CORE ANALYSIS RESULTS FOR

ANADARKO PRODUCTION COMPANY

NELL NO. A-1

GENTZLER FIELD

STEVENS COUNTY, KANSAS

Section 18 T33S R37W

6048 frac=6053 by

# CORE LABORATORIES, INC.

*Petroleum Reservoir Engineering*

DALLAS, TEXAS



ANADARKO PRODUCTION COMPANY
WELL NO. A-1
GENTZLER FIELD
STEVENS COUNTY

FORMATION : LOWER MORROW
DRLG. FLUID: WATER BASE MUD
LOCATION : SW NW SEC. 19-T33S-R37W
STATE : KANSAS

DATE : 12-27-78
FILE NO. : RP-2-5768
ANALYSTS : RM:RG:FD
ELEVATION: 3133' GL

## CONVENTIONAL CORE ANALYSIS

| SAMP. NO. | DEPTH | PERM. TO AIR (MD) HORZ. | VERTICAL | POR. FLD. | FLUID SATS. OIL | WATER | GR. DNS. | | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6036-37 | 5.7 | 1.3 | 6.0 | 0.0 | 62.3 | 2.69 | | SD WH FN CLY V/GLAJC |
| 2 | 6037-38 | 0.41 | 0.28 | 5.7 | 0.0 | 50.9 | | | SD WH FN-CSE CLY V/GLAJC |
| 3 | 6038-39 | 0.12 | 0.11 | 4.8 | 0.0 | 47.7 | | | SD WH FN-CSE CLY V/GLAJC |
| 4 | 6039-40 | 3.5 | 0.16 | 9.2 | 0.0 | 56.0 | | | SD WH FN CLY V/GLAJC CARB |
| 5 | 6040-41 | 0.12 | 0.62 | 6.2 | 0.0 | 50.1 | 2.68 | | SD WH FN CLY V/GLAJC |
| 6 | 6041-42 | 0.12 | 0.09 | 5.0 | 0.0 | 54.0 | | | SD WH FN CLY V/GLAJC |
| 7 | 6042-43 | 0.16 | 0.12 | 11.1 | 6.3 | 54.1 | | | SD WH FN CLY V/GLAJC |
| 8 | 6043-44 | 0.48 | 0.47 | 5.9 | 0.0 | 74.1 | | | SD WH FN CLY V/GLAJC |
| 9 | 6044-45 | 0.11 | 0.13 | 8.2 | 0.0 | 68.8 | 2.70 | | SD WH FN CLY V/GLAJC |
| 10 | 6045-46 | 0.45 | 0.40 | 11.4 | 0.0 | 75.6 | | | SD WH FN CLY V/GLAJC |
| 11 | 6046-47 | 0.12 | 0.10 | 14.5 | 0.0 | 73.3 | | | SD WH FN CLY V/GLAJC |
| 12 | 6047-48 | 2.6 | 1.2 | 15.7 | 3.1 | 74.9 | | | SD WH FN CLY V/GLAJC |
| 13 | 6048-49 | 0.09 | 0.11 | 13.8 | 6.1 | 55.9 | 2.68 | | SD WH FN CLY V/GLAJC |
| 14 | 6049-50 | 9.5 | 1.6 | 15.1 | 4.3 | 62.7 | | | SD WH FN CLY V/GLAJC |
| 15 | 6050-51 | 0.08 | 0.09 | 20.8 | 5.2 | 67.8 | | | SD WH FN CLY SL/GLAJC |
| 16 | 6051-52 | 7.7 | 3.4 | 13.5 | 5.6 | 59.3 | | | SD WH FN CLY GLAJC |
| 17 | 6052-53 | 0.08 | 0.11 | 13.5 | 6.3 | 54.9 | 2.70 | | SD WH FN CLY GLAJC |
| | 6053-6063 | | | | | | | | SHALE - NO ANALYSIS |
| 18 | 6063-64 | 0.20 | 0.70 | 10.8 | 1.8 | 58.9 | | | SD WH FN CLY GLAJC |
| 19 | 6064-65 | 0.16 | 1.6 | 9.3 | 1.1 | 56.6 | | | SD WH FN-CSE CLY GLAJC |
| 20 | 6065-66 | 0.14 | 0.16 | 9.3 | 0.0 | 56.4 | | | SD WH FN-CSE CLY GLAJC |
| 21 | 6066-67 | 0.17 | 0.17 | 9.4 | 0.0 | 56.3 | 2.70 | | SD WH FN-CSE CLY GLAJC |
| 22 | 6067-68 | 0.35 | 0.24 | 13.5 | 1.4 | 46.1 | | | SD WH FN-CSE CLY GLAJC |
| 23 | 6068-69 | 0.28 | 0.28 | 13.8 | 0.7 | 59.0 | | VF | SD WH FN-MED CLY GLAJC |
| 24 | 6069-70 | 0.38 | 0.26 | 9.9 | 0.0 | 56.0 | | VF | SD WH FN CLY GLAJC |

VF = VERTICAL FRACTURE

19-33-37W

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| SAMP. NO. | DEPTH | PERM. TO AIR (MD) HORZ. | PERM. TO AIR (MD) VERTICAL | POR. FLD. | FLUID SATS. OIL | FLUID SATS. WATER | GR. DNS. | | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| 25 | 6070-71 | 1.1 | 0.51 | 12.4 | 0.7 | 67.7 | 2.64 | | SD WH FN CLY V/GLAJC |
| 26 | 6071-72 | 0.57 | 0.25 | 6.3 | 0.0 | 76.1 | | | SD WH FN CLY V/GLAJC |
| 27 | 6072-73 | 0.30 | 0.17 | 17.1 | 0.5 | 50.5 | | | SD WH FN CLY V/GLAJC |
| 28 | 6073-74 | 0.78 | 0.25 | 5.7 | 0.0 | 72.2 | | | SD WH FN CLY V/GLAJC |
| 29 | 6074-75 | 0.33 | 0.16 | 15.6 | 1.2 | 56.0 | 2.70 | | SD WH FN CLY V/GLAJC |
| 30 | 6075-76 | 0.14 | 0.18 | 12.0 | 0.0 | 63.1 | | | SD WH FN CLY V/GLAJC CARB |
| 31 | 6076-77 | 0.12 | 0.08 | 11.9 | 0.8 | 67.1 | | | SD WH FN CLY V/GLAJC CARB |
| 32 | 6077-78 | 0.23 | 0.16 | 6.8 | 0.0 | 54.1 | | | SD WH FN CLY V/GLAJC CARB |
| 33 | 6078-79 | 0.10 | 0.07 | 14.5 | 0.7 | 62.1 | 2.75 | | SD WH FN-CSE CLY V/GLAJC |
| 34 | 6079-80 | 0.94 | 0.62 | 7.6 | 0.0 | 67.9 | | | SD WH FN CLY V/GLAJC |
| 35 | 6080-81 | 0.09 | 0.08 | 6.8 | 0.0 | 66.7 | | | SD WH FN-CSE CLY V/GLAJC |
| 36 | 6081-82 | 0.16 | 0.23 | 10.7 | 0.0 | 51.5 | | | SD WH FN-CSE CLY V/GLAJC |
| 37 | 6082-83 | 0.20 | 0.19 | 3.0 | 0.0 | 27.5 | 2.70 | | SD WH FN-CSE CLY V/GLAJC |
| 38 | 6083-84 | 0.08 | 0.14 | 12.8 | 0.0 | 57.4 | | | SD WH FN-CSE CLY V/GLAJC |
| 39 | 6084-85 | 0.07 | 0.08 | 15.6 | 3.0 | 49.6 | | | SD WH FN-CSE CLY V/GLAJC |
| 40 | 6085-86 | 0.59 | 0.22 | 17.3 | 6.5 | 48.6 | | VF | SD WH FN-MED CLY V/GLAJC |
| 41 | 6086-87 | 0.07 | 0.06 | 5.8 | 0.0 | 65.3 | 2.71 | | SD WH FN CLY V/GLAJC |
| 42 | 6087-88 | 7.1 | 2.8 | 15.8 | 5.4 | 52.4 | | | SD WH FN CLY GLAJC |
| 43 | 6088-89 | 0.14 | 0.13 | 7.5 | 1.4 | 68.0 | | | SD WH FN-MED CLY GLAJC |
| 44 | 6089-90 | 0.46 | 0.31 | 13.0 | 0.0 | 60.1 | | | SD WH FN-CSE CLY GLAJC |
| 45 | 6090-91 | 0.17 | 0.25 | 11.3 | 0.9 | 60.0 | 2.71 | | SD WH FN-CSE CLY GLAJC |
| 46 | 6091-92 | 0.30 | 0.29 | 9.3 | 1.1 | 62.9 | | | SD WH FN-MED CLY GLAJC |
| 47 | 6092-93 | 0.19 | 0.19 | 7.1 | 0.0 | 77.5 | | | SD WH FN-MED CLY GLAJC |
| 48 | 6093-94 | 0.15 | 0.13 | 7.4 | 0.0 | 55.2 | | | SD WH FN-MED CLY GLAJC |
| 49 | 6094-95 | 0.20 | 0.25 | 7.4 | 0.0 | 55.8 | 2.71 | | SD WH FN-MED CLY GLAJC |

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|---|---|---|---|---|---|---|---|---|---|
| 50 | 6095-96 | 0.78 | 0.38 | 12.5 | 0.8 | 58.9 | | | SD WH FN-MED CLY GLAUC |
| 51 | 6096-97 | 0.59 | 0.37 | 11.5 | 0.0 | 56.5 | | | SD WH FN-MED CLY GLAUC |
| 52 | 6097-98 | 0.14 | 0.14 | 7.4 | 0.0 | 60.9 | | | SD WH FN-MED CLY GLAUC |
| 53 | 6098-99 | 0.05 | 0.07 | 4.1 | 0.0 | 67.1 | 2.69 | | SD WH FN CLY GLAUC |
| | 6099-6103 | | | | | | | | SHALE - NO ANALYSIS |
| 54 | 6103 -4 | 0.05 | 0.13 | 8.1 | 0.0 | 86.7 | | | SD WH VFG CLY GLAUC |
| 55 | 6104 -5 | 0.05 | 0.07 | 6.3 | 0.0 | 72.3 | | | SD WH FN-CSE CLY GLAUC |
| 56 | 6105 -6 | 0.12 | 0.13 | 6.5 | 0.0 | 64.5 | | VF | SD WH FN-CSE CLY GLAUC |
| 57 | 6106 -7 | 0.17 | 0.23 | 6.9 | 0.0 | 67.3 | 2.71 | VF | SD WH FN-CSE CLY GLAUC |
| 58 | 6107 -8 | 0.40 | 0.29 | 13.0 | 0.0 | 84.3 | | VF | SD WH FN-CSE CLY GLAUC |
| 59 | 6108 -9 | 0.43 | 0.27 | 8.4 | 0.0 | 69.3 | | | SD WH FN-MED CLY GLAUC |
| | 6109-6136 | | | | | | | | LOST CORE |

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**CORE LABORATORIES, INC.** *Petroleum Reservoir Engineering*

COMPANY ANADARKO PRODUCTION COMPANY FIELD GENTZLER FILE RP-2-5768

WELL NELL NO. A-1 COUNTY STEVENS DATE 12-27-78

LOCATION SW NW SEC. 19-T33S-R37W STATE KANSAS ELEV. 3133' GL

# CORE-GAMMA CORRELATION



*VERTICAL SCALE: 5" = 100'*

**CORE-GAMMA SURFACE LOG**
(PATENT APPLIED FOR)

**GAMMA RAY**
RADIATION INCREASE →

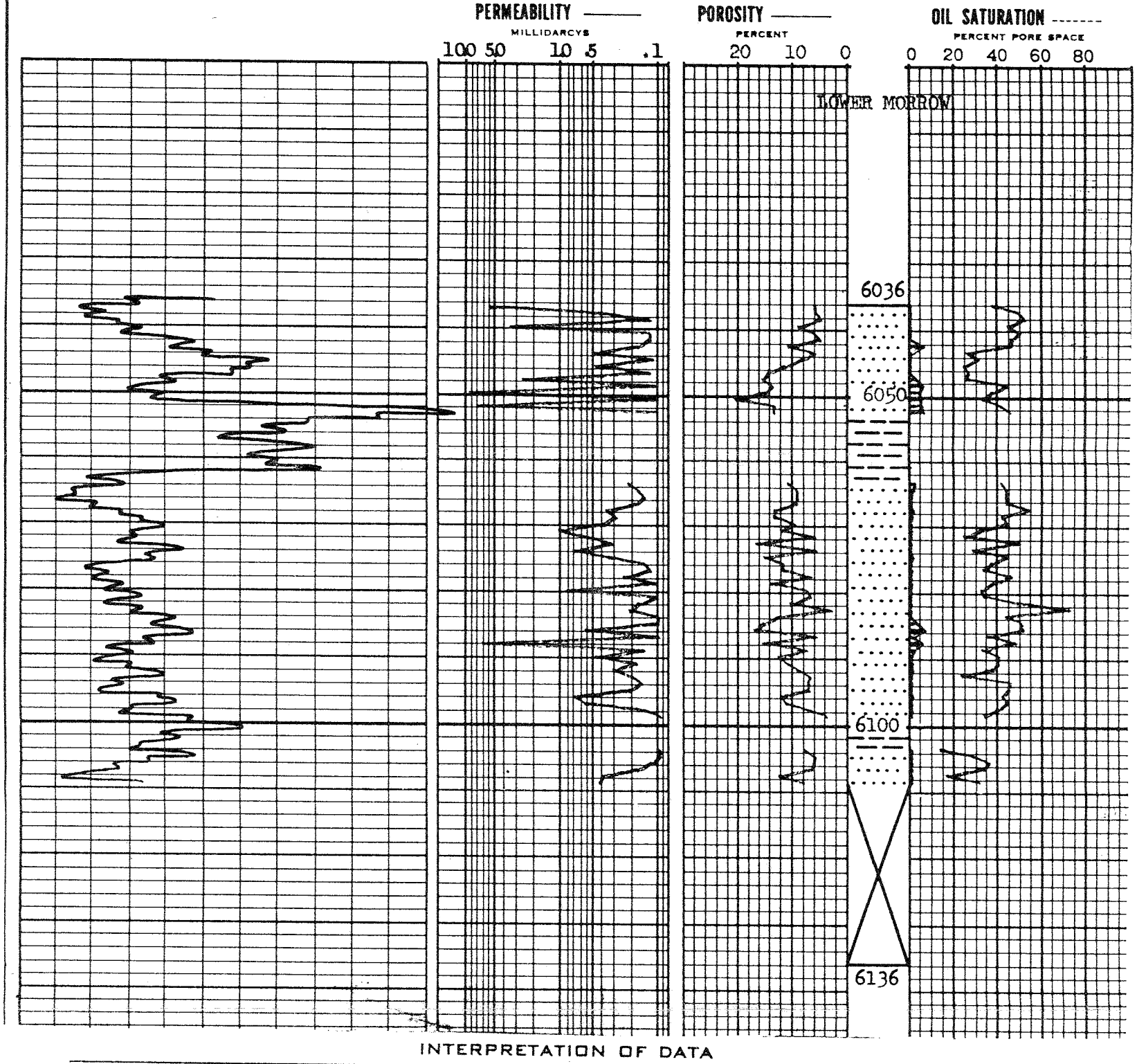
**COREGRAPH**

**PERMEABILITY** ——
MILLIDARCYS
100 50 10 5 .1

**POROSITY** ——
PERCENT
20 10 0

**TOTAL WATER** ——
PERCENT TOTAL WATER
80 60 40 20 0

**OIL SATURATION** - - - - - -
PERCENT PORE SPACE
0 20 40 60 80




## INTERPRETATION OF DATA

6036.0-6053.0 Feet - Essentially water productive.
6063.0-6099.0 Feet - Water productive where permeable.
6103.0-6109.0 Feet - Water productive.

*These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.*

375-37W-19

Dick Piderit

# GEOLOGICAL REPORT

ANADARKO PRODUCTION CO, NELL "A" 1

1250' FNL, 660' FWL

Sec 19-33S-37W

Stevens County, Kan

Gentzler Field

DRILLING STARTED 12-8-78

DRILLING COMPLETED 12-21-78

SIZE HOLE DRILLED 7 7/8

TYPE MUD Chemical

DRILL TIME PLOTTED 4800 TO 6210

SAMPLES DESCRIBED 4800 TO 6210

ELEVATION DATUM 3133 G.L.

LOGS Schlumberger

DIL

FDC-CNL

ELEVATION _____ KB

3133 GL

CONTRACTOR

Lohmam-Johnson

RIG 18

CASING 8 5/8 1706

D. TD 6210

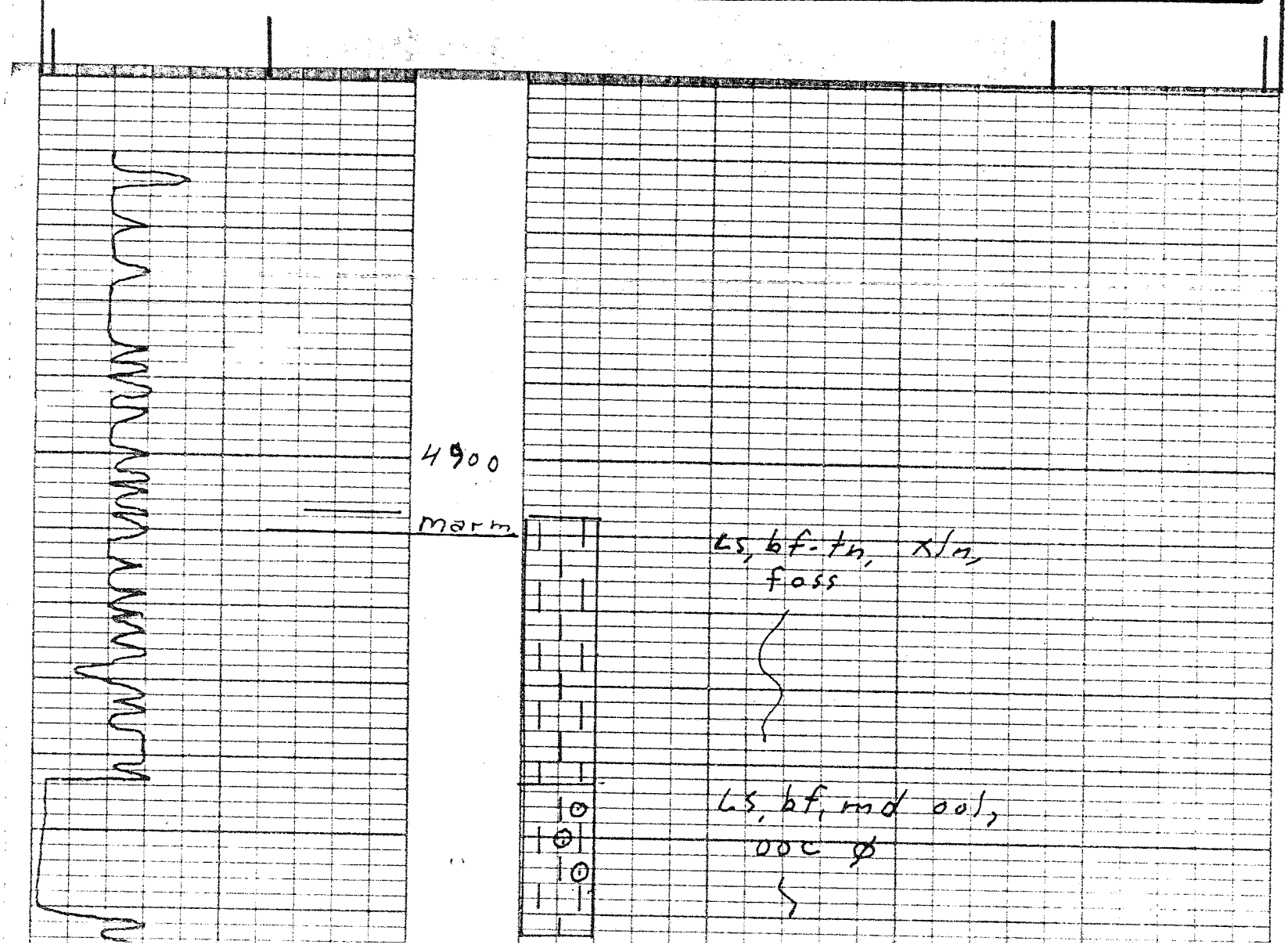
L.T.D

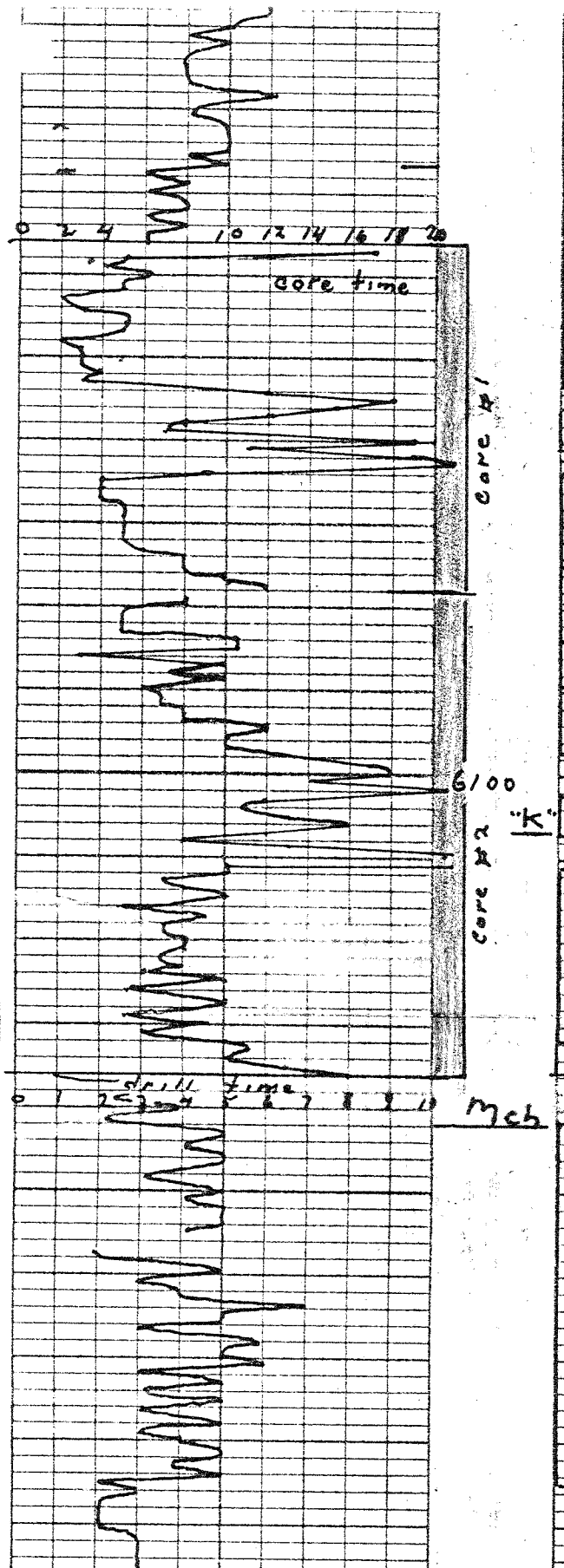
GEOLOGIST

Joe B Clair

## STRUCTURAL COMPARISON

| FORMATION | SUBJECT WELL Nell "A" 1 | OFFSET WELL Ratcliff"B" 1 |
|---|---|---|
| Marmaton | -1778 | -1733 |
| Morrow | -2507 | -2479 |
| L. Mor Sd. | -2860 | -2819 |
| Miss Chester | -3009 | -2979 |






Interbedded - fn grn glauc dirty sd,
wh vy fn grn lmy sd, gy lm + sh.

sd, fn, md- crs grn, lmy,
glauc, stn, odor, fluor, bleeding
sd, fn, md fn grn
stn, fluor
lmy sd, vy crs, glauc.

sh, blk, fissile

sd, fn, md fn grn, stn, odor, fluor
lmy sd, md gra, foss, glauc cgl.
sd, fn - md grn, fn, lt gy fn
lmy - cgl and sd, glauc, sh strks
sd, crs, lmy, glauc, stn
crs foss
sh, blk w/ gn glauc lmy silt - sd
lmy sd, crs dng, foss, glauc
sh, blk
sd, wh, lmy, soft - friable
fn - crs grn, sli glauc.

ls, brn, xln crs foss frag —
lt gy sh y lm,
ls, fn - bf, fn xln,
gy sh y
lt gy lmy sh
gh, gn, yello, brn, gy
ls, yello, gn, fn grn,
brn dn.