

Arden Ratzlaff

PETROLEUM GEOLOGIST

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DRILLING TIME AND SAMPLE LOG

COMPANY CHIEFTAIN OIL CO., INC.

LEASE LAKE No. 1

FIELD RHODES

LOCATION SE SW NE SW

SECTION 21 TOWNSHIP 33S RANGE 11W

COUNTY BARBER STATE KANSAS

CONTRACTOR HARDT DRILLING RIG NO. 1

COMMENCED DRILLING 4-18-2011

COMPLETED DRILLING 4-29-2011

RTD 5000 FEET LTD 5004 FEET

MUD UP AT 3440 FEET MUD TYPE CHEMICAL

ELEVATIONS

KB 1386

DF 1384

GL 1376

Measurements Are All
From K.B.

CASING

13 3/8" @ 344' W. 325 SX.

5 1/2" @ 4999' W. 225 SX.

ELECTRICAL SURVEYS

LOG-TECH ~ GAMMA RAY, DUCL
INDUCTION, COMPENSATED NEUTRON
& DENSITY, S.P. & CALIPER

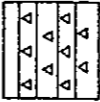
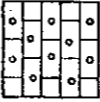

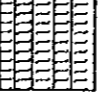
FORMATION TOPS

SAMPLE

ELECTRIC LOG

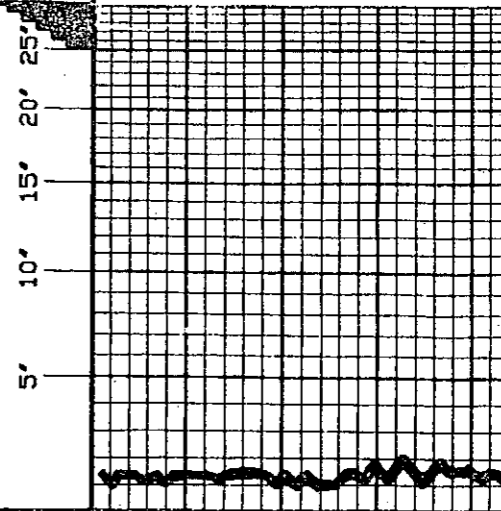
HEEBNER	3570 (-2184)	3572 (-2186)
LANSING	3756 (-2360)	3756 (-2360)
CHEROKEE	4428 (-3042)	4428 (-3042)
MISSISSIPPIAN	4434 (-3048)	4435 (-3049)
KINDERHOOK	4626 (-3240)	4631 (-3245)
VIOLA	4747 (-3361)	4750 (-3364)
SIMPSON	4845 (-3459)	4844 (-3458)
SIMPSON SAND	4862 (-3476)	4866 (-3480)
ARBUCKLE	4987 (-3601)	N.L.
TOTAL DEPTH	5000 (-3614)	5000 (-3618)

LEGEND

	Dolomite
	Chert
	Dol. Lime
	Limestone
	Carb sh
	Shale
	Sandstone
	Salt
	Anhydrite

DRILLING TIME IN MINUTES
PER FOOT

Rate of Penetration Increases



DEPTH
3400

20

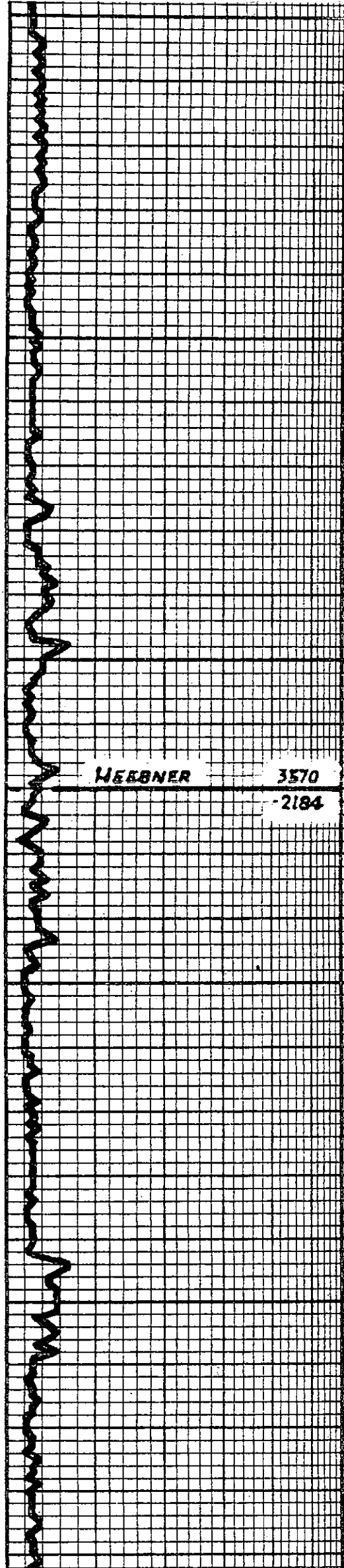
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LITHOLOGY

REMARKS

SAMPLE DESCRIPTIONS

REMARKS



SH. MED TO DV. GR. TO SPECKLED SIL
SILT. GR. CARB. & BLK

SH. AS ABOVE W. V. SCAT TAN & BRN.
FN. Y. N. DENSE. HARD LM

SAME AS ABOVE W. V. SCAT BLK. TP
CARB. SU

SH. DV. GR. & BLK (CARB. IN PART) W.
V. SCAT BRN. DENSE. HARD LM

WEBBER 3570
-2184

SH. BLK CARB. & GR. W. SCAT LM. AS
ABOVE

LM. CR. BLUE & GR. SUB. CHILKY TO
DENSE & HARD. W. SCAT. MED TO DV. GR.
& BLK SU

SH. MED TO DV. GR. SM. BLK & TP
GR. CARB. W. V. SCAT LM. AS ABOVE

SAME AS ABOVE

LM. W. CR. BLUE. GR. & IM. RPN. FN.
XIN. SUB. CHILKY & TP. CHILKY TO DENSE
& HARD

SH. MED GR. GR. GRN. TP SILTY W.
SCAT LM. AS ABOVE

SH. MED GR. W. SM. DV. GR. & GR. GRN.

3700

20

40

LANSING

3756

-2360

60

80

3800

20

40

60

ELDER

80

3900

20

40

SAME AS ABOVE W/ TR BLK SM

SAME AS ABOVE

CH. MED TO DK GR. GR. GRN. & TR BLK

1M. BUFE. GR. & TAN. EN YIN. PRED DENSE. HARD 1M. W/ CONS. AS ABOVE

1M. WH. CRM. BUFE. GR. & TAN. EN YIN. SUB-CHILKY & TR. CHILKY TO DENSE & HARD

1M. CRM. BUFE. GR. & TAN. EN YIN. SUB-CHILKY TO DENSE & HARD

1M. WH. CRM. BUFE. GR. & TAN. EN YIN. SUB-CHILKY & TR. CHILKY TO DENSE & HARD

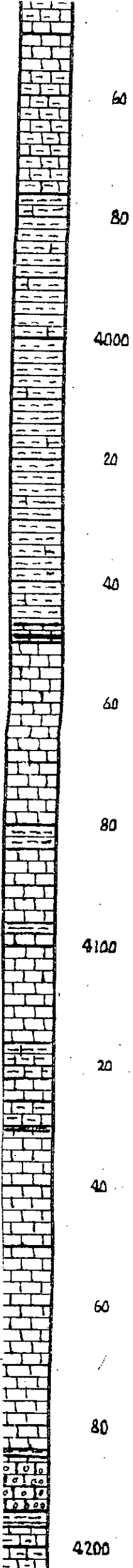
1M. CRM. BUFE. GR. & TAN. EN YIN. SUB-CHILKY TO DENSE & HARD

1M. AS ABOVE W/ MED TO DK GR. GR. GR. & BLK SM

1M. LT GR. & BUFE. EN. SM. INTER. YIN & VIG. DAR. N.S. - TR WH. CHILKY 1M.

1M. AS ABOVE PLUS CONS. MED TO DK GR. GR. GRN. & TR BLK SM

1M. BUFE. GR. & TAN. EN YIN. SUB-CHILKY TO DENSE & HARD IN SM AS ABOVE



POOR 2000 & TO VILG. DOR. N.S. PLUS
MED TO DV. GRY. SM. GRY. GRN. & BLK. SH

SH. MED TO DV. GRY. GRY. GRN. MAR. RED
TO BLK. W. BLUE TAN. (PROD. BPN. EN. XIN.
SUB. CHLY. TO PROD. DENSE. HORD. IM.

SH. MED TO DV. GRY. GRY. GRN. MAR. &
BLK. W. V. SCOT. IM. AS ABOVE.

SH. AS ABOVE W. SM. RED. CH. V. SCOT. IM.
AS ABOVE.

SH. IM. AS ABOVE.

SH. MED TO DV. GRY. BLK. & SM. GRY. GRN.
W. DV. GRY. & GRN. EN. YIN. DENSE. HORD. IM.

SH. IS ABOVE W. BLUE. BPN. & DV. GRY.
PROD. DENSE. HORD. IM. BLUE. TAN. GRY.
FRESH. SUBP. SUB. TRANS. CHPT. TO CHLY.
(TO INTER. XIN. & DOR. VILG. DOR. N.S.)

LM. GRN. BLUE. GRY. TAN. EN. XIN. SUB.
CHLY. TO DENSE. & HORD. W. MED. TO DV.
GRY. & GRY. GRN. SH.

LM. W. CRD. BLUE. GRY. TAN. EN. YIN.
SUB. CHLY. & SUB. CHLY. TO SCOT. DOR.
HARD. SCOT. DOR. & TR. CHLY. IM. W. DOR.
TO TR. BLUE. DOR. DOR. N.S.

LM. AS ABOVE W. MED. TO DV. GRY. & GRY.
GRN. SH.

LM. BLUE. GRY. TAN. EN. XIN. SUB.
CHLY. TO DENSE. & HORD. W. CONS. SH. AS
ABOVE.

SAME AS ABOVE PLUS SM. LT. GRY. EN.
XIN. SUB. TRANS. CHPT.

LM. BLUE. GRY. TAN. & TO BPN. EN. XIN.
SUB. CHLY. TO DENSE. & HORD. W. LT. GRY.
& TAN. FRESH. SUB. TRANS. CHPT. & CONS.
MED. TO DV. GRY. GRY. GRN. GENER. BLK. SH.

LM. TAN. & BPN. MIXED IN PART. EN. XIN.
DOR. IM. W. SM. GOOD. DOR. N.S.



4200

STARK

4212

32 UNITS

-2826

000' LM W SP GOOD BDR ALS

SH-MED TO DK GRY GRN-CRN GRN BLV
IN BLUE TAN & BRN EN XLA SUB-CHLY
TO DENSE HARD LM

20

SH-BLV CARB W MED TO DK GRY GRN
& GRN CRN PILLS CRN BLUE GRN TAN
EN XLA SUB-CHLY TO DENSE HARD LM

HUSHPICKNEY

4239

68 UNITS

-2853

SH-BLV CARB IN SL AS ABOVE BLUE LM
AS ABOVE

40

SH-MED TO DK GRY GRN-CRN BLV W
CRN SUB GRN TAN BRN EN XLA SUB-
CHLY TO DENSE HARD LM

BASE K.C.

4273

-2887

SH-MED TO DK GRY GRN-CRN BLV
(CARB IN PART) W LM AS ABOVE

80

SH LM AS ABOVE W SL INCR IN LM &
BLV (CARB IN PART) SH

4300

SH-MED TO DK GRY BLV GRN-CRN &
SH GRN W SP CRN BLUE GRN TAN BRN
EN XLA SUB-CHLY TO DENSE HARD LM

20

SH-MED TO DK GRY GRN-CRN BLV &
BRN W CONS LT GRY BLUE TAN EN XLA
SUB-CHLY TO DENSE HARD LM

40

ALTRAMONT

4352

-2966

LM BLUE GRN & TAN EN XLA SUB-CHLY
TO DENSE HARD W SH AS ABOVE

60

SH-BLV CARB W LM & SH AS ABOVE

80

PRUNEE

4385

-2999

LM-CRN BLUE LT GRN TAN EN XLA
SUB-CHLY TO DENSE HARD W SP
BLV (CARB) DK GRY GRN-SH

4400

SH-BLV CARB - PRED LM SH AS
ABOVE

20

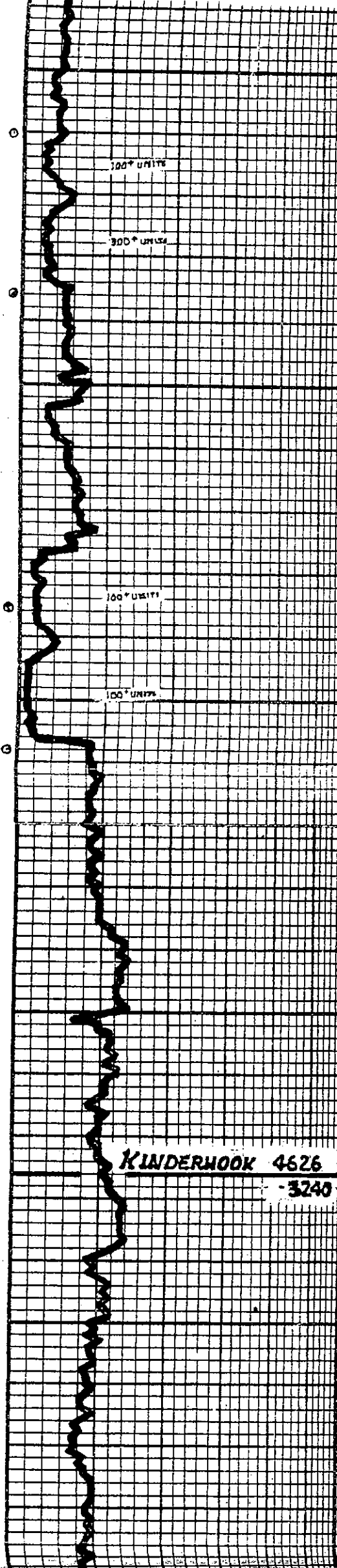
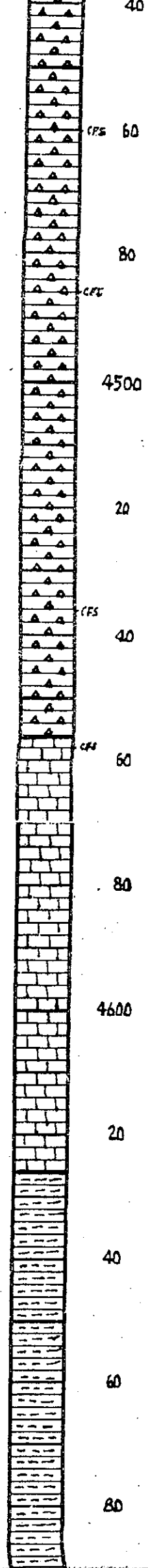
CHEROKEE

4428

MISSISSIPPIAN

3042

0120(-3008)



(4560) CURT. LT. GRAY BLUE-GRY. LTR. TRAIL. FRESH SUB-TRANSL. W/DRIFT SWRP. W. LM. & SH. AS ABOVE - GARY ODOR?

SAME AS ABOVE

(4565) CURT. LTR. LT. GRY. DRUIT. W/DRIFT W. W. SM. FAIR W/DRIFT. POR. & SCRT. FAIR W/DRIFT. POR. SPOTTY TO TR. SAT. TRN. STN. GAS. BUBBLES TO TINY TRN. OIL. DR. OILS. & LT. GRY. BLUE-GRY. CURT. AS ABOVE. W/DRIFT ODOR.

SAME AS ABOVE

(4536) SPI. F. BRED. SH. - V. BOD. SAMPLE ONLY TO SAMPLE IN BOX.

(4546) (60 MIN.) CURT. W/ LT. GRY. & YELLOW. FRESH SUB-TRANSL. TO BOD. ERAC. & NEAR. BLACKY TO SEM. VUCC. M. EDGES. W. SM. FAIR. POR. & SCRT. FAIR. W/DRIFT. POR. SPOTTY TO TR. SAT. STN. GAS. BUBBLES. & TINY OIL. DR. OILS. W/DRIFT ODOR.

(4558) CURT. W/ LT. GRY. & YELLOW. SUB-TRANSL. TO BRED. ODD. SH. TO BLACKY. ERAC. & DRUIT. POR. (SPOTTY) TO GAS. BUBBLES. & TINY GASSY OIL. DR. OILS. GRABING TO BRED. W/ LT. GRY. W. GOOD W/DRIFT. VUCCY. & SM. TRIP. POR. SPOTTY TO BRED. V. SAT. STN. GAS. BUBBLES. & LIVE OIL. FOX. BRAL. DR. OILS. & FLOATING ON WATER. SM. DR. OILS. & STRESS. STAINING. & DEFORMED. CAN. OIL. FLOATING ON WATER. - STRONG ODOR.

CURT. AS ABOVE. BRED. BRED. FRESH. W. SCRT. GR. & TRAIL. EN. W/DRIFT. BRED. BRED. W/DRIFT. LM. - FAIR ODOR.

LM. AS ABOVE. BRED. DRUIT. HARD. W. BOD. CURT. AS ABOVE.

SAME AS ABOVE

KINDERHOOK 4626
-3240

LM. & CURT. AS ABOVE. W. MED. TO DK. GRY. BLK. & GRN. SH.

SH. MED. TO DK. GRY. GRN. & SM. BLK.

SH. MED. TO DK. GRY. GRY. GRN. & SM. BLK. SP. LATER. V. IN. PORT.

SH. MED. TO DK. GRY. BLK. & TR. GRN.

4700
20
40
60
80
4800
20
40
60
80
4900
20

CHATTANOOGA 4710

3524

VIOLA 4747

3361

SIMPSON 4845

3459

SIMPSON SAND 4865

3479

SH. MED TO DK GRY & BLK (PART CARB)
W/ TR GRY-GRN SILTY IN PART

SH. DK GRY & BLK. CARB. TR DOLO. TR BOLD
SPORE BEARING.

SH. BLK. BRN. W/ BLK. DV GRY. SILTY DOLO
& SPORE BEARING.

SH. BLK & BRN. SH. BLK. DE GRY. CARB.
TR DOLO. AND SPORES

4750 DOLO. V. SILTY. LIT. GRY. EN. TAN. NEAR
MED. YIN. INTER. YIN. I. BOOR. MUG. BOO.
BOOR. W/ LIT. STN. GAS. BUBBLES &
GASSY OIL. PROPLETS. WEAK. OOR.

LM. W/ CR. BLUE. GR. & TAN. EN. TAN.
SUB. CHUKY. & TR. CHUKY. TO. OATE. I. HARD
W/ TAN. & BRN. TR. TAN. BLK. SP. I. OOR.
DULL. OOR.

LM & CPT AS ABOVE

LM. W/ CR. BLUE. GR. & TAN. EN. TAN.
CHUKY. & SUB. CHUKY. TO. DEN. I. HARD
W/ TAN. & GRY. BRN. EN. TAN. BLK.
SP. I. OOR. DULL. OOR.

LM. DOLO. OR. DOLO. LM. BLUE. TAN
& TR. BRN. EN. TAN. SUB. CHUKY. TO. PREN
DEN. I. HARD. W. CONC. CPT. AS. BRN.

SAME AS ABOVE W/ DOLO. GRN &
MED GRY SH.

4870 DOLO. SCAT. LT GRY & GRN. BLK. SCAT
GRY. GRN. DOLO. SOFT. BRN. DEN. I.
HARD. BOOR. TAN. N. S.

4870 (60 MIN'S) SAME W/ V. SCAT. LT GRY &
BLUE. EN. GRAN. ATZ. SOFT. HARD.
BOOR. EN. CLAR. SUB. EN. TO. WELL.
PAID. GRANS. V. CARB. W/ BOOR. BOO.
TR. TINY. SCAT. CLEAR. ALL. DRAPETS.
NO. OOR. OR. S. K.

4870 SCAT. NEAR. CLEAR. SUB. EN. TO. SUB. EN.
CLUSTERS. W/ BOOR. BOO. EN. CL. CLUSTERS. W/
V. LT. TAN. SOFTY. TAN. N. S. PLUS. AND
DOLO. SH. NO. OOR.

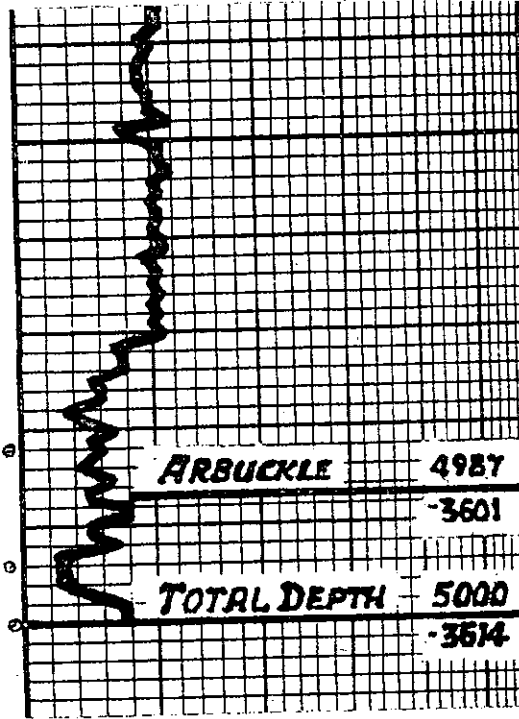
4870 STY. LT GRY & BLUE. EN. GRAN. SUB.
HARD. TO. WELL. END. PR. COBLE. CLUSTERS
W/ GR. P. I. OR. & LT. TAN. TAN. GASSY. OIL
DRAPETS. (EVID.) AND. CLUSTERS. W/ NO
FLOR. & BRN. NO. OOR.

STY. SCAT. BOOR. DIECT. AS. ABOVE. W/
TAN. BLK. ELECT. DOLO. (S) LM. SOFT.
EN. TAN. PREN. TYP. W/ FEW. SUB. EN. AND.
MED. SIZE. ATZ. GRANS. IN. REDD. N. S. W/
CONC. MED. TO. DV. GRY & BLK. SH.

SH. MED. TO. DV. GRY. TAN. BLK. & GRN. W/
W. SOFT. I. AS. ABOVE. (SILTY?)

DST No. 1 (4742-4760)
45-60-60-90
FAIR BLOW B.O.B. IN 18 MIN'S
(1 1/2 OPEN)
FAIR BLOW B.O.B. IN 47 MIN'S
REC: 560' GAS IN PIPE,
152' GASSY OIL CUT W/ TRY MUD
(8% G 2% OIL 45% W 45% M.)
1918/1518# FSLP/1554#
IFP/50-90# FFP/83-105#
TEMP 122°F
STRAIGHT HOLE SURVEY 4760'
DEVIATION = 1 1/2°
STRAP PIPE @ 4760'
STRAP 4759.08'
BOARD 4757.27'
STRAP LONG 1.81'

40
60
80
5000



ARBUCKLE 4987
-3601
TOTAL DEPTH 5000
-3614

SH & COST AS ABOVE

SH - AQUA. GRV. BLK & GRN

(GRN) SDTY - BLUE & LT GRV. ENGRAINED W. TP
MED. GRAINS IMBEDDED, HARD CUTTERS
FRID. FOL. P. 000. INT. GRN. POR. N.S. PULL
SHT. LT. GRV. BLK. SDTY. EN. & INT. GRN. 00
V. SL. SILTY. POR. N.L. N.S. - ADD AQUA. SH.

(GRN) DOLA. SL. LIMY IN PART. BLUE & TAN. EN
VIA. PRED. DEUCE & HARD PLUS CONE SD
AS ABOVE.