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Vitrinite reflectance (Ro)
of dispersed organics
from conventional cores
from seven
Scotian Shelf wells

M.P. Avery
Basin Analysis Subdivision
Atlantic Geoscience Centre, G.S.C., Dartmouth
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**Vitrinite reflectance (Ro) of dispersed organics from conventional cores from
seven Scotian Shelf wells**

Vitrinite reflectance has been determined on core samples from seven wells (Table I; Appendix III) on the Scotian Shelf approximately 300km east southeast of Halifax, Nova Scotia. These samples were measured to take advantage of sampling previously done by contractor (Dr. P.K. Mukhopadhyay) and to mesh with his organic petrography studies of cores from suspected hydrocarbon source rock intervals.

Sample preparation followed the procedure for whole rock listed in Appendix I. VR data for this report was gathered using a Zeiss Photometer III system with a custom microcomputer interface providing reliable data acquisition and statistical summaries.

Table I
Sample / well / reflectance information

Well	Location	Total Depth	Water Depth	Sample Depth	% Ro SD
Arcadia J-16	44°05'43.59"N 59°31'58.19"W	6005m	55.5m	5175.5m	1.27±0.05
Louisbourg J-47	44°26'43.08"N 58°21'26.02"W	6043m	63m	5447.2m	1.31±0.06
South Debarres O-79	44°05'56.06"N 59°55'59.01"W	6039m	69m	5955.0m	1.98±0.08
Venture B-52	44°01'12.88"N 59°38'07.76"W	5960m	19.5m	5129.5m	1.02±0.06
West Chebucto K-20	43°39'44.7 "N 59°47'33.3 "W	5369m	81m	5367.9m	1.76±0.12
West Venture C-62	44°01'02.78"N 59°40'00.93"W	5522m	15m	5256.7m	1.16±0.09
West Venture N-91	44°00'45.8 "N 59°44'27.36"W	5547m	36m	5137.1m	1.20±0.08

Remarks

These vitrinite reflectance data, although the sampling for individual wells was sparse, are important because the samples were taken from conventional core. Samples from these sections generally provide better maturation data than those obtained from cuttings which are often plagued by contamination from cavings.

The data are plotted on a log Ro vs. linear depth scale (Figure 1). For comparison, maturation slopes for proximal wells have been plotted. The maturation slopes for the comparison wells were determined by the least squares method and based on between 16 to 27 data points obtained from cuttings samples.

The specific maturation levels, as set out in this report, are slightly modified from terminology used by Dow (1977; Appendix II).

Arcadia J-16

For comparison, the maturation slope (0.126 log Ro/km) for previously reported Venture B-13, based on 19 cuttings and 2 core samples, has been plotted (Avery 1988a; Figure 1). The data from this core sample provide evidence that the thermal regime at Arcadia J-16 at the sample depth falls within the 'oil window'.

Louisbourg J-47

For comparison, the maturation slope (0.168 log Ro/km) for previously reported Louisbourg J-47, based on 16 cuttings samples, has been plotted (Avery 1988b; Figure 2). The data from this core sample provide evidence that the thermal regime at Louisbourg J-47 at the sample depth falls within the 'oil window'.

South Debarres O-79

For comparison, the maturation slope (0.143 log Ro/km) for previously reported Uniacke G-72, based on 23 cuttings samples, has been plotted (Avery 1989; Figure 3). The data from this core sample provide evidence that the thermal regime at South Debarres O-79 at the sample depth is beyond the 'oil window' but within the 'dry gas zone'.

Venture B-52

For comparison, the maturation slopes (upper 0.112 log Ro/km; lower 0.402 log Ro/km) for previously reported Venture B-43 has been plotted (Avery 1983; based on 27 cuttings and Avery 1985; based on 2 core samples; Figure 4). The earlier core samples were taken from sandstone lithology and have a significantly higher reflectance than the core sample reported here which was taken from a calcareous siltstone lithology. This phenomenon is noted by M. Teichmuller (in Stach *et al.*, 1982) who found that in general, vitrinites from sandstone lithologies have a higher reflectance and attributed the effect to early oxidation by percolating groundwater.

The data from this core sample provide evidence that the thermal regime at Venture B-52 at the sample depth falls within the 'oil window'.

West Chebucto K-20

For comparison, the maturation slopes (upper: 0.134 log Ro/km; lower: 0.383 log Ro/km) for previously reported Chebucto K-90, based on 23 cuttings samples, has been plotted (Avery 1990; Figure 5). The data from this core sample provide evidence that the thermal regime of West Chebucto K-20 at the sample depth is beyond the 'oil window' but within the 'wet gas zone'.

West Venture C-62

For comparison, the maturation slope (0.126 log Ro/km) for previously reported Venture B-13, based on 19 cuttings and 2 core samples, has been plotted (Avery 1988a; Figure 1). The data from this core sample provide evidence that the thermal regime at West Venture C-62 at the sample depth falls within the 'oil window'.

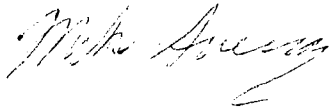
West Venture N-91

For comparison, the maturation slope (0.126 log Ro/km) for previously reported Venture B-13, based on 19 cuttings and 2 core samples, has been plotted (Avery 1988a; Figure 1). The data from this core sample provide evidence that the thermal regime at West Venture N-91 at the sample depth falls within the 'oil window'.

References

- Avery, M.P., 1983. Vitrinite reflectance (Ro) on the dispersed organics in the Mobil et al. Venture B-43. Internal report no. EPGs-DOM.9-83MPA.
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March 5, 1991



M.P. Avery
Basin Analysis

c.c. K.D. McAlpine, BAS, Dartmouth	Central Technical Files, Ottawa
J.A. Wade, BAS, Dartmouth	J.S. Bell, ISPG, Calgary
A.E. Jackson, BAS, Dartmouth	L.R. Snowdon, ISPG, Calgary
BAS Files, Dartmouth	D. Skibo, ISPG, Calgary
G.R. Morell, NEB, Calgary	C. Beaumont, Dalhousie Univ., Halifax
S. Bigelo, CNSOPB, Halifax	

Vitrinite Reflectance

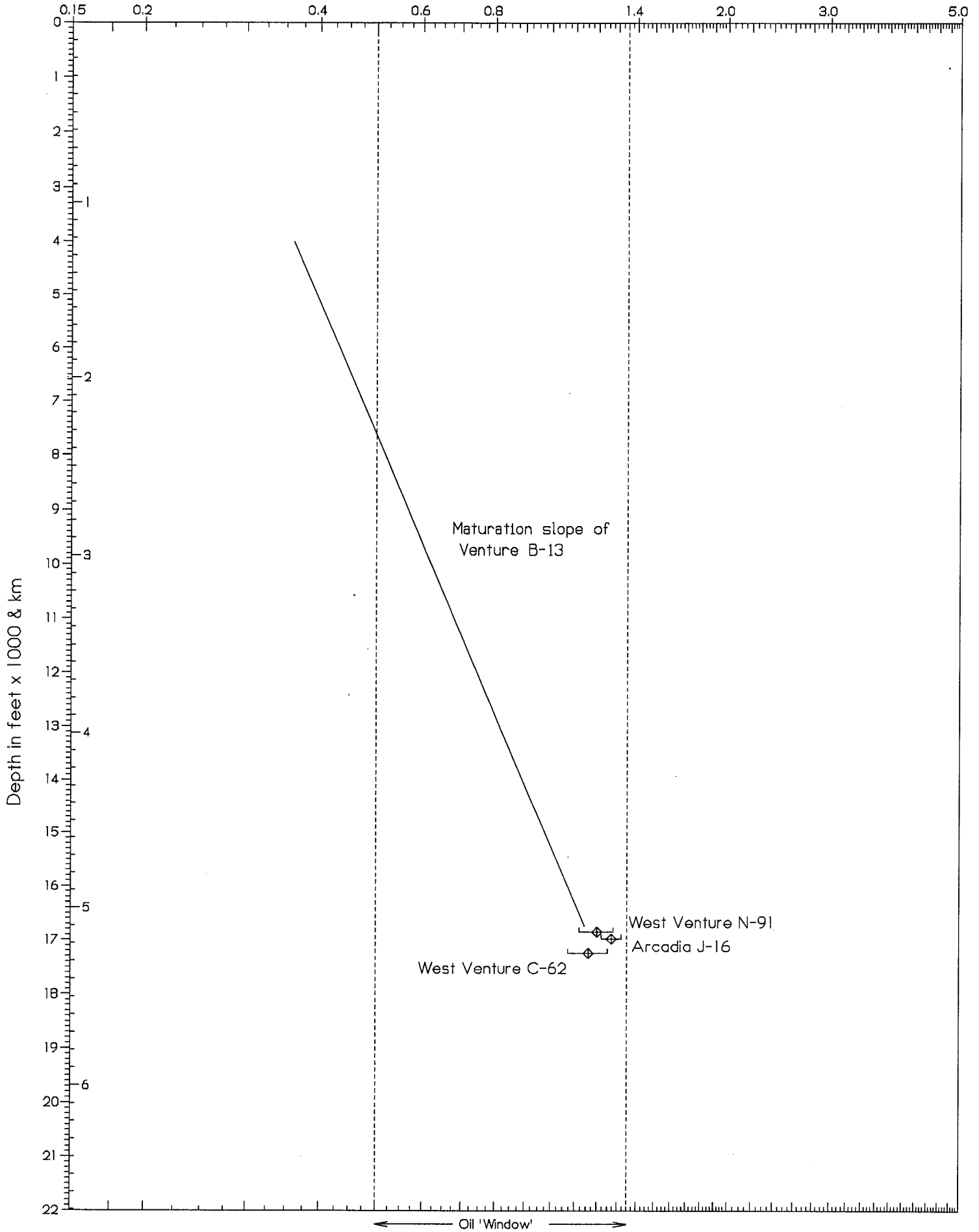


Fig. 1 Comparison of previously reported maturation slope of nearby well

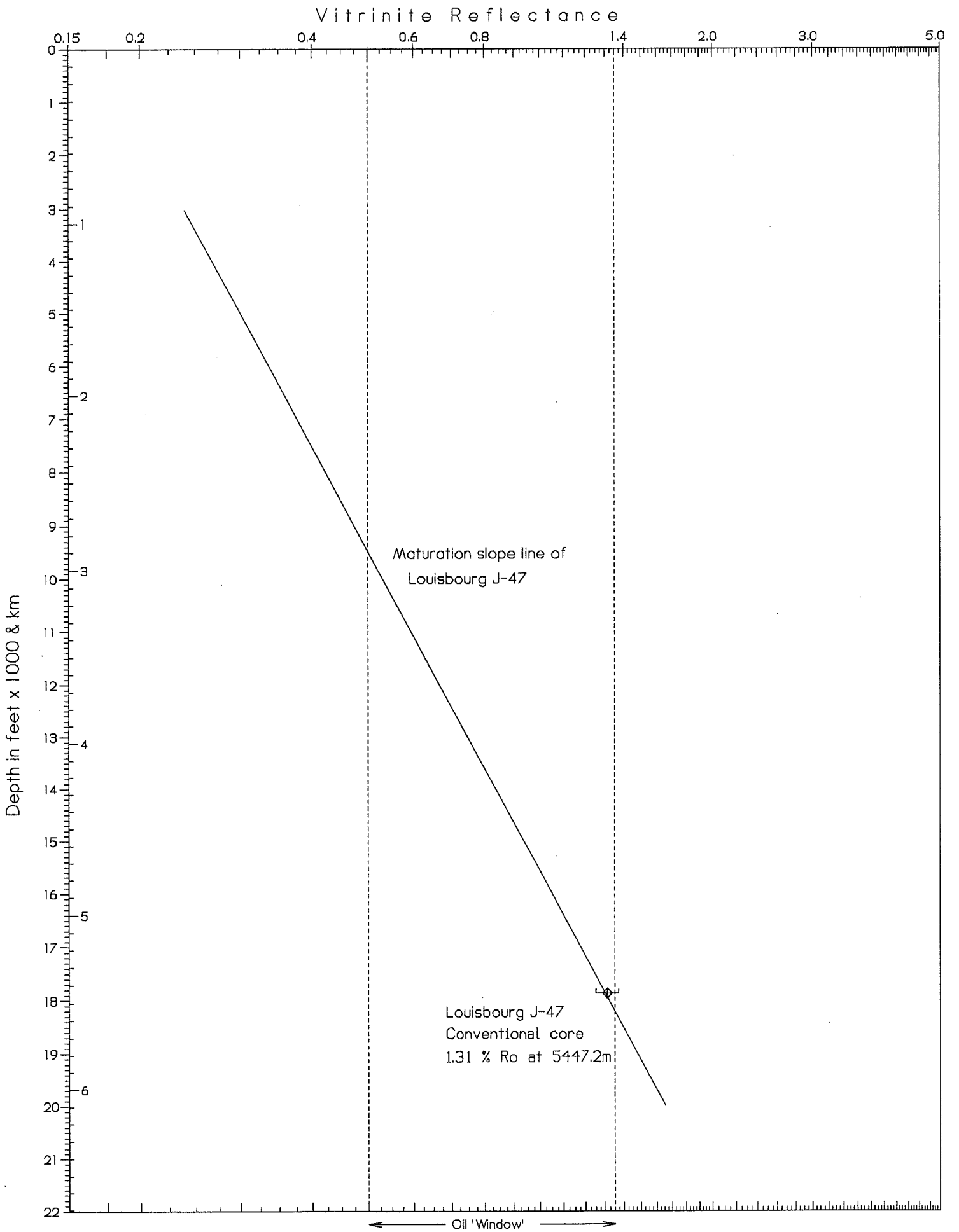


Fig. 2 Comparison of previously reported maturation slope

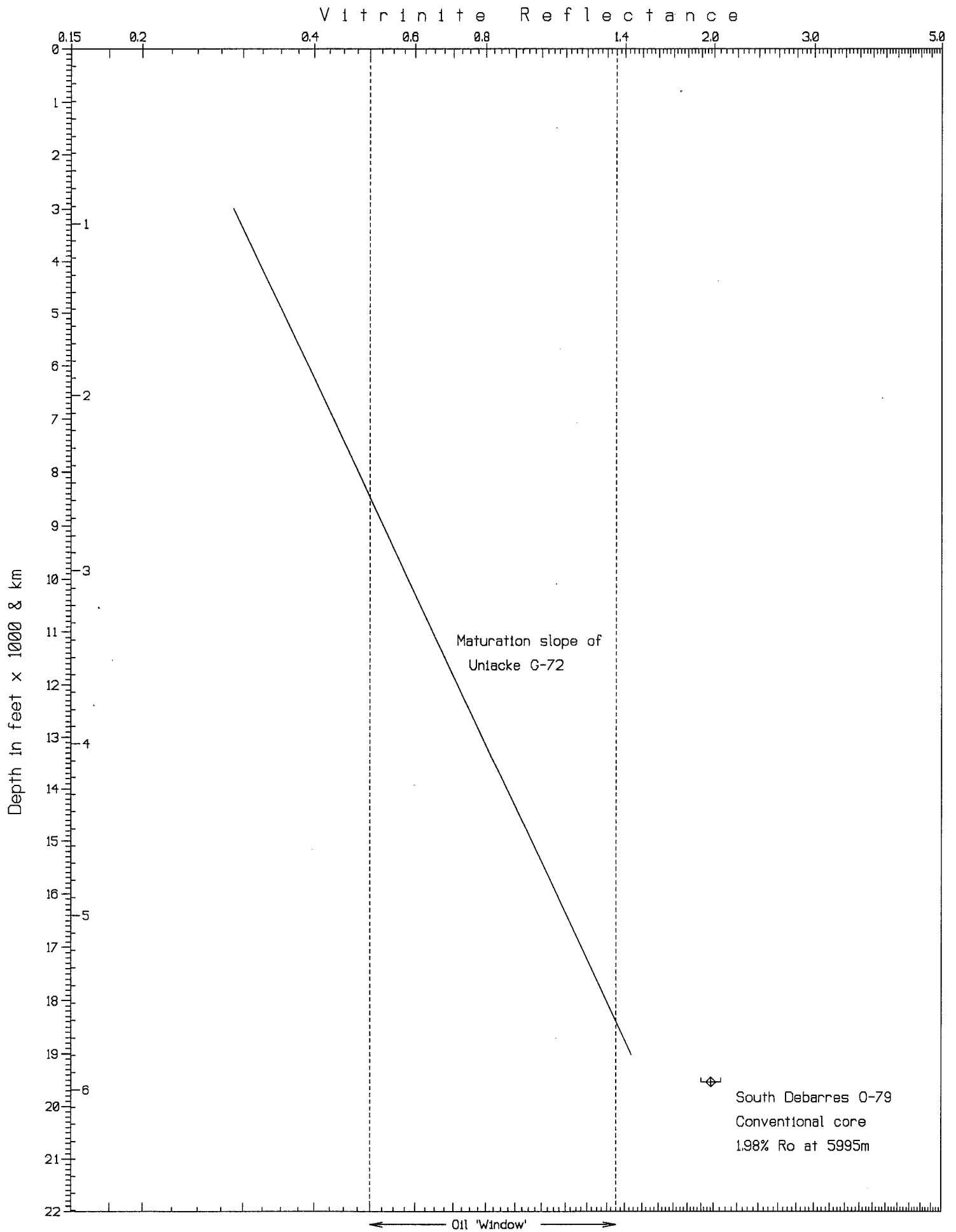


Fig. 3 Comparison of previously reported maturation slope of nearby well

Vitrinite Reflectance

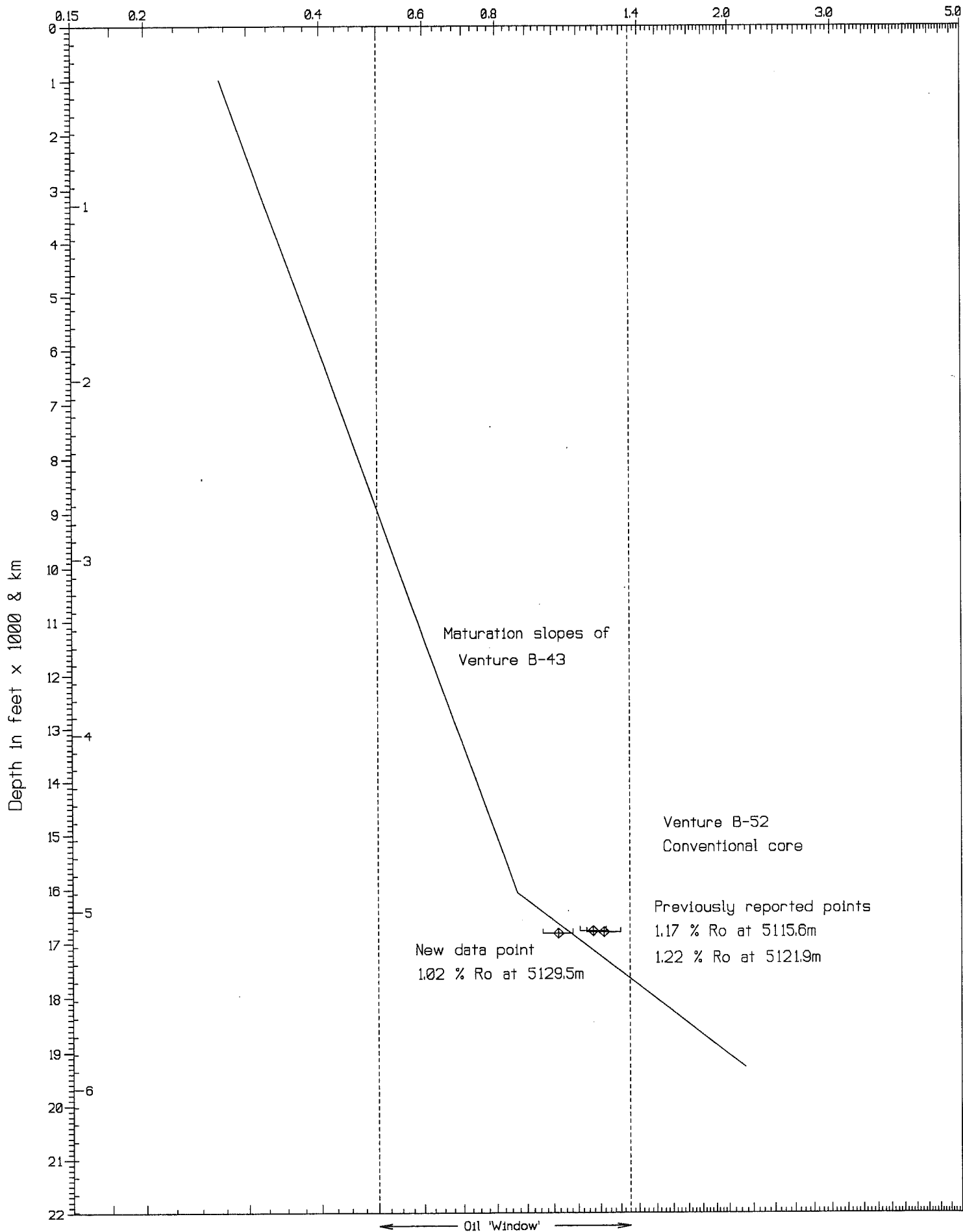


Fig. 4 Comparison of previously reported maturation slope of nearby well

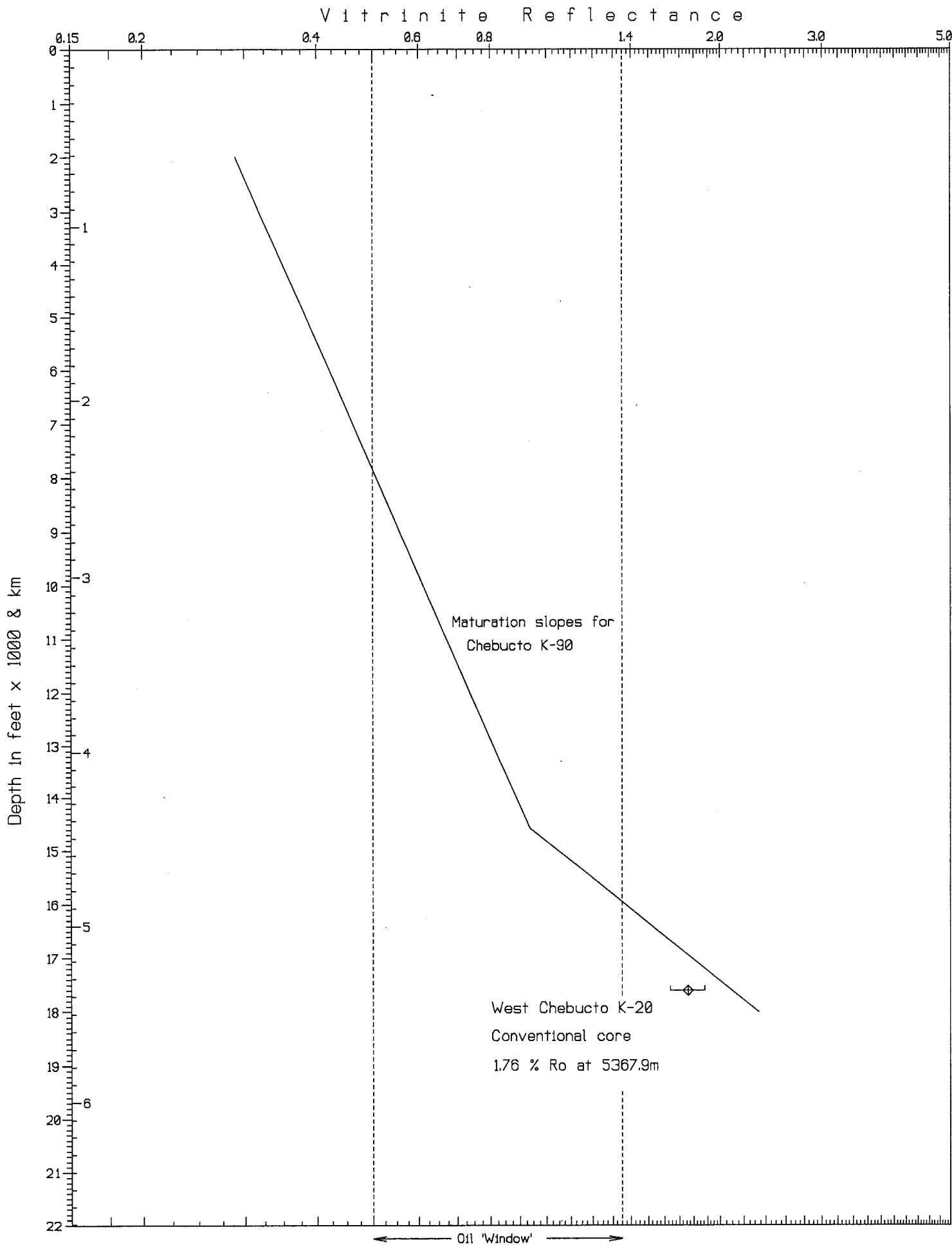


Fig. 5 Comparison of previously reported maturation slope of nearby well

APPENDIX I

Sample Preparation Method

Whole Rock (Vitrinite Reflectance lab prep only)

Preliminary wash & Air dry.

Crush to 1mm.

Mold into 1" stub with epoxy resin (EPOFIX).

Polish to obtain low relief, scratch free surface.

Examine under oil lens, incident light at approximately 800x mag'n.

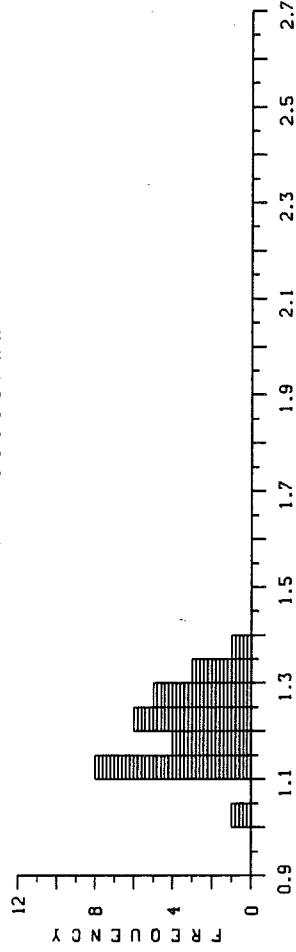
Appendix III
Reflectance Histograms

PH1740, 5137.1M, MEST VENTURE N-91

COL >	1	2	3	4	5	6	7	8	9	0
ROW	1.04<	1.10<	1.11<	1.12<	1.12<	1.12<	1.13<	1.14<	1.14<	1.15<
1	1.18<	1.18<	1.19<	1.20<	1.20<	1.22<	1.22<	1.23<	1.24<	1.25<
2	1.26<	1.27<	1.28<	1.29<	1.30<	1.32<	1.34<	1.35<		

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.20	.08	28	1.04	1.35	33.69
EDIT<	1.20	.08	28	1.04	1.35	33.69

REFLECTANCE HISTOGRAM

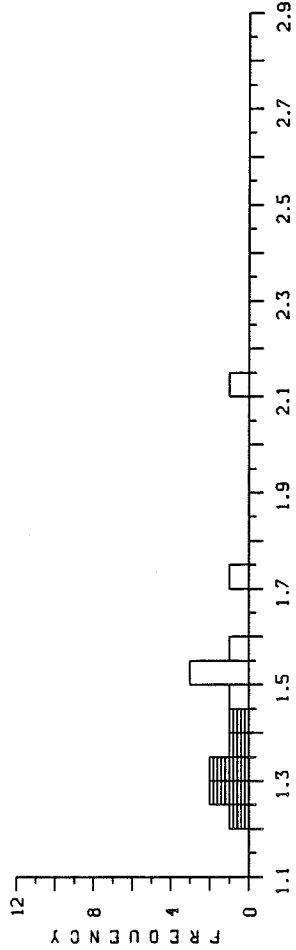


PH1737, 5447.2M, LOUISBOURG J-47

COL >	1	2	3	4	5	6	7	8	9	0
ROW	1.22<	1.27<	1.28<	1.33<	1.34<	1.36<	1.40<	1.47	1.50	1.51
1	1.52	1.55	1.71	2.14						

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.47	.23	14	1.22	2.14	20.60
EDIT<	1.31	.06	7	1.22	1.40	9.20

REFLECTANCE HISTOGRAM

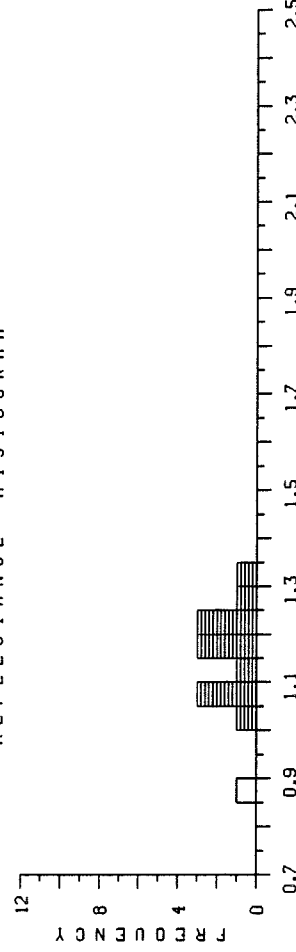


PH1741, 5256.7M, MEST VENTURE C-62

COL >	1	2	3	4	5	6	7	8	9	0
ROW	.89	1.01<	1.06<	1.06<	1.09<	1.11<	1.15<	1.18<	1.19<	1.22<
1	1.22<	1.23<	1.29<	1.31<						

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.14	.11	14	.89	1.31	16.01
EDIT<	1.16	.09	13	1.01	1.31	15.12

REFLECTANCE HISTOGRAM

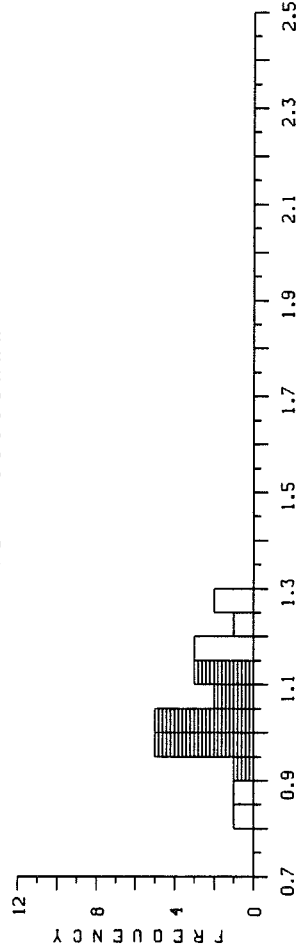


PH1739, 5129.5M, VENTURE B-52

COL >	1	2	3	4	5	6	7	8	9	0
ROW	.82	.86	.94<	.95<	.96<	.97<	.98<	.99<	1.00<	1.01<
1	1.04<	1.04<	1.04<	1.05<	1.07<	1.10<	1.11<	1.11<	1.17	1.17
2	1.18	1.21	1.25	1.26						

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.05	.11	24	.82	1.26	25.28
EDIT<	1.02	.06	16	.94	1.11	16.36

REFLECTANCE HISTOGRAM

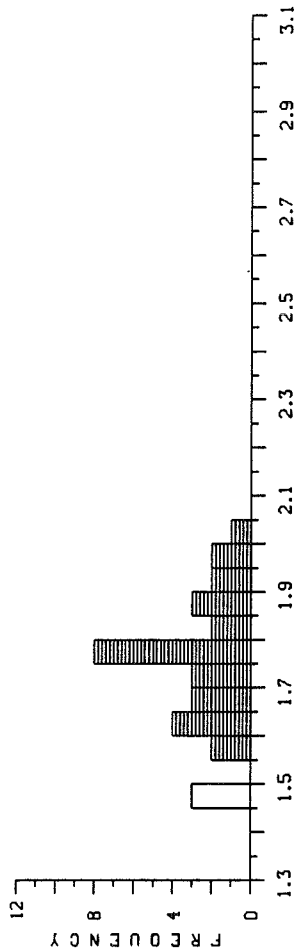


PH1744,5367.9M, WEST CHEBUCTO K-20

COL >	1	2	3	4	5	6	7	8	9	0
ROW	1.45	1.47	1.49	1.55	1.59	1.60	1.61	1.61	1.61	1.65
1	1.65	1.67	1.71	1.71	1.72	1.75	1.76	1.77	1.77	1.78
2	1.78	1.79	1.79	1.82	1.84	1.86	1.86	1.87	1.90	1.92
3	1.95	1.97	2.02							

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.74	.15	33	1.45	2.02	57.29
EDIT<	1.76	.12	30	1.55	2.02	52.88

REFLECTANCE HISTOGRAM

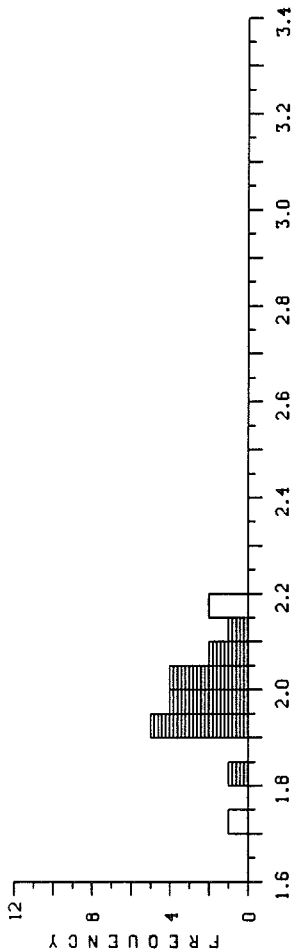


PH1742,5955.ON,SOUTH DEBARRES 0-79

COL >	1	2	3	4	5	6	7	8	9	0
ROW	1.71	1.80	1.91	1.92	1.94	1.94	1.94	1.96	1.97	1.99
1	1.99	2.00	2.01	2.03	2.04	2.08	2.09	2.10	2.19	2.19

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.99	.11	20	1.71	2.19	39.80
EDIT<	1.98	.08	17	1.80	2.10	33.71

REFLECTANCE HISTOGRAM



PH1743,5175.5M,ARCADIA J-16

COL >	1	2	3	4	5	6	7	8	9	0
ROW	1.19	1.22	1.22	1.22	1.23	1.23	1.23	1.27	1.27	1.28
1	1.30	1.31	1.31	1.31	1.32	1.35	1.37	1.41	1.41	1.42
2	1.44	1.46	1.48	1.48	1.50	1.52	1.54	1.55	1.59	1.69

	MEAN	STAND DEV	PTS	MIN	MAX	SUM
TOTAL	1.37	.13	30	1.19	1.69	41.12
EDIT<	1.27	.05	17	1.19	1.37	21.63

REFLECTANCE HISTOGRAM

