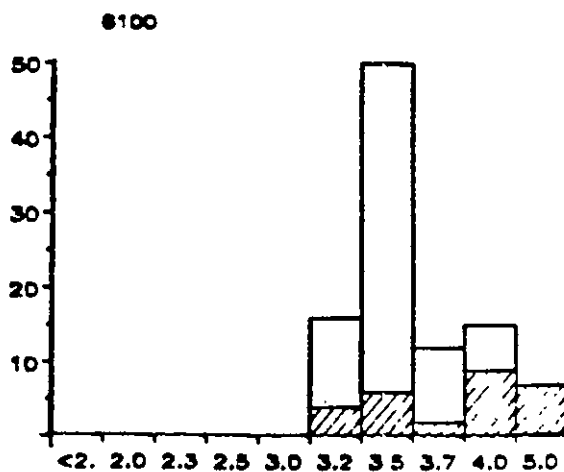
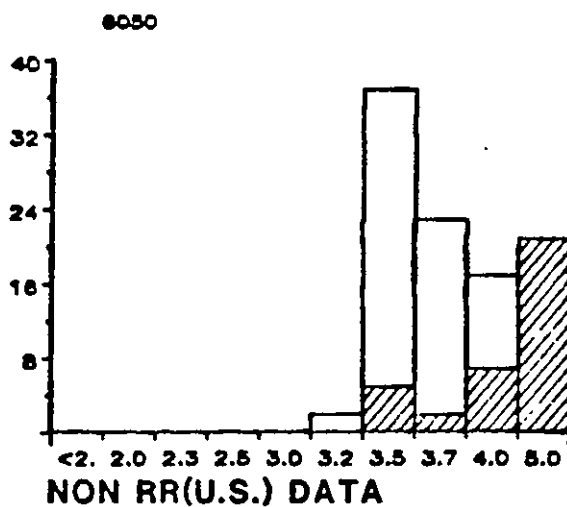
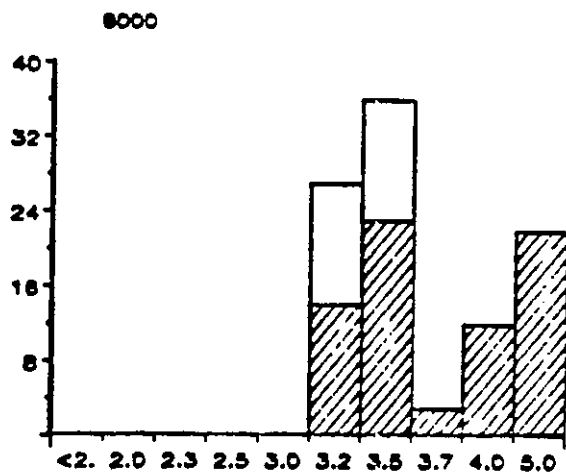
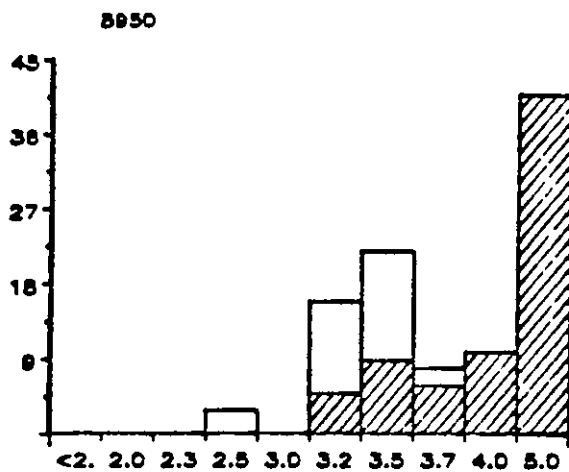
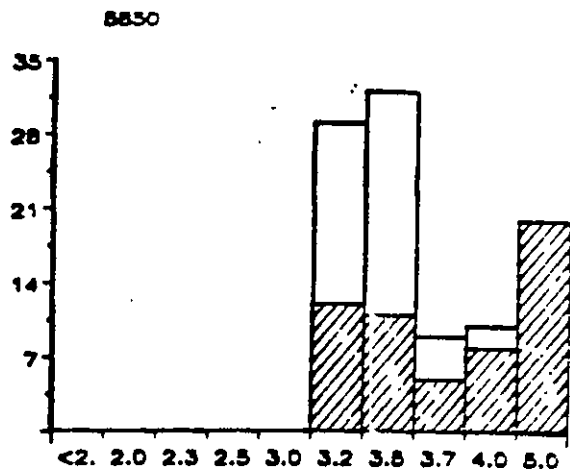
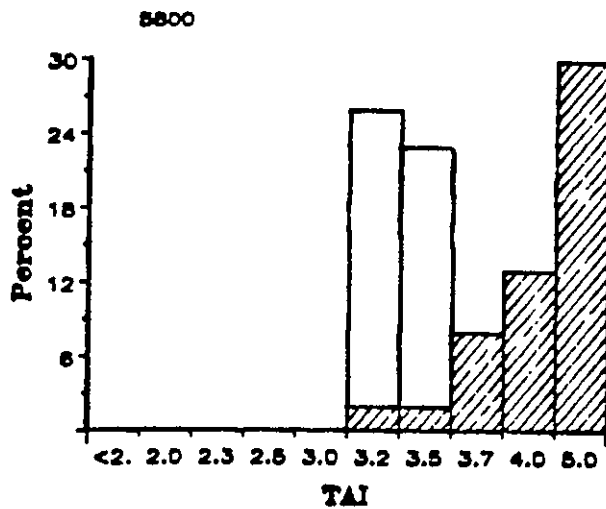
VISUAL KEROGEN DATA SUMMARY

P. Burbridge

NON RR(U.S.) DATA	Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
							————— Thermal Maturation Increases —————>										
							<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
							Oil and Gas Generation					Dry Gas Only					
6350	T	P	S	Structured	48	-	-	-	-	-	3	7	11	13	14	3.7-5.0	
				Nonstructured	52	-	-	-	-	-	12	21	19	-	-	3.5-3.7	
6400	T	P	M	Structured	23	-	-	-	-	-	-	4	3	7	9	4.0-5.0	
				Nonstructured	77	-	-	-	-	-	3	47	25	2	-	3.5	
6450	T	P	M	Structured	33	-	-	-	-	-	-	14	-	7	12	3.5+5.0	
				Nonstructured	67	-	-	-	-	-	11	27	14	14	1	3.5	
6500	T	P	M	Structured	60	-	-	-	-	-	6	20	7	15	12	3.5+4.0	
				Nonstructured	40	-	-	-	2	-	10	14	11	3	-	3.5	
6550	T	P	M	Structured	43	-	-	-	-	-	5	17	-	11	10	3.5+4.0	
				Nonstructured	57	-	-	-	-	-	2	35	15	5	-	3.5	
6600	T	P	M	Structured	32	-	-	-	-	-	6	10	4	9	3	3.5+4.0	
				Nonstructured	68	-	-	-	-	-	15	36	17	-	-	3.5	
6650	T	P	M	Structured	47	-	-	-	-	-	8	17	7	9	6	3.5+4.0	
				Nonstructured	53	-	-	-	-	-	21	23	9	-	-	3.2-3.5	
6700	T	M	M	Structured	66	-	-	-	-	2	21	19	5	9	10	3.2-3.5	
				Nonstructured	34	-	-	-	-	-	14	11	7	2	-	3.2-3.5	
6750	T	A	M	Structured	45	-	-	-	-	3	6	15	3	13	5	3.5+4.0	
				Nonstructured	55	-	-	-	-	10	31	11	1	2	-	3.2	

*M-Marine B=Brackish T=Terrestrial **A=Abundant P=Present M=Moderate S=Sufficient T=Trace B=Barren

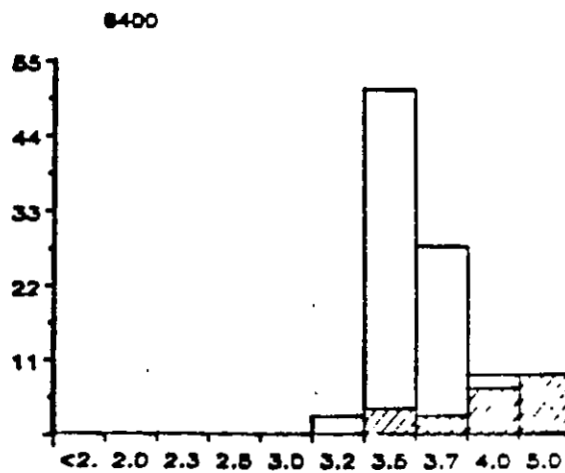
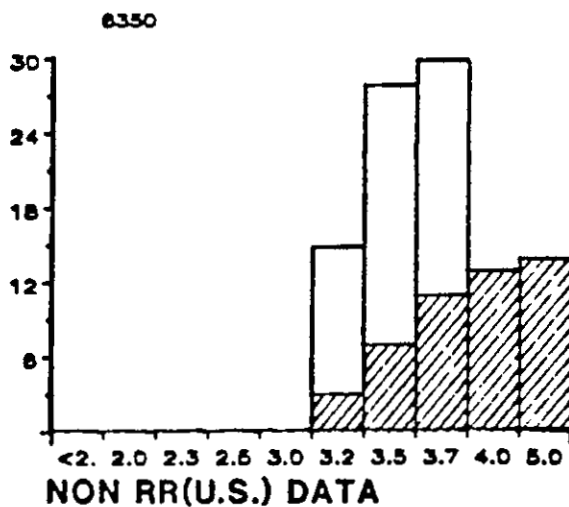
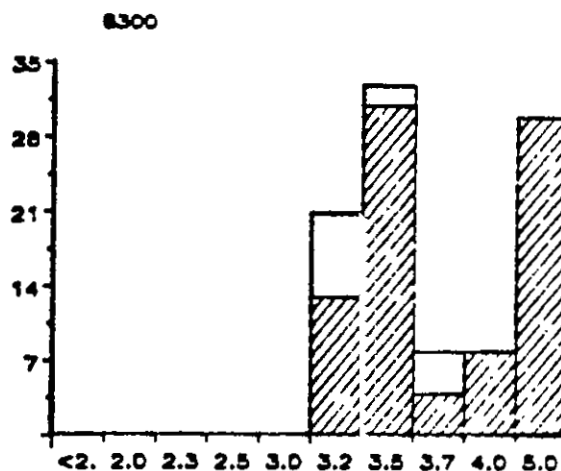
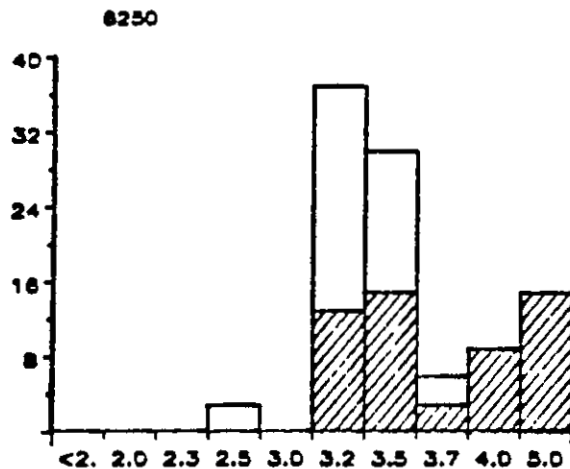
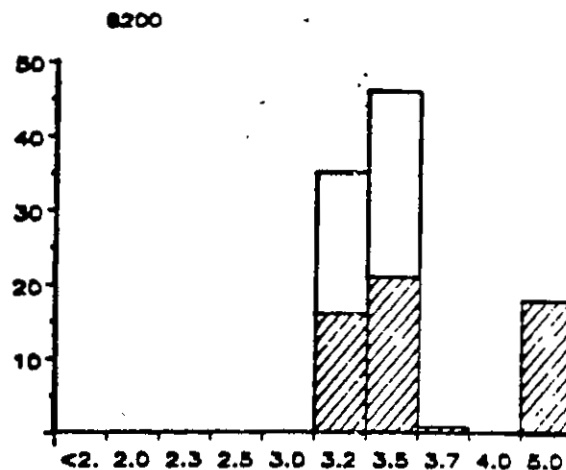
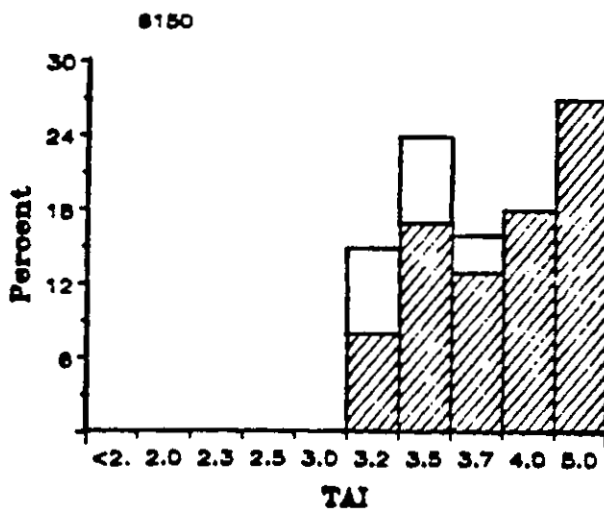
No.1 FULLER
 ▨ Structured Kerogen Data
 □ Non-Structured Kerogen Data



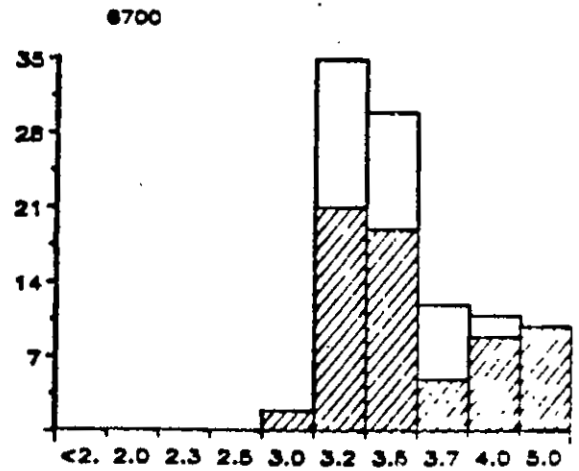
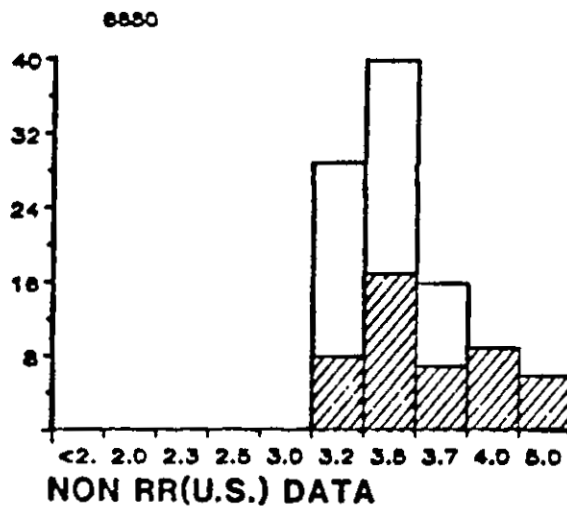
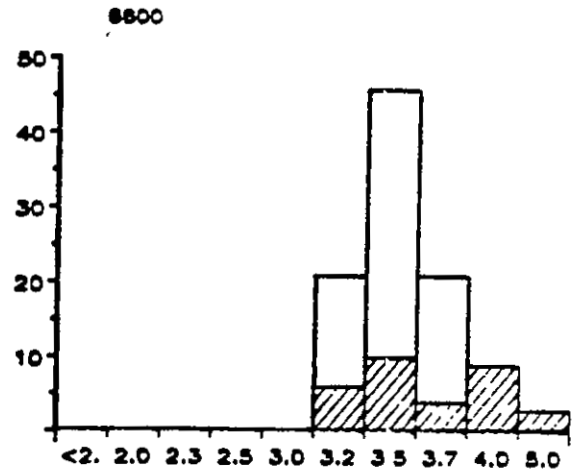
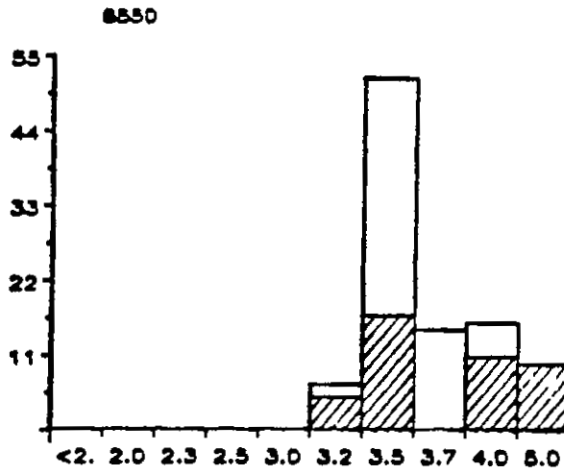
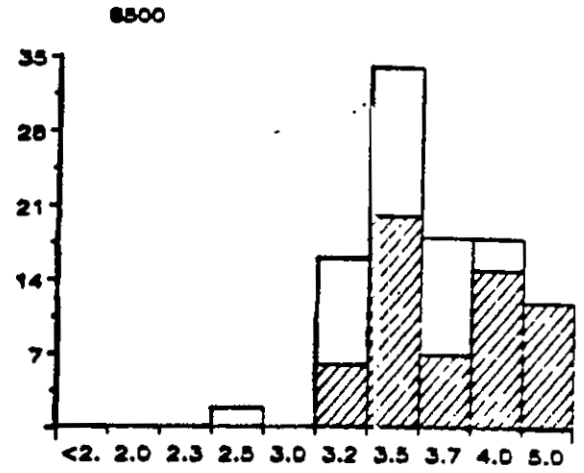
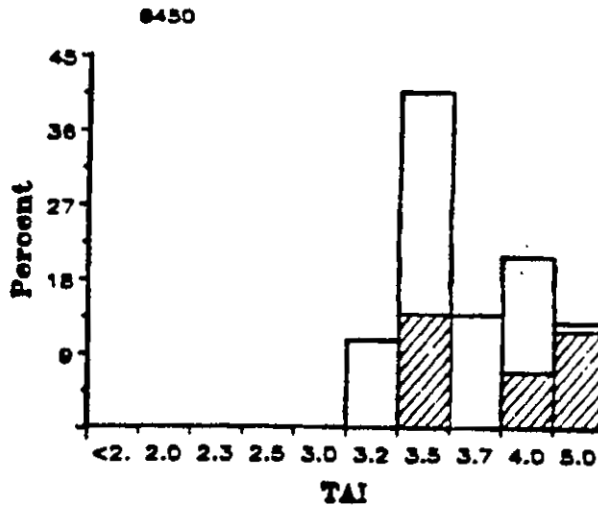
NON RR(U.S.) DATA

No. 1 FULLER

Structured Kerogen Data
 Non-Structured Kerogen Data

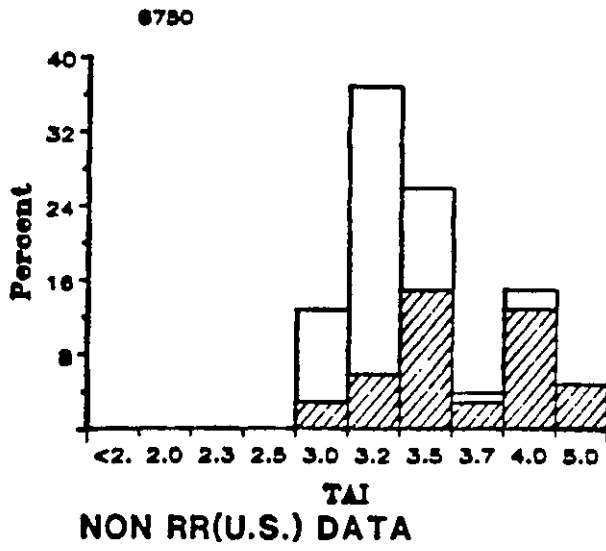


Structured Kerogen Data
 Non-Structured Kerogen Data



No.1 FULLER

- ▨ Structured Kerogen Data
- Non-Structured Kerogen Data



NO.1 FULLER

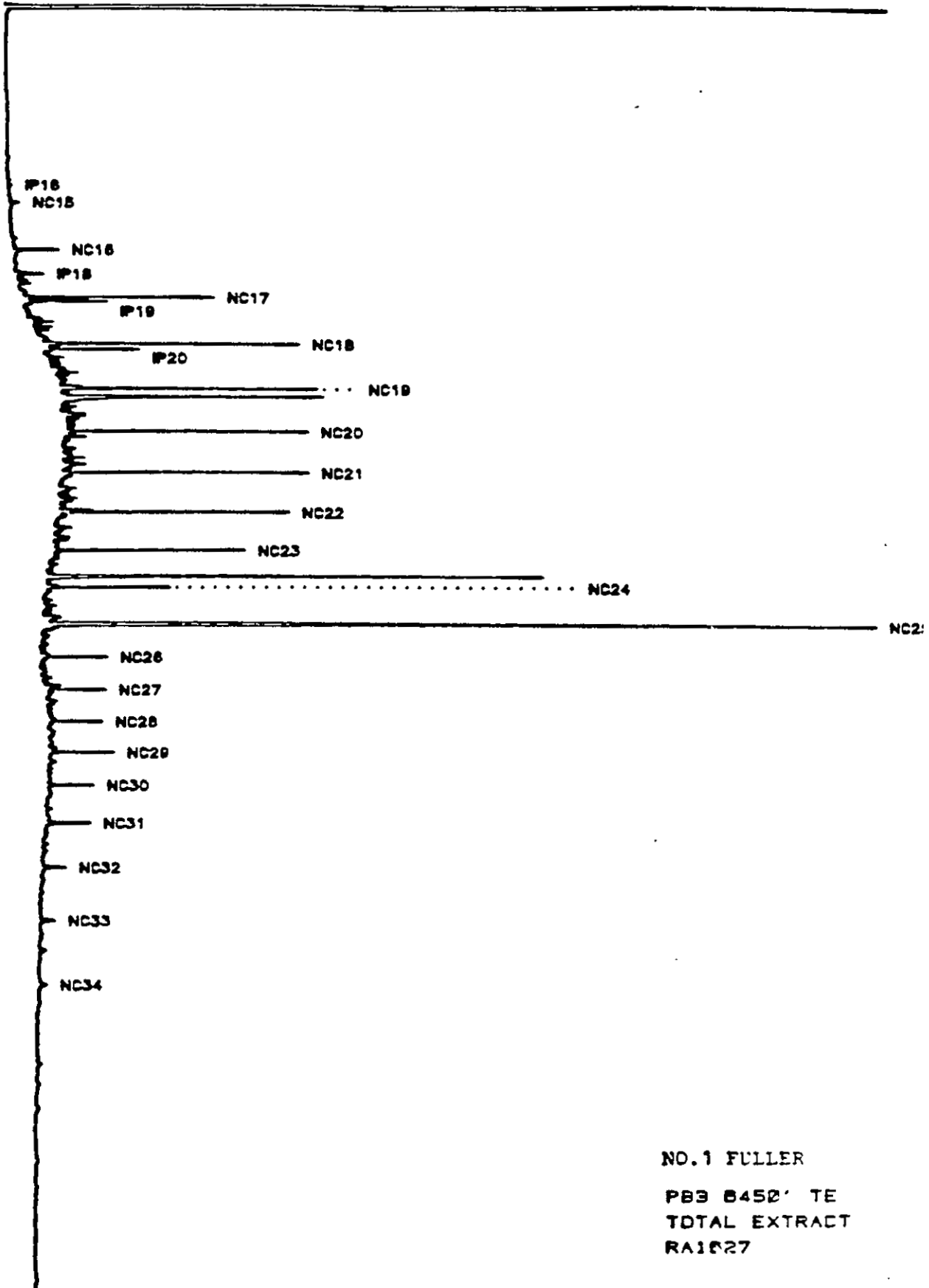
SAMPLE P83 6450' TE
 RAW FILE RA1627

AREA %

N-PARAFFIN HYDROCARBONS	15.50
ISOPRENOID HYDROCARBONS	1.32
OTHER RESOLVED C5 - C35 HYDROCARBONS	38.41
UNRESOLVED C5 - C35 HYDROCARBONS	44.77

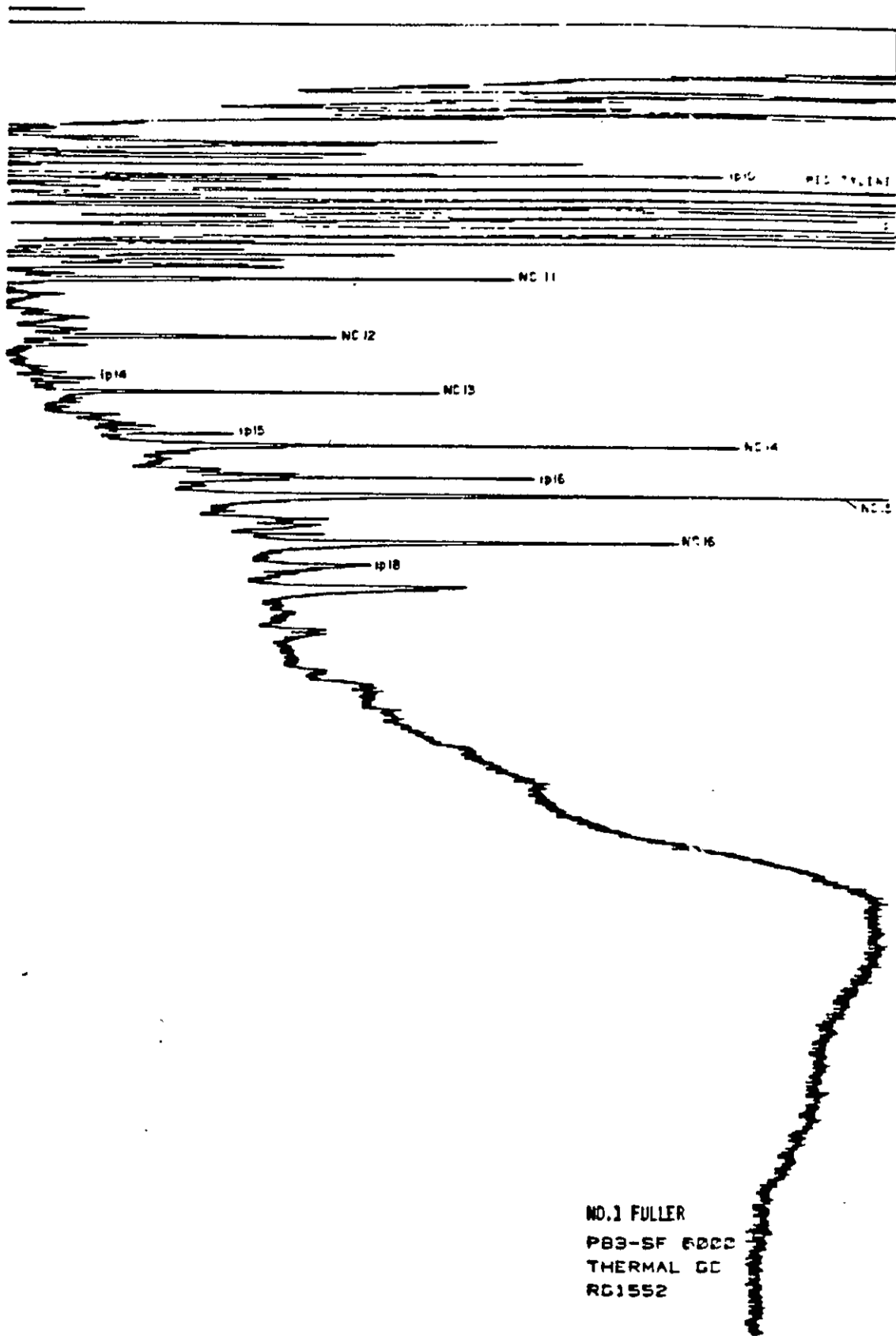
NAME	AREA %	NAME	AREA %
IP16	.14	NC23	5.29
NC15	.30	NC24	3.43
NC16	1.40	NC25	28.09
IP18	1.33	NC26	2.17
NC17	5.31	NC27	1.65
IP19	2.65	NC28	1.48
NC18	7.02	NC29	1.86
IP20	3.76	NC30	1.61
NC19	7.29	NC31	2.38
NC20	6.77	NC32	1.12
NC21	6.96	NC33	1.01
NC22	6.34	NC34	.65

NON RR(US) DATA



NO.1 FULLER
 PB3 6450' TE
 TOTAL EXTRACT
 RA1627

NON RR(U.S.)DATA



ip10 REC 79, JAN

NC 11

NC 12

ip14

NC 13

ip15

NC 14

ip16

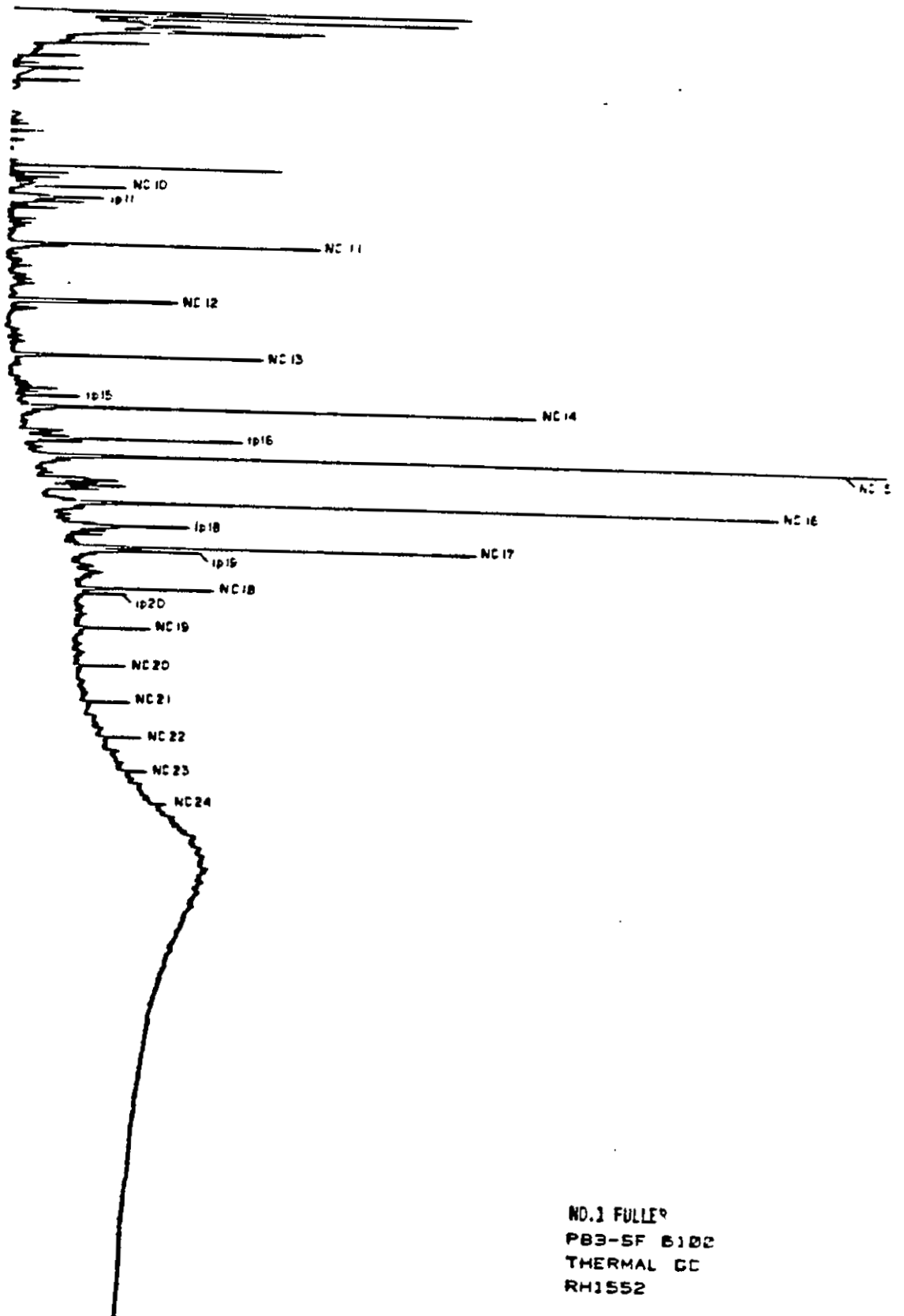
NC 15

NC 16

ip18

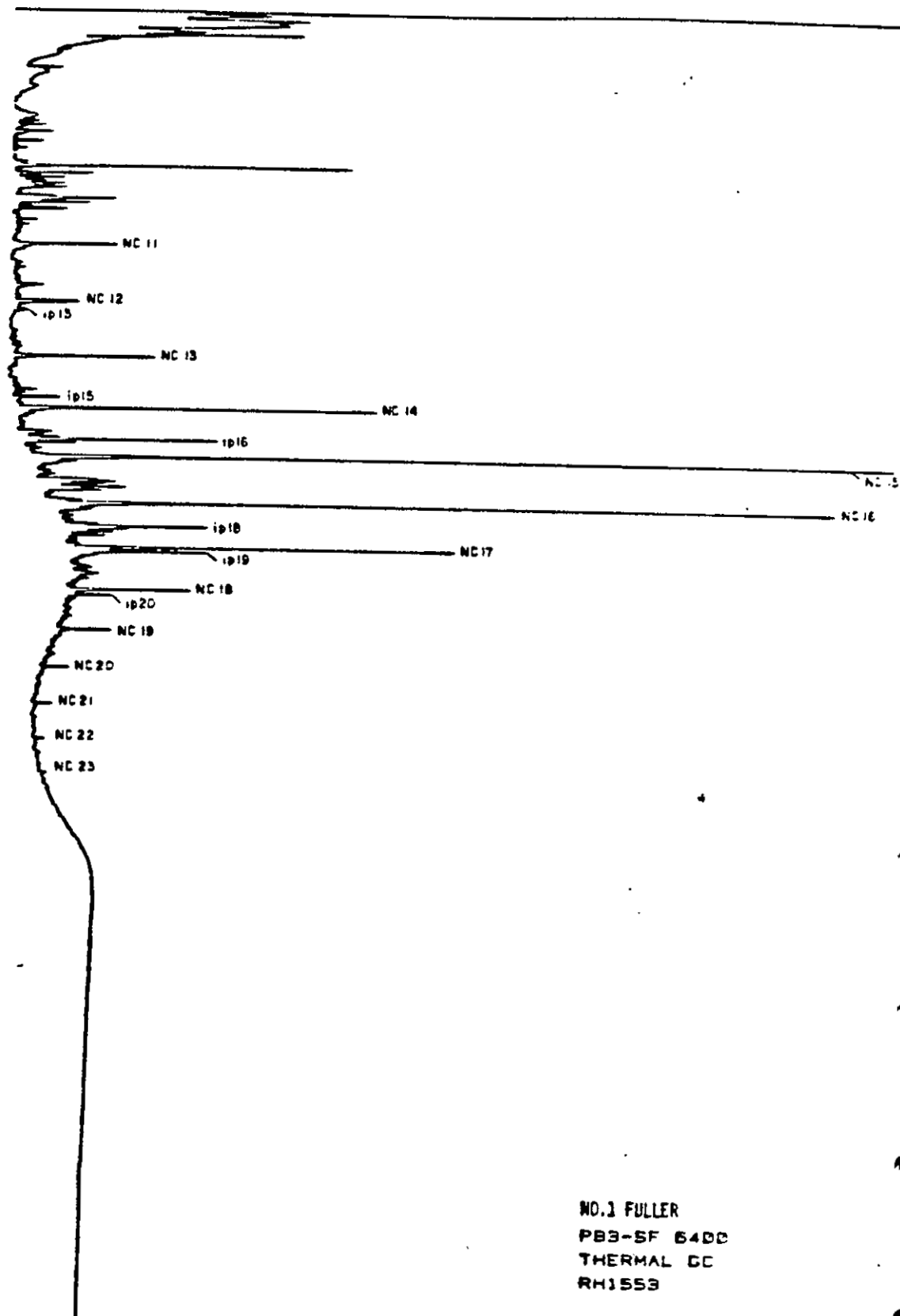
NO.1 FULLER
PB3-SF 6000
THERMAL GC
RC1552

NON RR(U.S.)DATA



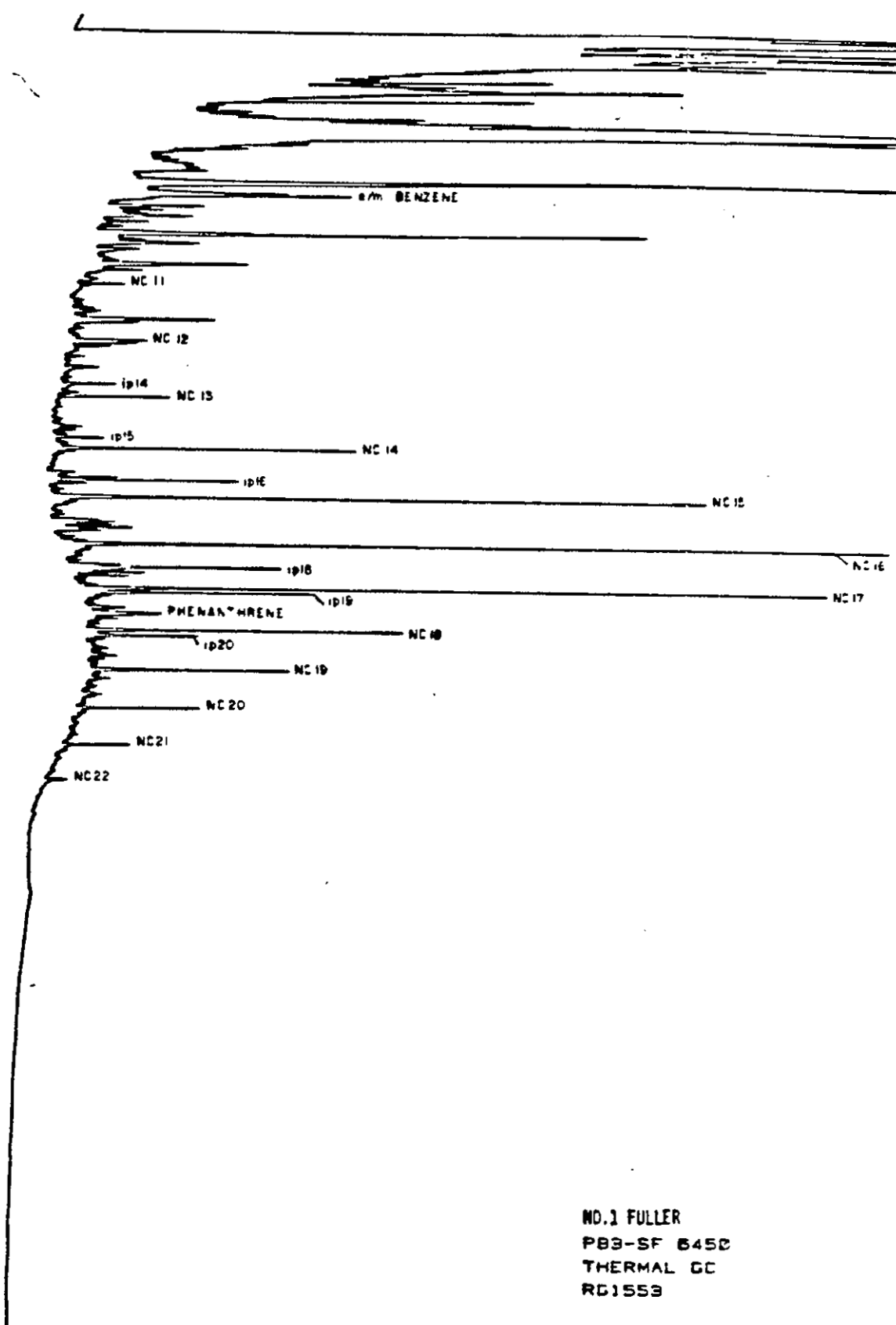
NO.1 FULLER
PB3-SF 6100
THERMAL CC
RH1552

NON RR(U.S.)DATA



NO. 1 FULLER
PB3-SF 6400
THERMAL GC
RH1553

NON RR(U.S.)DATA



ip11 BENZENE

ip12

ip14

ip15

ip16

ip18

ip19

ip20

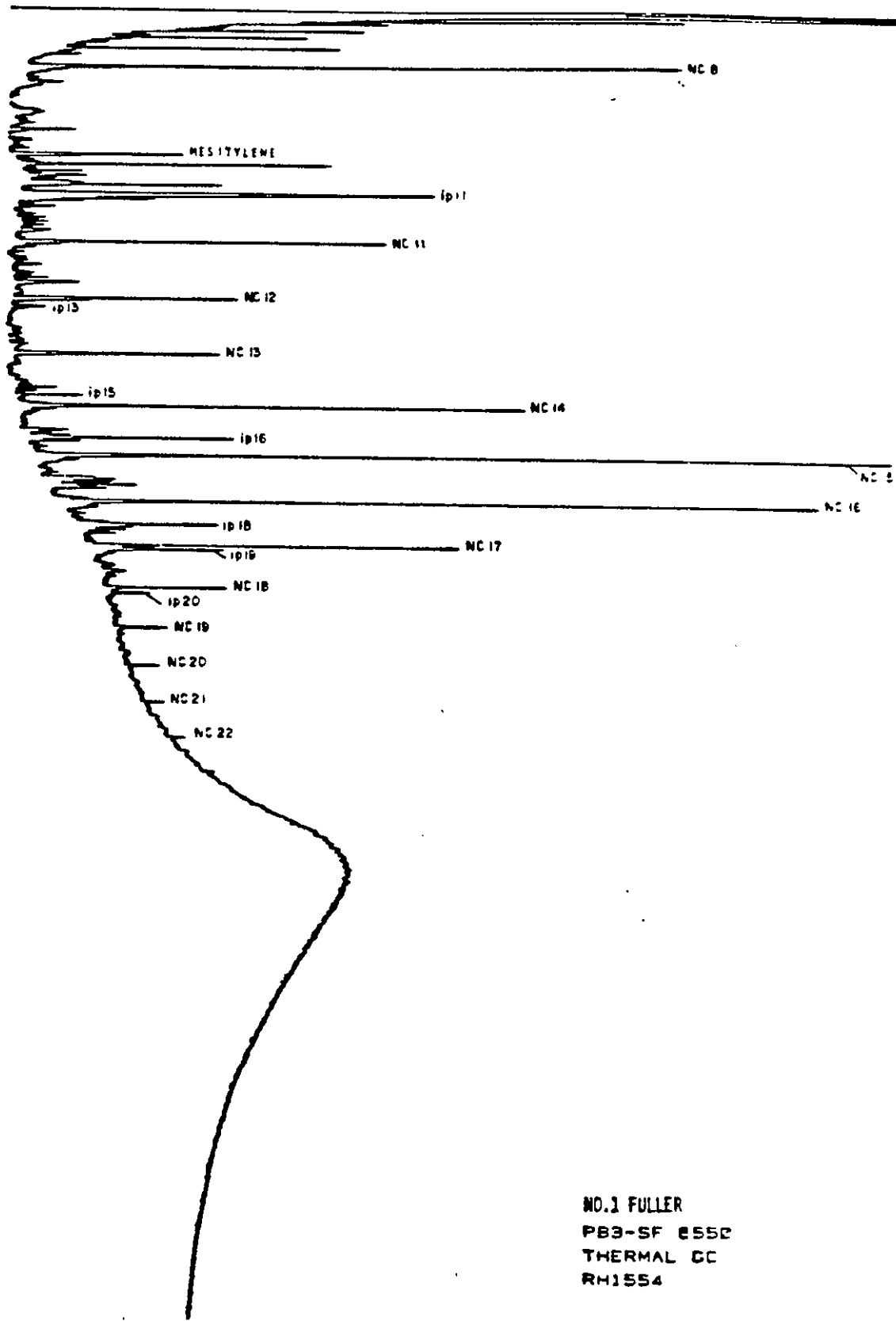
ip21

ip22

ip22

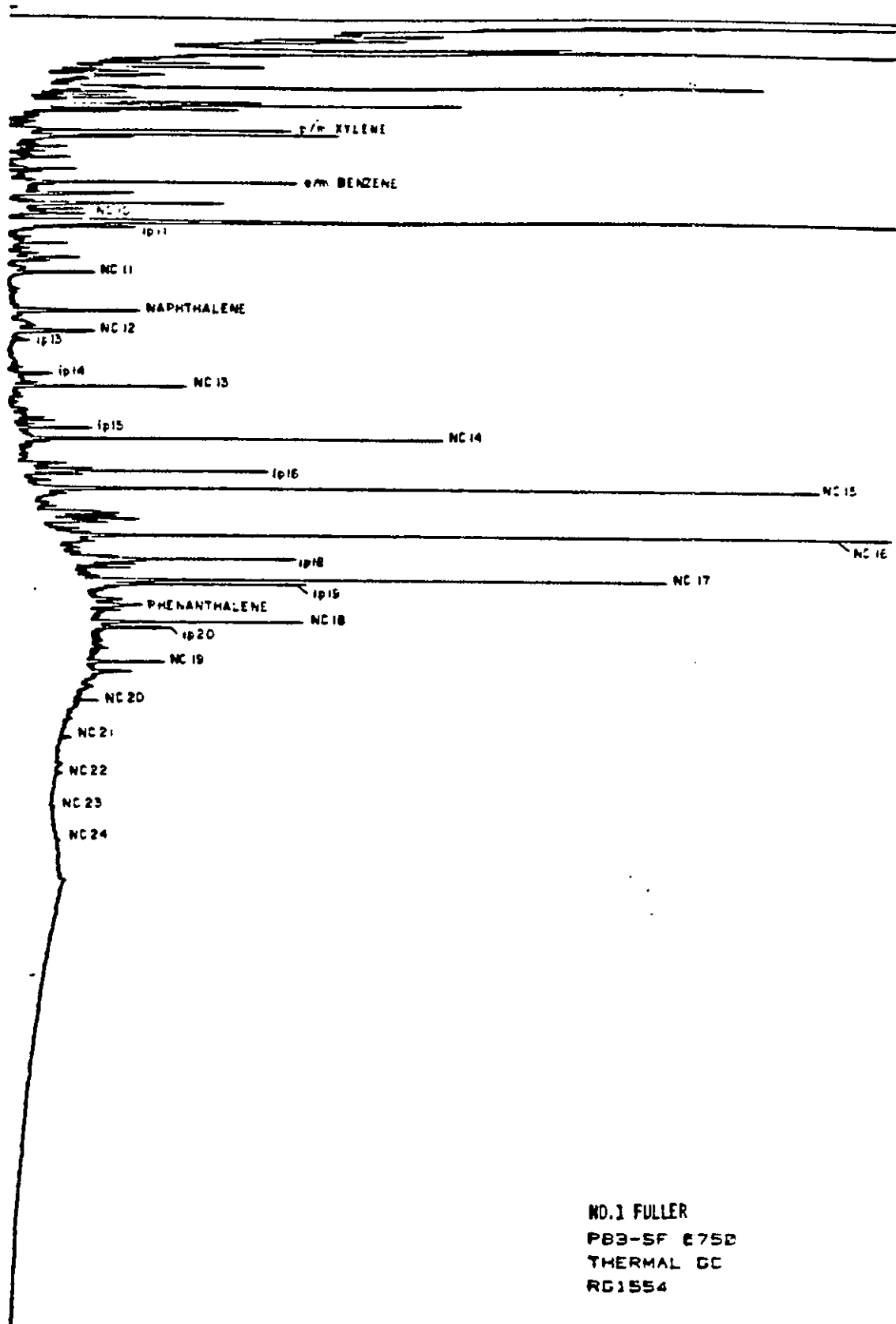
NO.1 FULLER
PB3-SF 6450
THERMAL GC
RC1553

NON RR(U.S.)DATA



NO.1 FULLER
PB3-SF 2552
THERMAL GC
RM1554

NON RR(U.S.)DATA



NO.1 FULLER
PB3-SF 0750
THERMAL GC
RG1554

NON RR(U.S.)DATA

GREEN ESTATE, #1 FRANKLIN, ASTON, AND FAIR



TABLE A.43

LITHOLOGIC DESCRIPTION

FRANKLIN ASTON & FAIR
#1 GREEN ESTATE

400- 500'	Mudstone, reddish brown
520- 650'	Mudstone, reddish brown
	Mudstone, greenish-gray (abundant in places)
670-2,600'	Mudstone, reddish brown (some green)
	Lst. clasts (abundant in places)
	Anhydrite
2,620-2,750'	Mudstone, lt. green (some reddish brown)
	Some dolomite
2,700-2,930'	Siltstone, lt.
2,960-3,030'	(Sand sized) mudstone, reddish brown-gray
3,050-3,300'	Mudstone, reddish brown
3,320-3,360'	?(Sand sized) mudstone, reddish brown-gray
3,380-3,390'	Mudstone, reddish brown (greenish gray)
	Anhydrite
3,410-3,840'	?(Sand sized particles) mudstone, reddish brown-gray
3,860-3,960'	Halite, lt. pink
3,980-4,050'	?(Sand sized particles) mudstone, reddish brown-gray
4,070-4,170'	Mudstone, green-gray
4,190-4,260'	Mudstone, reddish brown
4,280-4,320'	Halite, lt. pink
4,340-4,530'	Mudstone, reddish brown
	Mudstone, green
4,550-4,660'	Halite, lt. pink
4,680-4,720'	Mudstone, reddish brown
	Mudstone, green
	Anhydrite
4,740-4,810'	Halite, lt. pink
4,830-5,410'	Mudstone, reddish brown
	Mudstone, green
	Anhydrite
5,440-6,200'	Mudstone, reddish brown
	Mudstone (some green, some purple)
	Anhydrite
6,220-8,160'	Mudstone, dark brown
	Lst., dark
	Black shale, abundant in places
	Some anhydrite
	Traces of feldspar (granite wash)

TABLE A.44

TOTAL ORGANIC CARBON DATA
 GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
1501	405	: 400- 410	: 0.11	1515	5390	: 5370- 5410	: 0.08
1502	525	: 520- 530	: 0.14	1516	6015	: 6010- 6020	: 0.06
1503	1005	: 1000- 1010	: 0.06	1517	6530	: 6510- 6550	: 0.06
1504	1395	: 1390- 1400	: 0.05	1518	6980	: 6960- 7000	: 0.03
1505	1725	: 1720- 1730	: 0.03	1519	7090	: 7070- 7110	: 0.10
1506	2145	: 2140- 2150	: 0.02	1520	7300	: 7280- 7320	: 0.04
1507	2700	: 2680- 2720	: 0.26	1521	7405	: 7370- 7440	: 0.05
1508	2965	: 2960- 2970	: 0.08	1522	7615	: 7580- 7650	: 0.04
1509	3250	: 3230- 3270	: 0.27	1523	7705	: 7670- 7740	: 0.42
1510	3430	: 3410- 3450	: 0.17	1524	7795	: 7760- 7830	: 0.25
1511	3655	: 3620- 3690	: 0.14	1525	7885	: 7850- 7920	: 0.45
1512	4000	: 3980- 4020	: 0.13	1526	7975	: 7940- 8010	: 0.33
1513	4090	: 4070- 4110	: 0.15	1527	8065	: 8030- 8100	: 0.57
1514	4615	: 4610- 4620	: 0.06	1528	8145	: 8120- 8170	: 0.38

TABLE A.45

ROCK-EVAL PYROLYSIS RAW DATA
GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1507	2700	: 2680- 2720	0.130	0.880	1.160	0.759	0.129	---
1509	3250	: 3230- 3270	0.240	1.640	1.050	1.562	0.128	425
1523	7705	: 7670- 7740	0.010	0.170	0.250	0.680	0.056	443
1525	7885	: 7850- 7920	0.010	0.160	0.290	0.552	0.059	468
1527	8065	: 8030- 8100	0.020	0.240	0.290	0.828	0.077	453
1528	8145	: 8120- 8170	0.030	0.160	0.510	0.314	0.158	458

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.46

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA
GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
1507	2700	: 2680- 2720	338	446	0.26
1509	3250	: 3230- 3270	607	389	0.27
1523	7705	: 7670- 7740	40	60	0.42
1525	7885	: 7850- 7920	36	64	0.45
1527	8065	: 8030- 8100	42	51	0.57
1528	8145	: 8120- 8170	42	134	0.38

TABLE A.47

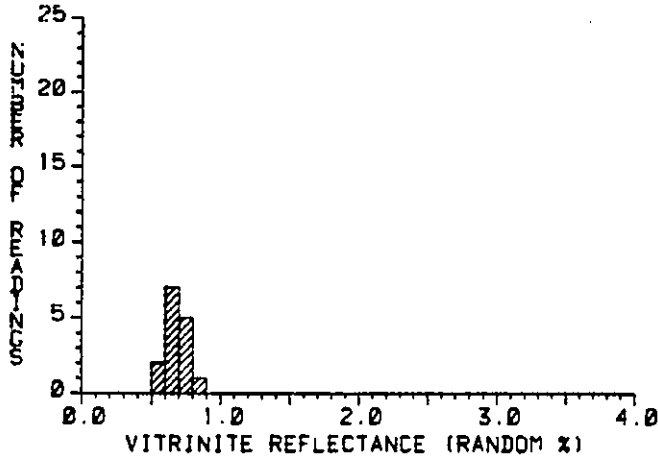
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

Project No : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS						TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%	
1507	2700	: 2680- 2720	0.69	20	0	10	70	Med	0.26	
1509	3250	: 3230- 3270	----	95	0	5	tr	Med	0.27	
1525	7885	: 7850- 7920	1.05	10	0	50	40	None	0.45	
1527	8065	: 8030- 8100	1.09	20	0	50	30	None	0.57	
1528	8145	: 8120- 8170	1.12	35	tr	40	25	None	0.38	

GREEN ESTATE #1, FRANKLIN, A. & F.



RRUS No. : 1537
 ID : CTGS.
 DEPTH : 2700.0 F;
 : 823.0 M

* = Ro. MATURITY

• VALUES : 15

MEAN : 0.69
 STD DEV : 0.07
 MEDIAN : 0.69
 MODE : 0.65

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

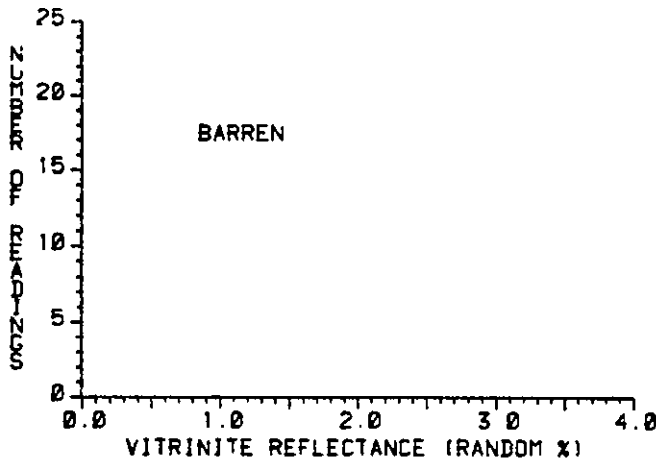
ORDERED REFLECTANCE VALUES.

*0.58 *0.74
 *0.59 *0.75
 *0.60 *0.77
 *0.64 *0.77
 *0.64 *0.84
 *0.67
 *0.68
 *0.69
 *0.69
 *0.70

KEROGEN DESCRIPTION

Amorphous : 20 %
 Exinite : 0 %
 Vitrinite : 10 %
 Inertinite : 70 %
 Back Fluor : Med
 Bitumen : 1r
 Coke : 1r

GREEN ESTATE #1, FRANKLIN, A. & F.



RRUS No. : 1539
 ID : CTGS.
 DEPTH : 3250.0 F;
 : 990.6 M

MEAN : N.D.

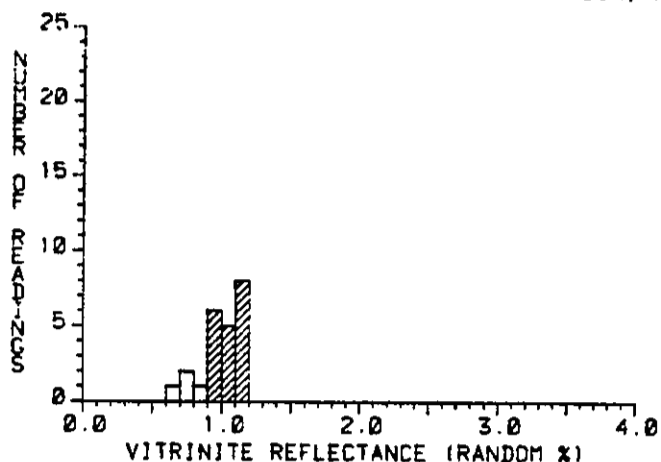
HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 95 %
 Exinite : 0 %
 Vitrinite : 5 %
 Inertinite : 1r %
 Back Fluor : Med
 Bitumen : None
 Coke : None

GREEN ESTATE #1, FRANKLIN, A, & F.



RRUS No. : 1525
 ID : CTCS.
 DEPTH : 7885.0 F1
 : 2403.3 M

* = Ro MATURITY
 # VALUES : 10
 MEAN : 1.05
 STD DEV : 0.08
 MEDIAN : 1.06
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

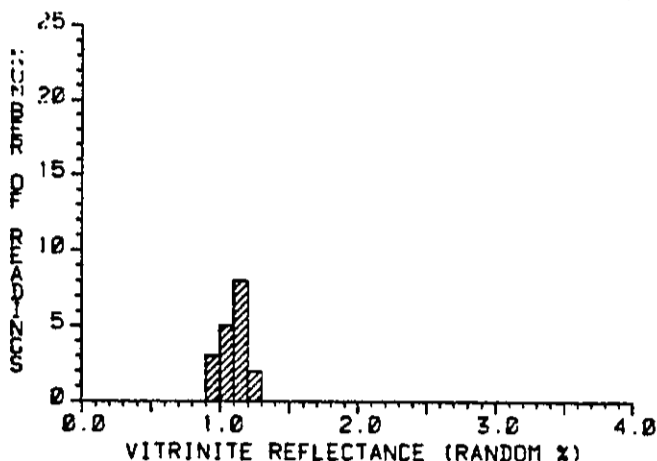
ORDERED REFLECTANCE VALUES:

0.64 *1.00 *1.12
 0.70 *1.03 *1.15
 0.75 *1.03 *1.17
 0.82 *1.06
 *0.92 *1.07
 *0.92 *1.10
 *0.95 *1.11
 *0.97 *1.12
 *0.98 *1.12
 *0.99 *1.12

KEROGEN DESCRIPTION

Amorphous : 10 %
 Exinite : 0 %
 Vitrinite : 50 %
 Inertinite : 40 %
 Back Fluor : None
 Bitumen : None
 Coke : None

GREEN ESTATE #1, FRANKLIN, A, & F.



RRUS No. : 1527
 ID : CTCS.
 DEPTH : 8065.0 F1
 : 2458.2 M

* = Ro MATURITY
 # VALUES : 18
 MEAN : 1.09
 STD DEV : 0.10
 MEDIAN : 1.10
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

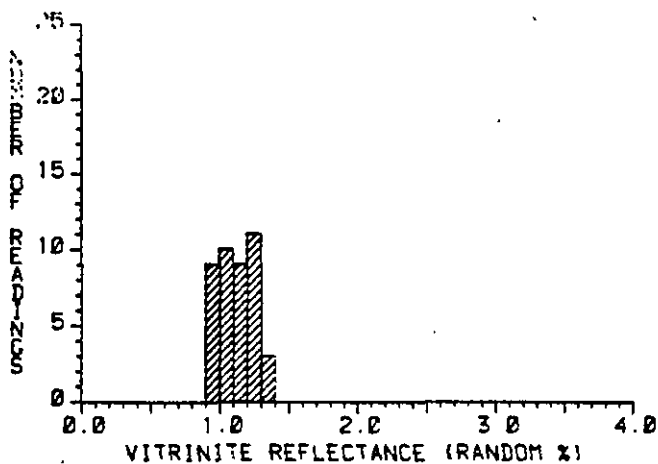
ORDERED REFLECTANCE VALUES:

*0.93 *1.10
 *0.94 *1.11
 *0.96 *1.11
 *1.00 *1.18
 *1.01 *1.19
 *1.03 *1.19
 *1.03 *1.20
 *1.08 *1.28
 *1.10
 *1.10

KEROGEN DESCRIPTION

Amorphous : 20 %
 Exinite : 0 %
 Vitrinite : 50 %
 Inertinite : 30 %
 Back Fluor : None
 Bitumen : Small
 Coke : 1%

GREEN ESTATE #1, FRANKLIN, A, & F.



RRUS No. : 1528
ID : CTGS.

DEPTH : 8145.0 Ft
: 2482.6 M

* = Ro MATURITY

VALUES : 42

MEAN : 1.12

STD DEV : 0.12

MEDIAN : 1.11

MODE : 1.25

HISTOGRAM:
Range: 0- 4%
Increment: 0.10%

ORDERED REFLECTANCE VALUES:

*0.92	*1.00	*1.11	*1.23	*1.30
*0.95	*1.00	*1.11	*1.23	*1.34
*0.95	*1.02	*1.13	*1.23	
*0.96	*1.02	*1.13	*1.24	
*0.96	*1.04	*1.15	*1.24	
*0.97	*1.06	*1.18	*1.26	
*0.97	*1.07	*1.18	*1.27	
*0.97	*1.07	*1.18	*1.27	
*0.99	*1.09	*1.20	*1.28	
*1.00	*1.10	*1.21	*1.30	

KEROGEN DESCRIPTION

Amorphous	: 35 %
Exinite	: 1r %
Vitrinite	: 40 %
Inertinite	: 25 %
Beck Fluor	: None
Bitumen	: 1r
Coke	: None

TABLE A.48

COMPOSITION OF SOURCE ROCK EXTRACT
 GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
1509	3250	: 3230- 3270	1449	51.9	18.6	29.5

TABLE A.49

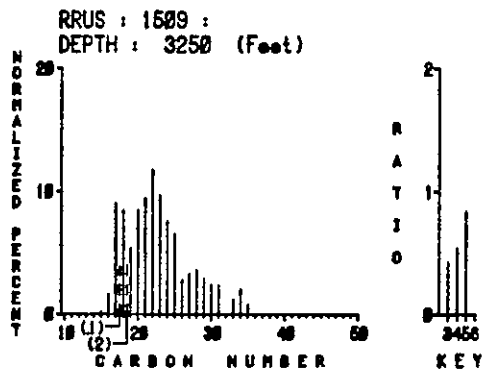
SUMMARY TABLE SHOWING SELECTED PARAMETERS
 OF OIL SAMPLES
 GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr / /C:17	Ph / /C:18	Pr / /Ph	----
1509	3250	: 3230- 3270	0.537	51.9	0.43	0.54	0.85	----

TABLE A.50

HEAVY HYDROCARBONS NORMALIZED TO 100%
 GREEN ESTATE #1, FRANKLIN, ASTON & FAIR
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
1509	3250	: 3230- 3270	0.20	1.60	9.10	8.50	5.40	8.50	9.50
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
1509	3250	: 3230- 3270	11.80	9.70	7.60	6.60	2.80	3.30	3.60
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
1509	3250	: 3230- 3270	2.90	2.40	2.40	0.00	1.20	2.00	0.80
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH
1509	3250	: 3230- 3270	0.00	0.00	0.00	0.00	0.00	3.90	4.60

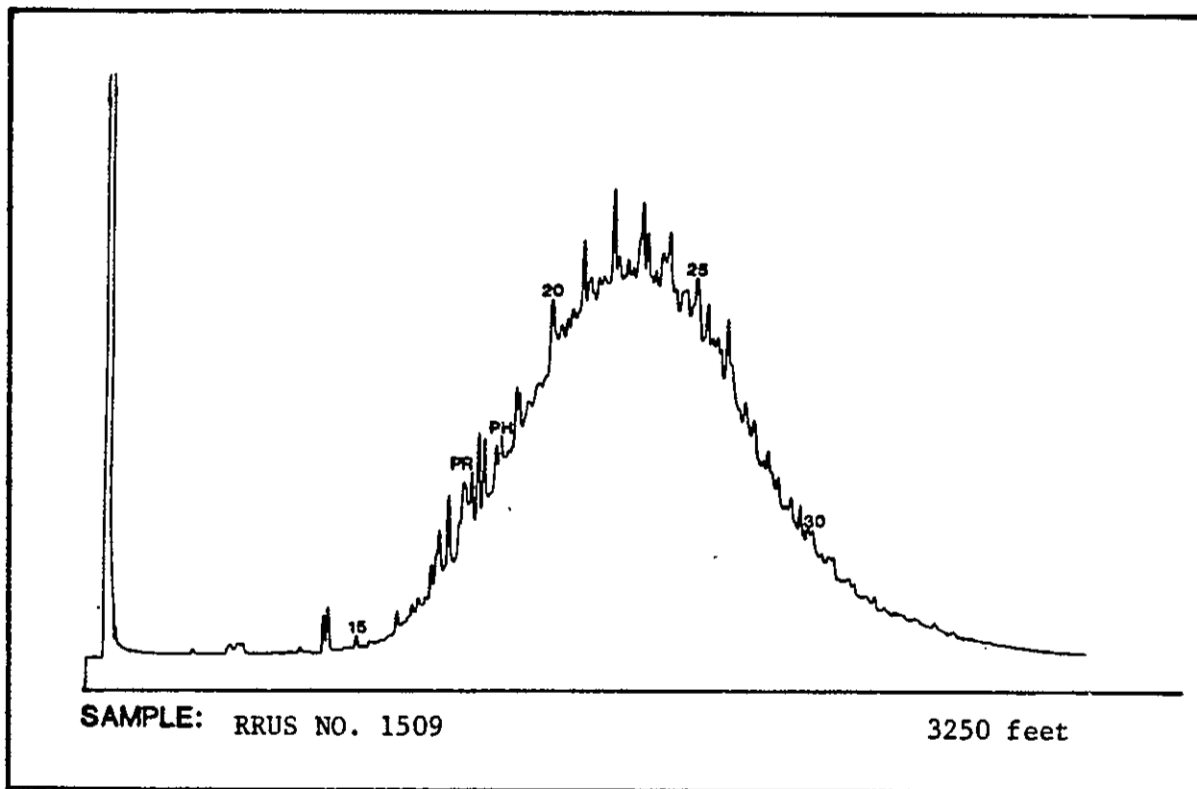


GREEN ESTATE #1, FRANKLIN, ASTON & FAIR

1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

NORMALIZED DISTRIBUTION OF n-ALKANES

NO. 1 GREEN



GAS CHROMATOGRAMS OF C15+ SATURATE HYDROCARBONS

HUSKY, #1 HANCHETT STATE



TABLE A.51

LITHOLOGIC DESCRIPTION

HUSKY OIL

1 HANCHETT STATE

(Sample every 10 feet)

0- 200'	Very red, calcareous sandstone
200- 440'	Red sandstone, contains clasts of calcareous mudstone in part.
440- 500'	Red sandstone, contains large clasts of calcareous mudstone
500- 560'	Red sandstone, clasts of limestone decrease in volume as well as size
560- 680'	Sandstone, fairly clean, cuttings are large indicating possibly well consolidated lithology
680- 780'	Sandstone (may be shale), shale (dark), calcareous clasts. Limestone and sandstone white to buff. Approximate equal percentage of all lithologies
780- 970'	Same as above but sandstone percentage increasing
990-1,090'	Very red, calcareous sandstone
1,090-1,360'	Red sandstone, calcareous percentage increased and clasts become larger towards base of unit
1,360-1,400'	Shale, sandstone, and calcareous clasts, (possibly gypsum)
1,400-1,450'	Shale dark gray (possibly mudstone)
1,450-1,600'	Sandstone, shale and calcareous clasts. Percentage of red material greatly depreciates, shale increases
1,600-1,790'	Shale limestone and sandstone, some red clasts possibly some gypsum.
1,790-2,180'	Sandstone, limestone, shale (mudstone) possibly gypsum, very red (1,960-1,990) percentages of lithologies variable, however on a whole approximately equal.
2,180-2,280'	Sandstone, limestone, shale (mudstone), becoming more red towards base. Sandstone or gypsum at 2,320-2,340'
2,470-3,270'	Red to very red sandstone with limestone clasts. Mudstone (shale) percentage is very low, except large increase in shale 2,860-2,900'
3,270-3,500'	Sandy limestone slight shale increase towards base, also becomes more red towards base
3,500-3,970'	Very red to red sandstone with clasts of limestone and shale (mudstone)
3,970-4,100'	Red sandstone, no large calcareous clasts, however appears to have very fine pieces of shale (mudstone)
4,100-5,050'	Sandstone and dark green to dark gray shale (mudstone), no visible white or buff limestones

LITHOLOGIC DESCRIPTION

HUSKY OIL # 1 HANCHETT STATE (continued)

5,050-7,000'	Shale, green to gray with variable amounts of white to buff limestone or gypsum, no visible red sandstone
7,000-7,320'	Shale, dark green to gray, not fissil, granite and calcareous fragments. Granite greatly increases towards base

TABLE A.52

TOTAL ORGANIC CARBON DATA

HUSKY #1 HANCHETT STATE

Project No. : RRUS/B45/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
1401	500	: 450- 550	: 0.10	1411	6030	: 6000- 6060	: 1.66
1402	1430	: 1410- 1450	: 0.68	1412	6335	: 6310- 6360	: 1.00
1403	1935	: 1910- 1960	: 0.52	1413	6475	: 6450- 6500	: 0.75
1404	2495	: 2470- 2520	: 0.37	1414	6595	: 6580- 6610	: 0.25
1405	3335	: 3310- 3360	: 0.42	1415	6710	: 6680- 6740	: 0.29
1406	4085	: 4050- 4120	: 0.29	1416	6805	: 6770- 6840	: 1.95
1407	4650	: 4600- 4700	: 0.22	1417	6940	: 6920- 6960	: 0.91
1408	5335	: 5310- 5360	: 0.29	1418	7035	: 7010- 7060	: 0.79
1409	5490	: 5470- 5510	: 0.53	1419	7075	: 7060- 7090	: 0.93
1410	5825	: 5800- 5850	: 0.48	1420	7105	: 7090- 7120	: 0.84

TABLE A.53

TOTAL ORGANIC CARBON DATA

HANCHETT STATE (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH (Feet)		TOC%	RRUS	DEPTH (Feet)		TOC%
3203	6100		0.19	3205	6640		0.45
3204	6260		0.22	3206	6750		0.37
3201	6400		0.23	3207	6840		0.39
3202	6550		0.59	3208	7000		0.59

NON RR(US) DATA

TABLE A.54

ROCK-EVAL PYROLYSIS RAW DATA

HUSKY #1 HANCHETT STATE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1402	1430	: 1410- 1450	0.120	1.440	0.640	2.250	0.077	431
1403	1935	: 1910- 1960	0.080	0.530	0.490	1.082	0.131	430
1405	3335	: 3310- 3360	0.010	0.050	0.330	0.152	0.167	---
1409	5490	: 5470- 5510	0.020	0.140	0.270	0.519	0.125	---
1410	5825	: 5800- 5850	0.040	0.160	0.300	0.533	0.200	---
1411	6030	: 6000- 6060	0.030	0.610	0.310	1.968	0.047	460
1412	6335	: 6310- 6360	0.040	0.240	0.290	0.828	0.143	452
1413	6475	: 6450- 6500	0.040	0.240	0.280	0.857	0.143	467
1416	6805	: 6770- 6840	0.130	0.930	0.250	3.720	0.123	452
1417	6940	: 6920- 6960	0.040	0.250	0.290	0.862	0.138	460
1418	7035	: 7010- 7060	0.050	0.240	0.330	0.727	0.172	463
1419	7075	: 7060- 7090	0.050	0.310	0.280	1.107	0.139	456
1420	7105	: 7090- 7120	0.040	0.220	0.290	0.759	0.154	454

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.55

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

HUSKY #1 HANCHETT STATE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO ₂ /gm TOC)	(%)
1402	1430	: 1410- 1450	212	94	0.68
1403	1935	: 1910- 1960	102	94	0.52
1405	3335	: 3310- 3360	12	79	0.42
1409	5490	: 5470- 5510	26	51	0.53
1410	5825	: 5800- 5850	33	62	0.48
1411	6030	: 6000- 6060	37	19	1.66
1412	6335	: 6310- 6360	24	29	1.00
1413	6475	: 6450- 6500	32	37	0.75
1416	6805	: 6770- 6840	48	13	1.95
1417	6940	: 6920- 6960	27	32	0.91
1418	7035	: 7010- 7060	30	42	0.79
1419	7075	: 7060- 7090	33	30	0.93
1420	7105	: 7090- 7120	26	35	0.84

TABLE A.56

ROCK-EVAL PYROLYSIS RAW DATA

HANCHETT STATE (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
3203	6100		0.110	0.030	---	---	0.786	---
3204	6260		0.050	---	---	---	---	---
3201	6400		0.040	---	---	---	---	---
3202	6550		0.070	0.130	---	---	0.350	467
3205	6640		0.040	0.080	---	---	0.333	---
3206	6750		0.040	0.040	---	---	0.500	440
3207	6840		0.050	0.050	---	---	0.500	440
3208	7000		0.090	0.110	---	---	0.450	448

--- REPRESENTS AN UNDETERMINED VALUE

NON RR(US) DATA

TABLE A.57

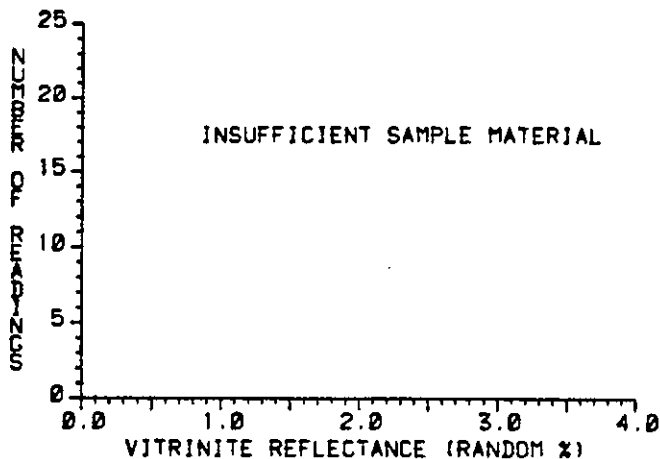
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

HUSKY #1 HANCHETT STATE

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Er%	Vit%	Inert%	Fluor	%
1402	1430	: 1410- 1450	----	0	0	0	0	None	0.68
1403	1935	: 1910- 1960	0.54	50	tr	40	10	None	0.52 <i>Sun</i>
1409	5490	: 5470- 5510	1.04	50	tr	20	30	Low	0.53 <i>Asbestos</i>
1410	5825	: 5800- 5850	1.04	80	0	15	5	None	0.48 <i>Carbon</i>
1411	6030	: 6000- 6060	----	0	0	0	0	None	1.66 <i>Carbon</i>
1412	6335	: 6310- 6360	1.01	30	0	30	40	None	1.00 <i>Carbon</i>
1416	6805	: 6770- 6840	1.00	20	tr	50	30	High	1.95 <i>Strawn</i>
1417	6940	: 6920- 6960	1.04	15	tr	55	30	Low	0.91 <i>Sun</i>
1419	7075	: 7060- 7090	1.03	30	tr	40	30	Med	0.93 <i>Coal</i>
1420	7105	: 7090- 7120	----	0	0	0	0	None	0.84 <i>Coal</i>

HUSKY #1 HANCHETT STATE



RRUS No. : 1402
 ID : CTGS.
 DEPTH : 1430.0 F1
 : 435.9 M
 MEAN : N.D.

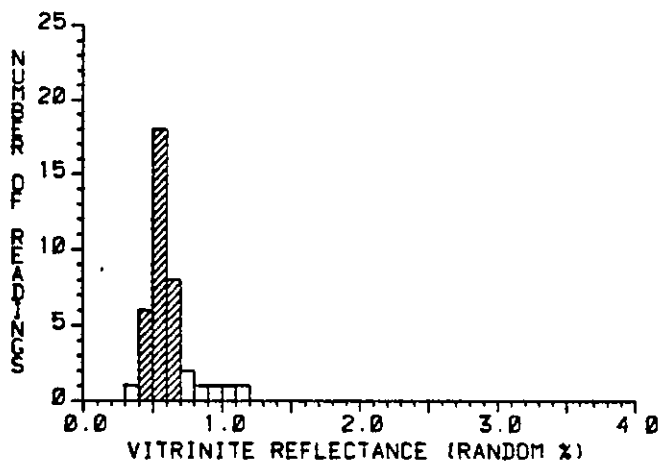
HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %
 Back Fluor : None
 Bitumen : None
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1403
 ID : CTGS.
 DEPTH : 1935.0 F1
 : 589.8 M

* = Ro MATURITY
 # VALUES : 32
 MEAN : 0.54
 STD DEV : 0.06
 MEDIAN : 0.54
 MODE : 0.55

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

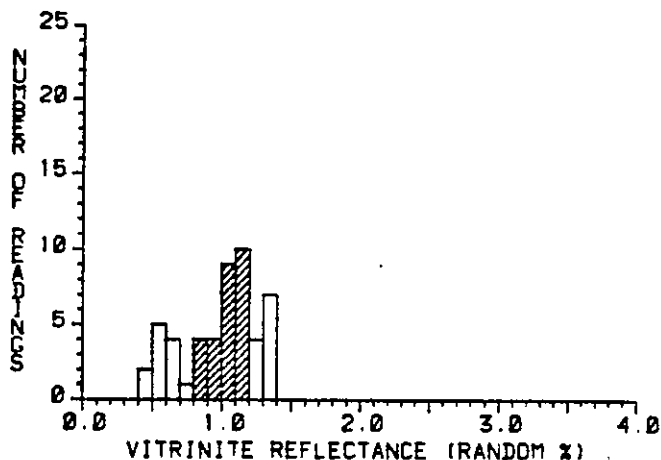
ORDERED REFLECTANCE VALUES

0.36 *0.51 *0.55 *0.64
 *0.44 *0.51 *0.55 *0.65
 *0.45 *0.51 *0.56 *0.66
 *0.48 *0.52 *0.57 0.71
 *0.48 *0.52 *0.58 0.77
 *0.48 *0.52 *0.60 0.84
 *0.49 *0.53 *0.62 0.94
 *0.50 *0.54 *0.62 1.25
 *0.50 *0.54 *0.62 1.16
 *0.51 *0.54 *0.63

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 10 %
 Vitrinite : 40 %
 Inertinite : 10 %
 Back Fluor : None
 Bitumen : Small
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1409
 ID : CTGS.
 DEPTH : 5490.0 Ft
 : 1573.4 M

* = Ro MATURITY

* VALUES : 27

MEAN : 1.04
 STD DEV : 0.11
 MEDIAN : 1.04
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

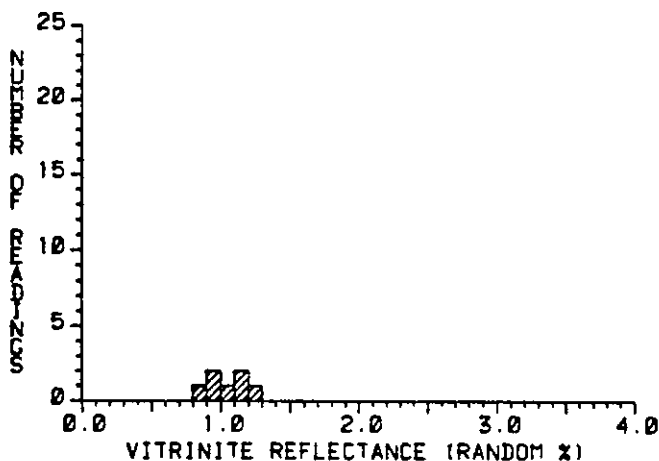
0.45	0.65	*1.00	*1.11	1.25
0.47	0.71	*1.01	*1.13	1.26
0.50	*0.80	*1.03	*1.15	1.26
0.51	*0.84	*1.03	*1.16	1.32
0.51	*0.84	*1.03	*1.17	1.32
0.53	*0.86	*1.04	*1.17	1.33
0.56	*0.93	*1.07	*1.17	1.35
0.60	*0.94	*1.08	*1.17	1.36
0.61	*0.95	*1.09	*1.19	1.38
0.64	*0.99	*1.10	1.22	1.39

KEROGEN DESCRIPTION

Amorphous : 50 %
 Exinite : 1%
 Vitrinite : 20 %
 Inertinite : 30 %

Beck Fluor : Low
 Bitumen : 1%
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1410
 ID : CTGS.
 DEPTH : 5825.0 Ft
 : 1775.5 M

* = Ro MATURITY

* VALUES : 7

MEAN : 1.04
 STD DEV : 0.12
 MEDIAN : 1.00
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

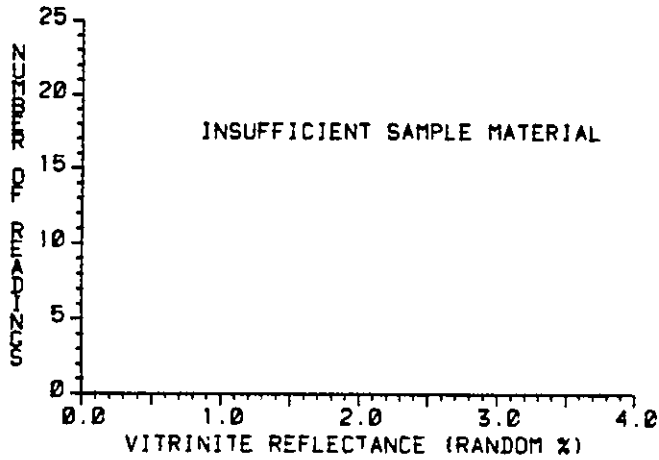
*0.88
 *0.93
 *0.96
 *1.00
 *1.13
 *1.16
 *1.23

KEROGEN DESCRIPTION

Amorphous : 80 %
 Exinite : 0 %
 Vitrinite : 15 %
 Inertinite : 5 %

Beck Fluor : None
 Bitumen : 1%
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1411
 ID : CTGS.
 DEPTH : 6030.0 F1
 : 1837.0 M
 MEAN : N.D.

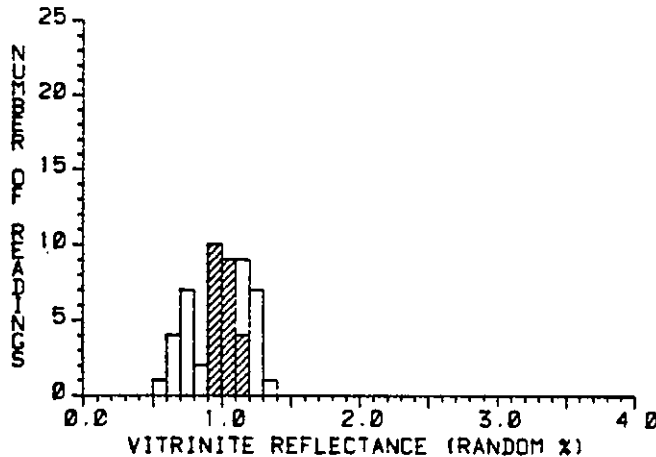
HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %
 Beck Fluor : None
 Bitumen : None
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1412
 ID : CTGS.
 DEPTH : 6335.0 F1
 : 1930.0 M

* = Ro MATURITY

VALUES : 23

MEAN : 1.01
 STD DEV : 0.07
 MEDIAN : 1.00
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

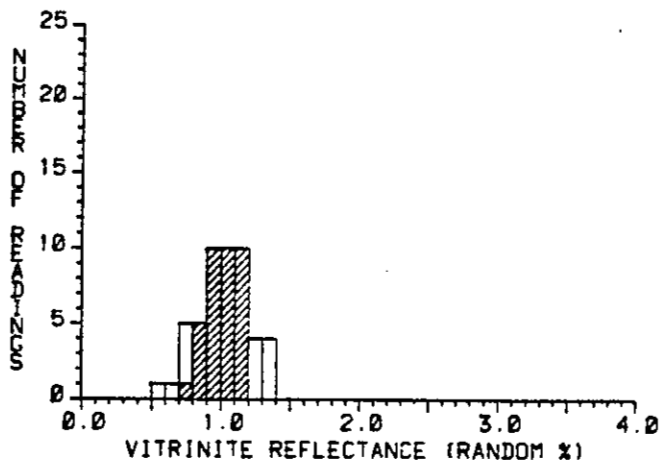
ORDERED REFLECTANCE VALUES:

0.55	0.79	*0.96	*1.04	1.18
0.64	0.79	*0.96	*1.08	1.19
0.68	0.81	*0.99	*1.09	1.20
0.69	0.83	*0.99	*1.10	1.22
0.69	*0.90	*1.00	*1.12	1.24
0.71	*0.91	*1.00	*1.12	1.25
0.72	*0.91	*1.01	*1.12	1.25
0.73	*0.94	*1.02	1.14	1.28
0.73	*0.95	*1.03	1.16	1.28
0.78	*0.95	*1.03	1.17	1.30

KEROGEN DESCRIPTION

Amorphous : 30 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 40 %
 Beck Fluor : None
 Bitumen : 1r
 Coke : 1r

HUSKY #1 HANCHETT STATE



RRUS No. : 1416
 ID : CTGS.
 DEPTH : 6805.0 Ft
 : 2074.2 M

* = Ro MATURITY

VALUES : 36

MEAN : 1.00
 STD DEV : 0.11
 MEDIAN : 1.01
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

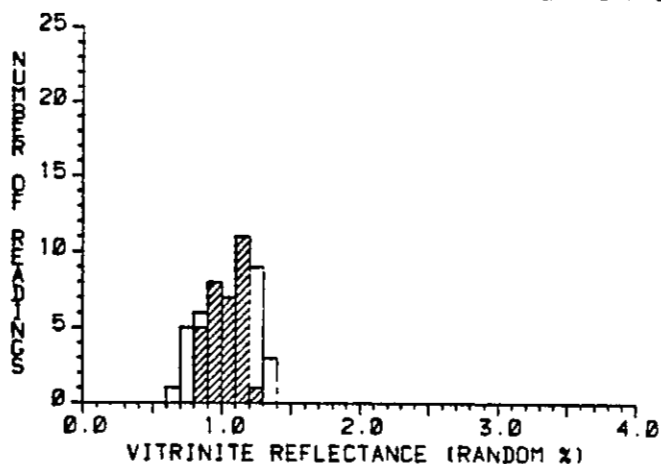
ORDERED REFLECTANCE VALUES.

0.51	*0.84	*0.98	*1.06	*1.17
0.67	*0.85	*0.98	*1.07	*1.18
0.71	*0.90	*1.01	*1.11	1.20
0.73	*0.90	*1.01	*1.11	1.22
0.73	*0.93	*1.01	*1.11	1.28
0.75	*0.94	*1.01	*1.14	1.28
*0.77	*0.94	*1.03	*1.14	1.31
*0.81	*0.94	*1.03	*1.14	1.33
*0.81	*0.95	*1.04	*1.14	1.34
*0.83	*0.97	*1.05	*1.17	1.36

KEROGEN DESCRIPTION

Amorphous : 20 %
 Exinite : 1r %
 Vitrinite : 50 %
 Inertinite : 30 %
 Back Fluor : High
 Bitumen : 1r
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1417
 ID : CTGS.
 DEPTH : 6840.0 Ft
 : 2115.3 M

* = Ro MATURITY

VALUES : 32

MEAN : 1.04
 STD DEV : 0.11
 MEDIAN : 1.06
 MODE : 1.15

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

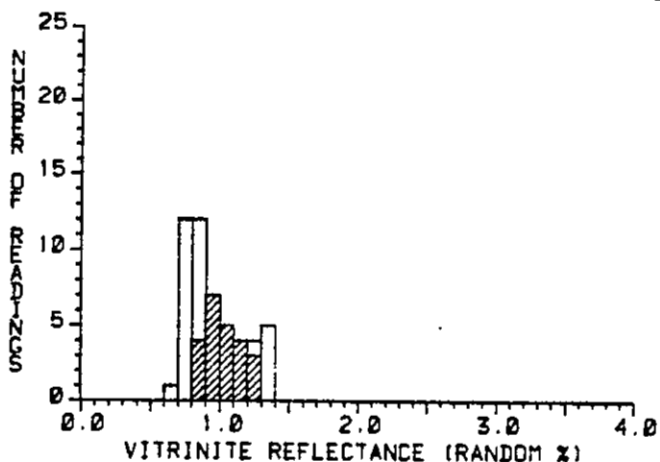
ORDERED REFLECTANCE VALUES.

0.62	*0.87	*1.02	*1.14	1.24
0.71	*0.88	*1.03	*1.16	1.24
0.72	*0.90	*1.04	*1.17	1.24
0.73	*0.91	*1.06	*1.17	1.25
0.78	*0.97	*1.08	*1.18	1.26
0.78	*0.97	*1.08	*1.19	1.26
0.81	*0.97	*1.09	*1.19	1.29
*0.84	*0.98	*1.10	*1.19	1.30
*0.85	*0.99	*1.11	*1.20	1.32
*0.87	*0.99	*1.13	*1.23	1.35

KEROGEN DESCRIPTION

Amorphous : 15 %
 Exinite : 1r %
 Vitrinite : 55 %
 Inertinite : 30 %
 Back Fluor : Low
 Bitumen : Small
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No : 1419
 ID : CTGS.
 DEPTH : 7075.0 Ft
 : 2156.5 M

* = Ro MATURITY

* VALUES : 23

MEAN : 1.03
 STD DEV : 0.12
 MEDIAN : 1.02
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

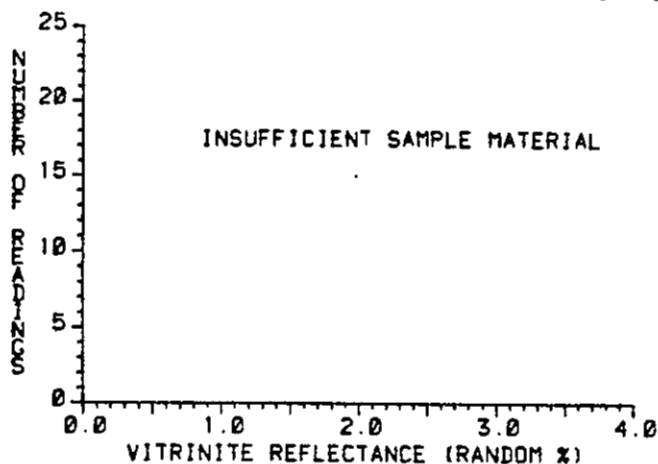
0.67	0.78	0.84	*0.97	*1.16
0.70	0.78	*0.87	*0.88	*1.25
0.71	0.79	*0.89	*1.02	*1.26
0.72	0.80	*0.89	*1.02	*1.26
0.74	0.80	*0.89	*1.05	1.29
0.76	0.81	*0.90	*1.07	1.30
0.77	0.82	*0.93	*1.07	1.31
0.77	0.83	*0.94	*1.10	1.31
0.77	0.83	*0.94	*1.11	1.33
0.78	0.83	*0.95	*1.14	1.38

KEROGEN DESCRIPTION

Amorphous : 30 %
 Exinite : 1r %
 Vitrinite : 40 %
 Inertinite : 30 %

Back Fluor : Med
 Bitumen : Small
 Coke : None

HUSKY #1 HANCHETT STATE



RRUS No. : 1420
 ID : CTGS.
 DEPTH : 7105.0 Ft
 : 2165.6 M

MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

TABLE A.58

VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

HANCHETT STATE (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
3203	6100		----	0	0	0	0	None	0.19
3204	6260		1.05	0	0	0	0	None	0.22
3201	6400		0.97	0	0	0	0	None	0.23
3202	6550		0.92	0	0	0	0	None	0.59
3205	6640		0.96	0	0	0	0	None	0.45
3206	6750		0.96	0	0	0	0	None	0.37
3207	6840		0.99	0	0	0	0	None	0.39
3208	7000		0.98	0	0	0	0	None	0.59

NON RR(US) DATA

VITRINITE REFLECTANCE DATA SUMMARY

Hanchett State

J. L. Martinez

NON RR(U.S.)DATA

SAMPLE	POINTS READ	COMMENTS
6100	15	Insufficient amount of identifiable organic material for a valid R_0 mean.
6260	64	Organic material appears to be weathered. Very small amounts of oxidized matter.
6400	60	Material appears to be unconsolidated with mixed populations.
6550	83	Light-brown gritty matter (may be sand). Organic debris is present. Organic material appears to be weathered.
6640	71	Loss of some less-mature organic material that was in previous sample has raised R_0 mean slightly.
6750	93	Slight shift in R_0 mean due to loss of more-mature organic material.
6840	89	Continued shift to less-mature organic material. Organic debris is present in sample.

TABLE A.59

VITRINITE REFLECTANCE DATA SUMMARY

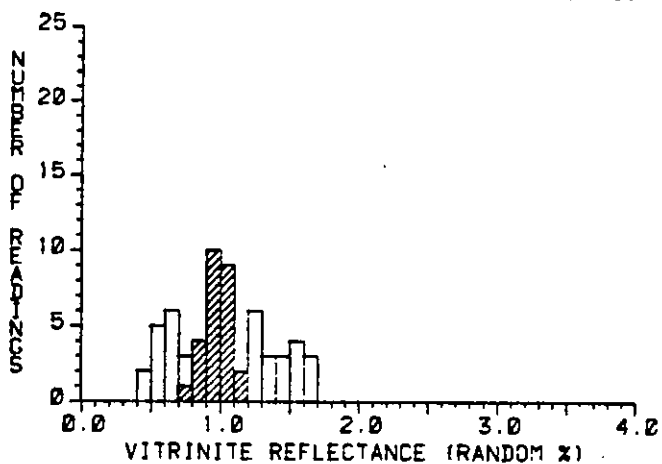
Hanchett State

J. L. Martinez

NON RR(U.S.)DATA

SAMPLE	POINTS READ	COMMENTS
7000	56	Possible change in deposition and/or environment. Majority of material is less-mature than in previous samples. This material may be cave or contamination.

#1 HANCHETT STATE (SUN)

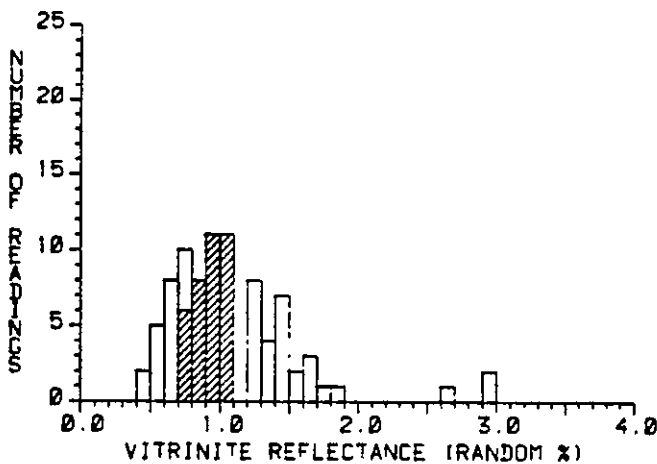


RRUS No. : 3201
 ID : CTGS.
 DEPTH : 6400.0 F1
 : 1050.7 M

* = Ro MATURITY
 # VALUES : 26
 MEAN : 0.97
 STD DEV : 0.09
 MEDIAN : 0.99
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

#1 HANCHETT STATE (SUN)

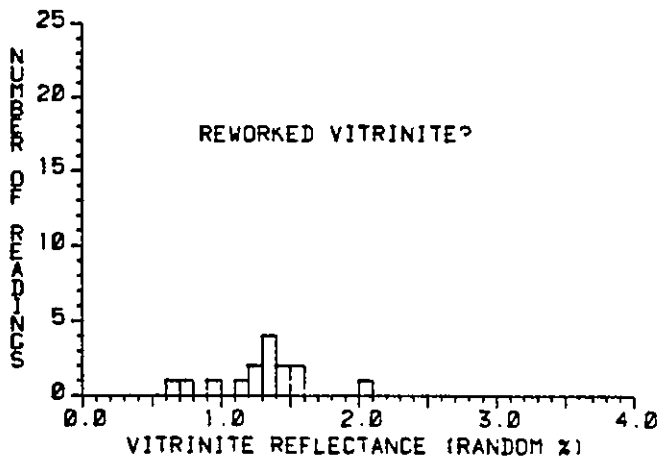


RRUS No. : 3202
 ID : CTGS.
 DEPTH : 6550.0 F1
 : 1096.4 M

* = Ro MATURITY
 # VALUES : 36
 MEAN : 0.92
 STD DEV : 0.10
 MEDIAN : 0.94
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

#1 HANCHETT STATE (SUN)



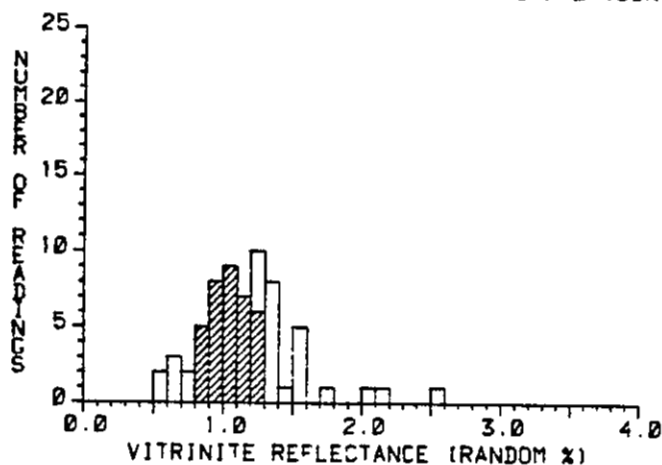
RRUS No. : 3203
 ID : CTGS.
 DEPTH : 6100.0 F1
 : 1859.3 M

MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

#1 HANCHETT STATE (SUN)



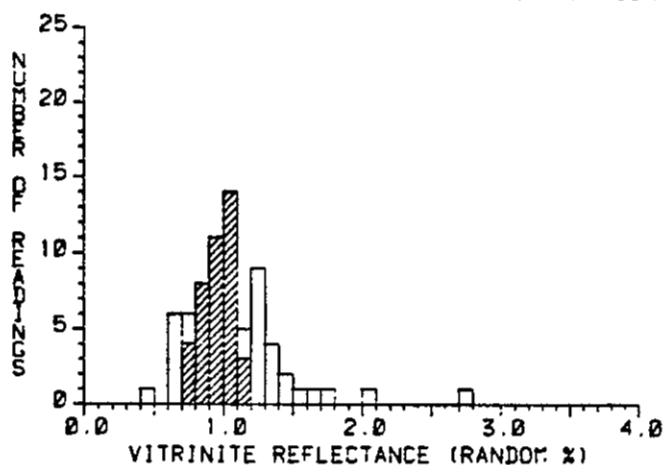
RRUS No. : 3204
 ID : CTGS.
 DEPTH : 6261.0 F1
 : 1208.4 M

* = Ro MATURITY

VALUES : 35
 MEAN : 1.05
 STD DEV : 0.12
 MEDIAN : 1.05
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

#1 HANCHETT STATE (SUN)



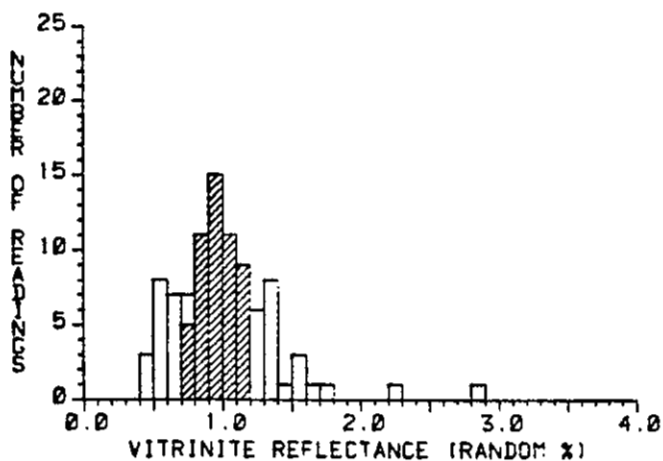
RRUS No. : 3205
 ID : CTGS.
 DEPTH : 6640.0 F1
 : 2023.0 M

* = Ro MATURITY

VALUES : 40
 MEAN : 0.96
 STD DEV : 0.12
 MEDIAN : 0.97
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

#1 HANCHETT STATE (SUN)



RRUS No. : 3206
 ID : CTGS.
 DEPTH : 6750.0 F1
 : 2057.4 M

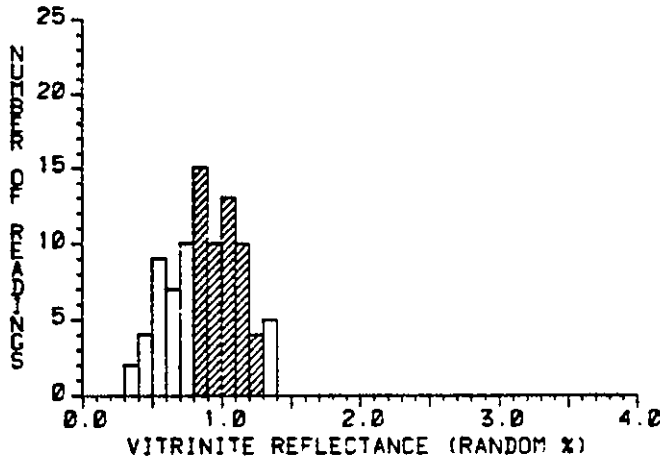
* = Ro MATURITY

VALUES : 51
 MEAN : 0.96
 STD DEV : 0.12
 MEDIAN : 0.95
 MODE : 0.95

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

#1 HANCHETT STATE (SUN)

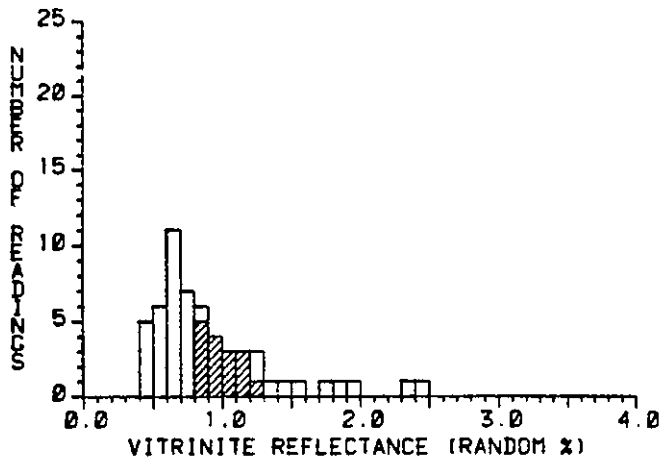


RRUS No. : 3207
 ID : CTGS.
 DEPTH : 68'0.0 F1
 : 20R4.8 M

* = Ro MATURITY
 * VALUES : 52
 MEAN : 0.99
 STD DEV : 0.13
 MEDIAN : 1.02
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

#1 HANCHETT STATE (SUN)



RRUS No. : 3208
 ID : CTGS.
 DEPTH : 70'0.0 F1
 : 2136.6 M

* = Ro MATURITY
 * VALUES : 16
 MEAN : 0.98
 STD DEV : 0.14
 MEDIAN : 0.96
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

NON RR(US) DATA

HANCHETT STATE

VISUAL KEROGEN DATA SUMMARY

P. Burbridge

NON RR(U.S.)DATA

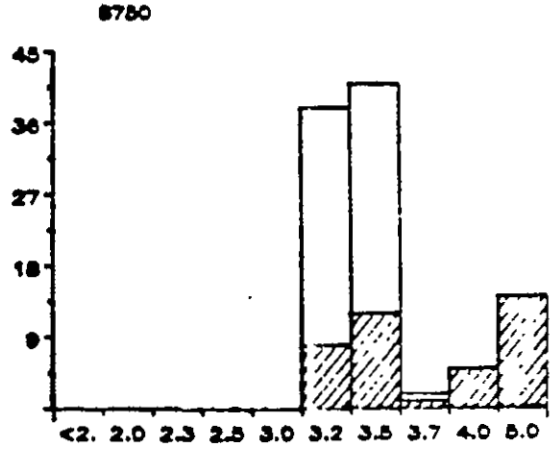
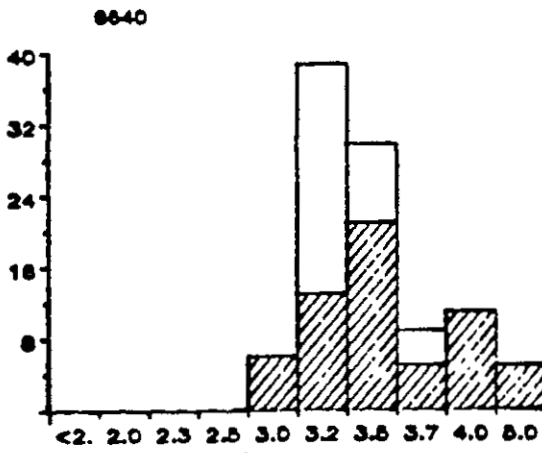
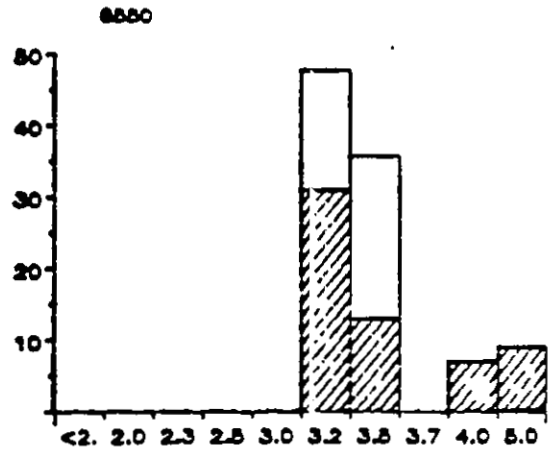
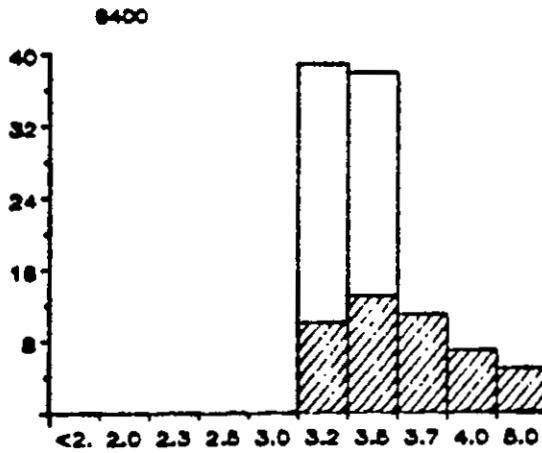
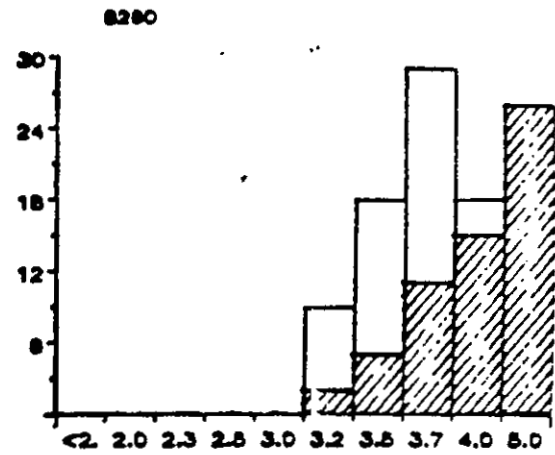
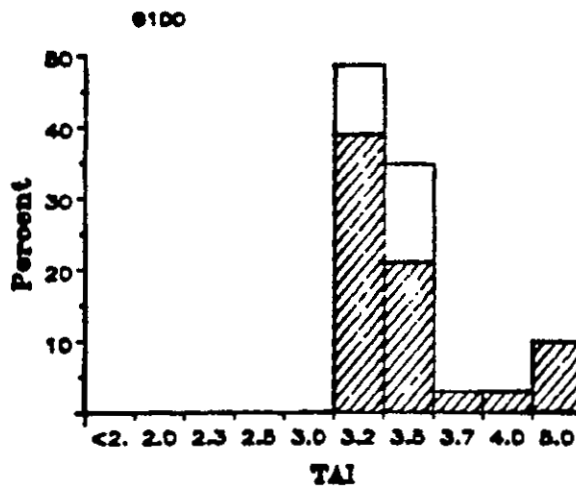
Sample	Depositional Environment*	Pyrite Content**	Organic Matter Abundance **	Type of Organic Matter	Structural Type (%)	THERMAL ALTERATION INDEX (TAI)										Modal TAI
						—————Thermal Maturation Increases—————>										
						<2.0	2.0	2.3	2.5	3.0	3.2	3.5	3.7	4.0	5.0	
6100	T	M	M	Structured	76	-	-	-	-	-	39	21	3	3	10	3.2
				Nonstructured	24	-	-	-	-	-	10	14	-	-	-	3.2-3.5
6260	T	P	T	Structured	59	-	-	-	-	-	2	5	11	15	26	3.7+5.0
				Nonstructured	41	-	-	-	-	-	7	13	18	3	-	3.5-3.7
6400	T	P	S	Structured	46	-	-	-	-	-	10	13	11	7	5	3.2-3.7
				Nonstructured	54	-	-	-	-	-	29	25	-	-	-	3.2-3.5
6550	T	P	M	Structured	60	-	-	-	-	-	31	13	-	7	9	3.2
				Nonstructured	40	-	-	-	-	-	17	23	-	-	-	3.2-3.5
6640	T	P	T	Structured	61	-	-	-	-	6	13	21	5	11	5	3.5
				Nonstructured	39	-	-	-	-	-	26	9	4	-	-	3.2
6750	T	T	T	Structured	40	-	-	-	-	-	8	12	1	5	14	3.5
				Nonstructured	60	-	-	-	-	-	30	29	1	-	-	3.2-3.5
6840	T	P	S	Structured	37	-	-	-	-	-	23	7	-	2	5	3.2
				Nonstructured	63	-	-	-	-	-	32	31	-	-	-	3.2-3.5
7000	T	P	M	Structured	41	-	-	-	-	-	12	3	-	13	13	3.2
				Nonstructured	59	-	-	-	-	-	50	9	-	-	-	3.2

TABLE A.60

*M-Marine B-Brackish T-Terrestrial **A-Abundant P-Present M-Moderate S-Sufficient F-Trace R-Barren

No.1 HANCHETT STATE

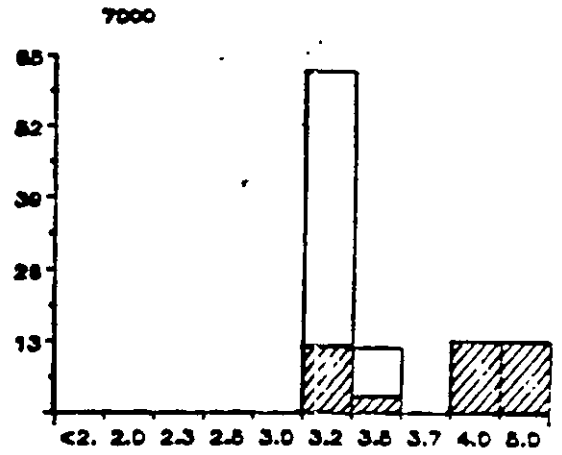
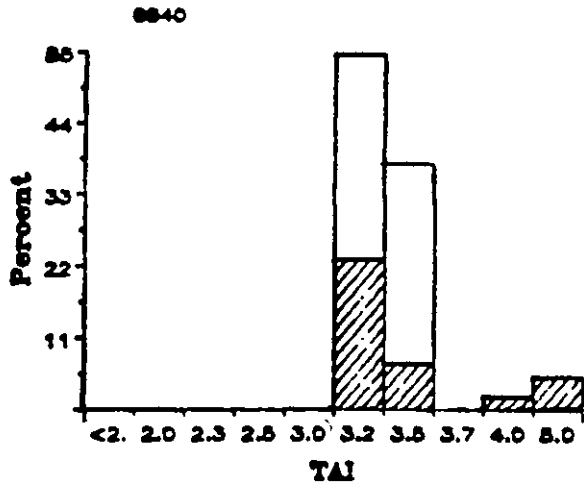
Structured Kerogen Data
 Non-Structured Kerogen Data



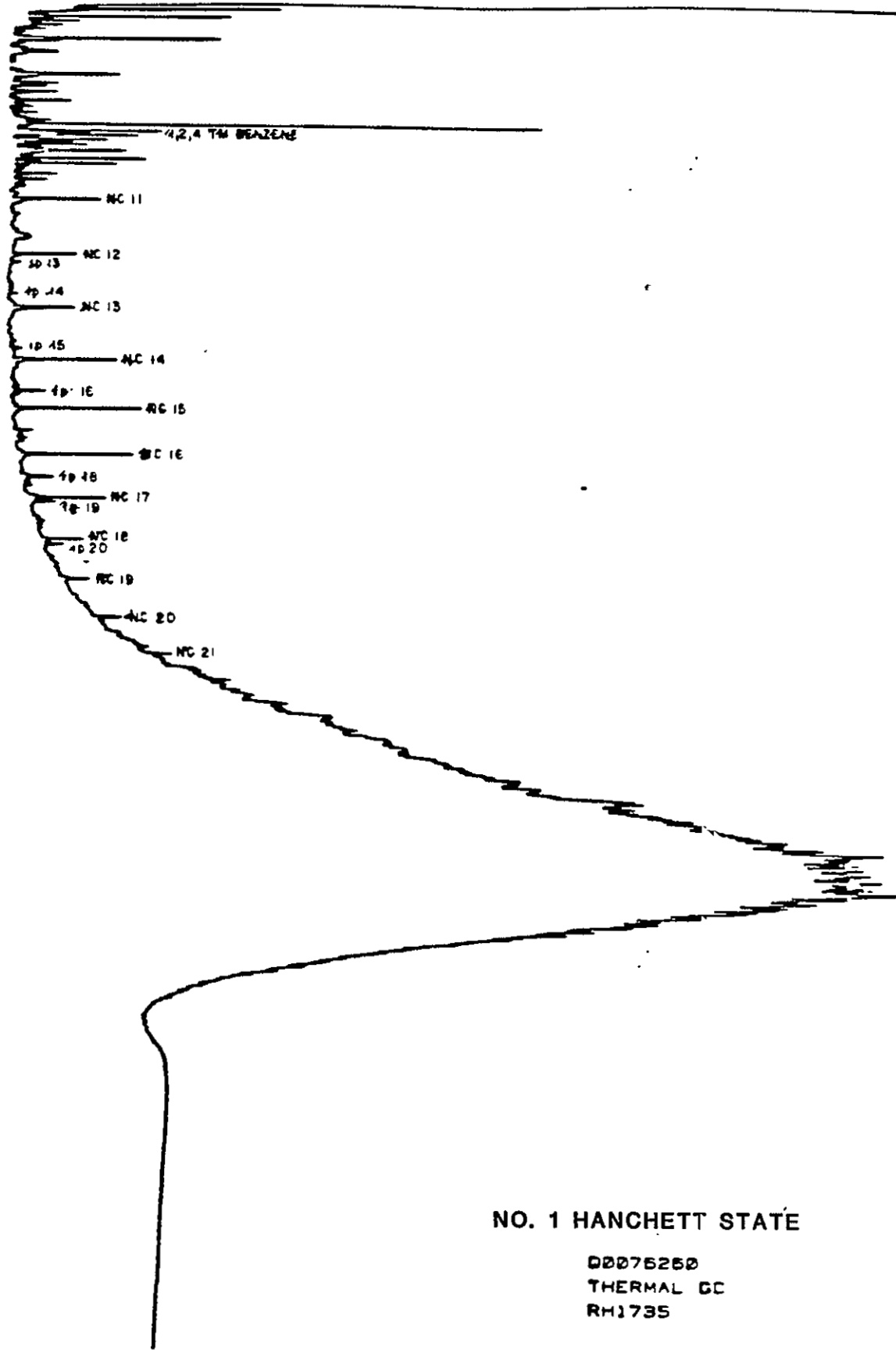
NON RR(U.S.)DATA

No.1 HANCHETT STATE

Structured Kerogen Data
 Non-Structured Kerogen Data



NON RR(U.S.)DATA



4,2,4 TM BENZENE

NC 11

NC 12

NC 13

NC 14

NC 15

NC 16

NC 17

NC 18

NC 19

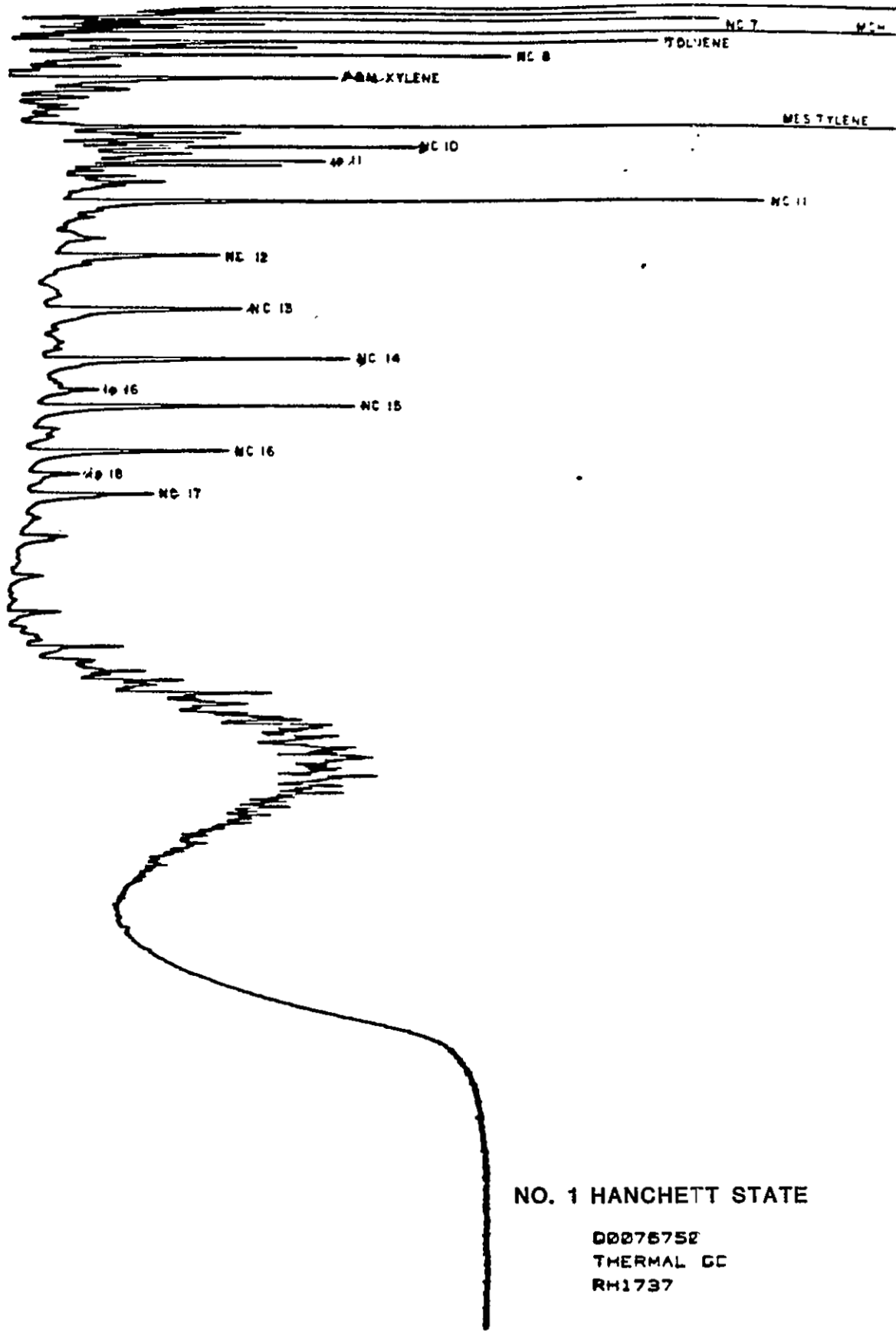
NC 20

NC 21

NO. 1 HANCHETT STATE

00076260
THERMAL GC
RM1735

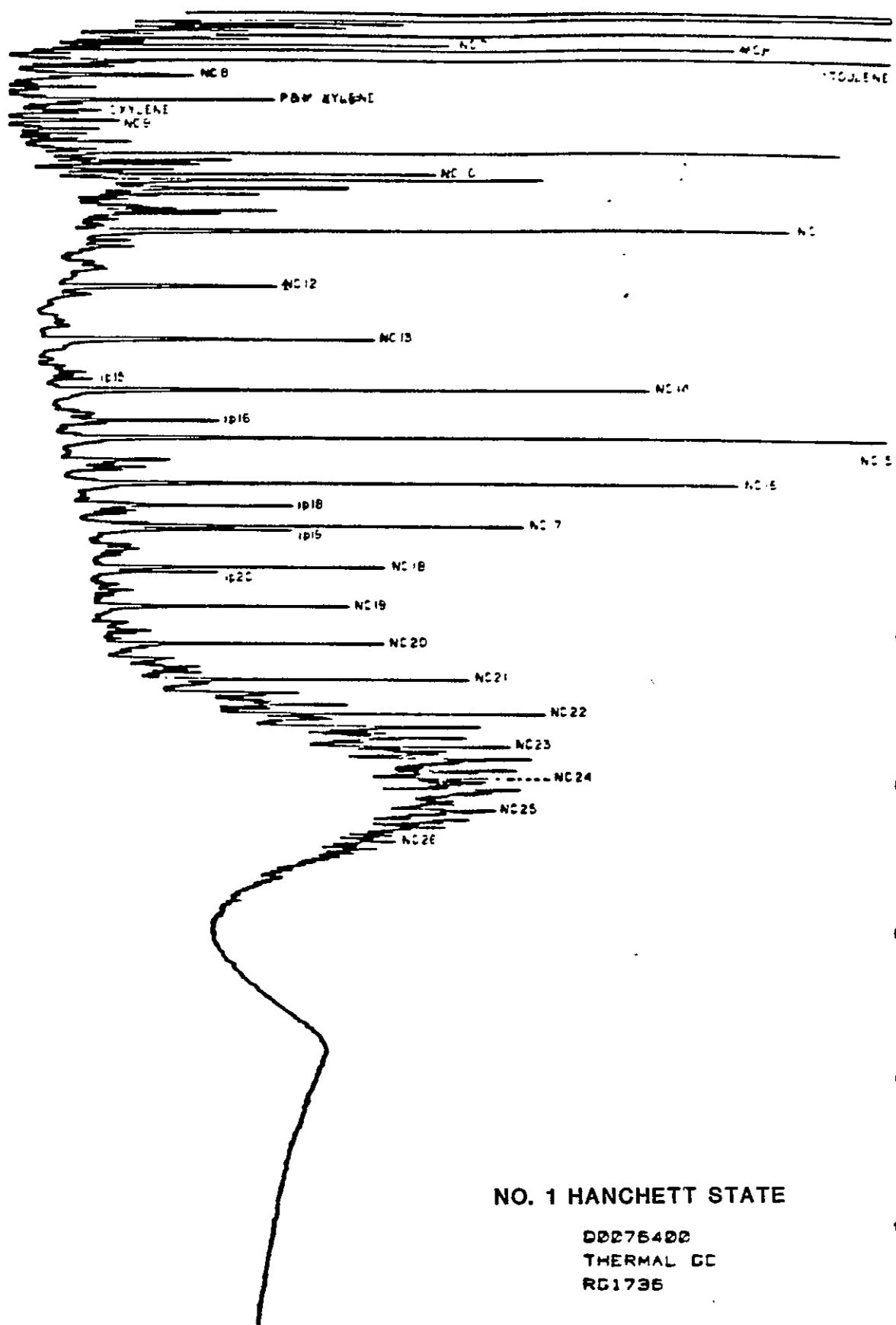
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

00076752
THERMAL GC
RH1737

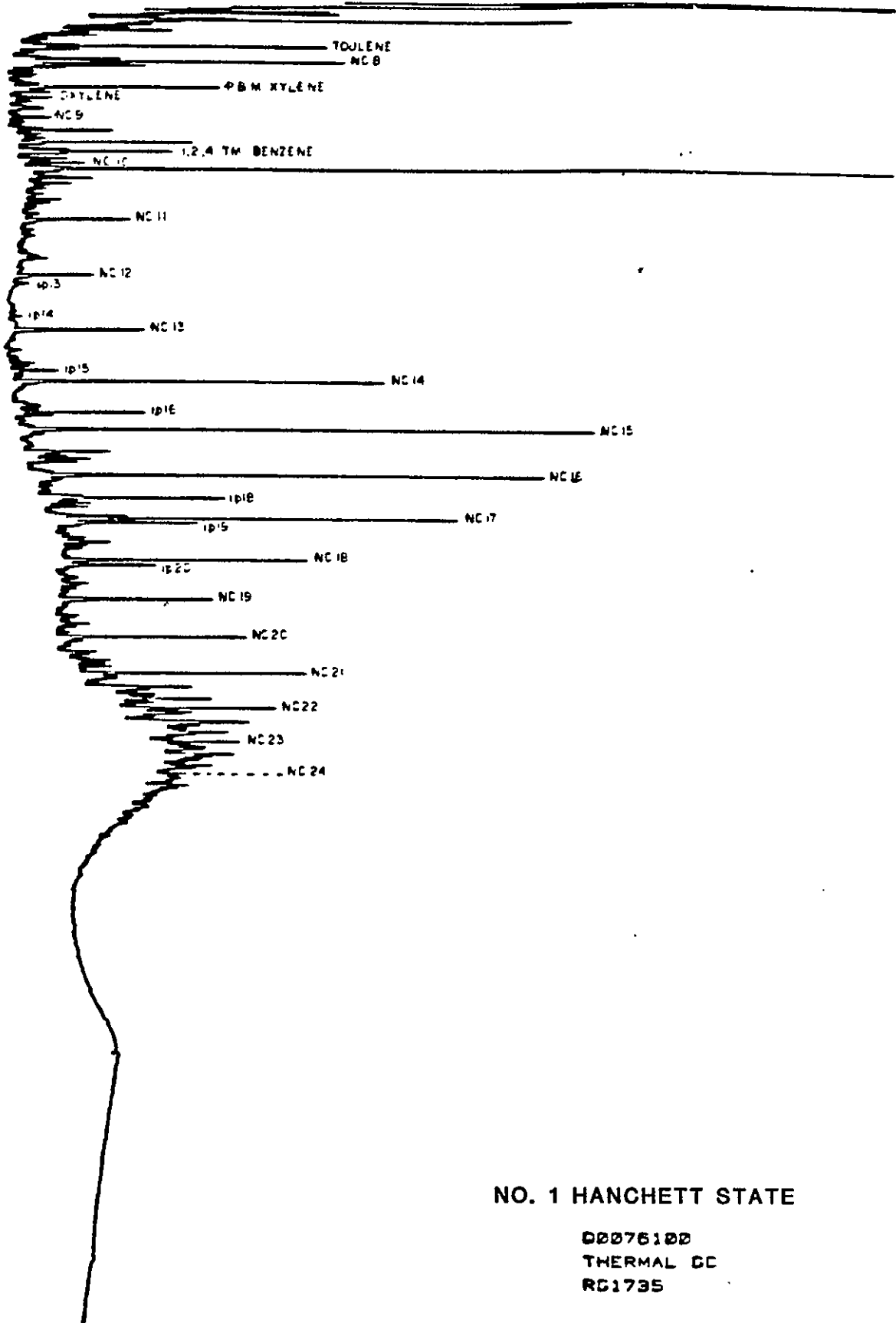
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

00075400
 THERMAL GC
 RG1736

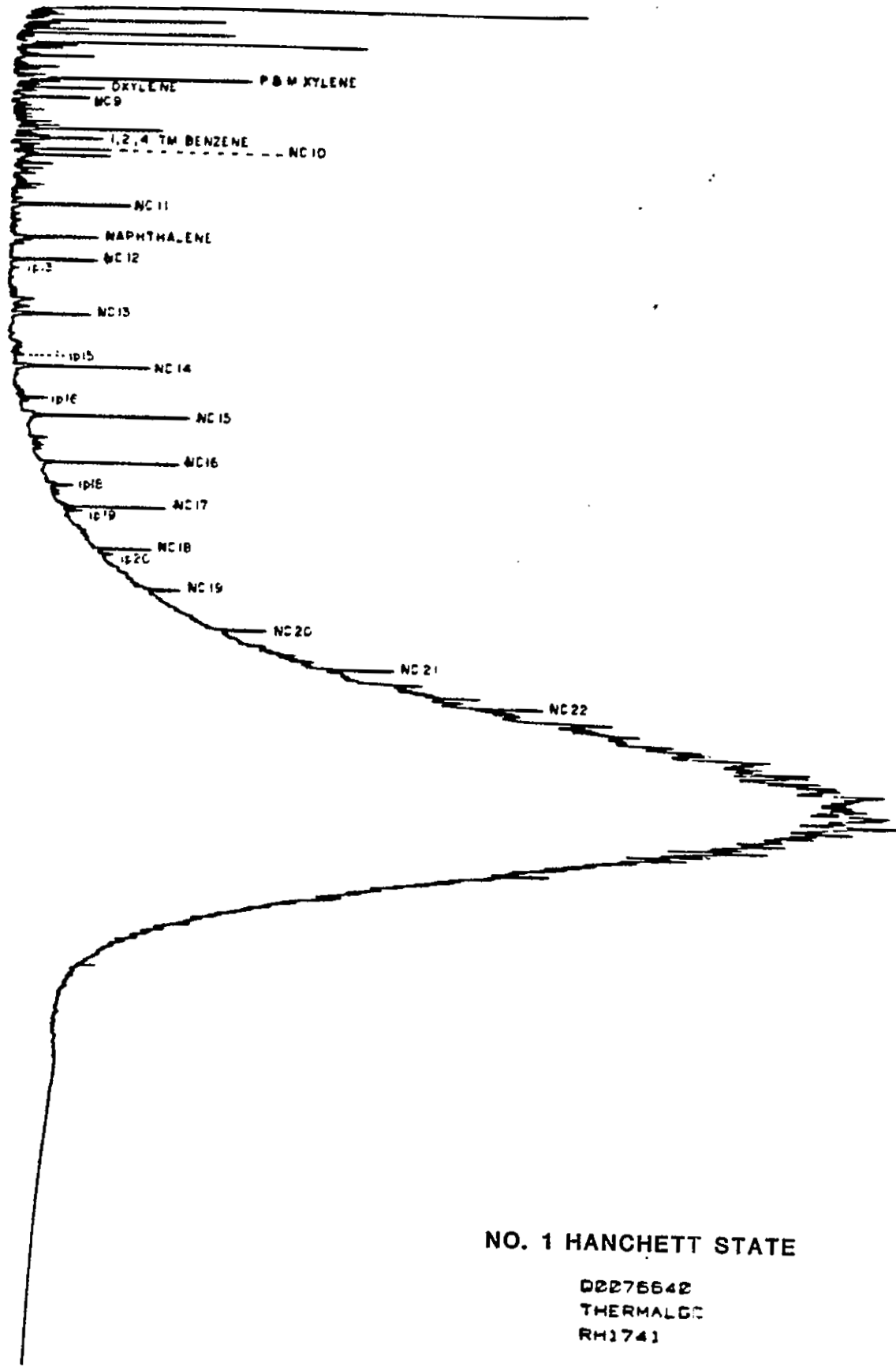
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

00076100
THERMAL GC
RC1735

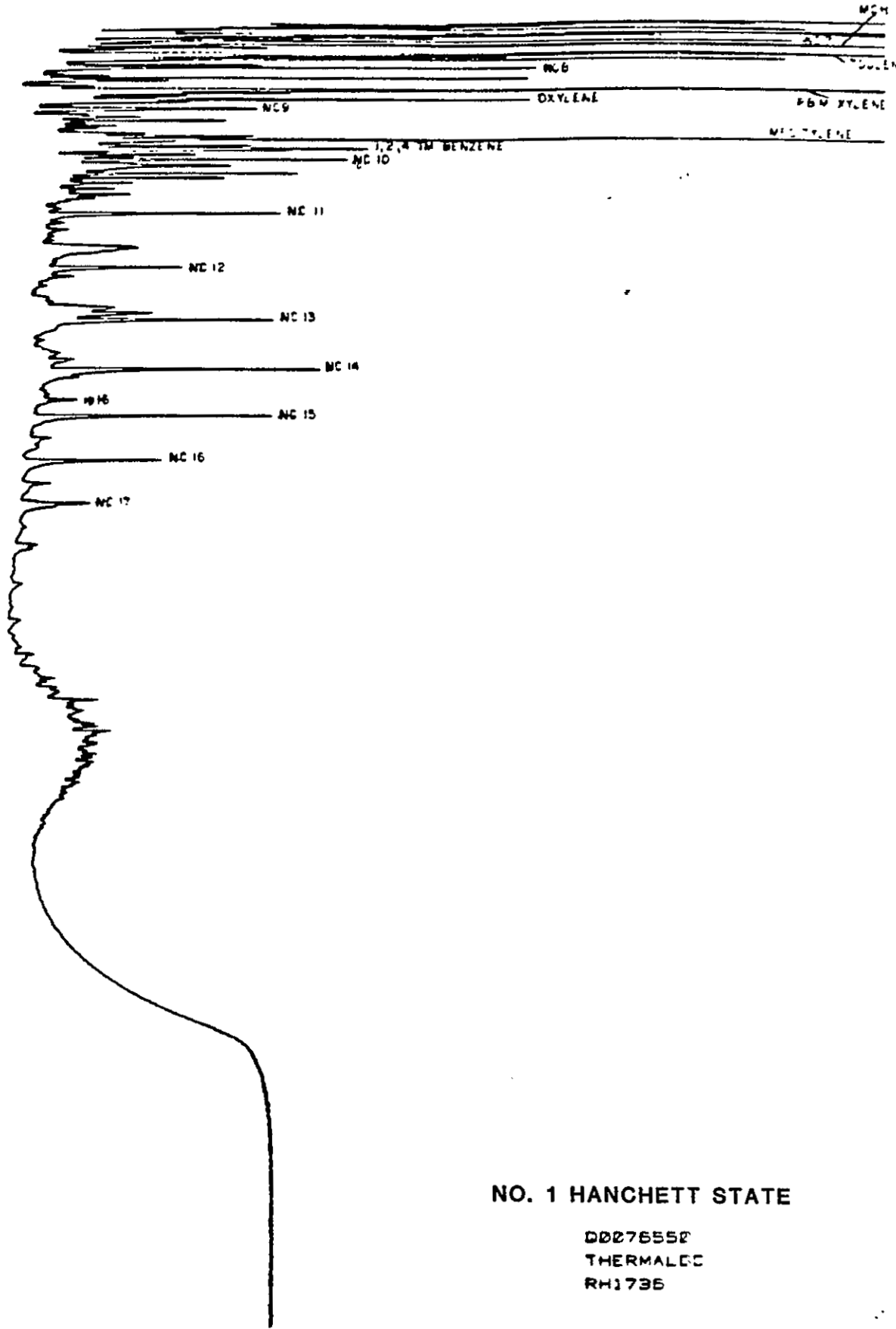
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

00076642
THERMALGC
RH1741

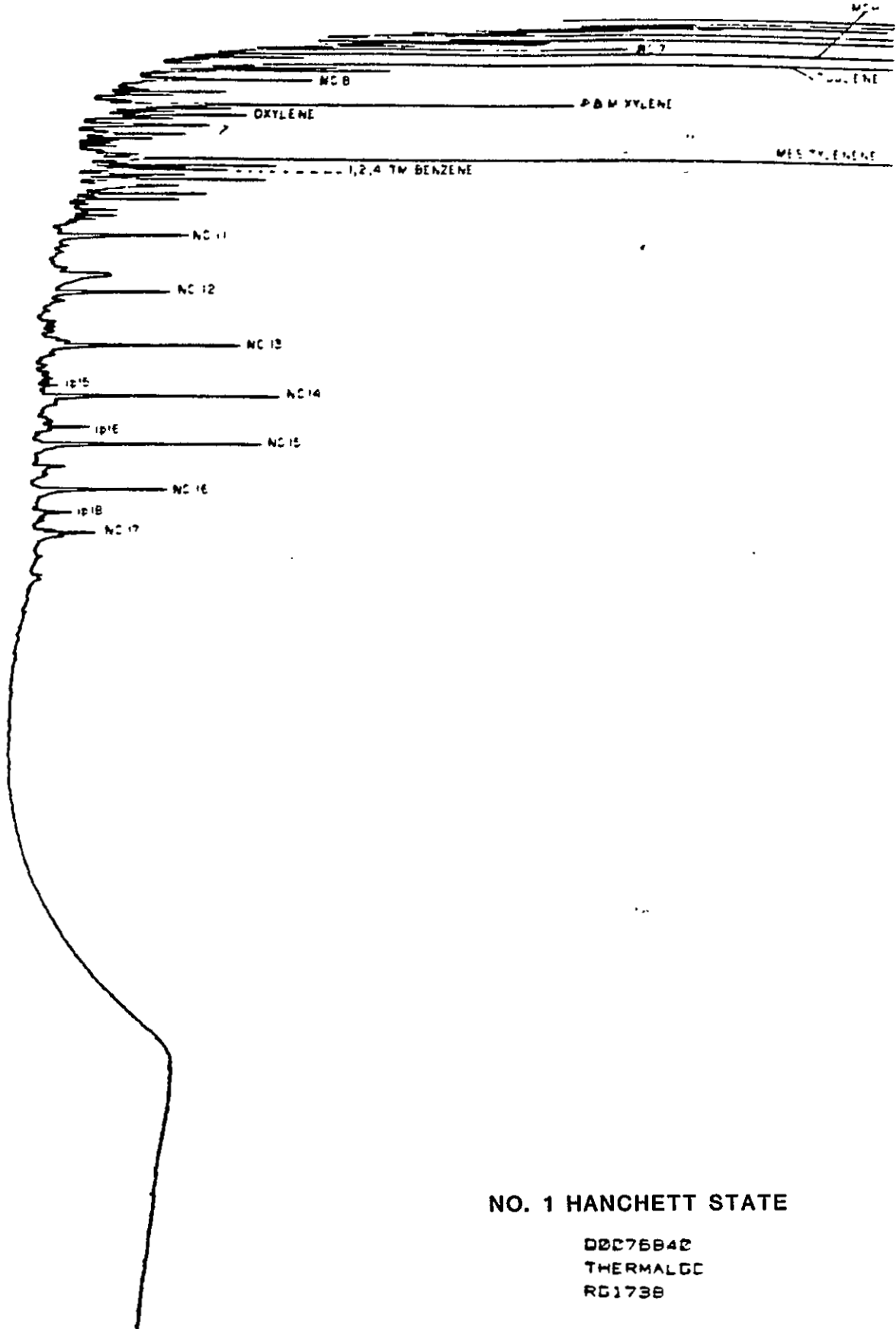
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

DD076550
THERMALGC
RH1736

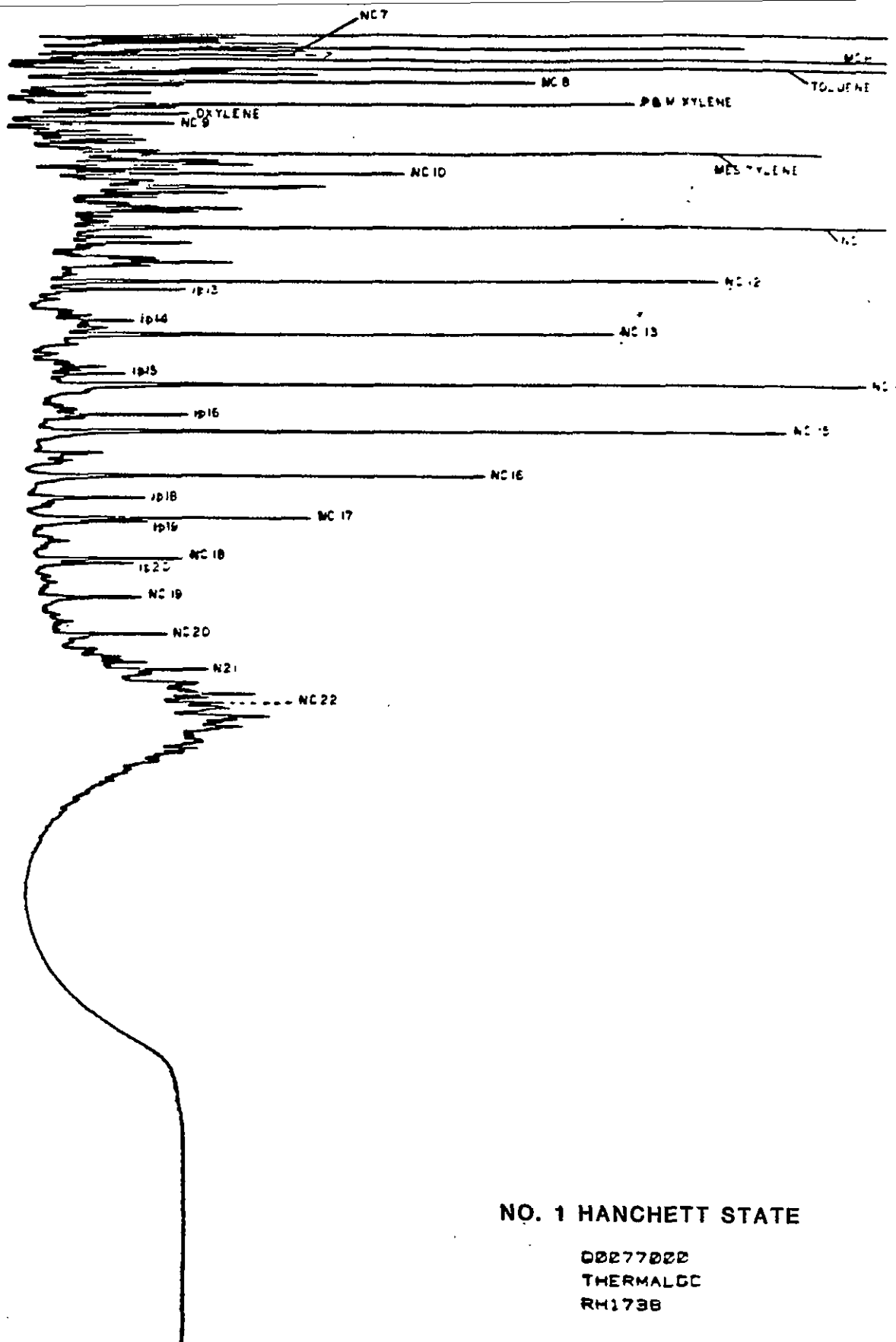
NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

D0076940
 THERMALGC
 RD1738

NON RR(U.S.)DATA



NO. 1 HANCHETT STATE

00277000
 THERMALGC
 RM1738

NON RR(U.S.)DATA

TRANS PECOS, #1 LATIGO RANCH

TABLE A.61
LATIGO RANCH

SCREEN ANALYSIS SUMMARY

Sample Number	Well Interval (Feet)	Brief Lithological Description	Total Organic Carbon (1 of Rock)
2260-025	3100	Sandstone, slightly dolomitic, pale yellowish brown.	0.06
2260-031	3400	Composite: 60% Sandstone, slightly dolomitic, pale yellowish brown. 40% Shale, pale red.	0.02
2260-033	3500	Composite: 65% Sandstone, slightly dolomitic, pale yellowish brown. 35% Shale, pale red.	0.03
2260-035	3600	Composite: 70% Sandstone, slightly dolomitic, pale yellowish brown. 30% Shale, pale red.	0.02/0.02
2260-037	3700	Composite: 60% Shale, pale red. 40% Sandstone, slightly dolomitic, pale yellowish brown.	0.02
2260-039	3800	Composite: 70% Shale, pale red. 30% Sandstone, slightly dolomitic, pale yellowish brown.	0.02
2260-041	3900	Shale, pale red.	0.01
2260-043	4000	Composite: 60% Shale, pale red. 40% Sandstone, slightly dolomitic, pale yellowish brown.	0.01
2260-045	4100	Composite: 80% Shale, pale red. 20% Sandstone, slightly dolomitic, pale yellowish brown.	0.03
2260-047	4200	Composite: 60% Shale, pale red. 40% Sandstone, slightly dolomitic, pale yellowish brown.	0.01
2260-049	4300	Shale, pale red.	0.03
2260-051	4400	Shale, pale red.	0.04/0.05
2260-053	4500	Composite: 60% Shale, pale red. 40% Sandstone, pale reddish brown.	0.03
2260-055	4600	Composite: 60% Shale, pale red. 40% Sandstone, pale reddish brown.	0.03

NON RR(US) DATA

LATIGO RANCH

SCREEN ANALYSIS SUMMARY

Sample Number	Well Interval (Feet)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2260-057	4700	Composite: 80% Shale, pale red. 20% Sandstone, pale reddish brown.	0.02
2260-059	4800	Composite: 70% Shale, pale red and medium dark gray. 30% Sandstone, pale reddish brown.	0.10
2260-061	4900	Shale, grayish red.	0.09
2260-063	5000	Composite: 70% Shale, grayish red and medium dark gray. 30% Sandstone, light gray.	0.12
2260-065	5100	Composite: 85% Shale, grayish red and medium dark gray. 15% Sandstone, light gray.	0.13
2260-067	5200	Composite: 90% Shale, grayish red and medium dark gray. 10% Sandstone, light gray.	0.10/0.09
2260-069	5300	Composite: 90% Shale, grayish red and medium dark gray. 10% Sandstone, light gray.	0.11
2260-071	5400	Composite: 85% Shale, grayish red and medium dark gray. 15% Sandstone, light gray.	0.09
2260-073	5500	Composite: 70% Shale, grading to siltstone, medium light gray to medium gray. 30% Dolomite, brownish gray.	0.20
2260-075	5600	Composite: 70% Dolomite, brownish gray. 30% Shale, medium gray.	0.23
2260-077	5700	Composite: 70% Dolomite, brownish gray. 30% Shale, medium gray.	0.10
2260-079	5800	Composite: 70% Shale, grayish red and medium dark gray. 30% Quartz fragments.	0.17
2260-081	5900	Composite: 80% Shale, grayish red and medium dark gray. 20% Sandstone, light gray.	0.20

NON RR(US) DATA

LATIGO RANCH

SCREEN ANALYSIS SUMMARY

Sample Number	Well Interval (Feet)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2260-083	6000	Composite: 75% Shale, grayish red and medium dark gray. 25% Sandstone, light gray.	0.18/0.18
2260-085	6100	Composite: 85% Quartz fragments, white. 15% Shale, grayish red and medium dark gray.	0.07
2260-088	6200	Composite: 70% Shale, grayish red and medium dark gray. 30% Quartz fragments.	0.19
2260-090	6300	Composite: 85% Shale, grayish red and medium dark gray. 15% Quartz fragments.	0.16
2260-093	6400	Shale, grayish red and medium dark gray.	0.16
2260-095	6500	Composite: 80% Shale, grayish red and medium dark gray. 20% Sandstone, light gray.	0.22
2260-098	6600	Composite: 70% Shale, grayish red and medium dark gray. 30% Sandstone, light gray.	0.16
2260-101	6700	Composite: 80% Shale, grayish red and medium dark gray. 20% Limestone and sandstone, light gray.	0.21
2260-104	6750	Composite: 60% Dolomite, brownish gray. 40% Shale, grayish red and medium dark gray.	0.49/0.47
2260-106	6900	Composite: 60% Shale, grayish red and medium dark gray. 30% Dolomite, brownish gray. 10% Sandstone, light gray.	0.31
2260-110	7000	Composite: 80% Sandstone, dolomitic, light brownish gray. 20% Shale, grayish red and medium dark gray.	0.26

NON RR(US) DATA

LATIGO RANCH

SCREEN ANALYSIS SUMMARY

Sample Number	Well Interval (Feet)	Brief Lithological Description	Total Organic Carbon (% of Rock)
2260-113	7100	Quartz fragments, white.	0.03
2260-115	7190	80% Shale, grayish red and medium dark gray. 20% Siltstone, silicified, moderate orange pink.	0.13

NON RR(US) DATA

TABLE A.62

TOTAL ORGANIC CARBON DATA

LATIGO RANCH (SUN)

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION		DATA	SAMPLE IDENTIFICATION		DATA
RRUS	DEPTH (Feet)	TOC%	RRUS	DEPTH (Feet)	TOC%
3501	3100	0.06	3521	5300	0.11
3502	3400	0.02	3522	5400	0.09
3503	3500	0.03	3523	5500	0.20
3504	3600	0.02	3524	5600	0.23
3505	3700	0.02	3525	5700	0.10
3506	3800	0.02	3526	5800	0.17
3507	3900	0.01	3527	5900	0.20
3508	4000	0.01	3528	6000	0.18
3509	4100	0.03	3529	6100	0.07
3510	4200	0.01	3530	6200	0.19
3511	4300	0.03	3531	6300	0.16
3512	4400	0.04	3532	6400	0.16
3513	4500	0.03	3533	6500	0.22
3514	4600	0.03	3534	6600	0.16
3515	4700	0.02	3535	6700	0.21
3516	4800	0.01	3536	6750	0.48
3517	4900	0.09	3537	6900	0.31
3518	5000	0.12	3538	7000	0.26
3519	5100	0.13	3539	7100	0.03
3520	5200	0.10	3540	7190	0.13

NON RR(US) DATA

LATIGO RANCH

VISUAL KEROGEN ASSESSMENT WORKSHEET

Latigo Ranch Trans Pecos		INDIGENOUS POPULATION (INTERPRETED)				GENERAL CHARACTERISTICS			CARVED AND/OR REWORKED POPULATION(S)		SUMMARY ORGANIC MATTER TYPE
		TYPE OF ORGANIC MATTER		MATURATION INDEX	REMARKS	COLOR OF ORGANIC MATTER	STATE OF ORGANIC MATTER	%	TYPE OF ORGANIC MATTER		
		TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER						TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	
DEPTH		REMARKS		REMARKS	REMARKS	REMARKS	REMARKS	REMARKS	REMARKS		
2260-025	3100			Am ₂ -s-					Am ₂ -s-	VLOM	
2260-031	3400			Am ₂ -s-					Am ₂ -s-	VLOM	
2260-033	3500			Am ₂ -s-					Am ₂ -s-	VLOM	
2260-035	3600			Am ₂ -s-					Am ₂ -s-	VLOM	
B	2260-037			Am ₂ -s-					Am ₂ -s-	VLOM	
B	2260-039			Am ₂ -s-					Am ₂ -s-	VLOM	
B	2260-041			Am ₂ -s-					Am ₂ -s-	VLOM	
B	2260-043			Am ₂ -s-					Am ₂ -s-	VLOM	
Change	2260-045			Am ₂ -s-					Am ₂ -s-	VLOM	
H	2260-047			Am ₂ -s-					Am ₂ -s-	VLOM	
	2260-049			W ₂ -H;Am					Am ₂ -s-	VLOM	
	2260-051			W ₂ -s-H					W ₂ -s-H	VLOM	
	2260-053			W ₂ -s;Am-H					W ₂ -s;H-I	VLOM	
	2260-055			W ₂ -s;Am-H					W ₂ -s;Am-H-I	VLOM	
Change	2260-057			W ₂ -s;Am-H					W ₂ -s;Am-H-I	VLOM	
	2260-059			W ₂ -s;Am-H					W ₂ -s;Am-H	VLOM	
	2260-061			W ₂ -s;Am-H					H;Am-W;I		
	2260-063			W ₂ -s;Am					H;Am-W;I		
	2260-065			W ₂ -s;Am					W ₂ -s;H;Am		
	2260-067			W ₂ -s;Am					W ₂ -s;H;Am		

VLOM = Very little organic material.

= Drilling mud contaminant.

B = Bacteria.

NON RR(US) DATA

LATIGO RANCH

VISUAL KEROGEN ASSESSMENT WORKSHEET

Latigo Ranch Trans Pecos		INDIGENOUS POPULATION (INTERPRETED)				GENERAL CHARACTERISTICS			CURED 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	
DEPTH		TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	TYPE OF ORGANIC MATTER	REMARKS
2260-069	5300										
2260-071	5400										M;H;I;Am
2260-073	5500										H;M;I;-
2260-075	5600										M;A;-H;I;-
2260-077	5700										H;M;I;Am
2260-079	5800										I;-;-
2260-081	5900										M;H;-I;Am
2260-083	6000										M;H;-I;Am
2260-085	6100										M;H;-I;-
2260-088	6200										M;H;-I;-
2250-090	6300										I;-;-
2250-093	6400										I;-;-
2250-095	6500										M;H;-I;Am
2250-098	6600										I;-;-
2250-101	6700										I;-;-
2250-104	6750										I;-;-
2250-106	6900										I;-;-
2250-110	7000										I;-;-
2250-113	7100										I;-;-
2250-115	7190										I;-;-

NON RR(US) DATA

LATIGO RANCH

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)	Paraffin- Naphthenes (grams)	Aromatics (grams)	Eluted NSO'S (grams)	Noneluted NSO'S (grams)
2260-073	5500	100.0	0.0311	0.0265	0.0046	N.D.	N.D.	N.D.	N.D.	N.D.
2260-104	6750	100.0	0.0295	0.0212	0.0083	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-----				-----Nonhydrocarbons-----			
			Paraffin- Naphthene (ppm)	Aromatic (ppm)	Total (ppm)	Sulfur (ppm)	Precipitd. Asphaltene (ppm)	Eluted NSO'S (ppm)	Noneluted NSO'S (ppm)	Total (ppm)
2260-073	5500	311	-	-	-	-	265	-	-	-
2260-104	6750	295	-	-	-	-	212	-	-	-

C. Composition of Extracts

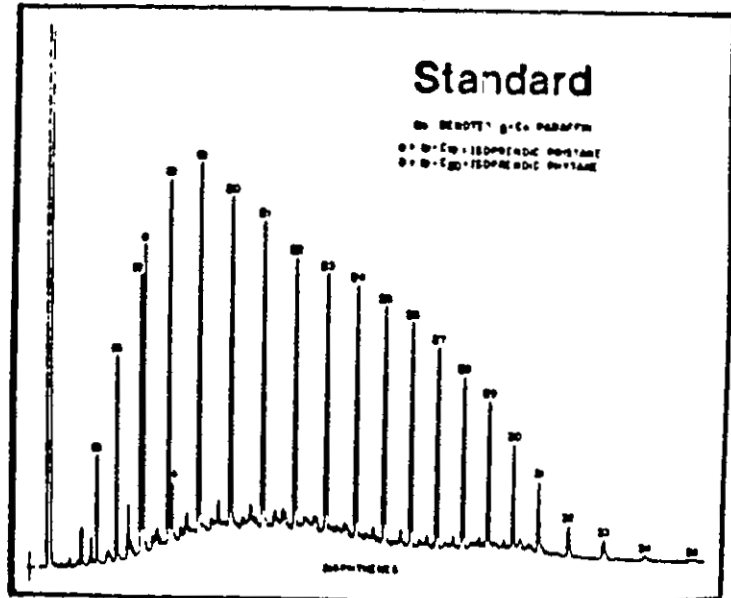
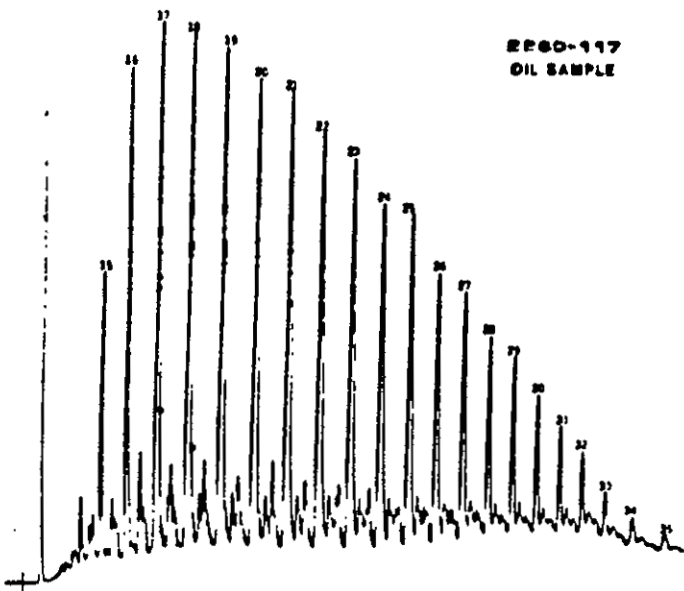
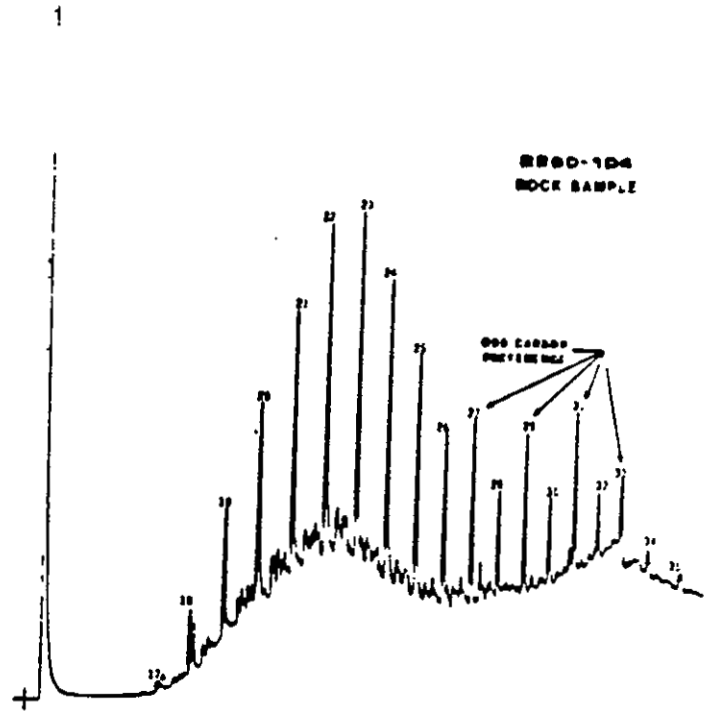
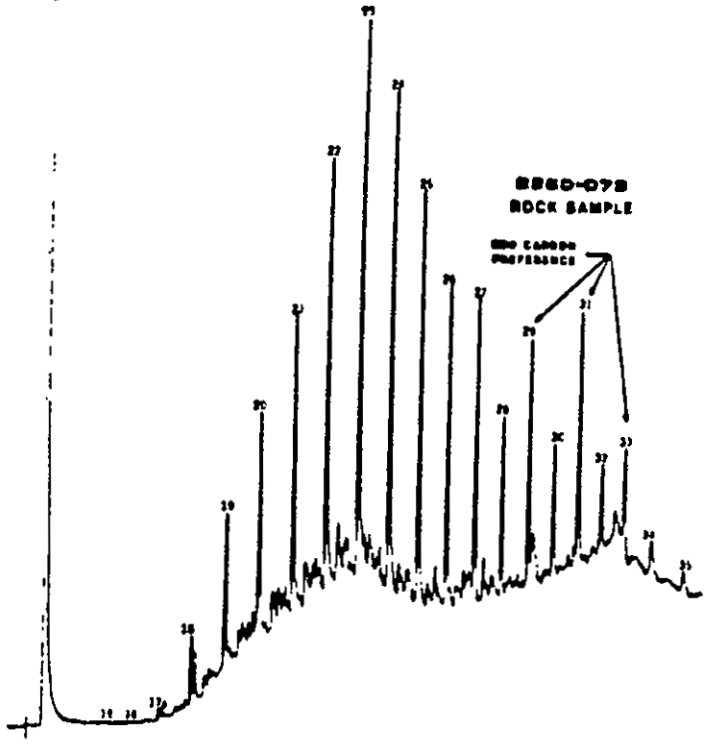
GeoChem Sample Number	Well Interval	-----Hydrocarbons-----				-----Nonhydrocarbons-----					
		Paraffin- Naphthene %	Aromatic %	PN/Arom	Sulfur %	Eluted NSO'S %	Noneluted NSO'S %	Precipitd. Asphaltene %	Amph/NSO	NC'S %	NC/Non NC
2260-073	5500	-	-	-	-	-	-	85.2	-	-	-
2260-104	6750	-	-	-	-	-	-	71.9	-	-	-

TABLE A.64

NON RR(US) DATA

LATIGO RANCH

C18 GAS CHROMATOGRAMS



NON RR(US) DATA

LATIGO RANCH

C1-C7 HYDROCARBON ANALYSES OF AIR SPACE AND CUTTINGS GAS

Sample Number	Well Interval*	Methane C1 PPM	Ethane C2 PPM	Propane C3 PPM	Isobutane IC4 PPM	Butane nC4 PPM	Total C5-C7 PPM	Total C1-C4 PPM	Total C2-C4 PPM	Gas Wetness %	IC4/nC4
2260-025	3100	78.4	8.1	7.0	2.7	6.5	576.2	102.9	24.4	23.8	0.42
2260-026	3150	86.5	7.2	11.6	4.9	17.2	414.7	127.6	41.0	32.2	0.29
2260-027	3200	12.7	2.6	2.1	0.6	1.9	31.3	20.1	7.3	36.5	0.34
2260-028	3250	9.1	0.9	2.9	0.4	1.4	140.3	14.8	5.7	38.6	0.33
2260-029	3300	9.7	1.9	5.2	0.6	1.9	144.9	19.5	9.8	50.3	0.32
2260-030	3350	7.4	1.6	3.3	0.6	2.7	162.8	15.8	8.4	53.1	0.24
2260-031	3400	235.0	44.9	91.4	14.1	29.1	237.6	414.6	179.6	43.3	0.49
2260-032	3450	8.2	0.8	4.0	0.4	0.7	158.1	14.3	6.0	42.4	0.55
2260-033	3500	90.7	15.9	27.8	10.1	19.7	546.2	164.4	73.6	44.8	0.52
2260-034	3550	32.4	3.2	3.7	1.4	3.6	139.9	44.5	12.1	27.2	0.40
2260-035	3600	47.9	3.8	3.8	2.8	3.7	150.7	62.2	14.2	22.9	0.74
2260-036	3650	30.2	2.9	2.3	1.3	2.7	315.8	39.5	9.3	23.6	0.48
2260-037	3700	46.5	3.5	5.4	1.2	2.4	148.4	59.2	12.6	21.4	0.51
2260-038	3750	26.6	7.1	1.2	0.4	1.0	122.8	36.5	9.9	27.1	0.38
2260-039	3800	32.0	1.9	0.9	0.2	0.8	201.9	36.0	4.0	11.1	0.26
2260-040	3850	54.0	4.9	2.1	0.9	1.6	127.3	63.7	9.7	15.3	0.60
2260-041	3900	44.4	3.1	1.2	0.2	0.9	178.4	54.0	5.5	10.3	0.28
2260-042	3950	40.5	2.1	0.9	0.2	1.6	253.8	45.6	5.1	11.2	0.18
2260-043	4000	35.0	2.0	0.8	0.2	1.0	277.6	39.2	4.1	10.6	0.21
2260-044	4050	50.0	4.5	1.9	0.3	1.3	437.9	58.2	8.1	14.0	0.24
2260-045	4100	52.2	3.9	1.6	0.2	0.9	205.9	59.1	6.8	11.6	0.32
2260-046	4150	132.1	3.9	1.6	0.3	1.2	294.0	139.1	7.0	5.1	0.25
2260-047	4200	82.6	12.3	9.6	2.6	13.0	765.9	120.2	37.6	31.3	0.20
2260-048	4250	87.3	38.7	6.2	1.2	6.7	923.3	140.4	53.1	37.8	0.19
2260-049	4300	140.2	19.7	6.1	0.8	4.3	903.9	171.3	31.1	18.2	0.21
2260-050	4350	158.7	7.3	2.6	1.0	5.4	816.8	175.2	16.4	9.4	0.20
2260-051	4400	98.5	7.2	3.1	0.4	2.1	770.0	111.5	12.9	11.7	0.21
2260-052	4450	102.7	9.5	12.5	0.5	1.7	552.8	127.1	24.3	19.2	0.29
2260-053	4500	136.9	15.2	28.1	2.1	3.9	869.0	186.3	49.4	26.5	0.54
2260-054	4550	108.9	3.0	1.0	0.3	0.9	557.8	114.2	5.3	4.7	0.34
2260-055	4600	142.0	26.6	10.8	0.7	1.3	535.5	181.6	39.5	21.8	0.51
2260-056	4650	93.2	7.4	2.4	0.6	1.4	612.0	105.3	12.1	11.5	0.47
2260-057	4700	87.0	3.7	0.8	0.1	0.4	388.2	92.1	5.1	5.6	0.34
2260-058	4750	111.4	4.4	3.4	0.0	0.4	322.0	119.8	8.4	7.0	0.22
2260-059	4800	751.8	31.6	8.3	0.9	1.1	495.5	793.8	42.0	5.3	0.83
2260-060	4850	66.7	6.2	1.4	0.2	0.7	424.8	75.3	8.6	41.5	0.28
2260-061	4900	389.3	27.3	18.2	6.7	6.6	624.4	444.2	58.9	13.1	1.02
2260-062	4950	229.6	14.2	8.2	7.0	8.7	542.5	272.8	43.2	15.8	0.80
2260-063	5000	1212.3	58.2	7.0	2.2	9.0	445.4	1248.9	76.6	5.9	0.24
2260-064	5050	585.2	51.8	6.3	1.6	2.1	304.1	647.3	62.0	4.6	0.74
2260-065	5100	259.0	51.6	7.5	2.5	3.5	313.1	344.3	65.3	20.1	0.72

PPM values expressed as volumes of gas per million volumes of cuttings

TABLE A.65

LATIGO RANCH

C1-C7 HYDROCARBON ANALYSES OF AIR SPACE AND CUTTINGS GAS

Sample Number	Well Interval ^o	Methane C1 PPM	Ethane C2 PPM	Propane C3 PPM	Isobutane iC4 PPM	Butane nC4 PPM	Total C5-C7 PPM	Total C1-C4 PPM	Total C2-C4 PPM	Gas Wetness %	iC4/nC4
2260-066	5150	129.4	14.5	7.3	2.0	5.1	55.1	158.5	29.1	18.4	0.41
2260-067	5200	399.9	65.2	9.4	0.6	2.5	81.3	477.9	77.9	16.3	0.26
2260-068	5250	558.0	62.9	7.6	1.7	2.1	86.9	632.5	74.4	11.8	0.84
2260-069	5300	984.5	45.5	4.1	0.0	0.0	75.3	1034.2	49.6	4.8	-
2260-070	5350	1072.8	68.9	10.8	3.4	4.0	66.5	1160.1	87.3	7.5	0.86
2260-071	5400	615.1	25.6	2.9	0.0	0.0	102.7	643.7	28.5	4.4	-
2260-072	5450	558.3	15.9	2.9	0.2	0.3	91.3	577.9	19.5	3.4	0.63
2260-073	5500	602.5	87.2	9.7	3.9	4.1	98.4	707.5	105.0	14.8	0.96
2260-074	5550	751.6	16.5	4.5	1.3	1.2	94.3	775.2	23.6	3.0	1.08
2260-075	5600	825.0	30.4	4.1	1.7	17.7	135.9	879.0	54.0	6.1	0.10
2260-076	5650	1337.7	63.2	6.0	0.2	1.6	216.7	1408.9	71.2	5.1	0.15
2260-077	5700	1092.0	39.3	3.8	0.0	1.3	200.1	1136.5	44.5	3.9	0.00
2260-078	5750	1203.4	43.9	2.6	0.0	0.1	283.0	1250.3	46.8	3.8	0.00
2260-079	5800	1657.3	68.7	5.6	0.1	3.8	183.0	1735.7	78.4	4.5	0.04
2260-080	5850	1285.3	49.7	3.8	0.0	0.0	195.7	1338.9	53.6	4.0	-
2260-081	5900	2547.5	124.0	8.3	1.6	36.1	328.4	2717.7	170.1	6.3	0.05
2260-082	5950	1445.4	71.7	7.8	0.3	6.6	290.0	1532.0	86.5	5.7	0.05
2260-083	6000	2576.6	280.4	23.9	1.4	4.5	397.5	2887.1	310.4	10.8	0.31
2260-084	6050	637.9	143.2	31.6	1.8	3.0	124.3	817.7	179.7	22.0	0.63
2260-085	6100	860.0	137.4	24.1	0.5	2.3	148.5	1024.6	164.6	16.1	0.25
2260-086	6150	1279.0	186.0	29.3	0.9	4.0	187.5	1499.4	220.3	14.7	0.22
2260-087	6170	2811.9	507.2	294.3	160.6	163.9	1681.7	3938.1	1126.1	28.6	0.98
2260-088	6200	1098.1	228.2	74.9	18.2	26.5	527.0	1446.1	348.0	24.1	0.69
2260-089	6250	686.1	198.4	87.5	25.5	19.9	298.8	1017.6	331.5	32.6	1.28
2260-090	6300	2756.7	456.2	122.6	20.4	22.8	899.7	3378.9	622.1	18.4	0.90
2260-091	6350	899.3	144.4	21.0	4.4	8.9	206.9	1082.3	182.9	16.9	0.49
2260-092	6360	2497.5	353.8	53.2	13.0	8.8	133.5	2926.6	429.0	14.7	1.46
2260-093	6400	416.7	135.4	20.4	3.3	3.3	151.1	579.3	162.5	28.1	0.99
2260-094	6450	352.5	66.9	13.5	2.2	2.5	163.8	437.7	85.2	19.5	0.88
2260-095	6500	352.8	170.1	25.9	2.9	3.2	147.9	555.2	202.3	36.4	0.90
2260-096	6520	1990.0	684.2	171.6	23.5	30.2	165.7	2899.7	909.6	31.4	0.78
2260-097	6550	2460.6	355.2	79.7	18.5	15.2	92.5	2929.5	468.8	16.8	1.22
2260-098	6600	2738.8	466.9	94.8	17.4	15.0	124.5	3333.0	594.2	17.8	1.16
2260-099	6662	1933.9	301.6	78.0	21.8	14.3	110.7	2349.8	415.9	17.7	1.52
2260-100	6678	7766.3	2287.4	388.6	88.9	50.9	241.2	10582.3	2815.9	26.6	1.74
2260-101	6700	1609.8	455.7	99.1	17.4	13.8	98.9	2196.0	586.2	26.7	1.76
2260-102	6720	8179.1	2018.8	553.6	202.5	123.7	932.8	11077.9	2848.7	26.2	1.64
2260-103	6740	1054.9	410.9	115.7	13.3	15.6	174.1	1610.6	555.7	34.5	0.85
2260-104	6750	19353.0	4728.6	638.1	46.4	56.5	143.6	23822.7	5469.7	23.0	0.82
2260-105	6850	2262.8	594.3	121.8	14.4	13.2	67.9	3006.6	743.8	24.7	1.09
2260-106	6900	2745.4	964.0	144.9	18.0	15.3	75.7	3887.8	1142.4	24.4	1.18
2260-107	6906	148161.6	26867.6	1410.1	111.3	21.4	36.0	176572.2	28410.6	16.1	5.14
2260-108	6950	4213.5	1256.0	188.8	24.7	21.9	94.6	5705.1	1491.5	26.1	1.13
2260-109	6970	1302.0	533.5	91.2	12.5	8.7	83.8	1948.1	646.0	33.2	1.44
2260-110	7000	4675.1	1819.0	324.5	92.6	41.8	309.6	6955.2	2280.1	32.8	2.11
2260-111	7016	28238.5	9120.7	563.1	56.4	24.7	51.7	34003.5	9765.0	25.7	2.28
2260-112	7050	3025.6	1245.4	174.0	27.0	18.6	98.8	4440.8	1465.2	32.6	1.45
2260-113	7100	1263.9	294.1	38.9	6.9	5.1	72.8	1609.1	345.2	21.5	1.35

NON RR(US) DATA

LATIGO RANCH

C1-C7 HYDROCARBON ANALYSES OF AIR SPACE AND CUTTINGS GAS

Sample Number	Well Interval ^o	Methane C1 PPM	Ethane C2 PPM	Propane C3 PPM	Isobutane iC4 PPM	Butane nC4 PPM	Total C5-C7 PPM	Total C1-C4 PPM	Total C2-C4 PPM	Gas Wetness %	iC4/nC4
2260-114	7150	2098.2	665.6	105.4	13.9	14.1	131.8	2897.4	799.2	27.6	0.99
2260-115	7190	1190.7	280.2	53.3	7.8	8.6	90.8	1540.8	350.1	22.7	0.91
2260-116	7190	1315.6	394.2	70.0	10.3	10.6	105.2	1800.8	485.2	26.9	0.97

PPM values expressed as volumes of gas per million volumes of cuttings

LATIGO RANCH

Saturate Hydrocarbon Analyses

Summary of Paraffin-Naphthene Distribution

Sample Number	Well Interval	% Paraffin	% Isoprenoid	% Naphthene	C-P Index A	C-P Index B	ip19/ip20
2260-073	5500	19.1	0.2	80.7	1.07	1.37	0.25
2260-104	6750	14.3	0.2	85.5	1.09	1.42	0.27
2260-117	Oil Sample	44.4	1.7	54.0	1.05	1.08	1.46

Saturate Hydrocarbon Analyses

Normalized Paraffin Distribution

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
2260-073	5500	0.1	0.1	0.2	0.2	1.6	0.9	3.5	5.1	6.8	9.8	12.7	11.5	9.4	7.3	6.0	4.1	5.6	3.0	5.7	1.9	2.4	0.7	0.5
2260-104	6750	0.0	0.0	0.3	0.3	2.2	1.2	4.3	6.7	8.8	11.1	11.6	10.1	8.1	5.7	6.2	3.5	5.3	3.0	5.2	2.2	2.7	0.7	0.5
2260-117	Oil Sample	4.6	7.9	8.5	2.1	8.2	1.5	8.0	7.5	7.3	6.7	6.2	5.5	5.3	4.3	4.0	3.2	2.8	2.2	1.7	1.2	0.7	0.4	0.2

TABLE A.66

NON RR(US) DATA

TABLE A.67
LATIGO RANCH

Detailed Compositional Data for Crude Oil

Sample No. 2260-117

<u>GROSS OIL COMPOSITION (%)</u>		<u>C₁₅₊ OIL COMPOSITION (%)</u>	
Less than C ₁₅₊ Fraction	42.0	Asphaltene (ASPH)	1.0
C ₁₅₊ Fraction	58.0	Paraffin-Naphthene (P-N)	83.5
		Aromatic HC (AROM)	11.0
		Eluted NSD	3.6
		Non-eluted NSD	0.9
<u>DETAILED C₄-C₇ COMPOSITION (NORM.%)</u>		<u>COMPOSITION OF C₁₅₊ SATURATE HYDROCARBONS</u>	
Isobutane	0.6	% n-Alkanes	44.4
n-Butane	1.5	% Isoalkanes	--
Isopentane	4.5	% C ₁₉ & C ₂₀ Isoprenoids	1.7
n-Pentane	3.6	% Naphthenes	54.0
2,2-Dimethylbutane	0.4		
Cyclopentane	0.4	Sat/Arom	7.56
2,3-Dimethylbutane	1.4	Asph/NSD	0.23
2-Methylpentane	5.6		
3-Methylpentane	4.0	CPI Index A	1.05
n-Hexane	8.6	CPI Index B	1.08
Methylcyclopentane	7.0		
2,2-Dimethylpentane	0.5	1p-C ₁₉ /1p-C ₂₀	1.46
Benzene	2.4		
2,4-Dimethylpentane	1.2		
2,2,3-Trimethylbutane	0.5	<u>NORMALIZED PARAFFIN DISTRIBUTION (%)</u>	
Cyclohexane	7.3	nC ₁₅	4.6
3,3-Dimethylpentane	0.3	nC ₁₆	7.9
1,1-Dimethylcyclopentane	0.9	nC ₁₇	8.5
2-Methylhexane	6.0	1p-C ₁₉	2.1
2,3-Dimethylpentane	0.0	nC ₁₈	8.2
1,cis-3-Dimethylcyclopentane	1.4	1p-C ₂₀	1.5
3-Methylhexane	4.3	nC ₁₉	8.0
1,trans-3-Dimethylcyclopentane	1.5	nC ₂₀	7.5
1,trans-2-Dimethylcyclopentane	2.2	nC ₂₁	7.3
3-Ethylpentane	0.3	nC ₂₂	6.7
n-Heptane	7.8	nC ₂₃	6.2
1,cis-2-Dimethylcyclopentane	0.3	nC ₂₄	5.5
Methylcyclohexane	16.4	nC ₂₅	5.3
Toluene	8.0	nC ₂₆	4.3
		nC ₂₇	4.0
		nC ₂₈	3.2
		nC ₂₉	2.8
		nC ₃₀	2.2
		nC ₃₁	1.7
		nC ₃₂	1.2
		nC ₃₃	0.7
		nC ₃₄	0.4
		nC ₃₅	0.2
<u>MOLECULAR RATIOS</u>			
2-methylpentane/3-methylpentane	1.42		
isopentane/n-pentane	1.23		
cyclohexane/methylcyclopentane	1.05		
methylcyclopentane/methylcyclohexane	0.42		

NON RR(US) DATA

GENERAL CRUDE, #1 SIMPSON

TABLE A.68
LITHOLOGIC DESCRIPTION

GENERAL CRUDE
#1 SIMPSON

4,490-4,790'	Mudstone, reddish brown Some anhydrite
5,010-8,110'	Mudstone, reddish brown (some purple) Mudstone, greenish-gray Dark shale, abundant in places Some anhydrite Traces of feldspar

TABLE A.69

TOTAL ORGANIC CARBON DATA

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
901	4510	: 4490- 4530	0.29	908	6885	: 6850- 6920	0.33
914	5090	: 5070- 5110	0.12	918	6975	: 6940- 7010	0.31
915	5345	: 5310- 5380	0.18	919	7095	: 7060- 7130	0.26
902	5615	: 5580- 5650	0.43	909	7275	: 7240- 7310	0.36
903	5825	: 5790- 5860	0.47	920	7380	: 7360- 7400	0.44
904	6015	: 5960- 6070	0.61	910	7580	: 7540- 7620	0.52
905	6125	: 6090- 6160	0.72	921	7765	: 7730- 7800	0.43
906	6250	: 6210- 6290	0.68	911	7840	: 7820- 7860	0.61
907	6430	: 6400- 6460	0.99	922	7965	: 7930- 8000	0.45
916	6560	: 6540- 6580	0.49	912	8040	: 8020- 8060	0.58
917	6765	: 6730- 6800	0.31	913	8100	: 8080- 8120	0.56

TABLE A.70

ROCK-EVAL PYROLYSIS RAW DATA

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
901	4510	: 4490- 4530	0.170	1.280	0.880	1.455	0.117	---
902	5615	: 5580- 5650	0.020	0.110	0.330	0.333	0.154	---
903	5825	: 5790- 5860	0.070	0.420	0.390	1.077	0.143	---
904	6015	: 5960- 6070	0.080	0.330	0.340	0.971	0.195	---
905	6125	: 6090- 6160	0.150	0.930	0.610	1.525	0.139	---
906	6250	: 6210- 6290	0.610	1.620	0.780	2.077	0.274	---
907	6430	: 6400- 6460	1.780	4.230	1.000	4.230	0.296	402
908	6885	: 6850- 6920	0.050	0.280	0.640	0.438	0.152	---
909	7275	: 7240- 7310	0.200	0.510	0.560	0.911	0.282	---
910	7580	: 7540- 7620	0.670	1.650	0.840	1.964	0.289	---
911	7840	: 7820- 7860	0.070	0.530	0.490	1.082	0.117	---
912	8040	: 8020- 8060	0.060	0.610	0.570	1.070	0.090	---
913	8100	: 8080- 8120	0.110	0.510	0.430	1.186	0.177	---

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.71

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO ₂ /gm TOC)	(%)
901	4510	: 4490- 4530	441	303	0.29
902	5615	: 5580- 5650	26	77	0.43
903	5825	: 5790- 5860	89	83	0.47
904	6015	: 5960- 6070	54	56	0.61
905	6125	: 6090- 6160	129	85	0.72
906	6250	: 6210- 6290	238	115	0.68
907	6430	: 6400- 6460	427	101	0.99
908	6885	: 6850- 6920	85	194	0.33
909	7275	: 7240- 7310	142	156	0.36
910	7580	: 7540- 7620	317	162	0.52
911	7840	: 7820- 7860	87	80	0.61
912	8040	: 8020- 8060	105	98	0.58
913	8100	: 8080- 8120	91	77	0.56

TABLE A.72

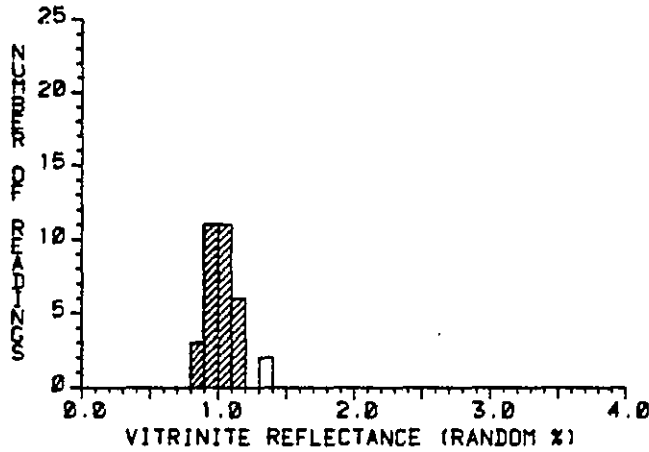
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
901	4510	: 4490- 4530	1.01	35	0	50	15	Low	0.29
904	6015	: 5960- 6070	1.11	35	0	30	35	Low	0.61
905	6125	: 6090- 6160	1.24	30	0	40	30	Low	0.72
906	6250	: 6210- 6290	1.25	40	tr	35	25	Low	0.68
911	7840	: 7820- 7860	----	0	0	0	0	None	0.61
912	8040	: 8020- 8060	----	0	0	0	0	None	0.58
913	8100	: 8080- 8120	1.35	30	0	40	30	Low	0.56

GENERAL CRUDE #1 SIMPSON



RRUS No. : 901
 ID : CTGS.
 DEPTH : 4935.0 Ft
 : 1504.2 M

* = Ro MATURITY

VALUES : 31
 MEAN : 1.01
 STD DEV : 0.09
 MEDIAN : 1.01
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

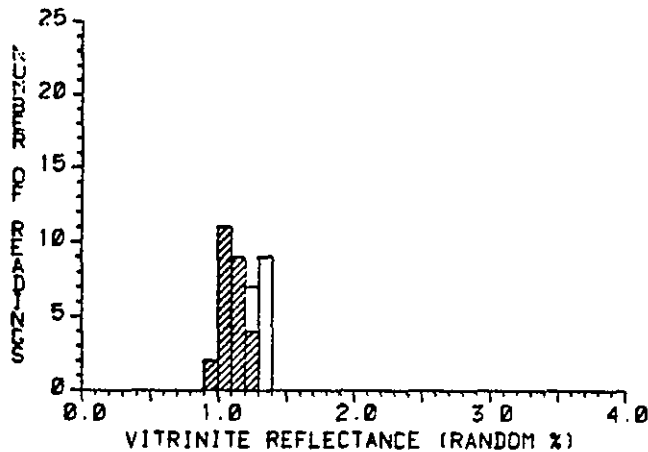
ORDERED REFLECTANCE VALUES:

*0.80	*0.98	*1.04	*1.18
*0.82	*0.98	*1.04	1.31
*0.89	*0.99	*1.04	1.38
*0.90	*0.99	*1.06	
*0.90	*1.01	*1.07	
*0.95	*1.01	*1.10	
*0.95	*1.02	*1.10	
*0.96	*1.02	*1.11	
*0.96	*1.02	*1.15	
*0.97	*1.03	*1.15	

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 0 %
 Vitrinite : 50 %
 Inertinite : 15 %
 Back Fluor : Low
 Bitumen : 1r
 Coke : None

GENERAL CRUDE #1 SIMPSON



RRUS No. : 904
 ID : CTGS.
 DEPTH : 6015.0 Ft
 : 1933.4 M

* = Ro MATURITY

VALUES : 26
 MEAN : 1.11
 STD DEV : 0.08
 MEDIAN : 1.10
 MODE : 1.05

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

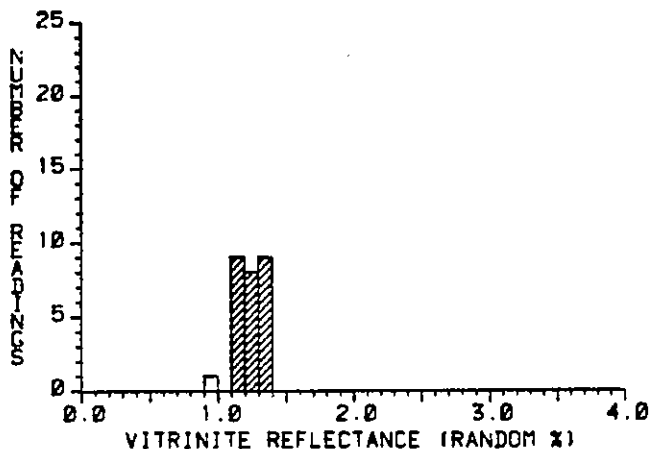
ORDERED REFLECTANCE VALUES:

*0.97	*1.08	*1.17	1.32
*0.97	*1.08	*1.18	1.32
*1.01	*1.08	*1.21	1.33
*1.02	*1.10	*1.22	1.33
*1.03	*1.12	*1.24	1.33
*1.05	*1.12	*1.25	1.34
*1.05	*1.13	1.29	1.34
*1.06	*1.15	1.29	1.35
*1.07	*1.15	1.29	
*1.07	*1.17	1.31	

KEROGEN DESCRIPTION

Amorphous : 35 %
 Exinite : 0 %
 Vitrinite : 30 %
 Inertinite : 35 %
 Back Fluor : Low
 Bitumen : None
 Coke : 1r

GENERAL CRUDE #1 SIMPSON



RRUS No. : 905
 ID : CTGS.
 DEPTH : 6'25.0 F;
 1866.0 M

* = Ro MATUR'Y
 # VALUES : 26
 MEAN : 1.24
 STD DEV : 0.08
 MEDIAN : 1.26
 MODE : 1.35

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

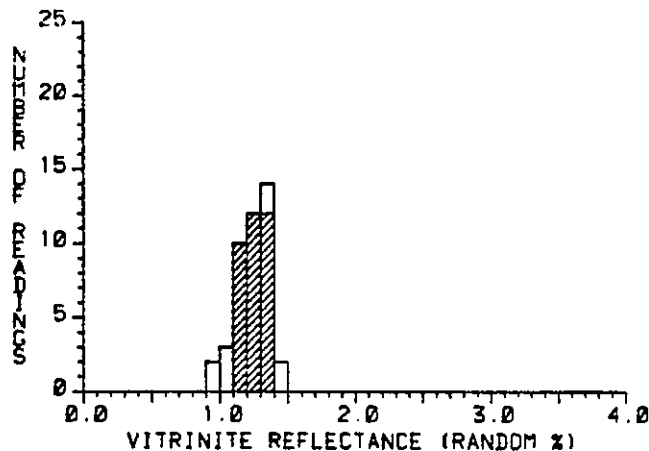
ORDERED REFLECTANCE VALUES:

0.09	*1.20	*1.33
*1.11	*1.21	*1.33
*1.11	*1.22	*1.35
*1.13	*1.22	*1.35
*1.14	*1.26	*1.35
*1.16	*1.27	*1.36
*1.16	*1.27	*1.38
*1.18	*1.28	
*1.18	*1.30	
*1.19	*1.30	

KEROGEN DESCRIPTION

Amorphous : 30 %
 Exinite : 0 %
 Vitrinite : 40 %
 Inertinite : 30 %
 Back Fluor : Low
 Bitumen : tr
 Coke : None

GENERAL CRUDE #1 SIMPSON



RRUS No. : 976
 ID : CTGS.
 DEPTH : 6335.0 F;
 1930.0 M

* = Ro MATUR'Y
 # VALUES : 34
 MEAN : 1.25
 STD DEV : 0.08
 MEDIAN : 1.23
 MODE : 1.35

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

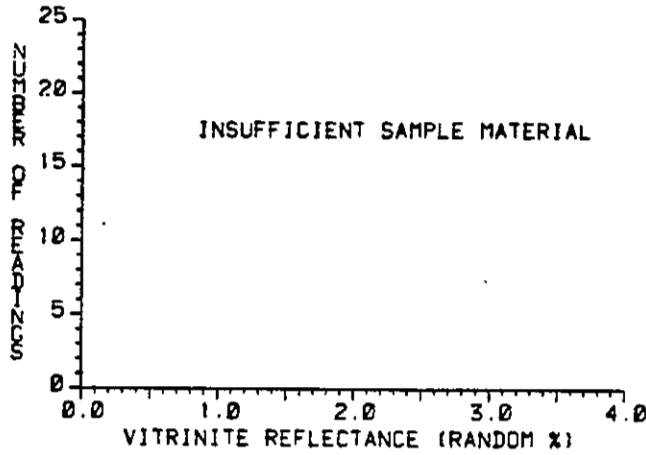
ORDERED REFLECTANCE VALUES:

0.05	*1.17	*1.23	*1.32	1.39
0.07	*1.18	*1.23	*1.33	1.41
1.01	*1.18	*1.23	*1.34	1.43
1.01	*1.18	*1.24	*1.34	
1.03	*1.19	*1.26	*1.35	
*1.10	*1.20	*1.26	*1.36	
*1.11	*1.21	*1.28	*1.36	
*1.12	*1.21	*1.31	*1.36	
*1.13	*1.22	*1.32	*1.36	
*1.16	*1.22	*1.32	1.39	

KEROGEN DESCRIPTION

Amorphous : 40 %
 Exinite : tr %
 Vitrinite : 35 %
 Inertinite : 25 %
 Back Fluor : Low
 Bitumen : tr
 Coke : None

GENERAL CRUDE #1 SIMPSON



RRUS No. : 911
 ID : CTGS.
 DEPTH : 7340.0 Ft
 : 2789.6 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

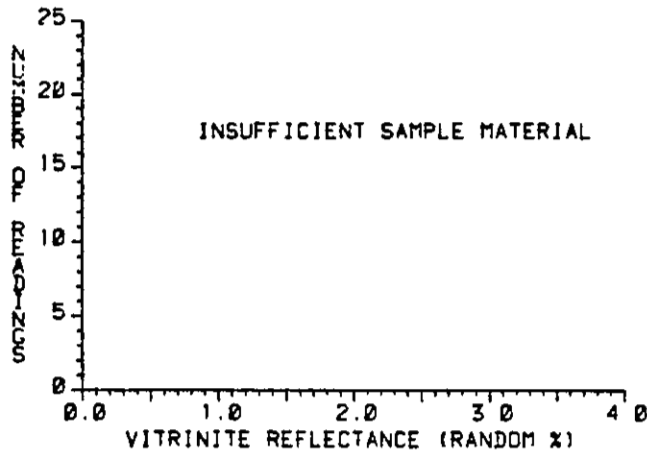
ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

GENERAL CRUDE #1 SIMPSON



RRUS No. : 912
 ID : CTGS.
 DEPTH : 8240.0 Ft
 : 2452.6 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

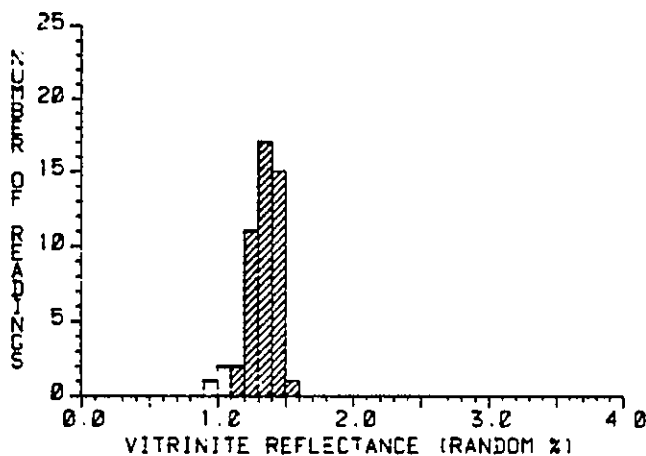
ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

GENERAL CRUDE #1 SIMPSON



RRUS No. : 9'3
 ID : CTGS.
 DEPTH : 8'00.0 Ft
 : 2'68.0 M

* = Ro MATURITY
 * VALUES : 46
 MEAN : 1.35
 STD DEV : 0.09
 MEDIAN : 1.35
 MODE : 1.35

HISTOGRAM:
 Range 0- 4%
 Increment 0.10%

ORDERED REFLECTANCE VALUES.

0.96	*1.24	*1.32	*1.39	*1.45
1.06	*1.24	*1.32	*1.39	*1.45
1.09	*1.27	*1.34	*1.39	*1.45
*1.18	*1.27	*1.34	*1.41	*1.46
*1.18	*1.28	*1.35	*1.42	*1.47
*1.20	*1.29	*1.35	*1.42	*1.48
*1.21	*1.30	*1.35	*1.42	*1.48
*1.21	*1.30	*1.35	*1.43	*1.48
*1.23	*1.31	*1.37	*1.44	*1.55
*1.24	*1.31	*1.38	*1.44	

KEROGEN DESCRIPTION

Amorphous	: 30 %
Exinite	: 0 %
Vitrinite	: 40 %
Inertinite	: 30 %
Back Fluor	: Low
Bitumen	: tr
Coke	: tr

TABLE A.73

COMPOSITION OF SOURCE ROCK EXTRACT

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
906	6250	: 6210- 6290	4444	49.6	8.1	42.3
907	6430	: 6400- 6460	5906	45.6	8.0	46.4
910	7580	: 7540- 7620	2877	55.7	16.6	27.7

TABLE A.74

SUMMARY TABLE SHOWING SELECTED PARAMETERS
OF OIL SAMPLES

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	
906	6250	: 6210- 6290	0.654	49.6	0.18	0.07	2.43	----
907	6430	: 6400- 6460	0.597	45.6	0.25	0.29	1.00	----
910	7580	: 7540- 7620	0.553	55.7	0.27	0.34	0.71	----

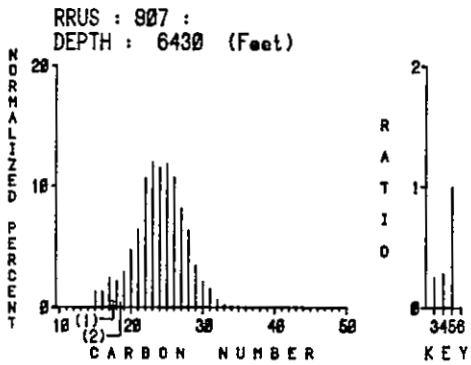
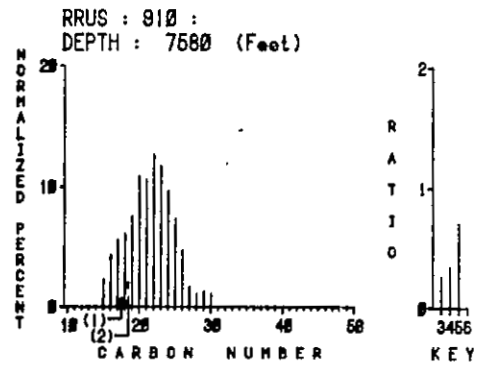
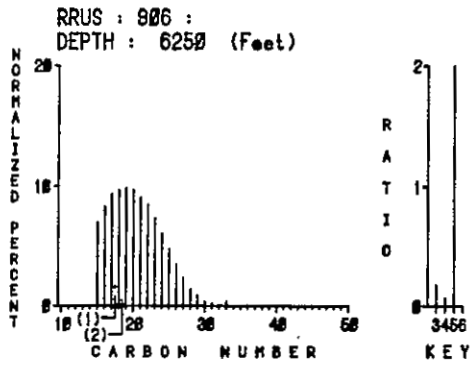
TABLE A.75

HEAVY HYDROCARBONS NORMALIZED TO 100%

GENERAL CRUDE #1 SIMPSON

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
906	6250	: 6210- 6290	7.00	8.30	9.40	9.70	9.90	9.70	9.20
907	6430	: 6400- 6460	1.30	1.30	2.40	2.10	2.90	4.70	6.40
910	7580	: 7540- 7620	2.30	4.30	5.60	6.10	7.60	10.90	10.60
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
906	6250	: 6210- 6290	8.50	7.40	6.10	4.80	3.50	2.40	1.40
907	6430	: 6400- 6460	10.60	12.00	11.50	11.80	10.70	8.20	6.30
910	7580	: 7540- 7620	12.70	11.80	9.70	7.50	4.70	1.70	1.10
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
906	6250	: 6210- 6290	0.75	0.50	0.30	0.10	0.40	0.00	0.00
907	6430	: 6400- 6460	3.50	2.10	1.50	0.60	0.20	0.00	0.00
910	7580	: 7540- 7620	1.30	1.10	0.00	0.00	0.00	0.00	0.00
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH
906	6250	: 6210- 6290	0.00	0.00	0.00	0.00	0.00	1.70	0.70
907	6430	: 6400- 6460	0.00	0.00	0.00	0.00	0.00	0.60	0.60
910	7580	: 7540- 7620	0.00	0.00	0.00	0.00	0.00	1.50	2.10

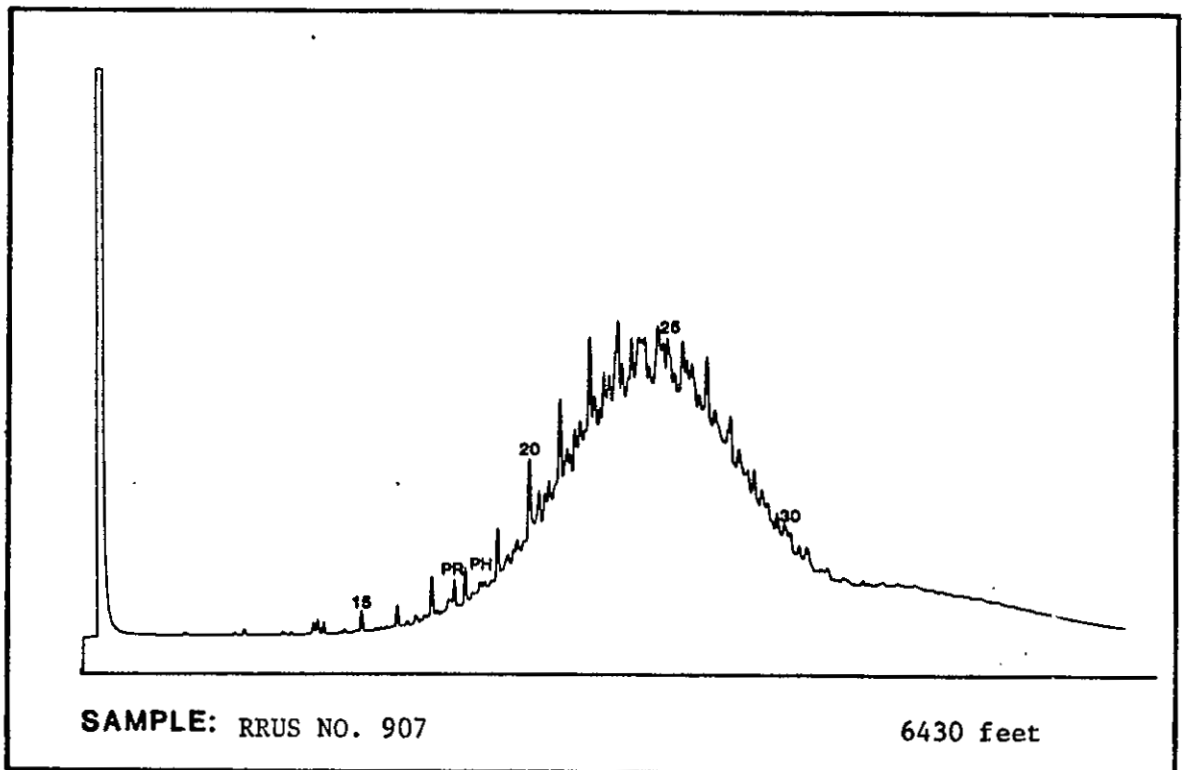
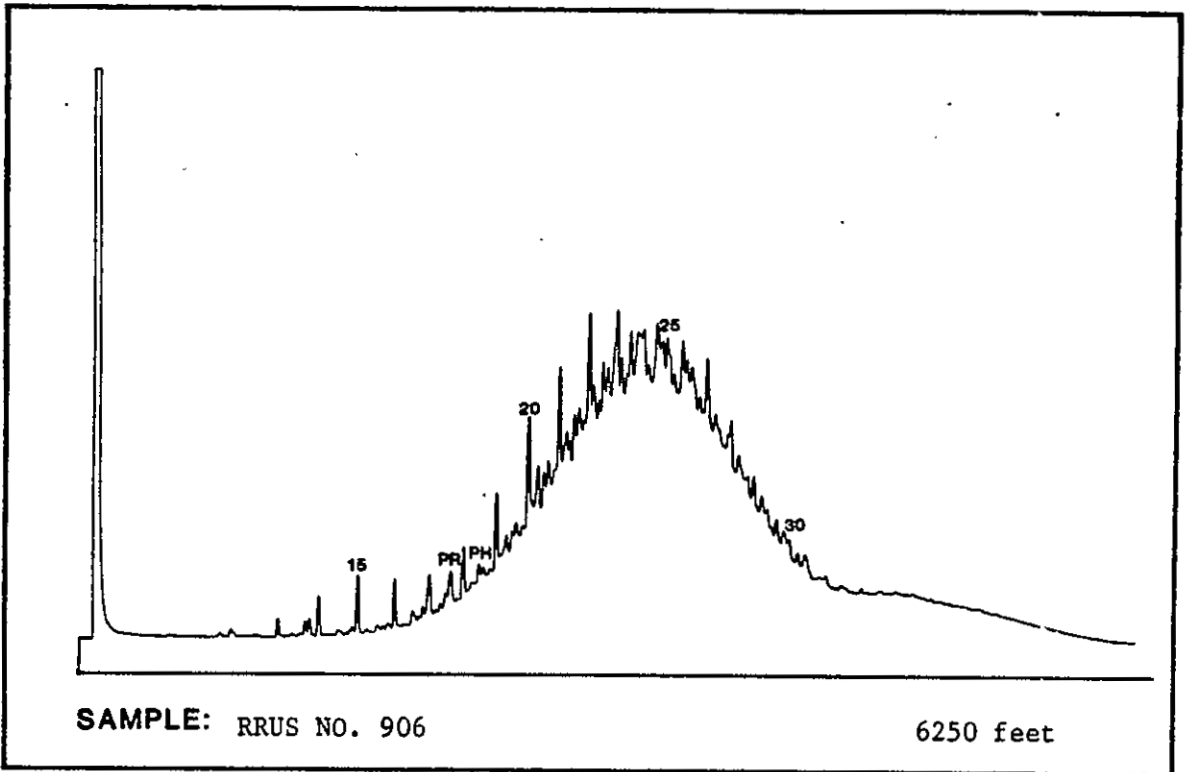


GENERAL CRUDE #1 SIMPSON

1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

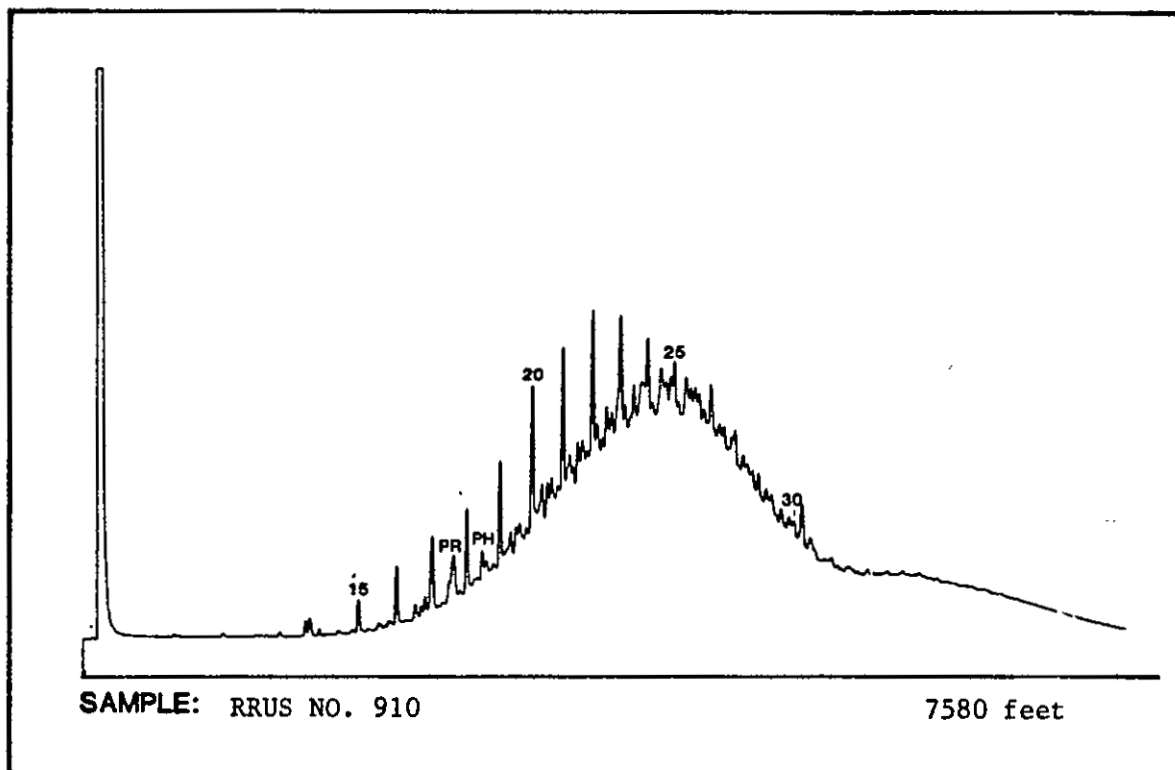
NORMALIZED DISTRIBUTION OF n-ALKANES

NO. 1 SIMPSON

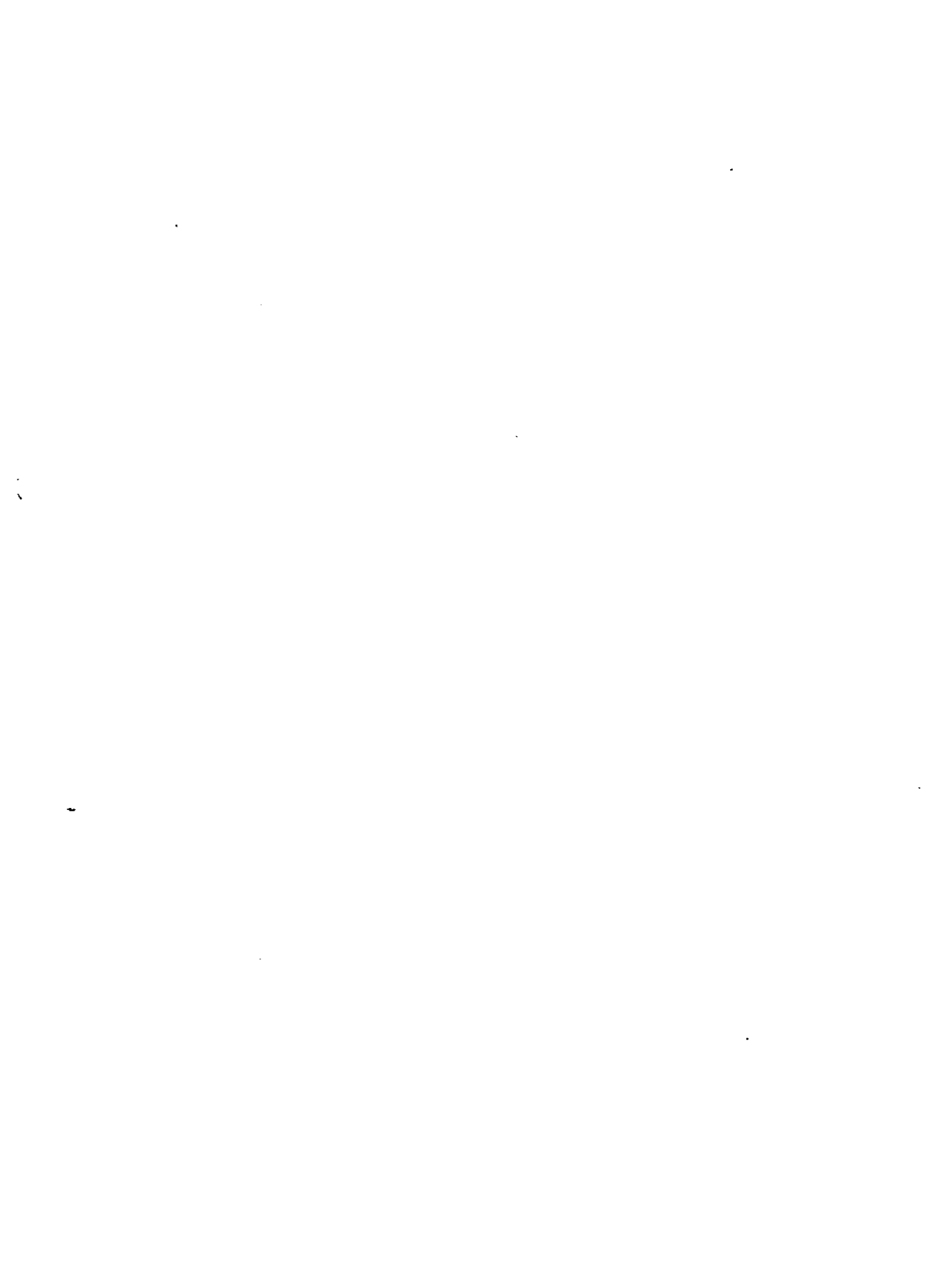


GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS

NO. 1 SIMPSON



GAS CHROMATOGRAMS OF C15+ SATURATE HYDROCARBONS



YATES PETROLUUM CORP., #1 T-4 CATTLE CO.

TABLE A.76

LITHOLOGIC DESCRIPTION

YATES

T-4 CATTLE COMPANY

400- 560'	Pink siltstone with abundant calcareous percentage, shale percentage very small.
560- 950'	Red sandstone with varying percentages of shale (mudstone) and calcareous pieces. Calcareous pieces are the least abundant, possibly some angular to subangular gypsum.
950-6,570'	Sandstone, red to pink, clean large pieces of quartz, angular to subangular pieces of light to dark gray shale, much of the sandstone stuck together with white and green to ochre clays, no visible gypsum, however some large calcareous (mudstone) clasts
6,570-7,220'	Sandstone-calcareous mudstone, red to pink, shale various colors red, lt. to dk. gray. Some rhyolite and quartz pieces. Quartz is sharp and clean. It is very difficult to determine the percentages of lithologies due to the dirt in the samples, however, the shale is definitely not as abundant as the sandstone.

TABLE A.77

TOTAL ORGANIC CARBON DATA
 YATES #1 T.H. CATTLE CO.
 Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA	SAMPLE IDENTIFICATION			DATA
RRUS	DEPTH	(Feet)	TOC%	RRUS	DEPTH	(Feet)	TOC%
1301	435	: 400- 470	0.05	1311	5535	: 5500- 5570	0.30
1302	1035	: 1000- 1070	0.06	1312	6035	: 6000- 6070	0.14
1303	1635	: 1600- 1670	0.06	1313	6320	: 6300- 6340	0.35
1304	2025	: 2000- 2050	0.21	1314	6455	: 6420- 6490	0.25
1305	2520	: 2500- 2540	0.38	1315	6595	: 6580- 6610	0.38
1306	3120	: 3070- 3170	0.07	1316	6750	: 6730- 6770	0.20
1307	3535	: 3490- 3580	0.09	1317	6880	: 6860- 6900	0.16
1308	4025	: 3990- 4060	0.04	1318	6955	: 6950- 6960	0.16
1309	4535	: 4500- 4570	0.08	1319	7200	: 7170- 7230	0.23
1310	5035	: 5000- 5070	0.08				

TABLE A.78

ROCK-EVAL PYROLYSIS RAW DATA

YATES #1 T.H. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			DATA (S1, S2, S3 mg/gm of rock, Tmax deg C)					
RRUS	DEPTH	(Feet)	S1	S2	S3	S2/S3	S1/(S1+S2)	Tmax
1304	2025	: 2000- 2050	0.050	0.060	0.460	0.130	0.455	---
1305	2520	: 2500- 2540	0.020	0.070	0.630	0.111	0.222	---
1311	5535	: 5500- 5570	0.060	0.360	0.600	0.600	0.143	---
1313	6320	: 6300- 6340	0.080	0.160	0.510	0.314	0.333	---
1315	6595	: 6580- 6610	0.030	0.140	0.440	0.318	0.176	---
1316	6750	: 6730- 6770	0.080	0.170	0.520	0.327	0.320	---
1319	7200	: 7170- 7230	0.160	0.340	0.450	0.756	0.320	---

NOTE: A DASH INDICATES AN INDETERMINABLE VALUE.

TABLE A.79

HYDROGEN AND OXYGEN INDICES FROM
ROCK-EVAL PYROLYSIS AND TOC DATA

YATES #1 T.H. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			HYDROGEN INDEX	OXYGEN INDEX	TOC
RRUS	DEPTH	(Feet)	(mg HC/gm TOC)	(mg CO2/gm TOC)	(%)
1304	2025	: 2000- 2050	29	219	0.21
1305	2520	: 2500- 2540	18	166	0.38
1311	5535	: 5500- 5570	120	200	0.30
1313	6320	: 6300- 6340	46	146	0.35
1315	6595	: 6580- 6610	37	116	0.38
1316	6750	: 6730- 6770	85	260	0.20
1319	7200	: 7170- 7230	148	196	0.23

TABLE A.80

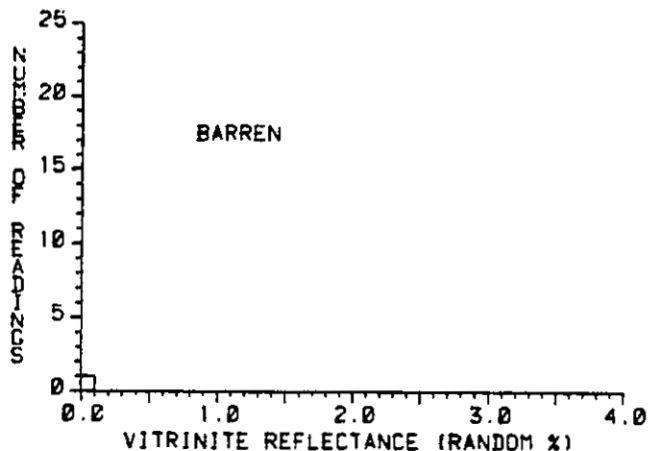
VISUAL KEROGEN ANALYSIS - REFLECTED LIGHT

YATES #1 T.M. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			REFLECT.	KEROGEN CHARACTERISTICS					TOC
RRUS	DEPTH	(Feet)	Ro %	Am%	Ex%	Vit%	Inert%	Fluor	%
1305	2520	: 2500- 2540	----	tr	0	tr	0	None	0.38
1311	5535	: 5500- 5570	0.73	25	tr	40	35	None	0.30
1313	6320	: 6300- 6340	----	tr	0	0	0	None	0.35
1315	6595	: 6580- 6610	0.96	45	0	35	20	Med	0.38
1316	6750	: 6730- 6770	0.95	55	0	25	20	None	0.20
1319	7200	: 7170- 7230	----	0	0	0	0	None	0.23

YATES #1 T.4. CATTLE CO.



RRUS No. : 1305
 ID : CTGS.
 DEPTH : 2070.0 Ft
 : 630.0 M
 MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

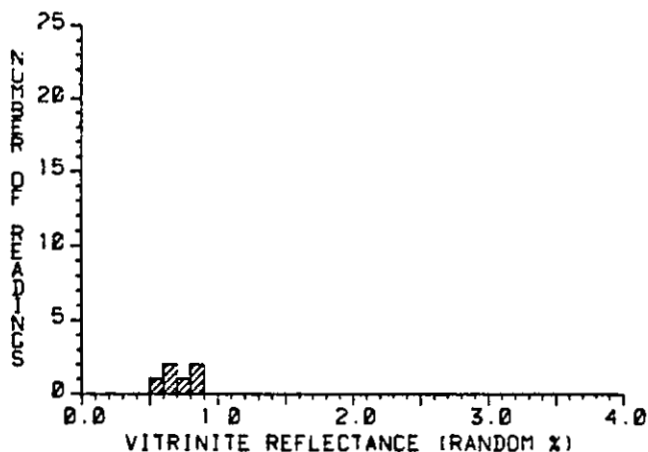
0.00

KEROGEN DESCRIPTION

Amorphous : 1r %
 Exinite : 0 %
 Vitrinite : 1r %
 Inertinite : 0 %

Back Fluor : None
 Bitumen : None
 Coke : None

YATES #1 T.4. CATTLE CO.



RRUS No. : 1311
 ID : CTGS
 DEPTH : 5035.0 Ft
 : 1534.7 M

* = Ro MATURITY

* VALUES : 6

MEAN : 0.73
 STD DEV : 0.11
 MEDIAN : 0.70
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

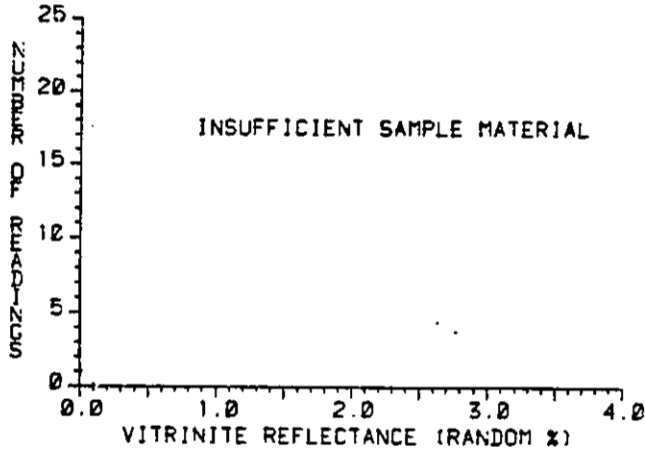
*0.59
 *0.67
 *0.68
 *0.70
 *0.88
 *0.89

KEROGEN DESCRIPTION

Amorphous : 25 %
 Exinite : 1r %
 Vitrinite : 40 %
 Inertinite : 35 %

Back Fluor : None
 Bitumen : 1r
 Coke : 1r

YATES #1 T.H. CATTLE CO.



RRUS No. : 1313
 ID : CTGS.
 DEPTH : 6170.0 F1
 : 1880.6 M
 MEAN : N.D.

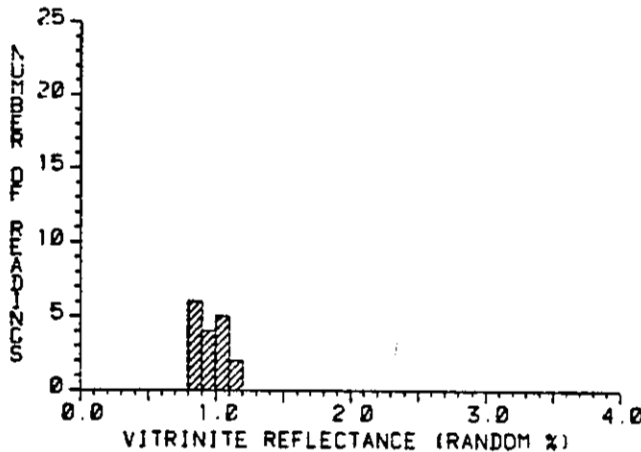
HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES.

KEROGEN DESCRIPTION

Amorphous : 1%
 Exinite : 0%
 Vitrinite : 0%
 Inertinite : 0%
 Back Fluor : None
 Bitumen : None
 Coke : None

YATES #1 T.H. CATTLE CO.



RRUS No. : 1315
 ID : CTGS.
 DEPTH : 6515.0 F1
 : 1685.8 M

* = Ro MATURITY
 * VALUES : 17
 MEAN : 0.96
 STD DEV : 0.11
 MEDIAN : 0.92
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

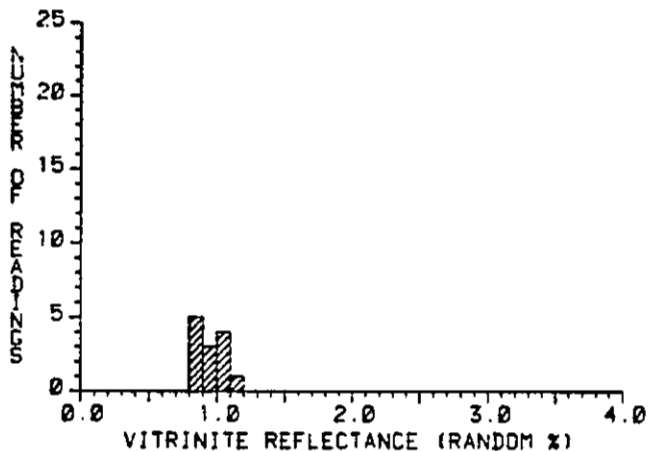
ORDERED REFLECTANCE VALUES.

*0.80 *1.02
 *0.83 *1.03
 *0.84 *1.06
 *0.85 *1.07
 *0.86 *1.08
 *0.88 *1.15
 *0.91 *1.15
 *0.92
 *0.82
 *0.98

KEROGEN DESCRIPTION

Amorphous : 45%
 Exinite : 0%
 Vitrinite : 35%
 Inertinite : 20%
 Back Fluor : Med
 Bitumen : 1%
 Coke : None

YATES #1 T.H. CATTLE CO.



RRUS No. : 1316
 ID : CTGS.
 DEPTH : 6815.0 Ft
 : 2077.2 M

* = Ro MATURITY

VALUES : 13

MEAN : 0.85
 STD DEV : 0.09
 MEDIAN : 0.90
 MODE : 0.85

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

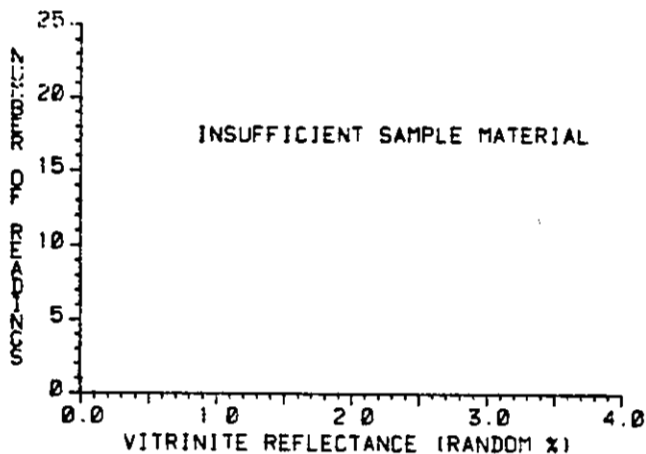
ORDERED REFLECTANCE VALUES:

*0.83 *1.06
 *0.85 *1.07
 *0.86 *1.10
 *0.87
 *0.89
 *0.90
 *0.90
 *0.93
 *1.00
 *1.03

KEROGEN DESCRIPTION

Amorphous : 55 %
 Exinite : 0 %
 Vitrinite : 25 %
 Inertinite : 20 %
 Back Fluor : None
 Bitumen : None
 Coke : None

YATES #1 T.H. CATTLE CO.



RRUS No. : 1319
 ID : CTGS.
 DEPTH : 7200.0 Ft
 : 2194.6 M

MEAN : N.D.

HISTOGRAM:
 Range: 0- 4%
 Increment: 0.10%

ORDERED REFLECTANCE VALUES:

KEROGEN DESCRIPTION

Amorphous : 0 %
 Exinite : 0 %
 Vitrinite : 0 %
 Inertinite : 0 %
 Back Fluor : None
 Bitumen : None
 Coke : None

TABLE A.81

COMPOSITION OF SOURCE ROCK EXTRACT

YATES #1 T.M. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SAT	AROM	POLARS
RRUS	DEPTH	(Feet)	ppm	percentage		
1319	7200	: 7170- 7230	1443	61.4	20.9	17.7

TABLE A.82

SUMMARY TABLE SHOWING SELECTED PARAMETERS OF OIL SAMPLES

YATES #1 T.M. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CFI
RRUS	DEPTH	(Feet)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	----
1319	7200	: 7170- 7230	0.627	61.4	0.71	0.72	0.71	----

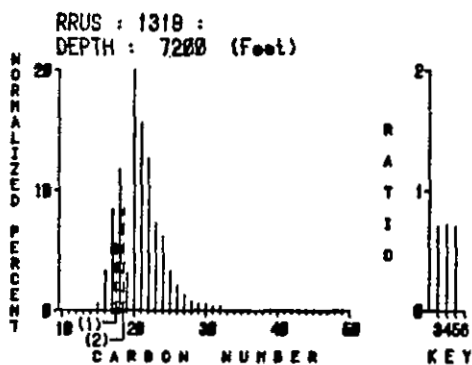
TABLE A.83

HEAVY HYDROCARBONS NORMALIZED TO 100%

YATES #1 T.H. CATTLE CO.

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES							
RRUS	DEPTH	(Feet)	C-15	C-16	C-17	C-18	C-19	C-20	C-21	
1319	7200	: 7170- 7230	0.60	3.30	8.50	11.80	3.20	21.40	15.70	
RRUS	DEPTH	(Feet)	C-22	C-23	C-24	C-25	C-26	C-27	C-28	
1319	7200	: 7170- 7230	12.70	7.30	6.20	3.30	2.10	1.30	0.80	
RRUS	DEPTH	(Feet)	C-29	C-30	C-31	C-32	C-33	C-34	C-35	
1319	7200	: 7170- 7230	0.60	0.50	0.30	0.30	0.00	0.00	0.00	
RRUS	DEPTH	(Feet)	C-36	C-37	C-38	C-39	C-40	PR	PH	
1319	7200	: 7170- 7230	0.00	0.00	0.00	0.00	0.00	6.00	8.50	

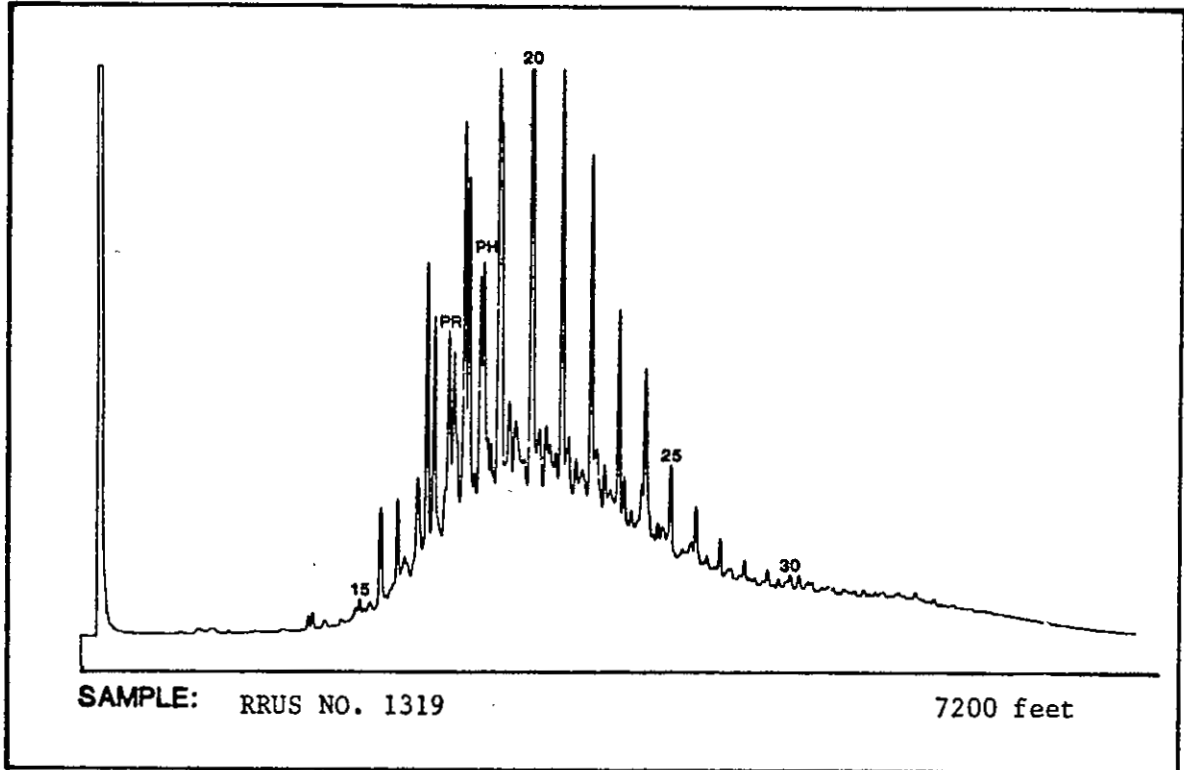


YATES #1 T.4. CATTLE CO.

1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
 2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

NORMALIZED DISTRIBUTION OF n-ALKANES

T-4 CATTLE CO.



GAS CHROMATOGRAMS OF C15+ SATURATE HYDROCARBONS

OILS

TABLE A.84

OIL COMPOSITION AND API GRAVITIES

OILS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			API	SAT	AROM	POLARS
RRUS	SAMPLE	(ID)	GRAVITY		percentage	
3401	B.T. EAST BILLY		39.6	72.8	23.7	3.5
3402	B.T. #1 NETTLES		40.3	62.6	31.7	5.7
3403	B.T. BILLY DST1		46.7	66.6	26.7	6.7
3404	LATIGO RANCH 1A		46.0	94.8	3.2	2.0
3405	B.T. BILLY		42.5	47.2	21.8	31.0
3406	MAR. MAYFIELD		32.6	51.6	36.4	12.0

TABLE A.85

SUMMARY TABLE SHOWING SELECTED PARAMETERS
OF OIL SAMPLES

OILS

Project No. : RRUS/845/M/807/4

SAMPLE IDENTIFICATION			EXTRACT	SATS	RATIOS			CPI
RRUS	SAMPLE	(ID)	----- TOC	%	Pr/ /C:17	Ph/ /C:18	Pr/ /Ph	
3401	B.T. EAST BILLY		----	72.8	0.84	0.96	0.95	0.99
3402	B.T. #1 NETTLES		----	62.6	1.04	1.25	0.88	1.04
3403	B.T. BILLY DST1		----	66.6	0.86	0.83	1.11	----
3404	LATIGO RANCH 1A		----	94.8	0.10	0.11	1.00	1.14
3405	B.T. BILLY		----	47.2	0.82	0.95	0.93	----
3406	MAR. MAYFIELD		----	51.6	1.75	1.78	1.03	1.08

TABLE A.86

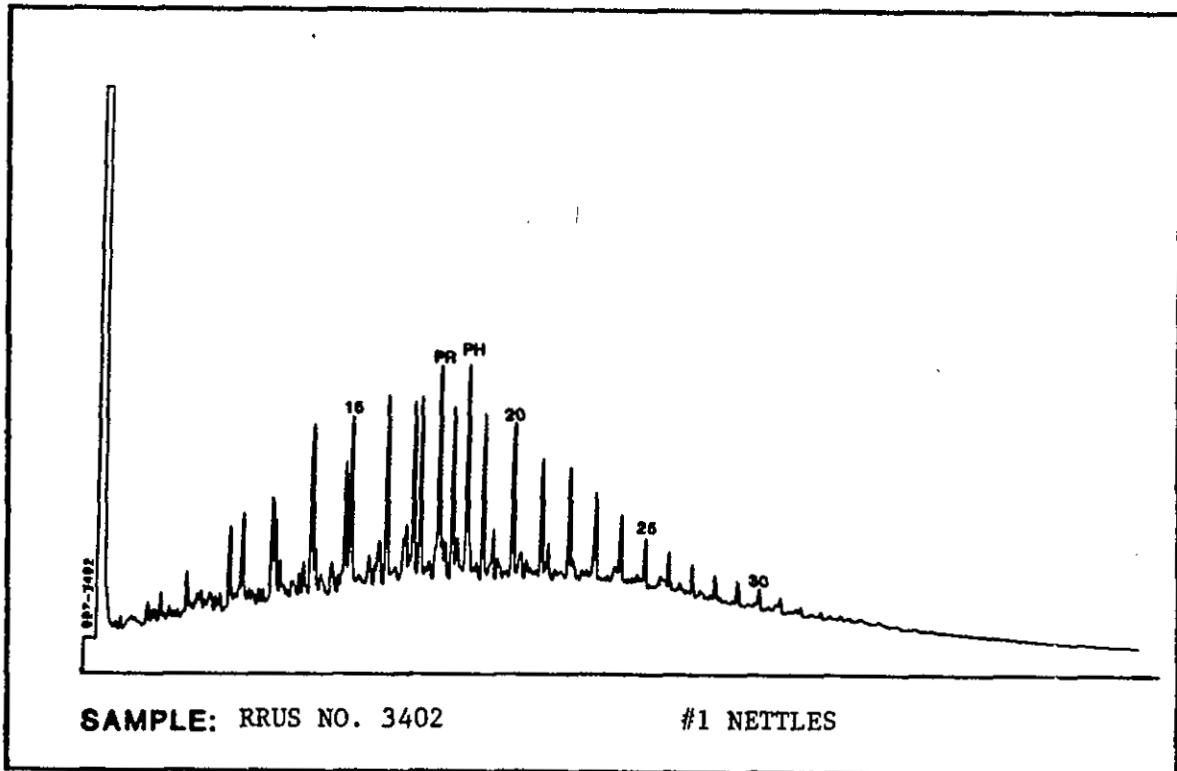
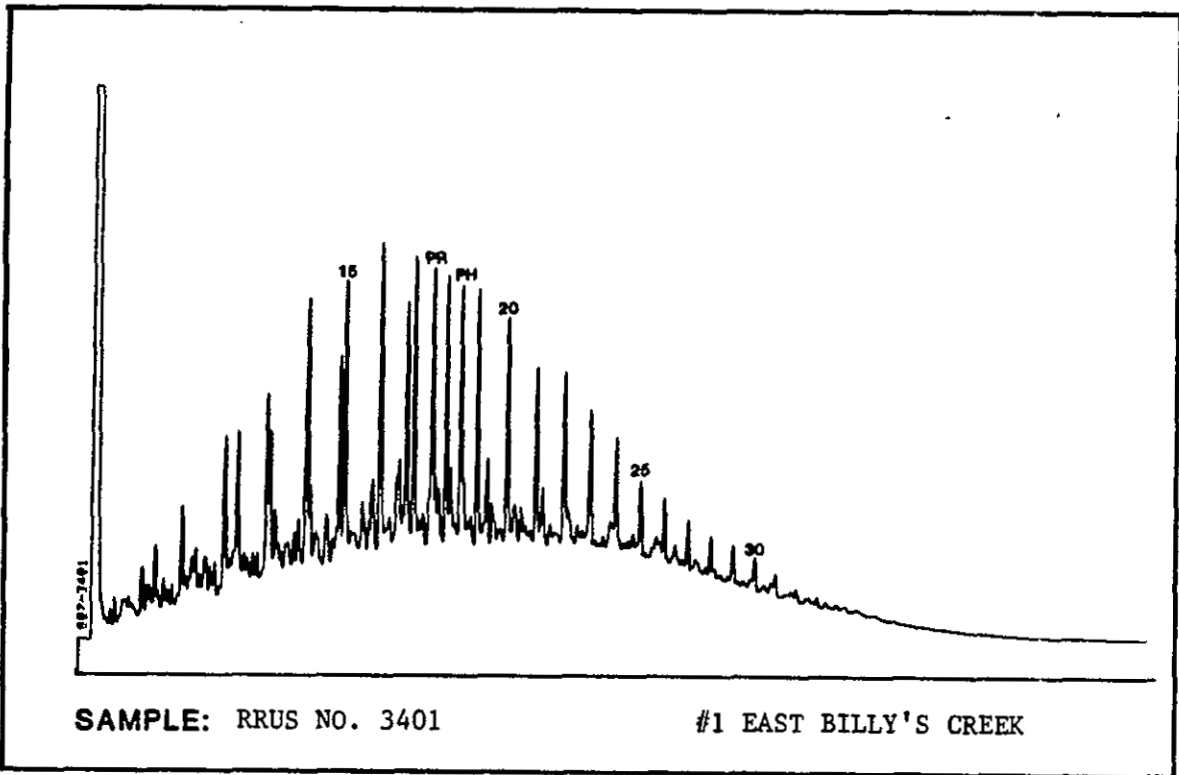
HEAVY HYDROCARBONS NORMALIZED TO 100%

OILS

Project No. : RRUS/B45/M/807/4

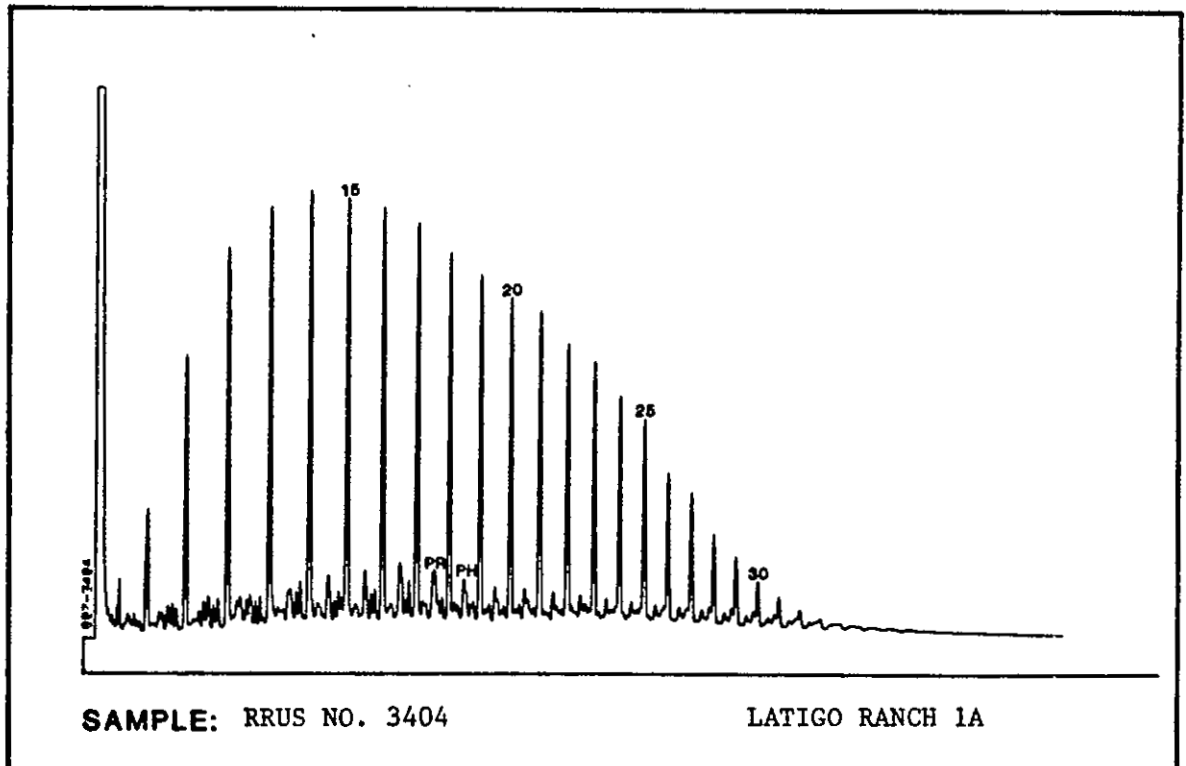
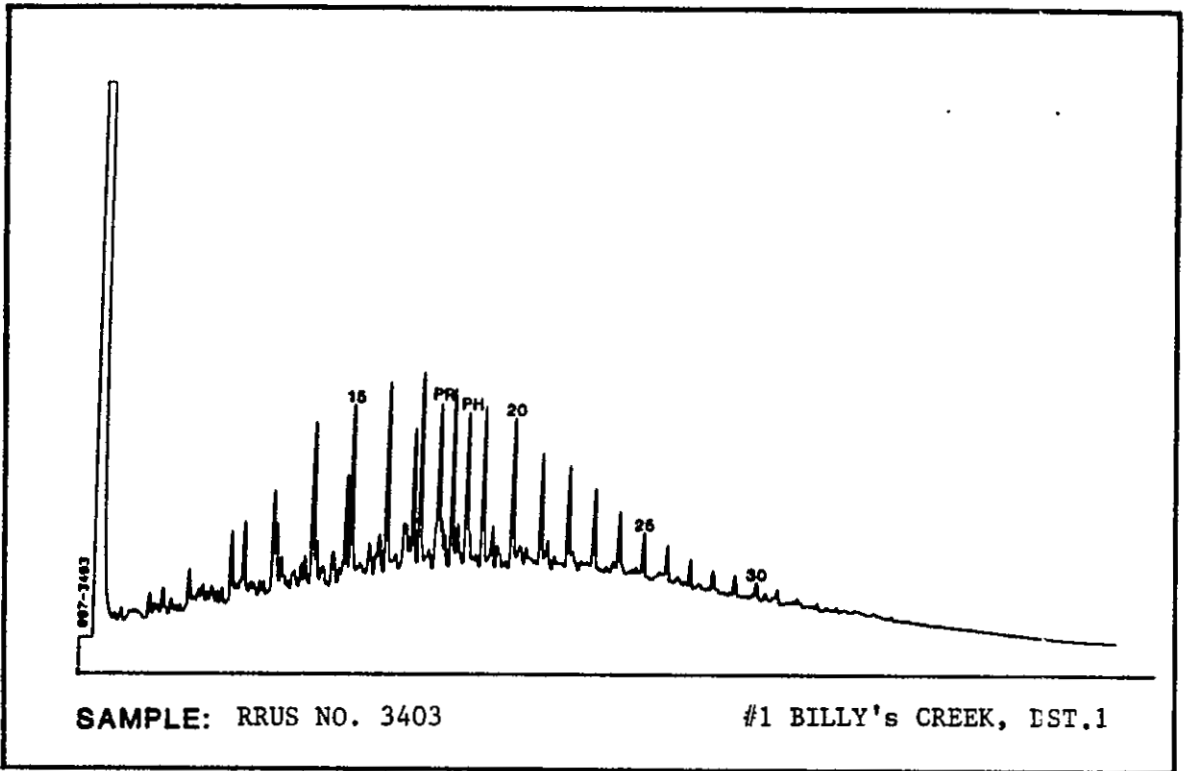
SAMPLE IDENTIFICATION			NORMALIZED n-ALKANES						
RRUS	SAMPLE	(ID)	C-15	C-16	C-17	C-18	C-19	C-20	C-21
3401	B.T. EAST BILLY		11.00	12.10	11.30	10.40	9.90	8.80	6.90
3402	B.T. #1 NETTLES		10.50	11.40	11.00	10.30	9.90	9.30	7.20
3403	B.T. BILLY DST1		10.70	11.70	11.70	10.90	9.70	9.10	6.90
3404	LATIGO RANCH 1A		10.40	10.20	9.80	9.10	8.50	8.00	7.50
3405	B.T. BILLY		14.30	12.80	11.40	10.50	10.00	9.00	6.70
3406	MAR. MAYFIELD		9.50	9.60	9.20	8.80	8.90	9.20	7.40
RRUS	SAMPLE	(ID)	C-22	C-23	C-24	C-25	C-26	C-27	C-28
3401	B.T. EAST BILLY		6.60	5.30	4.40	2.90	2.50	1.90	1.50
3402	B.T. #1 NETTLES		6.60	5.40	4.30	3.10	2.50	1.90	1.50
3403	B.T. BILLY DST1		6.50	5.30	4.20	3.10	2.60	2.00	1.50
3404	LATIGO RANCH 1A		6.70	6.30	5.50	5.00	3.60	3.20	2.20
3405	B.T. BILLY		6.20	4.80	3.50	2.60	2.00	1.60	1.20
3406	MAR. MAYFIELD		7.40	6.10	4.90	3.60	3.00	2.40	1.90
RRUS	SAMPLE	(ID)	C-29	C-30	C-31	C-32	C-33	C-34	C-35
3401	B.T. EAST BILLY		1.40	1.20	0.80	0.40	0.30	0.20	0.00
3402	B.T. #1 NETTLES		1.50	1.20	0.90	0.50	0.40	0.30	0.20
3403	B.T. BILLY DST1		1.40	1.10	0.90	0.50	0.40	0.00	0.00
3404	LATIGO RANCH 1A		1.70	1.10	0.70	0.40	0.10	0.10	0.00
3405	B.T. BILLY		1.20	0.90	0.60	0.40	0.20	0.00	0.00
3406	MAR. MAYFIELD		2.10	1.60	1.40	0.80	0.70	0.40	0.40
RRUS	SAMPLE	(ID)	C-36	C-37	C-38	C-39	C-40	PR	PH
3401	B.T. EAST BILLY		0.00	0.00	0.00	0.00	0.00	9.50	10.00
3402	B.T. #1 NETTLES		0.20	0.00	0.00	0.00	0.00	11.40	12.90
3403	B.T. BILLY DST1		0.00	0.00	0.00	0.00	0.00	10.10	9.10
3404	LATIGO RANCH 1A		0.00	0.00	0.00	0.00	0.00	1.00	1.00
3405	B.T. BILLY		0.00	0.00	0.00	0.00	0.00	9.30	10.00
3406	MAR. MAYFIELD		0.30	0.00	0.00	0.00	0.00	16.10	15.70

OILS



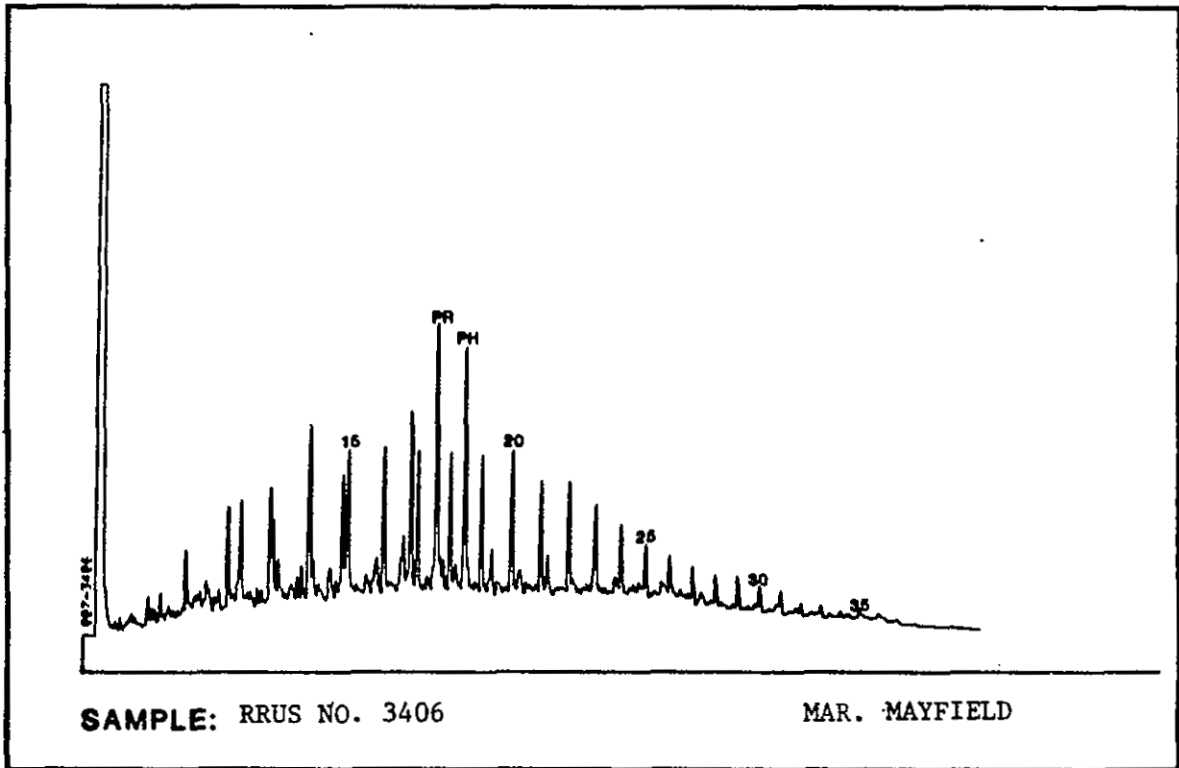
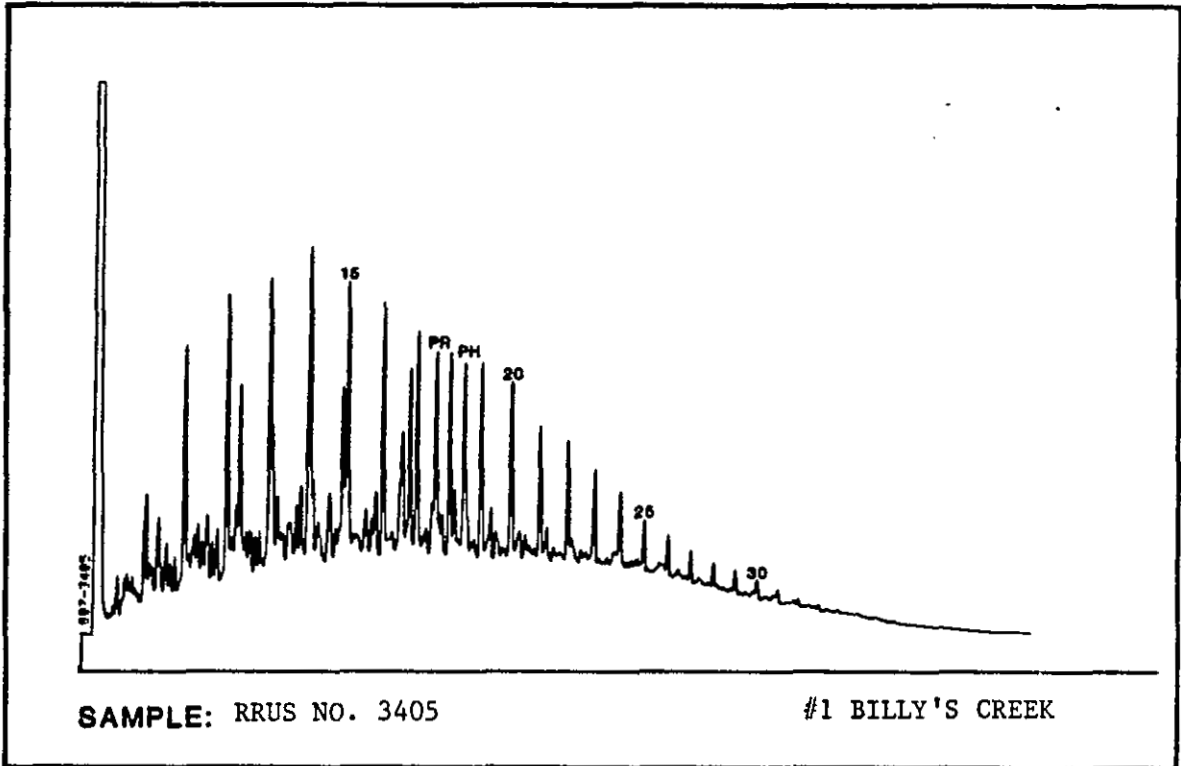
GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS

OILS

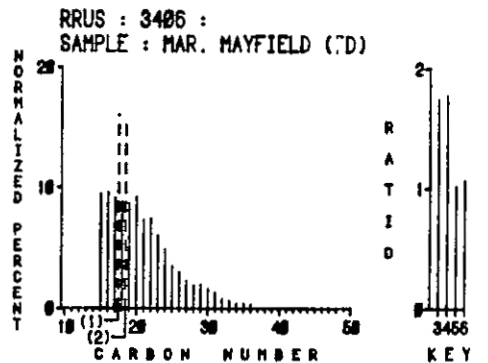
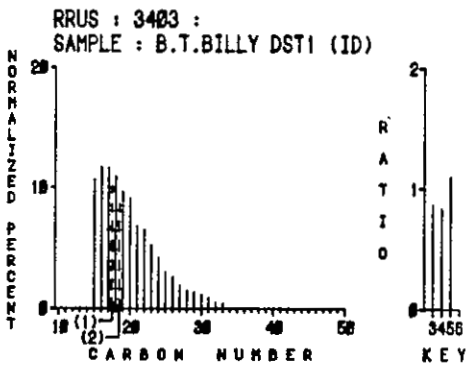
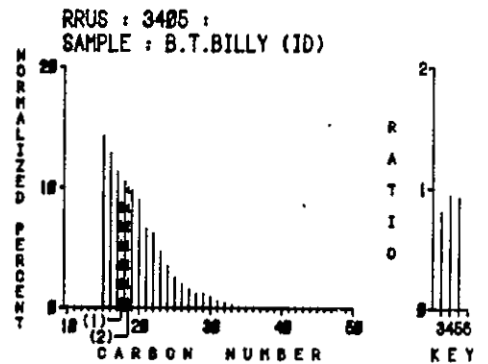
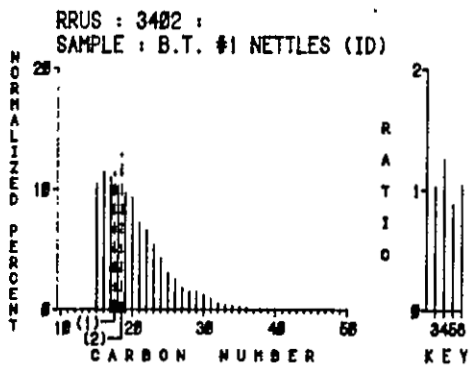
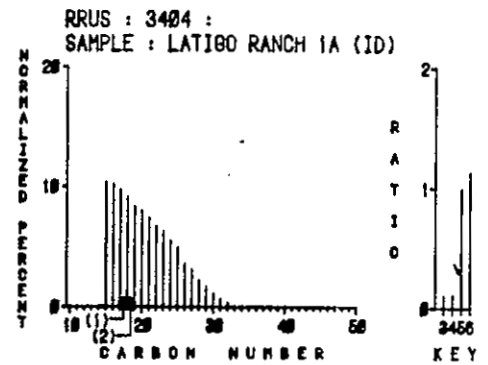
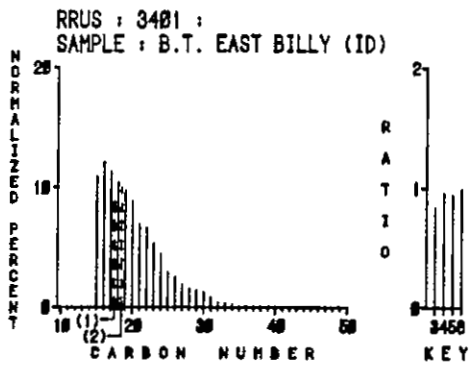


GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS

OILS



GAS CHROMATOGRAMS OF C15 + SATURATE HYDROCARBONS



OILS

1=100xPristane/Total 3=Pristane/n-C-17 5=Pristane/Phytane
2=100xPhytane/Total 4=Phytane/n-C-18 6=Carbon Pref.Index

NORMALIZED DISTRIBUTION OF n-ALKANES

TABLE A.87

LIST OF ABBREVIATIONS USED
IN GASOLINE RANGE HYDROCARBONS DATA TABLE

COMPONENT	DEFINITION
1. METHANE	: METHANE
2. ETHANE	: ETHANE
3. PROPANE	: PROPANE
4. i-BUTANE	: iso-BUTANE
5. n-BUTANE	: normal-BUTANE
6. i-PENTANE	: iso-PENTANE
7. n-PENTANE	: normal-PENTANE
8. 2,2 DMB	: 2,2 DI-METHYL-BUTANE
9. CP	: CYCLO-PENTANE
10. 2,3 DMB	: 2,3 DI-METHYL-BUTANE
11. 2 MP	: 2 METHYL-PENTANE
12. 3 MP	: 3 METHYL-PENTANE
13. HEXANE	: HEXANE
14. MCP	: METHYL-CYCLO-PENTANE
15. 2,2 DMP	: 2,2 DI-METHYL-PENTANE
16. 2,4 DMP	: 2,4 DI-METHYL-PENTANE
17. BENZENE	: BENZENE
18. CH	: CYCLO-HEXANE
19. 3,3 DMP	: 3,3 DI-METHYL-PENTANE
20. 2 MH	: 2 METHYL-HEXANE
21. 2,3 DMP	: 2,3 DI-METHYL-PENTANE
22. 1,1 DMCP	: 1,1 DI-METHYL-CYCLO-PENTANE
23. 3 MH	: 3 METHYL-HEXANE
24. 1-o-3 DMCP	: 1- <i>o</i> -3 DI-METHYL-CYCLO-PENTANE
25. 1-t-3 DMCP	: 1- <i>t</i> -3 DI-METHYL-CYCLO-PENTANE
26. 1-t-2 DMCP	: 1- <i>t</i> -2 DI-METHYL-CYCLO-PENTANE
27. 3 EP	: 3 ETHYL-PENTANE
28. HEPTANE	: HEPTANE
29. MCH *	: METHYL-CYCLO-HEXANE+(1- <i>o</i> -2 DMCP)
30. ECP	: ETHYL-CYCLO-PENTANE
31. TOLUENE	: TOLUENE
tr	: TRACE AMOUNT DETECTED (<0.1%)
na	: COMPONENT RATIO NOT AVAILABLE
*	: CO-ELUTING COMPONENTS

TABLE A.88

INDIVIDUAL COMPONENT CONCENTRATIONS
IN GASOLINE RANGE HYDROCARBONS

OILS

Project No. : RRUS/845/M/807/4

RRUS : 3401

ID : B.T. EAST BILLY

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	3.4	23. 3 MH	5.5
2. ETHANE	0.0	13. HEXANE	0.9	24. 1-c-3 DMCP	3.8
3. PROPANE	0.0	14. MCP	2.6	25. 1-t-3 DMCP	3.6
4. i-BUTANE	0.2	15. 2,2 DMP	2.6	26. 1-t-2 DMCP	4.7
5. n-BUTANE	0.1	16. 2,4 DMP	0.8	27. 3 EP	4.7
6. i-PENTANE	3.0	17. BENZENE	0.1	28. HEPTANE	2.5
7. n-PENTANE	0.2	18. CH	7.8	29. MCH	32.2
8. 2,2 DMB	0.4	19. 3,3 DMP	0.3	30. ECP	0.6
9. CP	0.3	20. 2 MH	5.6	31. TOLUENE	2.1
10. 2,3 DMB	1.4	21. 2,3 DMP	0.0		
11. 2 MP	3.5	22. 1,1 DMCP	6.0		

RATIOS

1. i-BUTANE / n-BUTANE	1.9
2. i-PENTANE / n-PENTANE	10.9
3. CP / 2,3 DMB	0.2
4. 2 MP / 3 MP	1.0
5. HEX / (MCP + 2,2 DMP)	0.1
6. 2 MH / 2,4 DMP	7.0
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	0.5
8. 1-t-3 DMCP / 1-t-2 DMCP	0.7
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	0.4
10. (HEX + HEP) / 3 MH	0.6
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	7.1
12. CH / (MCH + 1-c-2 DMCP)	0.2
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	0.1

RRUS : 3402

ID : B.T. #1 NETTLES

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	3.4	23. 3 MH	5.0
2. ETHANE	0.0	13. HEXANE	0.9	24. 1-c-3 DMCP	4.3
3. PROPANE	0.0	14. MCP	3.1	25. 1-t-3 DMCP	4.0
4. i-BUTANE	0.2	15. 2,2 DMP	3.1	26. 1-t-2 DMCP	5.4
5. n-BUTANE	0.1	16. 2,4 DMP	0.9	27. 3 EP	5.4
6. i-PENTANE	3.7	17. BENZENE	0.6	28. HEPTANE	2.3
7. n-PENTANE	0.5	18. CH	8.9	29. MCH	26.4
8. 2,2 DMB	0.3	19. 3,3 DMP	0.3	30. ECP	0.5
9. CP	0.3	20. 2 MH	4.6	31. TOLUENE	5.2
10. 2,3 DMB	1.8	21. 2,3 DMP	0.0		
11. 2 MP	3.3	22. 1,1 DMCP	5.1		

RATIOS

1. i-BUTANE / n-BUTANE	1.6
2. i-PENTANE / n-PENTANE	7.5
3. CP / 2,3 DMB	0.2
4. 2 MP / 3 MP	0.9
5. HEX / (MCP + 2,2 DMP)	0.1
6. 2 MH / 2,4 DMP	5.0
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	0.5
8. 1-t-3 DMCP / 1-t-2 DMCP	0.7
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	0.4
10. (HEX + HEP) / 3 MH	0.6
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	7.0
12. CH / (MCH + 1-c-2 DMCP)	0.3
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	0.2

INDIVIDUAL COMPONENT CONCENTRATIONS
IN GASOLINE RANGE HYDROCARBONS

OILS

Project No. : RRUS/845/M/807/4

RRUS : 3403 ID : B.T.BILLY DST1

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	2.5	23. 3 MH	4.5
2. ETHANE	0.0	13. HEXANE	3.0	24. 1-c-3 DMCP	2.6
3. PROPANE	0.0	14. MCP	2.2	25. 1-t-3 DMCP	2.4
4. i-BUTANE	0.2	15. 2,2 DMP	2.2	26. 1-t-2 DMCP	3.9
5. n-BUTANE	0.7	16. 2,4 DMP	0.6	27. 3 EP	3.9
6. i-PENTANE	2.4	17. BENZENE	2.4	28. HEPTANE	6.6
7. n-PENTANE	1.9	18. CH	7.3	29. MCH	23.5
8. 2,2 DMB	0.5	19. 3,3 DMP	0.2	30. ECP	0.7
9. CP	0.3	20. 2 MH	4.7	31. TOLUENE	13.6
10. 2,3 DMB	0.9	21. 2,3 DMP	0.0		
11. 2 MP	2.6	22. 1,1 DMCP	3.4		

RATIOS

1. i-BUTANE / n-BUTANE	0.3
2. i-PENTANE / n-PENTANE	1.2
3. CP / 2,3 DMB	0.4
4. 2 MP / 3 MP	1.0
5. HEX / (MCP + 2,2 DMP)	0.6
6. 2 MH / 2,4 DMP	7.4
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	0.7
8. 1-t-3 DMCP / 1-t-2 DMCP	0.6
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	0.5
10. (HEX + HEP) / 3 MH	2.1
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	6.8
12. CH / (MCH + 1-c-2 DMCP)	0.3
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	0.2

RRUS : 3404 ID : LATIGO RANCH 1A

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	3.5	23. 3 MH	3.4
2. ETHANE	0.0	13. HEXANE	10.3	24. 1-c-3 DMCP	0.8
3. PROPANE	0.0	14. MCP	2.4	25. 1-t-3 DMCP	0.8
4. i-BUTANE	2.3	15. 2,2 DMP	2.4	26. 1-t-2 DMCP	0.7
5. n-BUTANE	4.7	16. 2,4 DMP	0.6	27. 3 EP	0.7
6. i-PENTANE	10.6	17. BENZENE	1.6	28. HEPTANE	12.2
7. n-PENTANE	9.5	18. CH	4.1	29. MCH	10.7
8. 2,2 DMB	0.4	19. 3,3 DMP	0.1	30. ECP	0.4
9. CP	0.4	20. 2 MH	4.5	31. TOLUENE	5.7
10. 2,3 DMB	1.4	21. 2,3 DMP	0.0		
11. 2 MP	5.5	22. 1,1 DMCP	tr		

RATIOS

1. i-BUTANE / n-BUTANE	0.5
2. i-PENTANE / n-PENTANE	1.1
3. CP / 2,3 DMB	0.3
4. 2 MP / 3 MP	1.5
5. HEX / (MCP + 2,2 DMP)	2.1
6. 2 MH / 2,4 DMP	7.4
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	na
8. 1-t-3 DMCP / 1-t-2 DMCP	1.1
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	1.7
10. (HEX + HEP) / 3 MH	6.6
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	4.3
12. CH / (MCH + 1-c-2 DMCP)	0.3
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	0.4

INDIVIDUAL COMPONENT CONCENTRATIONS
IN GASOLINE RANGE HYDROCARBONS

OILS

Project No. : RRUS/845/M/807/4

RRUS : 3405

ID : B.T.BILLY

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	3.2	23. 3 MH	3.4
2. ETHANE	0.0	13. HEXANE	7.7	24. 1-c-3 DMCP	2.1
3. PROPANE	0.0	14. MCP	0.2	25. 1-t-3 DMCP	0.2
4. i-BUTANE	2.2	15. 2,2 DMP	0.2	26. 1-t-2 DMCP	0.1
5. n-BUTANE	10.9	16. 2,4 DMP	0.3	27. 3 EP	0.1
6. i-PENTANE	9.6	17. BENZENE	0.4	28. HEPTANE	6.3
7. n-PENTANE	14.2	18. CH	4.6	29. MCH	9.8
8. 2,2 DMB	0.1	19. 3,3 DMP	tr	30. ECP	0.4
9. CP	1.2	20. 2 MH	3.3	31. TOLUENE	1.8
10. 2,3 DMB	0.5	21. 2,3 DMP	0.0		
11. 2 MP	5.2	22. 1,1 DMCP	0.9		

RATIOS

1. i-BUTANE / n-BUTANE	0.2
2. i-PENTANE / n-PENTANE	0.6
3. CP / 2,3 DMB	2.3
4. 2 MP / 3 MP	1.6
5. HEX / (MCP + 2,2 DMP)	17.6
6. 2 MH / 2,4 DMP	10.6
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	1.0
8. 1-t-3 DMCP / 1-t-2 DMCP	1.2
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	1.3
10. (HEX + HEP) / 3 MH	4.1
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	4.2
12. CH / (MCH + 1-c-2 DMCP)	0.4
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	na

RRUS : 3406

ID : MAR. MAYFIELD

COMPONENT	%	COMPONENT	%	COMPONENT	%
1. METHANE	0.0	12. 3 MP	3.8	23. 3 MH	5.8
2. ETHANE	0.0	13. HEXANE	4.0	24. 1-c-3 DMCP	7.4
3. PROPANE	0.0	14. MCP	0.5	25. 1-t-3 DMCP	7.0
4. i-BUTANE	0.2	15. 2,2 DMP	0.5	26. 1-t-2 DMCP	7.4
5. n-BUTANE	0.5	16. 2,4 DMP	0.3	27. 3 EP	7.4
6. i-PENTANE	3.0	17. BENZENE	0.4	28. HEPTANE	7.0
7. n-PENTANE	2.9	18. CH	3.0	29. MCH	13.1
8. 2,2 DMB	0.1	19. 3,3 DMP	0.1	30. ECP	1.7
9. CP	0.9	20. 2 MH	4.5	31. TOLUENE	2.1
10. 2,3 DMB	0.3	21. 2,3 DMP	0.0		
11. 2 MP	4.0	22. 1,1 DMCP	1.8		

RATIOS

1. i-BUTANE / n-BUTANE	0.4
2. i-PENTANE / n-PENTANE	1.0
3. CP / 2,3 DMB	2.4
4. 2 MP / 3 MP	1.0
5. HEX / (MCP + 2,2 DMP)	4.0
6. 2 MH / 2,4 DMP	13.9
7. 3 MH / (1,1 DMCP + 1-c-3 DMCP)	0.6
8. 1-t-3 DMCP / 1-t-2 DMCP	0.9
9. CH / (1,1: + 1-c-3: + 1-t-2: + 1-t-3:DMCP)	0.1
10. (HEX + HEP) / 3 MH	1.9
11. (CH + 1-c-2 DMCP + MCH) / 3 MH	2.8
12. CH / (MCH + 1-c-2 DMCP)	0.2
13. (MCP + 2,2 DMP) / (MCH + 1-c-2 DMCP)	na

TABLE A.89

GASOLINE HYDROCARBONS Thompson Indices		Project : RRUS/845/M/807/4 Title : OILS	
RRUS SAMPLE	(ID)	iso-HEPTANE VALUE	HEPTANE VALUE
3401	B.T. EAST BILLY	0.922	3.312
3402	B.T. #1 NETTLES	0.698	3.248
3403	B.T. BILLY DST1	1.023	10.565
3404	LATIGO RANCH 1A	3.342	32.206
3405	B.T. BILLY	2.694	20.339
3406	MAR. MAYFIELD	0.475	10.854

TABLE A.90

Classification of oil on the basis of light hydrocarbon composition.

Petroleum Class	Class Limits		Petroleum Class	Class Limits	
	Heptane Value	Isoheptane Value		Heptane Value	Isoheptane Value
Normal, Paraffinic	18 - 22 (41%)	0.8 - 1.2 (42%)	Supermature	30 - 60 (13%)	2.0 - 4.0 (10%)
Mature	22 - 30 (26%)	1.2 - 2.0 (28%)	Biodegraded	0 - 18 (20%)	0 - 0.8 (20%)

Thompson, K. F. M., 1983, Classification and thermal history of petroleum based on light hydrocarbons: *Geochim. et Cosmochim. Acta*, Vol. 47, p. 303-316.