Rock-eval pyrolysis data and interpretation for the Alaska Consolidated Oil Iniskin Unit Zappa No. 1 well.

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Geologic Materials Center Data Report 83

Rock Eval Pyrolysis performed by Brown and Ruth Laboratories, Inc. of Houston

RESULTS AND DISCUSSION:

TOC/ROCK EVAL

Analytical Data

Geochemical logs, tabulated TOC and Rock Eval data, and pyrograms are provided for each well (Appendices 1, 2 and 3). Geochemical data are expressed as:

TOC	= Total Organic Carbon, in weight percent
S_1	= Thermal extract of mobile hydrocarbons, in $mgHC/g_{rock}$
S_2	= Hydrocarbons generated from kerogen during pyrolysis, in $mgHC/g_{rock}$
S_3	= CO_2 generated from kerogen during pyrolysis, in $mgCO_2/g_{rock}$
T_{max}	= Temperature of peak generation during pyrolysis, in °C
PI	= Production Index = $S_1/S_1 + S_2$
HI	= Hydrogen Index = $100 \times S_2/TOC$
OI	= Oxygen Index = $100 \times S_3/TOC$

Well LCI-Iniskin

Thermal Maturity

The five samples analyzed show increasing T_{max} with depth, from thermally immature at 2000-2050' (T_{max} 432°C) to within the oil window at 10770-10800' (T_{max} 443°C). Production Index ($S_1/S_1 + S_2$) also shows progressive increase with depth.

Organic Richness and Quality

TOC values for the five samples range from fair (0.50) for potential source rocks to good (1.62). All samples, however, show no current oil proneness, with low S_1, S_2 and Hydrogen Index (52-124). The two deepest submitted samples may be mature enough to have reduced their oil proneness by having generated and expelled hydrocarbons, but this is unlikely.

Well LCI Iniskin

TABLE I

Results of Total Organic Carbon Analysis and Rock-Eval Pyrolysis

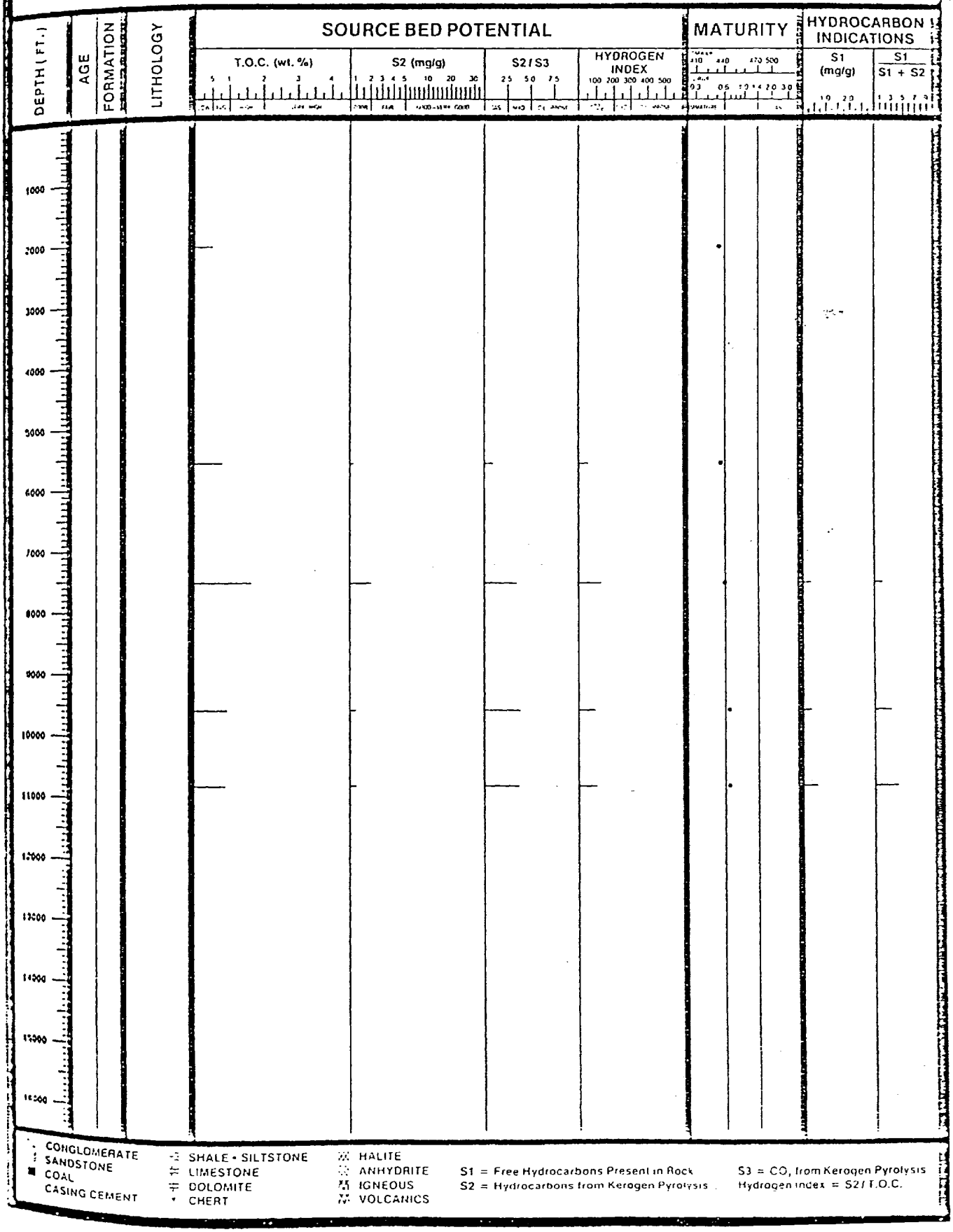
Sample Number	Depth (ft)	TOC (Wt.%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	Tmax (°C)	Production Index $\frac{S_1}{S_1+S_2}$	Hydrogen Index $\frac{S_2}{TOC}$	Oxygen Index $\frac{S_3}{TOC}$
6399-003	2000-2050	0.50	<0.10	<0.10	0.30	432	---	---	60
6399-010	5540-5570	0.78	<0.10	0.40	0.48	434	---	52	61
6399-014	7470-7510	1.62	0.28	2.00	0.59	439	0.12	124	36
6399-018	9540-9570	0.93	0.30	0.83	0.22	443	0.26	89	24
6399-021	10770-10800	0.88	0.54	0.87	0.24	443	0.38	99	28

** Unable to determine due to insufficient S2 yield, multiple peaks, etc.

BROWN & RUTH LABORATORIES, INC.

GEOCHEMICAL LOG

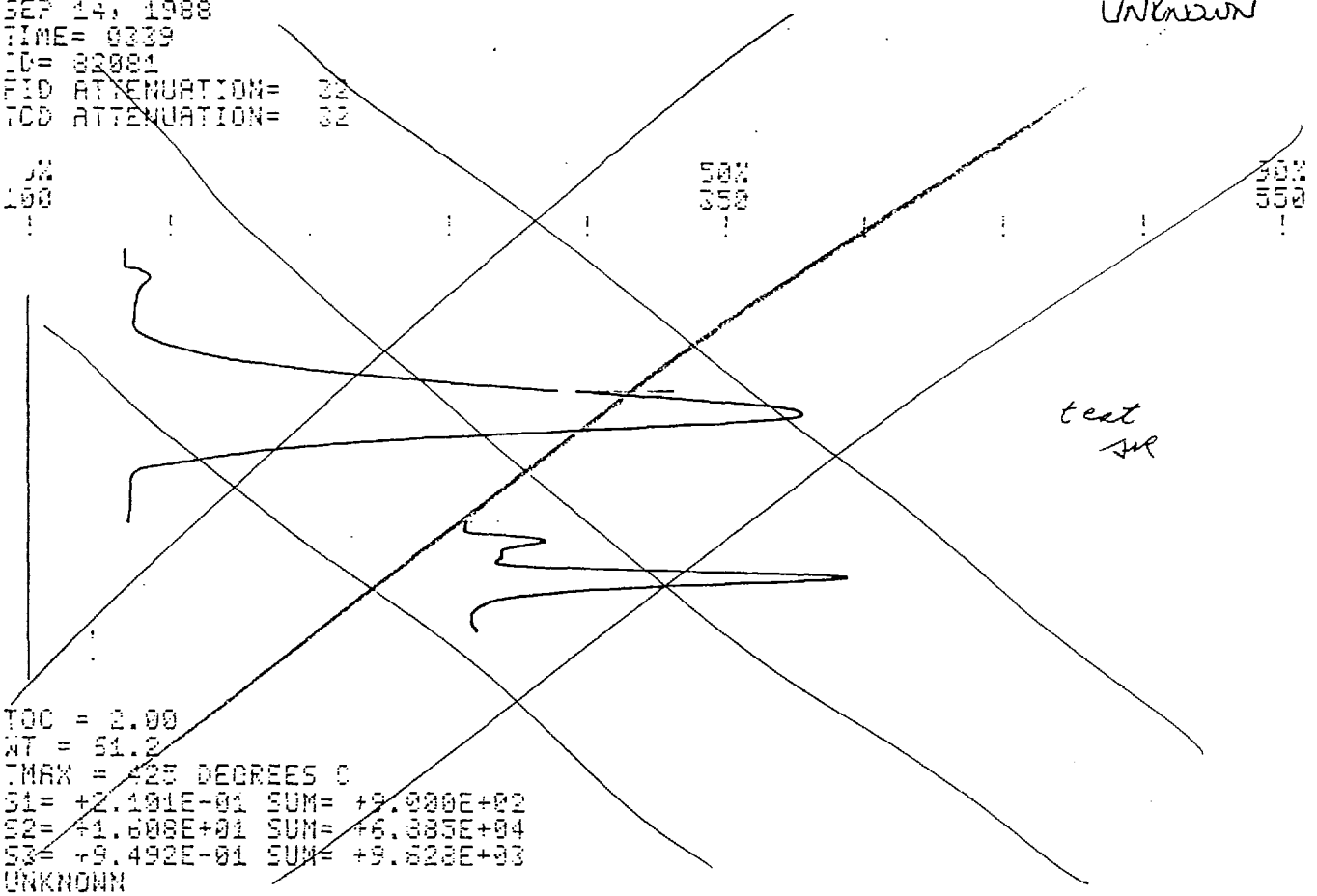
OPERATOR: JACOBSON CONSULTING
WELL NAME: LCI Iniskin



GEOCOM ROCK EVAL II

UNKNOWN

SEP 14, 1988
TIME= 0339
ID= 82081
FID ATTENUATION= 32
TCD ATTENUATION= 32



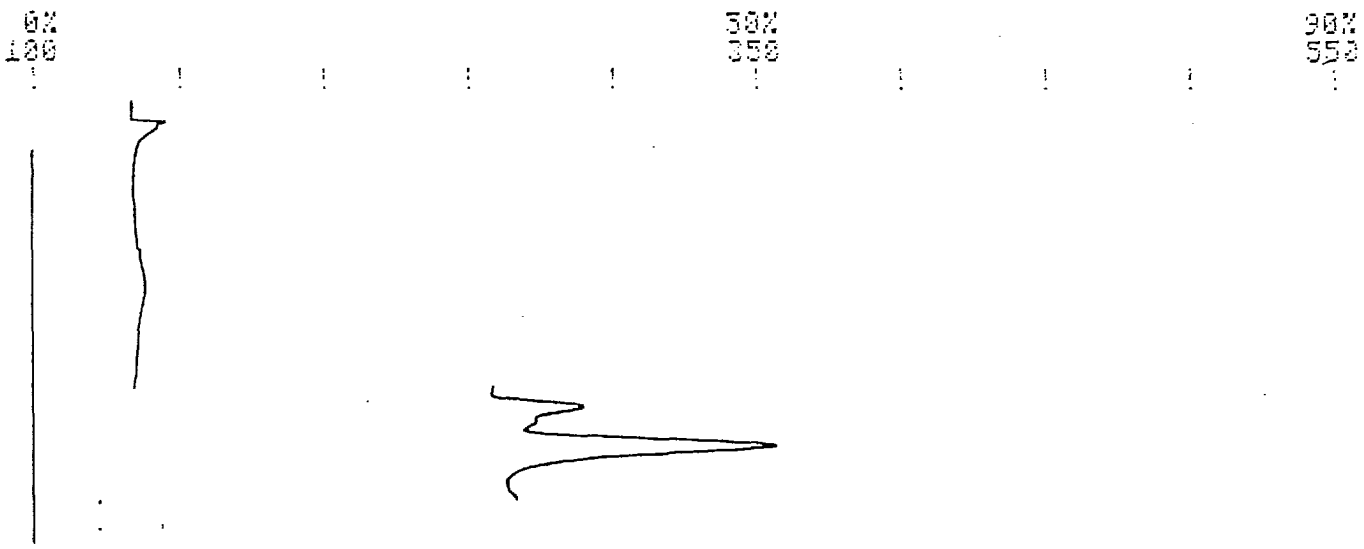
TOC = 2.00
WT = 51.2
TMAX = 425 DEGREES C
S1= +2.101E-01 SUM= +9.900E+02
S2= +1.608E+01 SUM= +6.385E+04
S3= +9.492E-01 SUM= +9.628E+03
UNKNOWN

GEOCOM ROCK EVAL II

6399-003

SEP 14, 1988
TIME= 0403
ID= 99003
FID ATTENUATION= 32
TCD ATTENUATION= 32

LCI-Inishin
2000-2050'



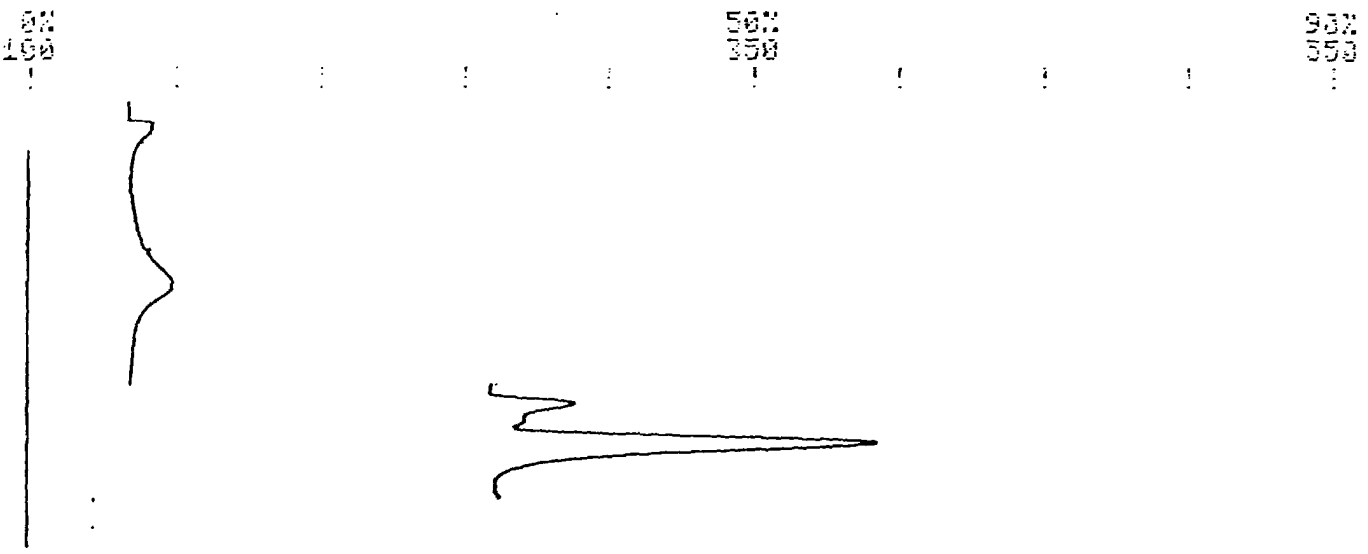
TOC = 0.53
WT = 130.2
TMAX = 437 DEGREES C
S1= +5.512E-02 SUM= +4.728E+02
S2= +3.120E-01 SUM= +5.338E+02
S3= +3.017E-01 SUM= +5.345E+02
UNKNOWN

GEOCOM ROCK EVAL II

6399-010

SEP 14, 1988
TIME= 0431
ID= 010
FID ATTENUATION= 32
TCD ATTENUATION= 32

LCI-Inishin
5540-5570'



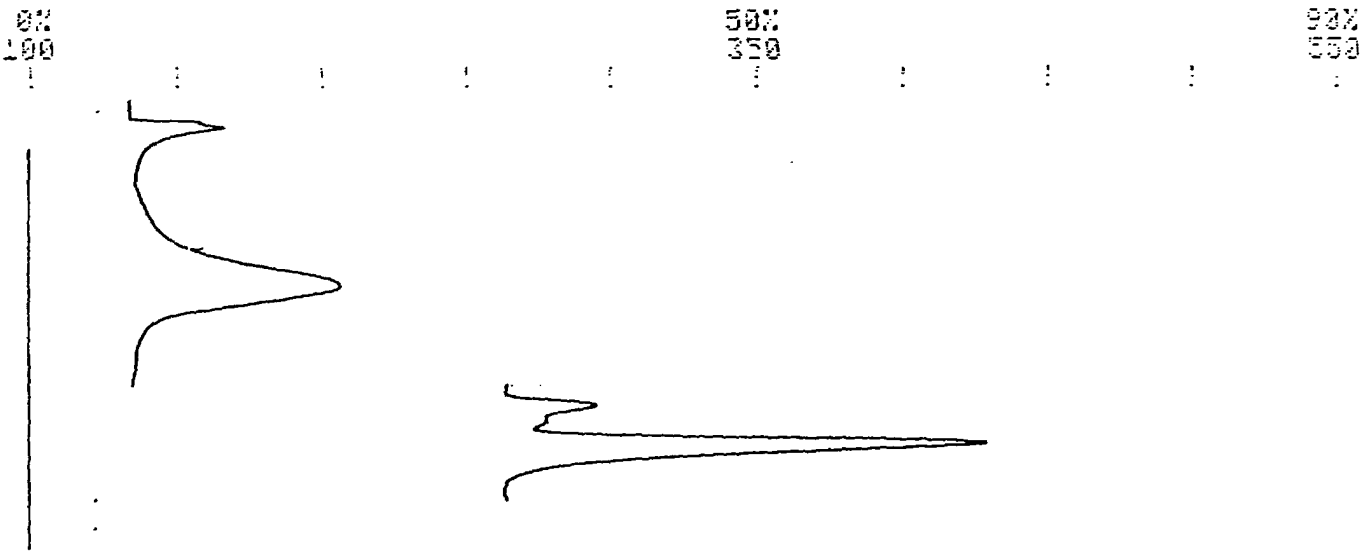
TOC = 0.78
WT = 119.3
TMAX = 439 DEGREES C
S1= +6.421E-02 SUM= +5.350E+02
S2= +4.021E-01 SUM= +3.357E+03
S3= +4.764E-01 SUM= +9.439E+03
UNKNOWN

GEOCOM ROCK EVAL II

6399-014

SEP 14, 1988
TIME= 0457
ID= 014
FID ATTENUATION= 32
TCD ATTENUATION= 32

LCI-Inishin
7470-7510'



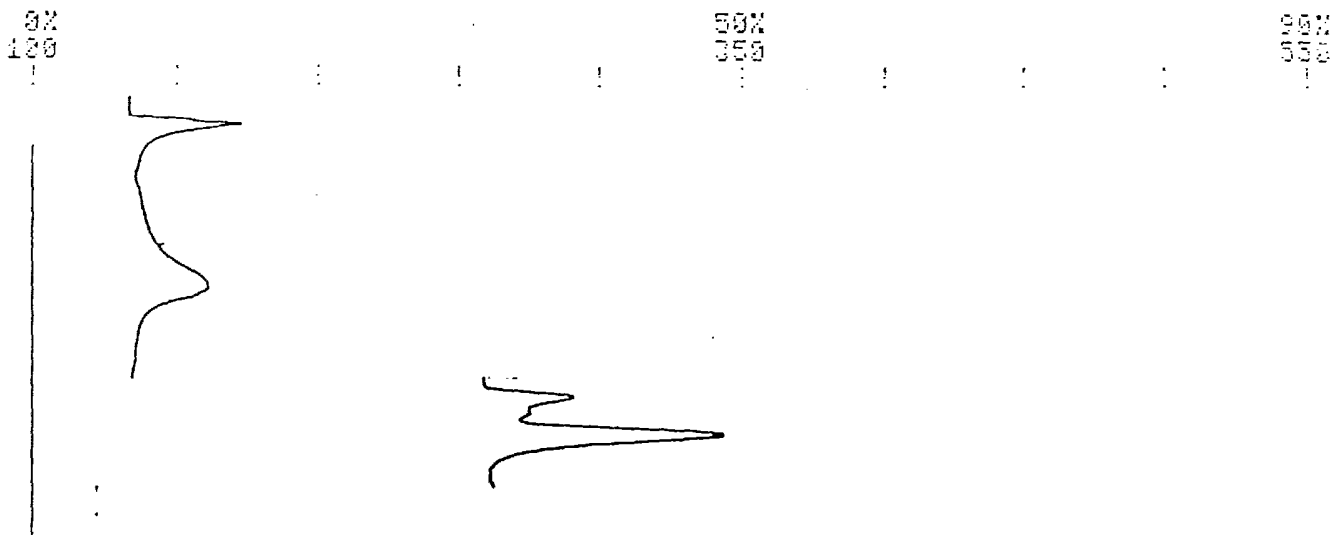
TOC = 1.62
WT = 122.1
TMAX = 441 DEGREES C
S1= +2.765E-01 SUM= +1.353E+00
S2= +2.001E+00 SUM= +1.709E+04
S3= +5.055E-01 SUM= +1.164E+04

6399-018

GEOCOM ROCK EVAL II

SEP 14, 1988
TIME= 0523
ID= 018
FID ATTENUATION= 32
TCD ATTENUATION= 32

LCI-Iniskin
9,540-9570'



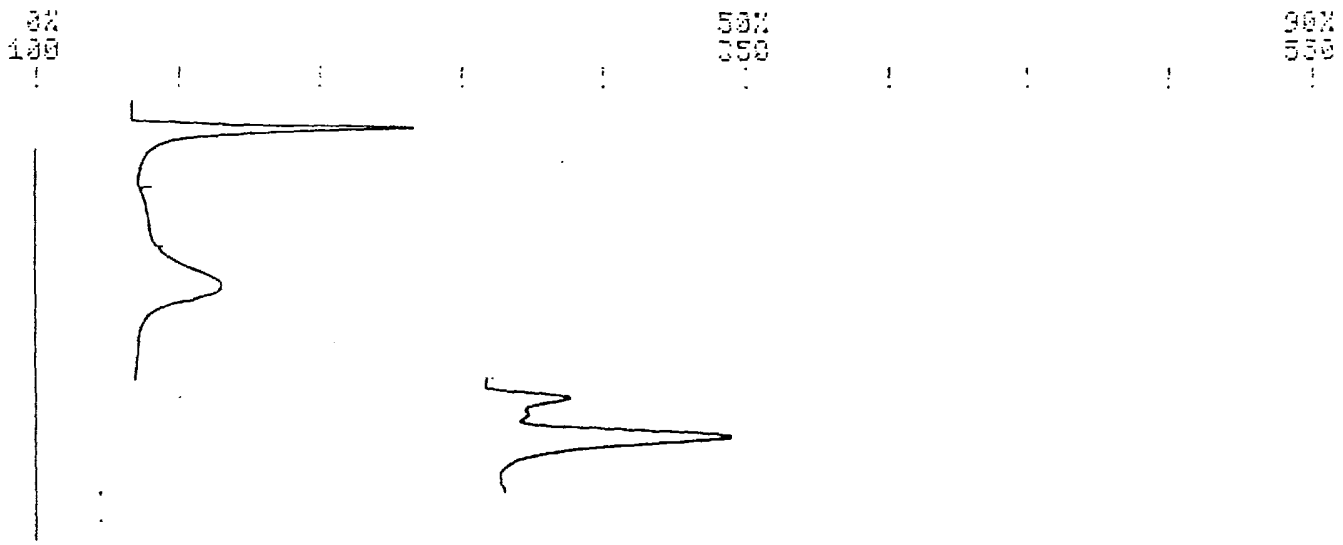
TOC = 0.33
WT = 120.2
TMAX = 448 DEGREES C
S1= +2.983E-01 SUM= +2.509E+03
S2= +8.292E-01 SUM= +6.974E+03
S3= +2.232E-01 SUM= +4.925E+03
UNKNOWN

6399-021

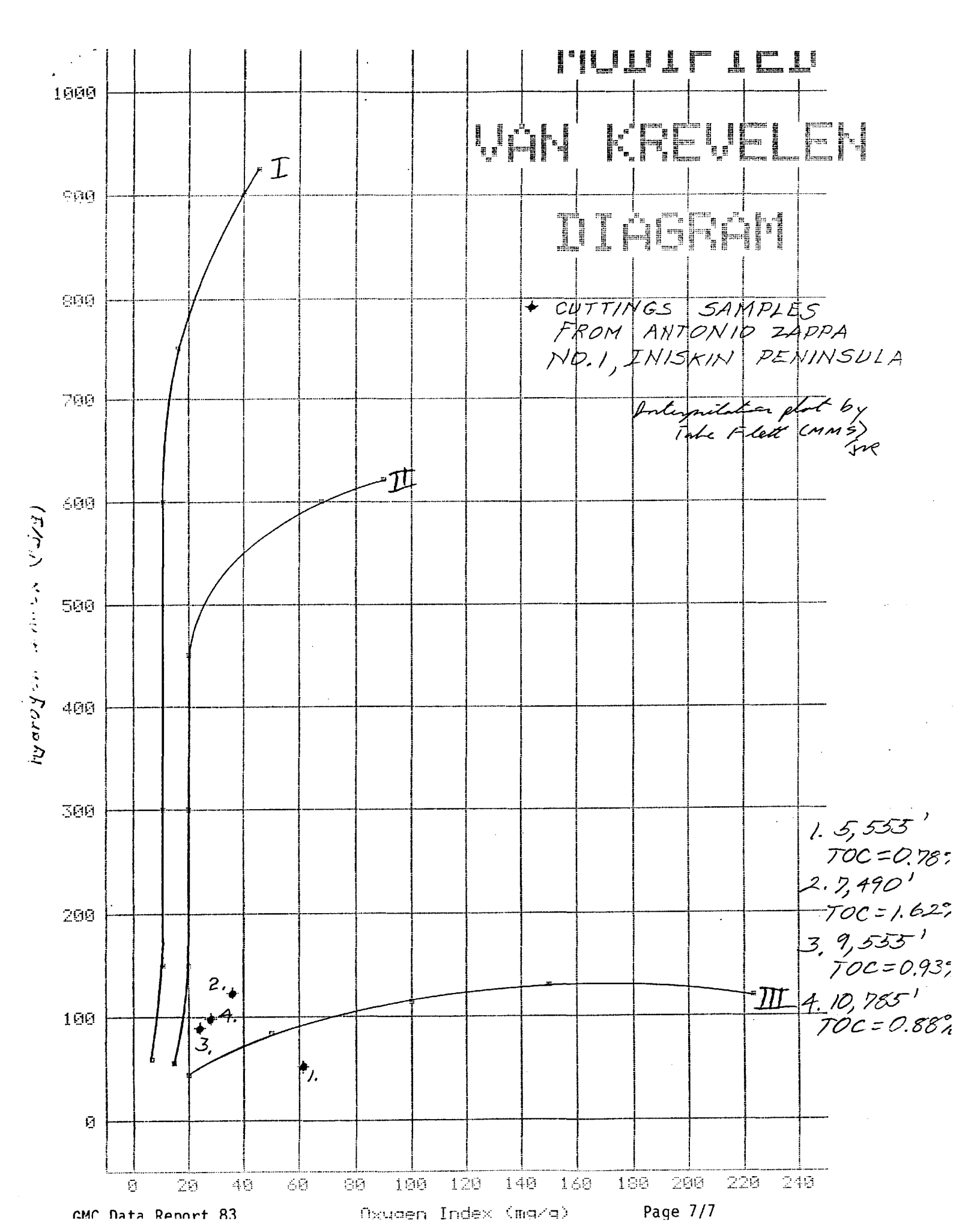
GEOCOM ROCK EVAL II

SEP 14, 1988
TIME= 0549
ID= 021
FID ATTENUATION= 32
TCD ATTENUATION= 32

LCI-Iniskin
10770-10800'



TOC = 0.86
WT = 119.6
TMAX = 448 DEGREES C
S1= +5.351E-01 SUM= +4.478E+02
S2= +3.748E-01 SUM= +7.347E+03
S3= -2.448E-01 SUM= +5.293E+03
UNKNOWN


MUDLOGGING
VAN KREVELEN
DIAGRAM
CUTTINGS SAMPLES
FROM ANTONIO ZAPPA
NO.1, INISKIN PENINSULA
Interpretation plot by
Jake Hlett (MMS)
JVR
I
II
III
1. 5,535'
TOC=0.78%
2. 7,490'
TOC=1.62%
3. 9,535'
TOC=0.93%
4. 10,785'
TOC=0.88%
1000
900
800
700
600
500
400
300
200
100
0
0
20
40
60
80
100
120
140
160
180
200
220
240
Oxygen Index (mg/g)