

NEW MEXICO HYDROCARBON SOURCE
ROCK EVALUATION PROJECT

HUNT OIL COMPANY, NO.1-16 STATE
SEC.16,T3S,R13W, CATRON COUNTY, NEW MEXICO
API NO. 30-003-20018
NORTHWEST AREA
GEOCHEM JOB NO. 3954

Prepared

for

PROGRAM PARTICIPANTS

by

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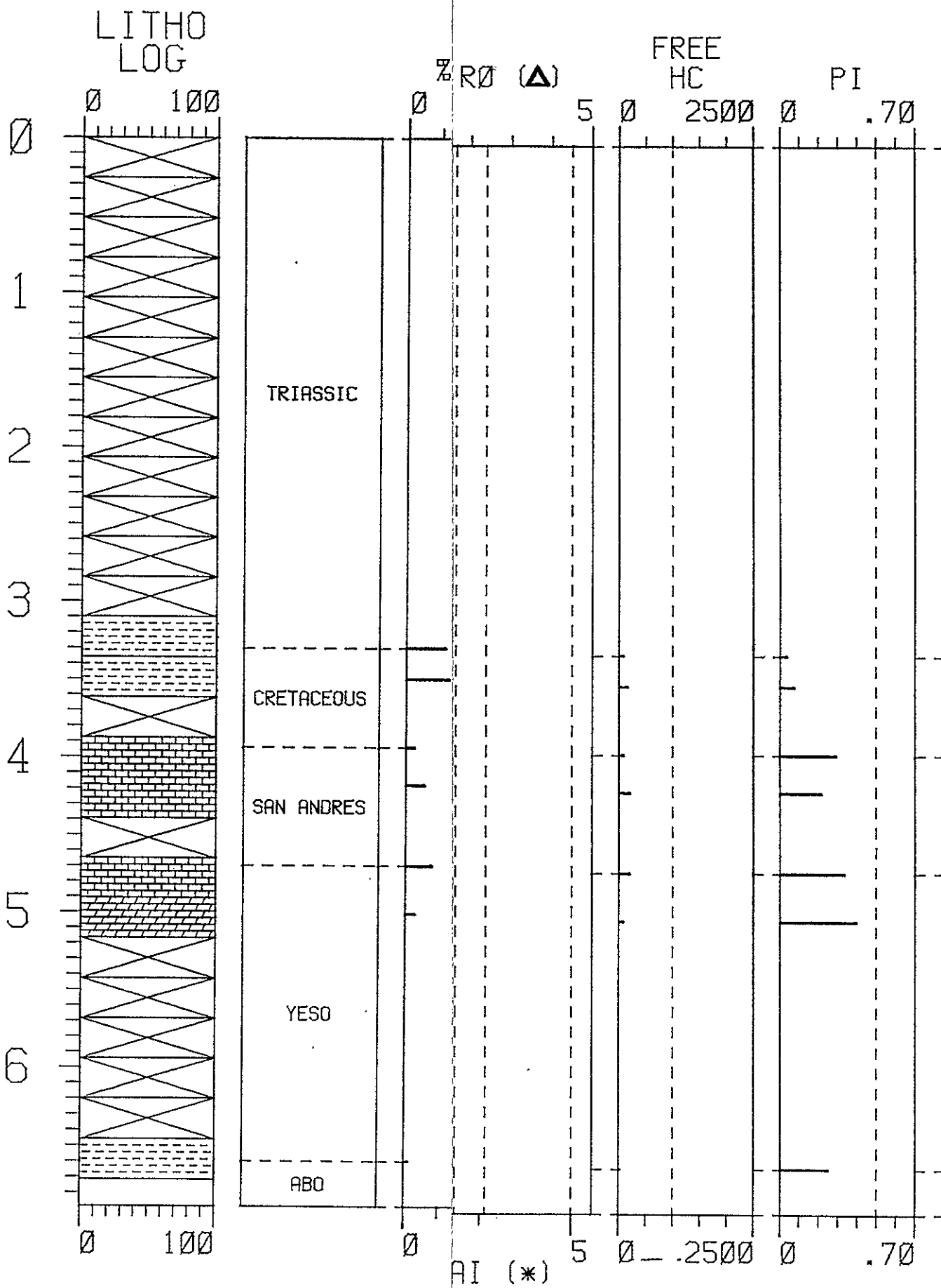
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MAY 1990

NEW MEXICO HYDROCARBON SOURCE ROCK EVALUATION

WELL NAME: HUNT OIL COMPANY, NO.1-16 STATE
 API NO.: 30-003-20018
 AREA: NORTHWEST
 LOCATION: CATRON COUNTY, NEW MEXICO SEC.16, T3S, R13W
 GEOCHEM JOB NO.: 3954
 TOTAL DEPTH: 6890 ft.
 INTERVAL SAMPLED: 3300 - 6700 ft.
 TOTAL NUMBER OF SAMPLES: 7

GEOCHEM SAMPLE NUMBER	SAMPLE DEPTH	STRATIGRAPHIC INTERVAL	ANALYSES				
			LITHO	TOC	ROCK-EVAL	KEROGEN	OTHER
3954-001	3300-3400	Cretaceous	X	X	X	X	
3954-002	3500-3590	Cretaceous	X	X	X	X	
3954-003	3940-3970	San Andres	X	X	X	X	
3954-004	4180-4250	San Andres	X	X	X	X	
3954-005	4700-4730	Yeso	X	X	X	X	
3954-006	5010-5030	Yeso	X	X	X	X	
3954-007	6600-6700	Abo	X	X	X	X	



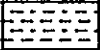
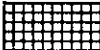
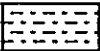

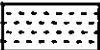


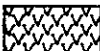
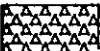




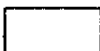
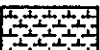

HUNT #1-16 STATE
JOB NUMBER 3954



LEGEND FOR SUMMARY DIAGRAM

DEPTH:	in feet
LITHO LOG:	see lithology symbols
STRATIGRAPHY:	by age
% TOC:	percent total organic carbon
HI:	Rock-Eval, Hydrocarbon Index = $100 \text{ S2}(0/00 \text{ Wt})/\text{TOC}$
OI:	Rock-Eval, Oxygen Index = $100 \text{ S3}(0/00 \text{ Wt})/\text{TOC}$
HC YIELD:	Rock-Eval, S2 peak (ppm)
S2/S3:	Rock-Eval, Ratio of S2 to S3 peak
KEROGEN:	see Kerogen symbols
T-MAX:	Rock-Eval, maximum temperature of S2 peak, in degrees Centigrade
%RO (Δ):	Vitrinite Reflectance (scale 0 to 5)
TAI (*):	Thermal Alteration Index (Scale 1 to 5)
FREE HC:	Rock-Eval, S1 peak (ppm)
PI:	Rock-Eval, Productivity Index = $\text{S1}/(\text{S1}+\text{S2})$

LITHOLOGIES

	SHALE		SILICEOUS ROCKS
	MUDSTONE		EVAPORITES
	SILTSTONE		COAL
	SANDSTONE		IGNEOUS ROCKS
	CONGLOMERATE		VOLCANICS
	BRECCIA		METAMORPHIC ROCKS
	LIMESTONE		BASEMENT
	DOLOMITE		OTHER
	MARL		MISSING SECTION

KEROGEN TYPES




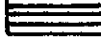
	AMORPHOUS
	HERBACEOUS
	WOODY
	INERTINITE

TABLE I

RESULTS OF TOTAL ORGANIC CARBON

NEW MEXICO HYDROCARBON SOURCE ROCK EVALUATION

HUNT OIL COMPANY, NO.1-16 STATE
SEC.16, T3S, R13W, CATRON COUNTY, NEW MEXICO
API #30-003-20018
NORTHWEST AREA

GEOCHEM SAMPLE NUMBER	DEPTH INTERVAL (feet)	TOTAL ORGANIC CARBON (% of Rock)
3954-001	3300-3400	1.17
3954-002	3500-3590	1.28
3954-003	3940-3970	0.27
3954-004	4180-4250	0.57
3954-005	4700-4730	0.80
3954-006	5010-5030	0.30/0.30
3954-007	6600-6700	0.14

TABLE II

LITHOLOGICAL DESCRIPTIONS AND ORGANIC CARBON ANALYSES

NEW MEXICO HYDROCARBON SOURCE ROCK EVALUATION

HUNT OIL COMPANY, NO. 1-16 STATE
 SEC.16, T3S, R13W, CATRON COUNTY, NEW MEXICO
 API #30-003-20018
 NORTHWEST AREA

GEOCHEM SAMPLE NUMBER	DEPTH INTERVAL (feet)	LITHO DESCRIPTION	GSA NO.	ORGANIC CARBON (wt.%)
3954-001 -A	3300-3400	100% Shale, calcareous, medium dark gray.	N4	1.17
3954-002 -A	3500-3590	100% Shale, moderately calcareous, dark gray.	N3	1.28
3954-003 -A	3940-3970	100% Limestone, light brownish gray.	5YR 6/1	0.27
3954-004 -A	4180-4250	100% Limestone, argillaceous, dusky yellowish brown.	10YR 2/2	0.57
3954-005 -A	4700-4730	100% Limestone, argillaceous, dusky yellowish brown.	10YR 2/2	0.80
3954-006 -A	5010-5030	100% Dolomite, calcareous, brownish gray.	5YR 4/1	0.30/0.30
3954-007 -A	6600-6700	100% Shale, very slightly calcareous, dark reddish brown.	10R 3/4	0.14

TABLE III

RESULTS OF ROCK-EVAL PYROLYSIS ANALYSIS

NEW MEXICO HYDROCARBON SOURCE ROCK EVALUATION

HUNT OIL COMPANY, NO.1-16 STATE
 SEC.16, T3S, R13W, CATRON COUNTY, NEW MEXICO
 API #30-003-20018
 NORTHWEST AREA

GEOCHEM SAMPLE NUMBER	DEPTH INTERVAL (Feet)	TMAX (c)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	PI	PC*	T.O.C. (wt.%)	HYDROGEN INDEX	OXYGEN INDEX
3954-001	3300-3400	435	0.09	2.19	0.30	0.04	0.19	1.17	187	26
3954-002	3500-3590	437	0.17	2.08	0.43	0.08	0.18	1.28	162	33
3954-003	3940-3970	437	0.10	0.24	0.28	0.29	0.02	0.27	88	103
3954-004	4180-4250	428	0.22	0.79	0.90	0.22	0.08	0.57	138	157
3954-005	4700-4730	514	0.21	0.41	0.44	0.34	0.05	0.80	51	55
3954-006	5010-5030	349	0.10	0.15	0.43	0.42	0.02	0.30	50	143
3954-007	6600-6700	437	0.04	0.12	0.17	0.25	0.01	0.14	85	121

T.O.C. = Total organic carbon, wt.%

S1 = Free hydrocarbons, mg Hc/g of rock

S2 = Residual hydrocarbon potential
(mg HC/g or rock)S3 = CO₂ produced from kerogen pyrolysis
(mg CO₂/g of rock)

PC* = 0.083 (S1 + S2)

Hydrogen
Index = mg HC/g organic carbon

Oxygen

Index = mg CO₂/g organic carbon

PI = S1/S1 + S2

TMAX = Temperature Index, degrees C.

TABLE IV

SUMMARY OF ORGANIC CARBON AND VISUAL KEROGEN DATA

NEW MEXICO HYDROCARBON SOURCE ROCK EVALUATION PROJECT

HUNT OIL COMPANY, NO. 1-16 STATE
 SEC.16, T3S, R13W, CATRON COUNTY, NEW MEXICO
 API NO. 30-003-20018
 NORTHWEST AREA

GEOCHEM SAMPLE NUMBER	DEPTH INTERVAL (feet)	TOTAL ORGANIC CARBON	ORGANIC MATTER TYPE	VISUAL ABUNDANCE NORMALIZED PERCENT					ALTERATION STAGE	THERMAL ALTERATION INDEX
				Al	Am	H	W	I		
3954-001	3300-3400	1.17	Am-H*;W;I	0	36	36	19	9	1+ to 2-	1.5
3954-002	3500-3590	1.28	Am-H*;W;I	0	33	33	25	12	1+ to 2-	1.5
3954-003	3940-3970	0.27	Am-H*;W;I	0	36	36	19	9	2- to 2	2.0
3954-004	4180-4250	0.57	Am-H*;-;W-I	0	40	40	10	10	2 to 2+	2.3
3954-005	4700-4730	0.80	H;Am;-	0	28	72	0	0	2+	2.6
3954-006	5010-5030	0.30/0.30	I;Am**;H	0	33	22	0	45	3- to 3	3.2
3954-007	6600-6700	0.14	Am**;H-I;-	0	42	29	0	29	2 to 2+	2.4

LEGEND:

KEROGEN KEY

Predominant; Secondary; Trace
 60-100% 20-40% 0-20%

Al = Algal
 Am = Amorphous-Sapropel
 Am** = Relic Amorphous-Sapropel
 H = Herbaceous-Spore/Pollen
 H* = Degraded Herbaceous
 W = Woody-Structured
 U = Unidentified Material
 I = Inertinite
 C = Coaly

TABLE V
VISUAL KEROGEN ASSESSMENT WORKSHEET

[illegible]

05-11-90 00017515 CYCLE : 4 SCALE = 1/32

ISO TIME = 5 TEMP GRADIENT=25 TRAP STOP T = 390

1001 51 52 53 P1 100/53 P0 100 H1 01

1001 3.10 2.90 0.92 0.03 3.15 0.25

1001 3.10 2.90 0.92 0.03 3.15 0.25

1001 3.10 2.90 0.92 0.03 3.15 0.25

1001 3.10 2.90 0.92 0.03 3.15 0.25

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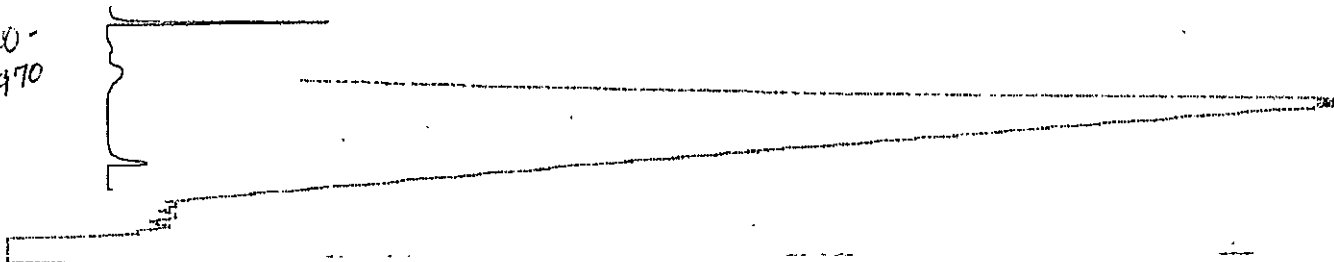
1001 3.10 2.90 0.92 0.03 3.15 0.25

1001 3.10 2.90 0.92 0.03 3.15 0.25

I [] T [] P [] = [] 2 [] I [] T [] = [] MP [] AD [] T [] = [] P [] DP [] = [] 0

DEPTH: QTY :TMAX: S 1 : S 2 : S 3 : P I : 52/S3 : P C : TOC : H I : O I :
3954-007: 99.11: 437: 0.10: 0.24: 0.28: 0.29: 0.85: 0.02: 0.27: 88 : 193 :

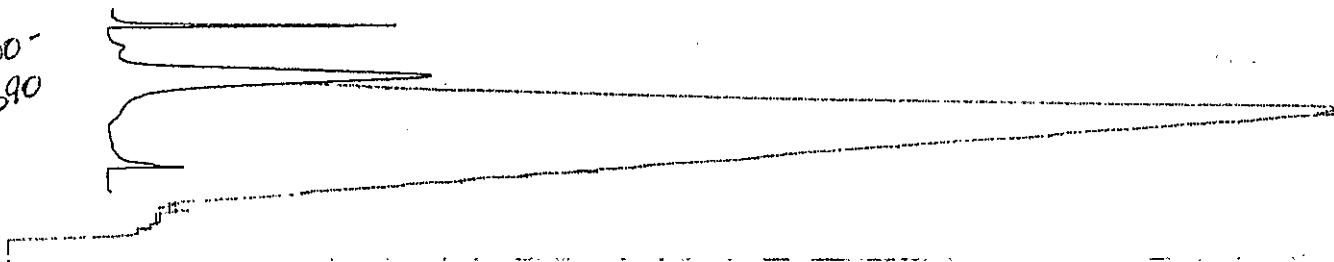
3940-
3970



DATE: 05-11-90 ANALYSIS CYCLE : 4 SCALE = 1/32

INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT=25 TRAP STOP T = 390
DEPTH: QTY :TMAX: S 1 : S 2 : S 3 : P I : 52/S3 : P C : TOC : H I : O I :
3954-007: 96.2: 437: 0.17: 2.08: 0.43: 0.09: 4.83: 0.18: 1.28: 162 : 33 :

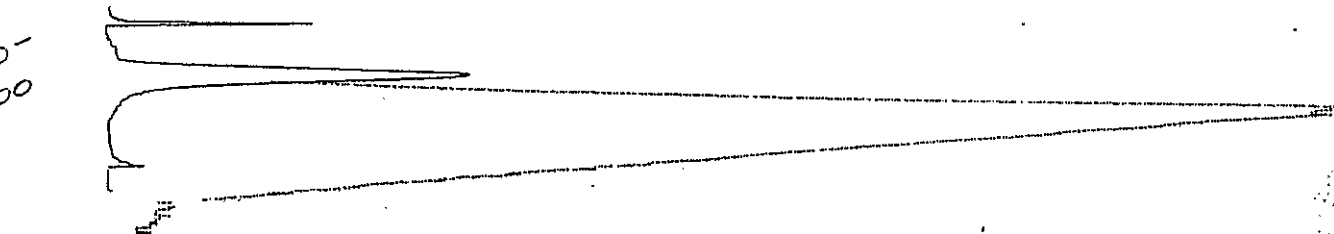
3500-
3590



DATE: 05-11-90 ANALYSIS CYCLE : 4 SCALE = 1/32

INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT=25 TRAP STOP T = 390
DEPTH: QTY :TMAX: S 1 : S 2 : S 3 : P I : 52/S3 : P C : TOC : H I : O I :
3954-001: 95.5: 435: 0.09: 2.19: 0.30: 0.04: 7.30: 0.19: 1.17: 187 : 26 :

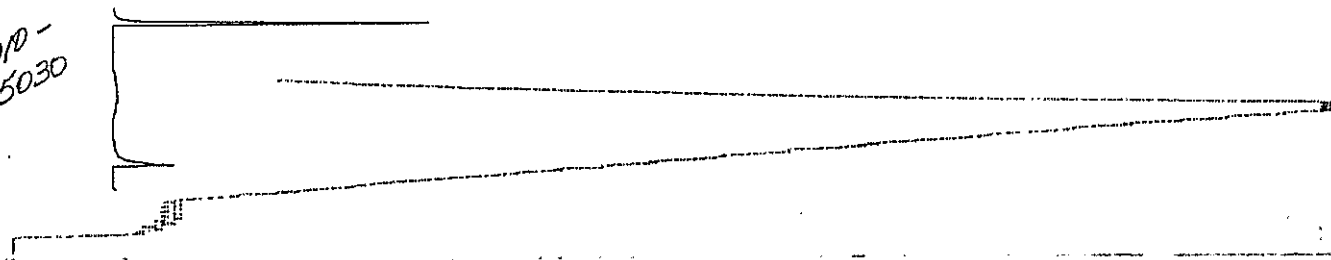
3300-
3400



INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT = 25 TRAP STOP T = 390

DEPTH	QTY	TMAX	S 1	S 2	S 3	P I	S2/S3	P C	TOC	H I	O I
3954-00	99.1	349	0.10	0.15	0.43	0.42	0.34	0.02	0.30	50	143

5010-
5030

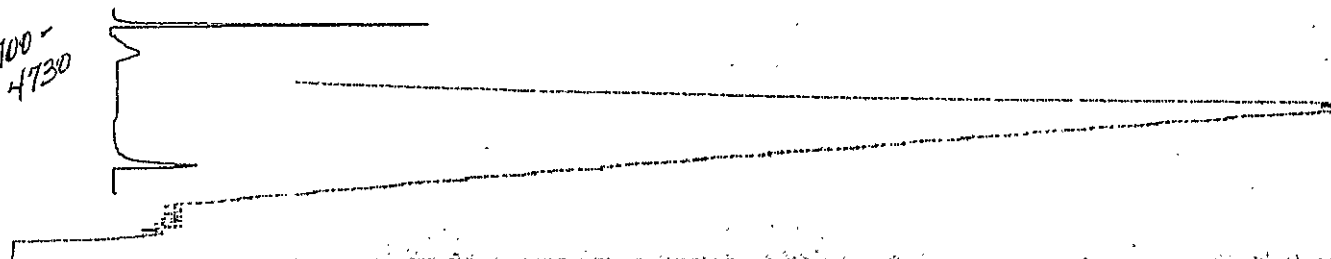


DATE: 05-11-90 ANALYSIS CYCLE : 4 SCALE = 1/32

INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT = 25 TRAP STOP T = 390

DEPTH	QTY	TMAX	S 1	S 2	S 3	P I	S2/S3	P C	TOC	H I	O I
3954-00	93.0	514	0.21	0.41	0.44	0.34	0.93	0.05	0.80	51	55

4700-
4730

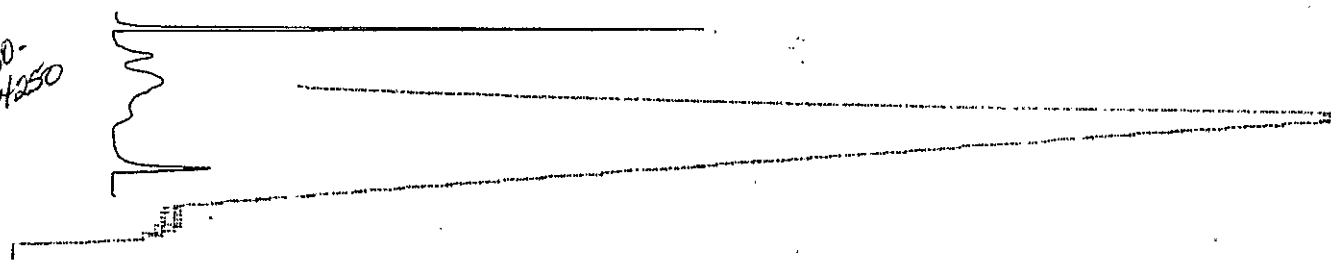


DATE: 05-11-90 ANALYSIS CYCLE : 4 SCALE = 1/32

INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT = 25 TRAP STOP T = 390

DEPTH	QTY	TMAX	S 1	S 2	S 3	P I	S2/S3	P C	TOC	H I	O I
3954-00	97.1	428	0.22	0.79	0.90	0.22	0.87	0.08	0.57	138	157

4180-
4250



DATE: 05-11-90

ANALYSIS

CYCLE : 4

SCALE = 1/32

INIT TEMP = 250 ISO TIME = 5 TEMP GRADIENT=25 TRAP STOP T = 390

DEPTH	DTY	TRAX	S 1	S 2	S 3	P 1	152/53	P C	TCC	H I	O I
3954-00	96.7	437	0.04	0.12	0.17	0.25	0.70	0.01	0.14	85	121

6600
6700

