New Mexico Bureau of Mines and Mineral Resources
Open File Report No. OF-350

ORGANIC GEOCHEMICAL ANALYSIS, SUN OIL CO. NO. 1 VICTORIO LAND AND CATTLE CO. WELL, SIERRA COUNTY, NEW MEXICO

by
Stephen R. Jacobson,
James S. Rankin, and
James D. Saxton
Chevron U.S.A., Inc.
Denver, Colorado

October 5, 1982

Sun #1 Victoria
25-10S-1W
Sierra Co, NM

Chevron U.S.A. Inc.
700 South Colorado Blvd., P. O. Box 599, Denver, CO 80201

October 5, 1982

Mr. R. A. Bieberman
New Mexico Bureau of Mines
and Mineral Resources
Socorro, NM 87801

Dear Mr. Bieberman:

Chevron has been slow in returning the samples you loaned us, and I thought a note of explanation was in order. To obtain the best possible analytical results we have:

1. decided to have a Chevron geologist (me) pick the samples to be analyzed, and

2. have the analytical work done "in-house," TOC and pyrolysis testing at our research lab in California and kerogen typing and thermal alteration history performed here in the Denver office.

Both my picking and the in-house testing are requiring more time than anticipated. We have assigned an additional geologist to assist in sample picking and are exploring methods to reduce the time required for the geochemical work. While having a commercial lab do the work would be faster and less expensive, we feel that the data quality obtained would be of lower quality and usefulness. I do appreciate your patience and understanding.

Would you please hold the enclosed report in your confidential file for one year? I've included a copy for Mr. Thompson, please communicate the one year request to him.

We are finishing work on the Shell No. 1 Leeman and the Gartland No. 1 Bristor wells, both in Sierra Coumty, and will be returning those samples to you soon.

Yours very truly,

James S. Rankin

James S. Rankin

JSR:ksh

cc: G. C. Young, Chevron U.S.A. Inc.
M. I. Roberson, Chevron U.S.A. Inc.

Recd 10-10-82

COFRC #	DEPTH (FT)	E	AGE	FORM	DESCRIPTION	S1	S2	S3	TMAX S2	S1 (S1+S2)	S2/S3	WT % TOC	HI	OI
40605-001	730-800	D	Cret		Shale-gy	.2	.5	.3	439	.3	1.9	1.02	45	24
40605-002	800-900	D	Cret		Shale-gy	.2	.3	.3	436	.3	1.1	.82	39	35
40605-003	900-1000	D	Cret		Shale-drk gy	.2	.3	.3	448	.4	1.1	.85	36	33
40605-004	1030-1100	D	Cret		Shale-gy	**						.10		
40605-005	1200-1310	D	Perm	S. Andres	Limest-lt gy	.1		.4				.35		99
40605-006	1310-1500	D	Perm	S. Andres	Limest-lt to drk gy	**		.2				.29		77
40605-007	1500-1600	D	Perm	S. Andres	Limest-AA	.1	.2	.1	462	.3	1.4	.82	24	18
40605-008	1600-1700	D	Perm	S. Andres	Limest-gy to blk	.2	.3	.2	468	.5	1.4	.93	27	19
40605-009	1700-1800	D	Perm	S. Andres	Limest med to drk gy	.2	.1	.1	469	.7	.8	.74		17
40605-010	1800-1900	D	Perm	S. Andres	Limest-lt to drk gy	.1		.1				.42		29
40605-011	2080-2300	D	Perm	Yeso	Limest-med gy	.1		.2				.40		37
40605-012	2300-2530	D	Perm	Yeso	Limest-med to drk gy	.2		.2				.59		30
40605-013	2530-2700	D	Perm	Yeso	Limest-AA	.1		.1				.30		48
40605-014	2700-2830	D	Perm	Yeso	Limest-AA	**		.2				.26		58
40605-015	3900-3920	D	Penn		Limest-AA	**		.4				.24		157
40605-016	3940-4200	D	Penn		Limest-lt to med gy			.3				.15		
40605-017	4200-4240	D	Penn		Limest-drk gy			.6				.40		
40605-018	4240-4400	D	Penn		Limest-lt to med gy	-		.5				.22		
40605-019	4400-4450	D	Penn		Limest-med to drk gy	**		.6				.36		
40605-020	4450-4570	D	Penn		Limest-lt to med gy			.4				.34		
40605-021	4570-4580	D	Penn		Shale/Limest-drk gy to blk			.9				.36		
40605-022	4800-4830	D	Penn		Shale/Limest-AA			.8				.28		
40605-023	4830-5045	D	Penn		Limest-lt to med gy			.5				.24		197
40605-024	5060-5170	D	Penn		Limest-AA			.6				.23		240
40605-025	5210-5235	D	Penn		Limest-med gy to blk			.4				.28		151
40605-026	5340-5400	D	Penn		Calc Sh-drk gy to blk			.5				.28		182
40605-027	5400-5500	D	Penn		Limest-gy	**		.5				.65		77
40605-028	5500-5600	D	Penn		Limest-gy	**		.5				.74		73
40605-029	5600-5710	D	Penn		Limest-gy	**		.4				.51		71
40605-030	5775-5900	D	Penn		Shale-drk gy to blk	**		.7				1.04		64
40605-031	5900-6000	D	Penn		Shale-AA	**		.4				1.01		43

(** = Value less than 0.1 which is below the detectable limit)

S1: HG HC'S/GM Rock, a measure of the bitumen content and,therefore, of amount of generation that has occurred.

S2: MG HC'S/GM Rock, a measure of the generating capacity. Is a function of the quantity, oil proneness and maturity of the organic matter.

S3: MG CO2/GM Rock, a measure of the ability of the OM to generate non-hydrocarbons, also depends upon quantity, oil proneness and maturity of the OM.

TMAX: Temperature (Deg C.) at which rate of hydrocarbon generation peaks. A function of maturation of the OM.

S1/S1+S2: Ratio of amount generated to toal generative potential; a maturation indicator.

S2/S3: A measure of the oil proneness of the OM.

HI (Hydrogen Index = 100S2/TOC): MG HC'S/GM organic carbon; a measure of the oil proneness of a unit amount of OM.

OI (Oxygen Index = 100S3/TOC): MG CO2/GM organic carbon; a measure of the ability of a unit amount of the OM to generate non-hydrocarbons.

Type D indicates drill cuttings (picked by a geologist).

Color key for rock descriptions: gy=gray, drk gy=dark gray, blk=black, lt=light, AA=as above

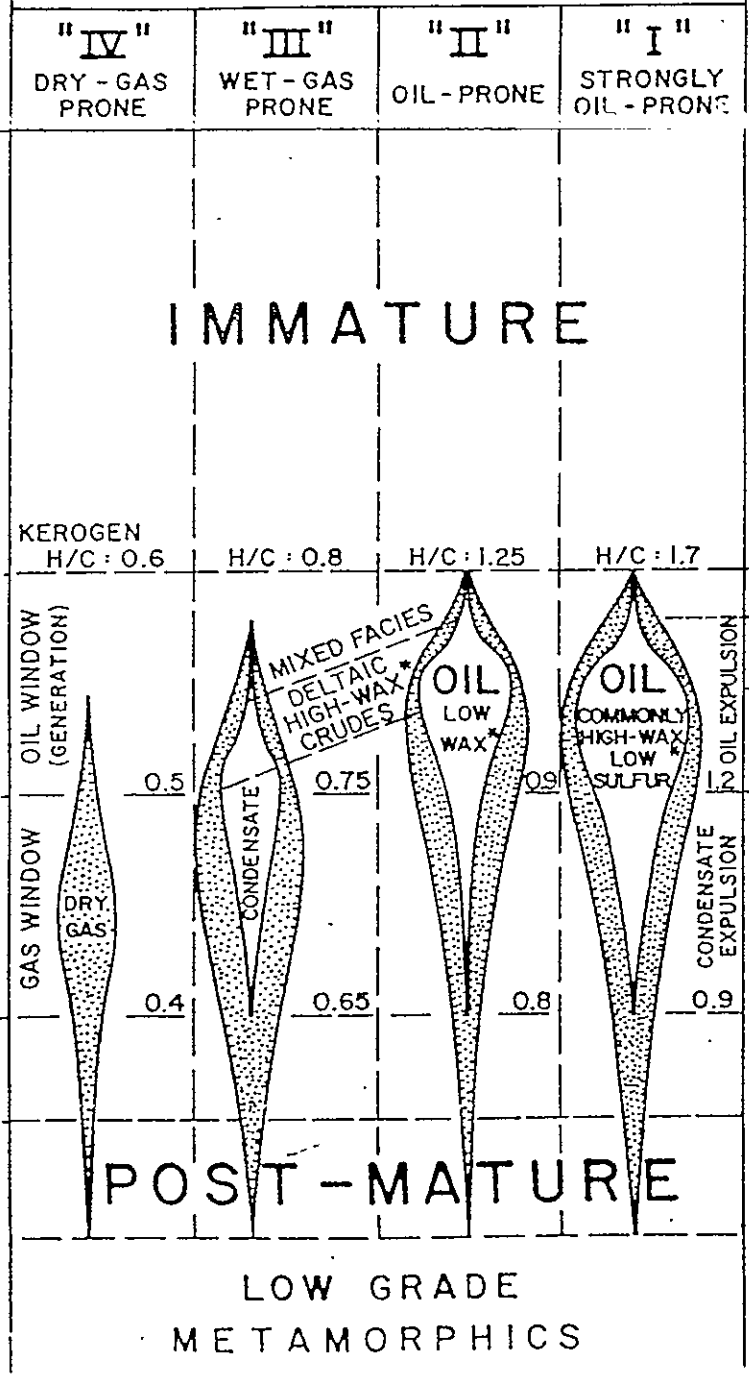
MATURATION RANGE CHART

G. J. DEMAISON

JAN. 15, 1980

APPROXIMATE TEMP. (F°) REACHED AT MAX. BURIAL VS AGE OF MAIN OVERBURDEN			% VOLATILE (COAL)	COAL RANK (U.S.A.)	T. A. I. SPORE COLOR.	ROCK EVAL T MAX °C
5-20 M. Y.	20-75 M. Y.	75 + M. Y.				
IMPLIES CONSTANT HEAT FLOW THROUGH GEOLOGIC TIME! *USE WITH CAUTION*				PEAT	PALE YELLOW	
150	130	120	60	LIGNITE AND SUB-BITUMINOUS COALS	2.0 YELLOW	
200	175	150	46	BITUMINOUS COALS — HIGH VOLATILE	2.5 ORANGE	Ca 430
300	225	200	35	BITUMINOUS COALS — HIGH VOLATILE	2.7 DK. OR.	
325	250	225	33	BITUMINOUS COALS — MED. VOL.	3.0 BROWN	Ca 455
375	300	275	25	BITUMINOUS COALS — MED. VOL.	3.3	Ca 470
400	350	300	13	BITUMINOUS COALS — LOW VOL.	DK. BRN. 3.7	Ca 500
450	400	350	4	ANTHRACITE	BLACK 4.0	
				META ANTHRACITE		

KEROGEN TYPE VS GENERATIVE WINDOWS



C_{24}+ N-ALKANES (BRAY-EVANS) CPI	% R_o VITRINITE REFLECTANCE
	0.2
2+ to 1.4	0.3
Ca 1.3	0.5
Ca 1.2	0.6
Ca 1.1	0.75
1.0	1.0
	1.35
	2.0
	4.0

PRESERVATION AND DESTRUCTION WINDOWS IN ENTRAPMENT AREAS

(STAIRCASE = MIGRATION)

"BIOGENIC" DRY GAS Co_2 N_2

TO MINOR EARLY THERMAL LEAN GAS

HEAVY DEGRADED OILS

UNDEGRADED MEDIUM GRAVITY OILS

LIGHT OILS

MAINLY GAS

WET TO DRY CONDENSATES

MINOR OIL

OIL DEADLINE

LEAN TO DRY GAS

CH_4, CO_2, H_2S, N_2

VERY LOW POROSITIES

GAS DEADLINE

BARREN

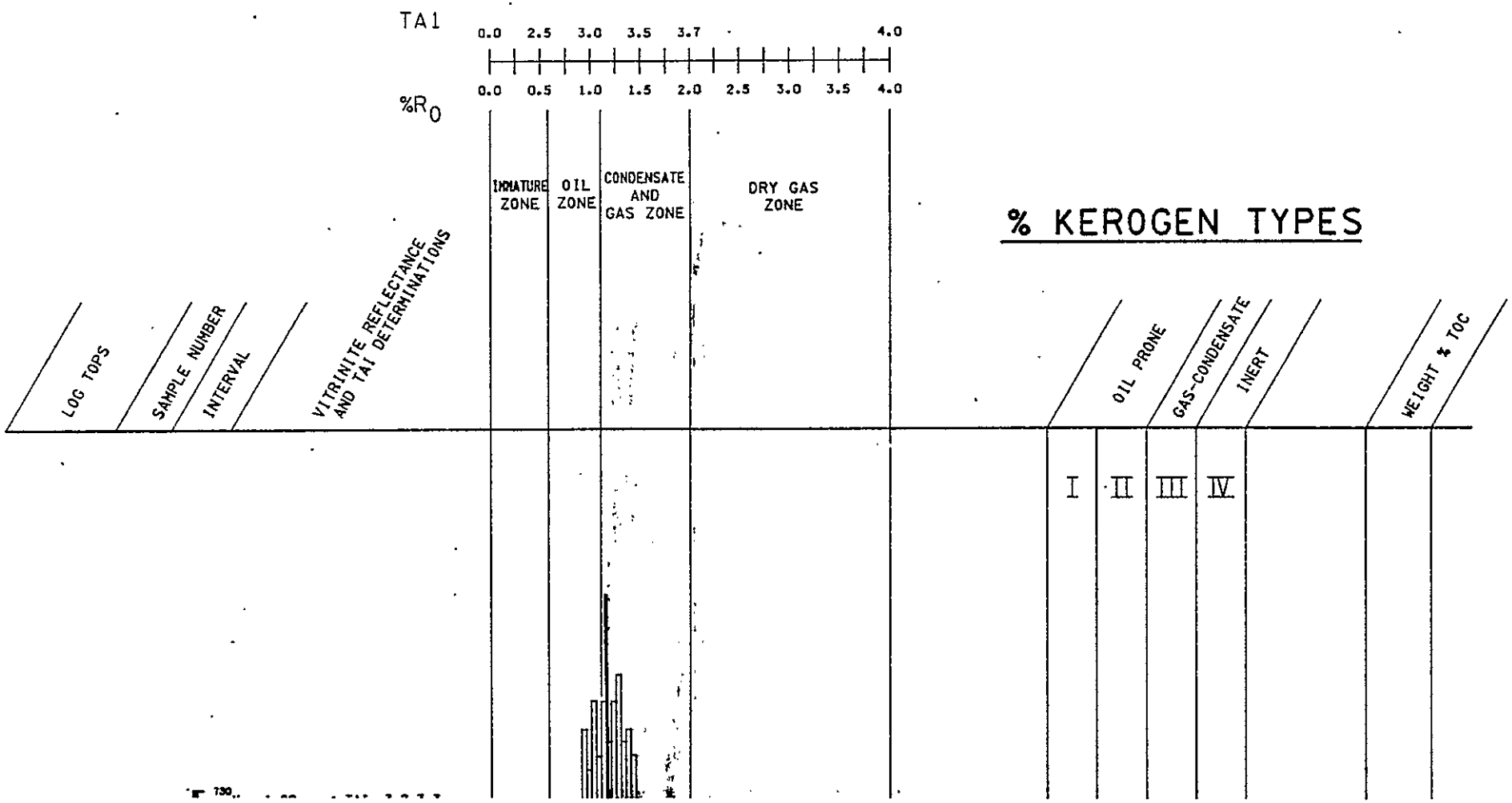
SUN #1 VICTORIA

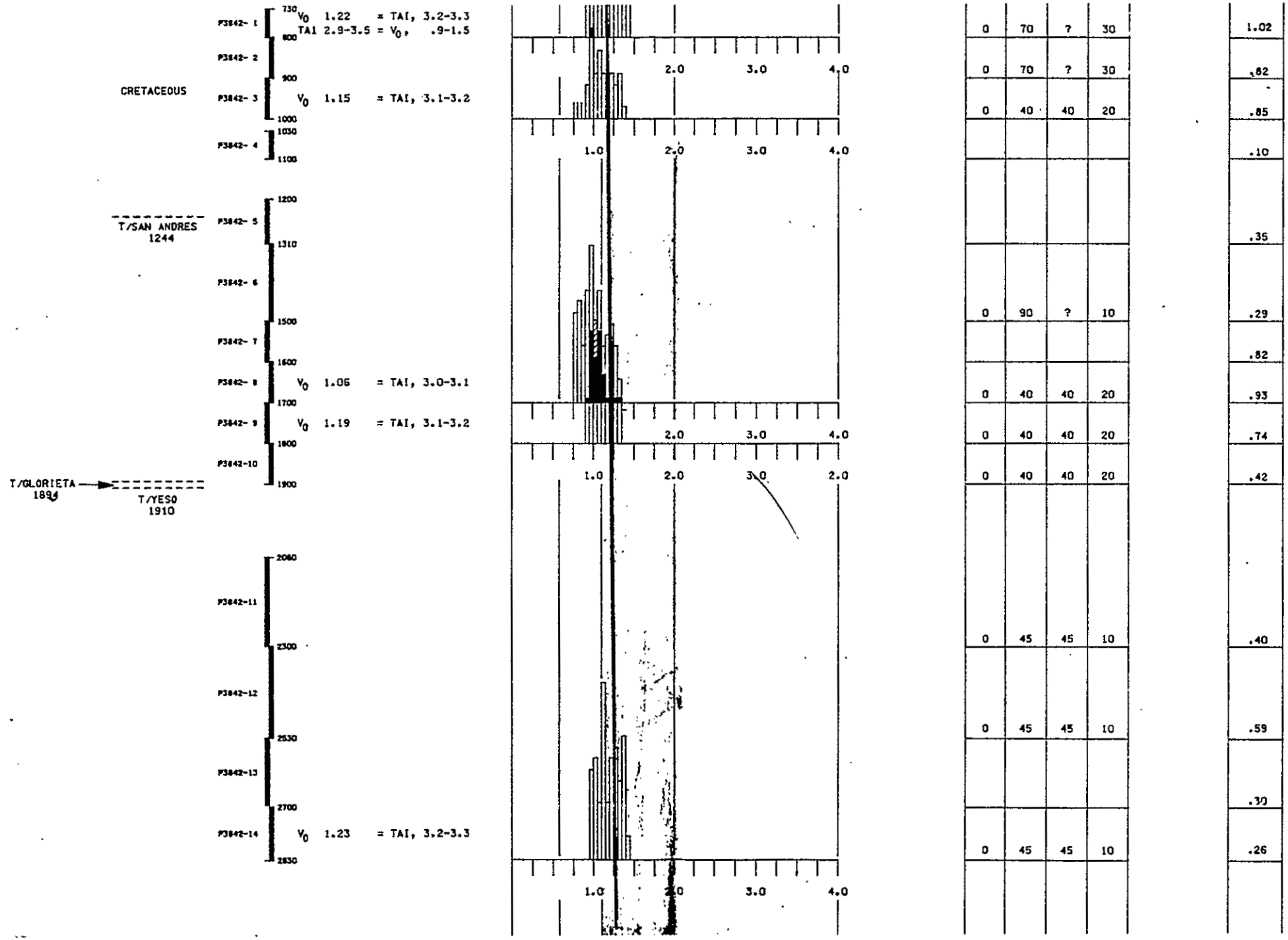
SEC. 25 - 10S - 1W

SIERRA CO., NEW MEXICO

HYDROCARBON GENERATION ZONES

BIOSTUDY NO. 1049




730
P3842- 1
V_0 1.22 = TAI, 3.2-3.3
TAI 2.9-3.5 = V_0, .9-1.5
800
P3842- 2
900
CRETACEOUS
P3842- 3
V_0 1.15 = TAI, 3.1-3.2
1000
1030
P3842- 4
1100
1200
T/SAN ANDRES
1244
P3842- 5
1310
P3842- 6
1500
P3842- 7
1600
P3842- 8
V_0 1.06 = TAI, 3.0-3.1
1700
P3842- 9
V_0 1.19 = TAI, 3.1-3.2
1800
P3842-10
T/GLORIETA
1894
T/YESO
1910
1900
2060
P3842-11
2300
P3842-12
2530
P3842-13
2700
P3842-14
V_0 1.23 = TAI, 3.2-3.3
2830
1.0
2.0
3.0
4.0
0 70 ? 30
0 70 ? 30
0 40 40 20
0 90 ? 10
0 40 40 20
0 40 40 20
0 40 40 20
0 45 45 10
0 45 45 10
0 45 45 10
1.02
.82
.85
.10
.35
.29
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.93
.74
.42
.40
.59
.30
.26

P3842-14 2700 / 2830 V_0 1.23 = TAI, 3.2-3.3

T/ABO
3168

T/PENN
3890

P3842-15 3500 / 3520 TAI 3.6-3.7 = V_0, 1.7-2.0

P3842-16 3940

P3842-17 4200 / 4240 V_0 2.04 = TAI, 3.7-3.8

P3842-18

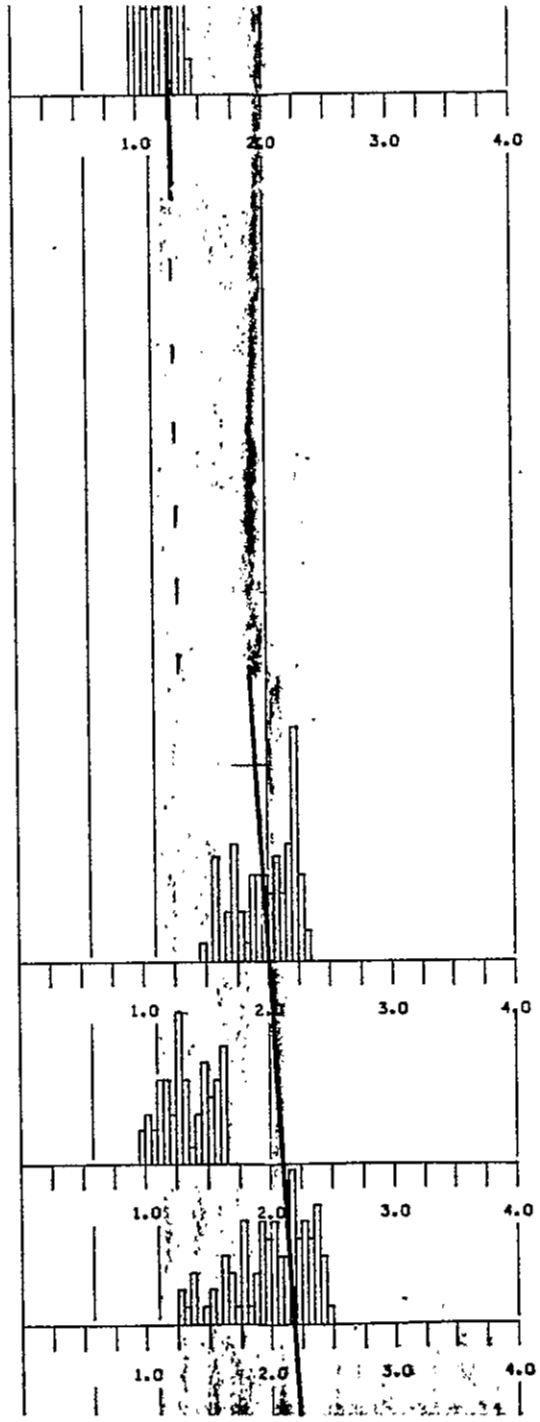
P3842-19 4400 / 4450

P3842-20 V_0 1.38 = TAI, 3.3 -3.4

P3842-21 4570 / 4590

P3842-22 4800 / 4830 V_0 2.06 = TAI, 3.7-3.8

P3842-23



0	45	45	10	.26
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0	80	?	20	.34
0	10	10	80	.36
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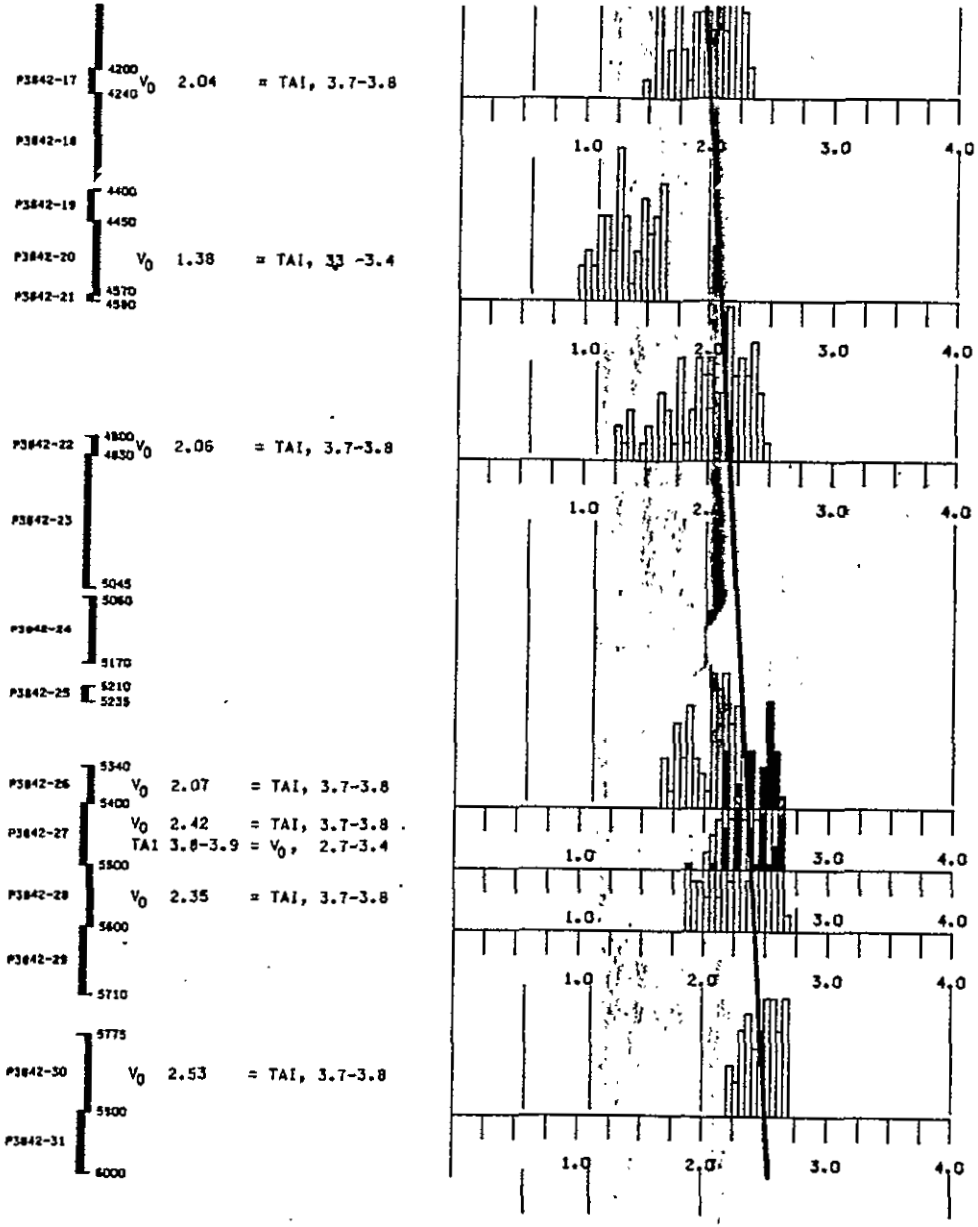

0	20	20	60
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BIOSTUDY 1049
J.O. SAXTON 06-9662
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