

Arden Ratzlaff

PETROLEUM GEOLOGIST

Phone 262-8938

107 N. Market 808 Biting Bldg. Wichita, KS 67202

COMPANY CHIEFTAIN OIL CO., INC.

LEASE YATES 'A' No. 3

FIELD STRANATHAN

LOCATION NW SE NE SE

SECTION 36 TOWNSHIP 34S RANGE 12W

COUNTY BARBER STATE KANSAS

CONTRACTOR MAYERBACH DRILLING RIG NL 106

COMMENCED DRILLING 6-13-10

COMPLETED DRILLING 6-25-10

RTD SAND FEET LTD FEET

MUD UP AT 2000 FEET MUD TYPE CHEMICAL

FORMATION TOPS

SAMPLE

ELECTRIC LOG

ANHYDRITE
SAND
SAND KANSAS CITY
CHERT
MISSISSIPPIAN
KANSAS
VIOLA
STIMPSON
STIMPSON SAND
TOTAL DEPTH

3764 (2890)
4448 (3074)
4512 (3158)
4644 (3280)
4711 (3357)
4962 (3588)
5124 (3750)
5203 (3829)
5224 (3850)
5410 (4036)

3765 (2991)
4444 (3070)
4508 (3154)
4665 (3289)
4709 (3335)
4960 (3586)
5120 (3786)
5210 (3886)
5228 (3884)
5411 (4057)

DRILLING TIME

AND

SAMPLE LOG

ELEVATIONS

KD 1374

IF 1372

EL 1365

Measurements Are All
From K.B.

CASING

1 3/4" @ 305' W. 240 SX

5 1/2" @ 500' W. 200 SX

ELECTRICAL SURVEYS

SUPERIOR - GAMMA RAY DUAL
INDUCTION COMPENSATED NEUTRON
& DENSITY, S.P. & CALIPER

REMARKS AFTER ANALYZING THE DRILLING FLUID, ESPECIALLY THE HYDROCARBON SHOWS & THE HISTORY OF PRODUCTION IN THE AREA, IT WAS DECIDED
THAT CASING BE CEMENTED IN EXPECTANCE OF COMMERCIAL PRODUCTION.

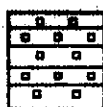
Arden Ratzlaff, Petroleum Geologist

NOTE: NATIVE AMERICAN FURNISHED THE MUD - TRILONITE. THE DRILL STEM TESTS - SAMPLES DEPOSITED AT THE K.G.S. SURVEY.

LEGEND



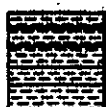
Anhydrite



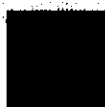
Salt



Sandstone



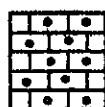
Shale



Carb sh



Limestone



Dol. Line



Chert

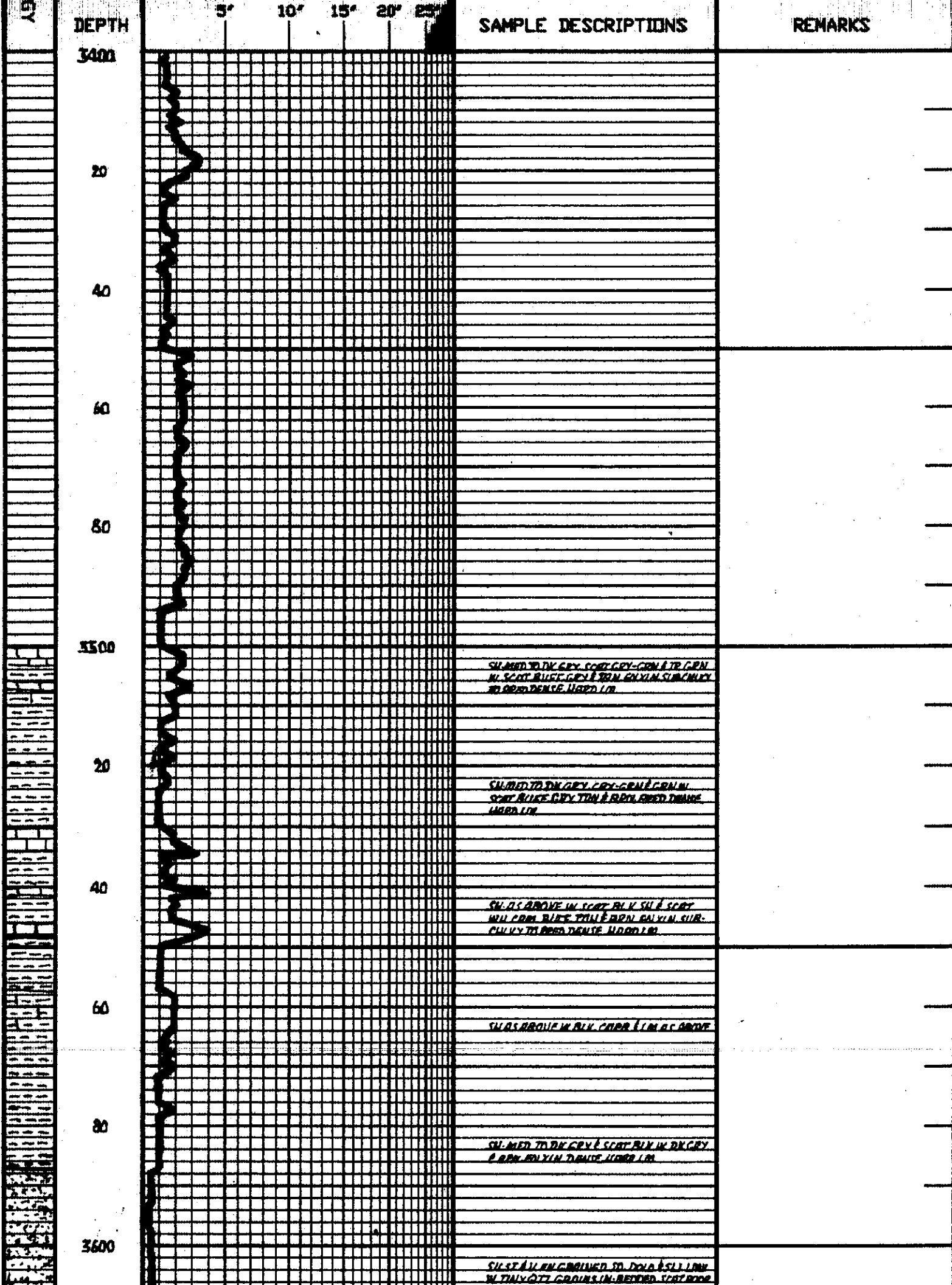


Dolomite

DRILLING TIME IN MINUTES
PER FOOT
Rate of Penetration Increases



LITHOLOG



20

TO TR FOUR INTER-CRAN FOR-N.C

SILT AS ABOVE

40

SILT LT GRAY W. SMALL S. GR. GR. IN YLN
DNG. CA. CLUSTERS IN ENG. GRAN. DE. BY
IMBEDDED TO FOUR FOR-N.S. BUT NOT TO
THE GR. & BLK. SH.

60

SILT & SILT AS ABOVE

80

SILT. DNG. CLUSTERS IN YLN. BY GR. IN YLN
IMBEDDED. TITE TO SIL. FOUR. INTER-CRAN
FOR-N.S.

3700

SILT AS ABOVE IN SILT. MED. TO DY. GR. Y
& SIL. GR. GR. SH.

20

SH. MED. TO DY. GR. Y. GR. CON. BLK. PLUS
SCAT. TON. BDN. & BK. GR. EN. YLN. BRED
DENSE. HARD. L.M. & SCAT. SD. ST. AT ABOVE.

40

SH. MED. TO DY. GR. Y. BLK. (OR. CABR) IN SCAT
TON. & BDN. EN. YLN. DENSE. HARD. L.M.

HEARNER

3964

2390

60

SH. BLK. & BRN. BLK. (OR. CABR) IN SCAT. (MED.
TO DY. GR. Y. BLK. LT. GR. Y. BLK. & TR. EN.
YLN. SUB. CH. TO DENSE. HARD. L.M.

80

SH. MED. TO DY. GR. Y. BLK. IN SCAT. CON. BLK.
LT. GR. Y. EN. YLN. SUB. CH. TO DENSE. HARD. L.M.

3800

SH. CON. SILT AS ABOVE. W. CR. PR. LT.
GR. & TR. EN. YLN. SUB. CH. TO DENSE.
HARD. L.M.

20

40

60

80

3900

20

40

60

80

4000

20

SOME - GRY SU IN INCR IN IN ABOVE

IN. MIN. TH. BLUE & GRY SUB-CALC. & TP
CHLY TO DENSE & HARD IN IN GRY BLK &
BRNISH-BLK. CARB. IN PART. SU

SOME (IN AC ABOVE) & TRACED TO THE GRY
SU

IN AC ABOVE IN TR. MIN. CLY. IN & OVER
GRY. GRY-GON & CARBON SU & SPRT BRN
EN YIN.

IN. CAR. BLUE GRY. TRAIL & BRN. EN YIN. SUB-
CALC. TO DENSE & HARD IN IN GRY-GON
IN GRY & BLK SU

SU AS ABOVE IN MIN. CAR. BLUE & GRY TRAIL
& BRN EN YIN. SUB-CALC. & TR. CHLY TO
DENSE & HARD

IN & SU AS ABOVE - SOME GRY GRY SU
SILTY

SU. OVER GRY. GRY-GON. SPRT IN GON IN
SPRT IN AS ABOVE

SU. OVER GRY. GRY-BRN. SPRT IN GRY &
Y. SPRT TRAIL & BRN. DENSE. HARD IN.

SU & IN AC ABOVE

SU AS ABOVE IN SPRT. BLUE TRAIL & BRN.
EN YIN. DENSE. HARD IN

40

SH AS ABOVE IN SORT BRN FN YAL DENSE
HARD LN

60

SH MED GRN BRN GRN LN SORT BRN GRN
A TO BLK

80

SH AS ABOVE IN TR GRN SH

4300

SH MED GRN GRN GRN SORT GRN TR DRP
PLUS CRD BRN GRN GRN BRN GRN LN
DENSE DENSE HARD LN

20

SH MED GRN GRN GRN SORT GRN GRN
V SORT GRN A RED SH

40

SH MED GRN GRN GRN SORT GRN GRN
V SORT GRN

60

SH AS ABOVE IN SORT BRN GRN GRN
FN YAL SUB GRN TO DENSE HARD LN

80

SH MED TO DR GRN GRN GRN A BLK TO
SILTY

4200

LN BRN GRN GRN GRN FN YAL SUB GRN
TO DENSE HARD LN DENSE SH AS ABOVE

20

SH MED TO DR GRN GRN GRN GRN GRN
IN LN AS ABOVE PLUS SORT LT GRN SUB
GRN LN IN DR GRN SH BRN GRN TO D
(BRN IN DR GRN (SHEMED))

40

SAME AS ABOVE

60

80

4300

20

40

60

80

4400

20

40

60

270172

LANSING

4298

-2924

SH. BED TO TK GRY GRY - CON SCOT DR GRY
E BLK PILL SCOT DR BLUE GRY TAN ARN
EN YIN SUB-CHUKY TO DENSE HARD LN

SH LMS AS ABOVE PILL BLK W CORR
(GAS BURSTS) SU

LM - WH. CON. BLUE & LT GRY EN YIN SUB-
CHUKY & TR CHUKY TO CAL DENSE HARD LN
STILL DR BLK CORR. SU

LM - WH. CON. BLUE GRY TAN ARN EN
YIN SUB-CHUKY & TR CHUKY TO DENSE &
HARD - STILL SH AS ABOVE

SAME AS ABOVE IN LONG SU

LM - WH. CON. EN YIN FOSSE (FOSSE)
CHUKY & SUB-CHUKY IN LT GRY BLUE & TAN
EN YIN BED DENSE & HARD

LM - WH. CON. BLUE LT GRY TAN EN YIN
SUB-CHUKY & TR CHUKY TO DENSE & HARD

LM - CON. BLUE GRY & TAN EN YIN SUB-
CHUKY TO DENSE DENSE HARD & PLTY
IN V. SCOT LT GRY CRES. SUB. SUB-
TRANS. CABT

LM - BLUE GRY TAN & ARN EN YIN DENSE
DENSE & HARD IN V. SCOT WH. & CON.
SUB-CHUKY & CHUKY LN

LM - AS ABOVE IN INCR IN WH. CON. CHUKY
& SUB-CHUKY & SCOT BLK CORR. SU

STARK

4448

-3074

240172

LM - WH. CON. BLUE GRY & TAN EN YIN

80
4500
20
40
60
80
4600
20
40
60

HUSHPUCKNEY 6882

42 UNITS -3108

SAME IN CONT. BLK. V. CORR. (GAS BUBBLES)
SH

BASE K.C. 4512

-3138

1 IN. AS ABOVE W. L. T. GRY. (TAN. FLYIN.
SUB. CILKY TO CILKY TO DENSE & HARD
SUR. SUB-TRANS. CURT

SAME AS ABOVE IN SCOT. BLK. CORR. SH

1 IN. W. CORR. BLUE. GRY. & TAN. FLYIN.
SUB. CILKY & TO CILKY TO DENSE & HARD IN
MED. TO DK. GRY. BLK. (PART. IN PART.) & SCOT.
GRY. CORR. SH

1 IN. CORR. BLUE. GRY. & TAN. FLYIN. SUB.
CILKY TO DENSE & HARD IN MED. TO DK. GRY.
CORR. & SH. BLK. SH

ALTAMONT 4591

(-3217)

1 IN. W. CORR. BLUE. GRY. & TAN. FLYIN. SUB.
CILKY & TO CILKY TO DENSE & HARD
IN MED. TO DK. GRY. CORR. & BLK. SH

1 IN. 1 SH AT ABOVE? (AFTER BIT TRIP)

BIT TRIP @ 4615'
STEAD PIPE @ 4645'
BOARD 4615.47'
STRAP 4615.07'
STRAP SHORT .40'

STRAIGHT HOLE SURVEY 4615'
DEVIATION: 1°

PANNEE 4650

-3256

SU. BLK. CORR. IN PART. IN SCOT. MED. TO DK.
GRY. BLK. (PART. CORR.) CORR. & GRY. CORR. SH
IN 1 IN. CORR. BLUE. GRY. & TAN. FLYIN. SUB. CILKY
TO DENSE & HARD

1 IN. AS ABOVE - PRE-TEN. HARD

CHEROKEE 4666

26 UNITS -3290

1 IN. CORR. BLUE. GRY. & TAN. FLYIN. SUB. CILKY
TO DENSE & HARD IN CONT. BLK. CORR. SH

80
4700
20
40
60
80
4800
20
40
60
80

MISSISSIPPIAN 4711
-3557

40' UNITS

100' UNITS

100' UNITS

100' UNITS

1.5' AS ABOVE IN SAND TO SILT GRAY GRY.
CON. SILT (COAR. IN PART) & GRN. SH.

1.5' SH. AS ABOVE

NOTE: SAME AS ABOVE IN IT GRY. (THE SAND
SILT-TRIMMED ON AND FLUID-NO ODOOR - GY. &
NOT INTERACTIVE - SAND NOT THROTTLED OUT

(274) FINE IT GRY. & SILT BLUE GRY. DENSE SAND.
SAND TRIM. IN SAND. SAND IN SAND FOR TR. GY.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

(275) CURT. UNDOING. FINE IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

(276) SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

FINE IT GRY. SILT & CON. SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

1.5' CON. BLUE GRY. & TRIM. SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

SIL. IN & CURT. ABOVE

SIL. SAND TO FINE GRY. GRY. CON. SILT & TR. GY.
IN SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

SIL. SAND TO FINE GRY. GRY. CON. SILT & TR. GY.
IN SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

SIL. SAND TO FINE GRY. GRY. CON. SILT & TR. GY.
IN SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.
SAND TRIM. IN SAND. SAND IN SAND. SAND TRIM.

4900

20

40

60

80

5000

20

40

60

80

5100

SH. MED. GRAY / GRAY. GRN. IN. SCOT. BK. / GRN. /
PILLS. SCOT. BUCK. TRAIL. BRAL. GR. YIN. DREN.
DENISE. HARD. LON.

SH. AS ABOVE IN SCOT. BK. GRAY. FARM. EN.
YIN. BRILL. DENISE. HARD. LON.

SH. AS ABOVE IN CONG. BRN. GRAY. TRAIL. /
GRY. BRN. BRILL. GR. YIN. LINT. BOB. OR.
ROAD. SH. KEM. BRILL. IT. GR. BRILL. /
TRAIL. GR. YIN. BRILL. DENISE. HARD. LON. /
BR. CU.

KINDERHOOK 4961

-3500

SH. MED. TO SH. GRAY. GRN. IT. GR. /
GRY. TRAIL. V. EN. YIN. LINT. BRILL. BRILL. DENISE.
HARD. LON.

SH. MED. TRAIL. GRAY. GRN. GRN. BRILL. TR. GRN.
HARD. IN. V. SCOT. BRILL. DENISE.

SH. AS ABOVE

SH. MED. TO TR. GRAY. GRN. GRN. BRILL. EN. V.
L. TR. GRN.

CHATTANOOGA 5040

-3666

SH. AS ABOVE IN V. SCOT. BK. GRAY. BRILL. V.
GR. BRILL. DENISE. HARD. LON. SP. BRILL.

ACQUITS

WYSEMER 5063

-3677

(5070) SH. MED. TO GRAY. GRN. IN. BRILL. GR. YIN. TRAIL. TR.
BRILL. INTER. GRN. BRILL. BOB. BOB. GR. BRILL. GR. BRILL.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.
SH. MED. TO GRAY. GRN. IN. BRILL. GR. YIN. TRAIL. TR.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.

MAQUOKETA 5072

-3698

(5080) SH. MED. TO GRAY. GRN. IN. BRILL. GR. YIN. TRAIL. TR.
BRILL. INTER. GRN. BRILL. BOB. BOB. GR. BRILL. GR. BRILL.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.
SH. MED. TO GRAY. GRN. IN. BRILL. GR. YIN. TRAIL. TR.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.
TRAIL. TR. BRILL. GR. YIN. TRAIL. TR. BRILL. GR. YIN. TRAIL. TR.

SH. MED. TO GRAY. GRN. IN. BRILL. GR. YIN. TRAIL. TR.
BRILL. INTER. GRN. BRILL. BOB. BOB. GR. BRILL. GR. BRILL.

DST No. 1 (5054-5084)

30-45-60-90

WEAK BLOW TO 4 3/4" IN

BUCKET (1st OPEN)

WEAK BLOW TO 3" IN

BUCKET (2nd OPEN)

REC: 15 FEET VERY SLIGHTLY

GAS CUT MUD 50' GAS IN

THE PIPE.

FSIP/94# FSIP/199#

LFP/22-25# FFP/21-23#

TEMP: 128°F.

STRAIGHT HOLE SURVEY 5084'

DEVIATION = 34°

20
40
60
80
5200
20
45
40
60
80
5300
20

VIOLA

5129

-5150

SIMPSON

5208

-3829

SIMPSON SAND

5224

-3850

28 UNITS

1 M AS ABOVE W. SPATIAL EN. YIN.

FROM DENSE. HARD. PARTLY REGULAR IN
MILL AND PARTLY BUCKY. CRY-CRY-GRN. I
BLK SU

1 M AS ABOVE W. SPATIAL EN. YIN.

1 M. CRN. BLK. CRY. YIN. I. DEN. (REG. IN
PART) EN. YIN. SUB. CH. TO DENSE. I
IN. COME. MED. CRY. GRN. GRN. GEN. REG. I
I. BLK

SM. AS ABOVE BL. MED. IN. CRN. I. DEN. (REG. IN
PART) EN. YIN. SUB. CH. TO DENSE. I
IN. COME. MED. CRY. GRN. GRN. GEN. REG. I
I. BLK

(5208) SM. MED. TO D. CRY. GRN. GRN. BLK. W. M. N.
SHT. 1 M AS ABOVE

(5212) SH. MED. TO D. CRY. GRN. GRN. BLK. W. M. N.
I. TO. REG. PLUS CLEAR. SUB. RND. TO
BDR. WELL-RND. MED. QTY. GRN. ON
TRAY. BOTTOM. NO. FLUOR. D. DOR. PLUS
TR. TRN. EN. YIN. SUB. CH. TO DENSE. I
IN. COME. MED. CRY. GRN. GRN. GEN. REG. I
I. BLK

(5224) SD. CLEAR. I. TR. I. CRY. EN. YIN. MED. QTY.
QTY. GRN. ON. BDR. WELL-RND. W. NO. M. N.
SHOW. FLOR. AS. DOR.

(5230) SD. AS ABOVE. W. CLUSTER. DE. MED. GRN. I.
BDR. W. COME. QTY. GRN. IN. BDR. TO. FLOR.
IN. BDR. TO. FLOR. ER. I. DEN. NO. FLUOR. D. DOR.
PLUS CLEAR. EN. I. DEN. GRN. SUB. RND. TO
TO. MED. RND. QTY. GRN. N. I.

SD. I. CRY. CLUSTER. DE. EN. GRN. I. DEN. (REG. IN
PART) EN. YIN. SUB. CH. TO DENSE. I
IN. COME. MED. CRY. GRN. GRN. GEN. REG. I
I. BLK

SD. I. CRY. AND. I. TR. I. W. SD. BLK. COME. BDR.
ON. I. DEN. HARD. BUT. FR. I. W. SUB.
RND. TO. WELL-RND. QTY. GRN. ON. BDR.
BDR. N. I. SD. I. DEN. SD. AS ABOVE

SD. CLEAR. SINGLE. SUB. RND. TO. BDR.
WELL-RND. EN. I. DEN. QTY. GRN. ON
TRAY. BOTTOM. NO. FLUOR. D. DOR. PLUS
TR. TRN. EN. YIN. SUB. CH. TO DENSE. I
IN. COME. MED. CRY. GRN. GRN. GEN. REG. I
I. BLK

SH. MED. TO. D. CRY. GRN. GRN. BLK. W. M. N.
SHT. 1 M AS ABOVE

SH. MED. TO. D. CRY. GRN. GRN. BLK. W. M. N.
SHT. 1 M AS ABOVE

DST No. 2 (5179-5216)

30-45-60-90
FAIR BLOW BLINDING TO 11" IN
BUCKET (1ST OPEN)
WEAK STEADY BLOW AT 1" IN
BUCKET (2ND OPEN)
REC: 45' SLI GAS CUT OILY MUD
(12% GAS, 37% OIL, 51% MUD)
& 2495' GAS IN PIPE.
ISIP/1789# FSIP/N/A
IFP/27-25# FFP/32-35#
TEMP=128°F.

DST No. 3 (5225-5238)

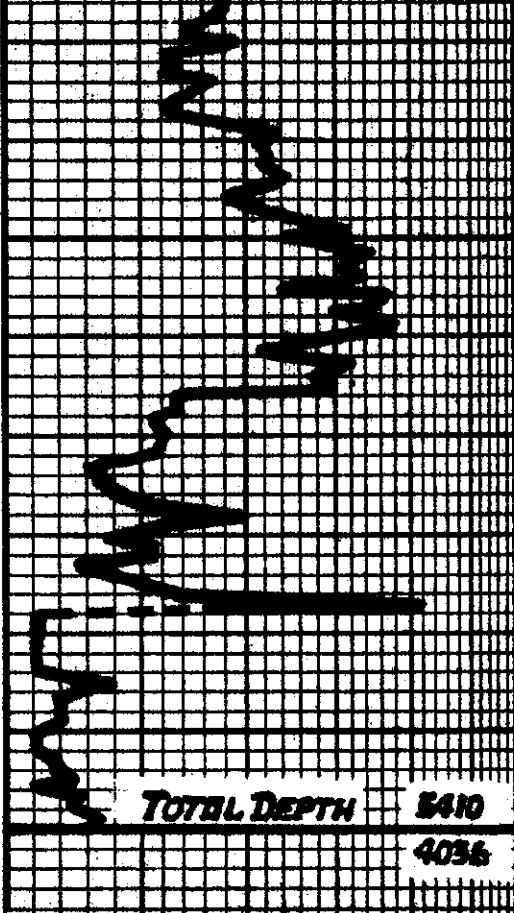
30-45-60-90
STRONG BLOW TO BOTTOM OF
BUCKET IN 2 MIN (1ST OPEN)
STRONG BLOW TO BOTTOM OF
OF BUCKET IN 5 MIN (2ND OPEN)
REC: 100' DRLG MUD (3120' MUD)
MUD CUT WATER (80,000 CM)
ISIP/2025# FSIP/2032#
IFP/32-506# FFP/506-1516#
TEMP=138°F.

40

60

80

3400



TOTAL DEPTH **5410**
4036

SH. MED TO DK GRY. BOLD BLK & SW LY
 GRN

SH. BOLD. MED TO DK GRY & BLK

STWD SLUGS ABOVE IN LY GRY. BLK SW'S CRT
 CLUSTERS. EN GRANITE. BOLD FOR BIT
 FINE. FOL. N.S. - SW CLUSTERS IN SWLY
 PARTIAL.

STWD SORT. TOP IN BLK SW'S EN GRANITE. BOLD
 BOLD FOR BIT. BOLD. GRAN. BOLD. N.S. BOLD. LY
 GRY. EN GRANITE. BOLD. V. MED. BOLD. BOLD. BOLD. BOLD.
 FINE. BOLD. GRAN. BOLD. N.S. - TO GRY. BLK SW'S
 V. FINE. BOLD. BOLD. BOLD. N.S. BOLD. BOLD. BOLD.
 BOLD. MED TO DK GRY. SW

STWD SORT. BOLD. LY GRY. EN GRANITE. BOLD. BOLD.
 BOLD. GRAN. BOLD. BOLD. BOLD. N.S. BOLD. BOLD. BOLD.
 BOLD. BOLD. BOLD. CLUSTERS OF SW. BOLD. BOLD. BOLD.
 BOLD. BOLD. BOLD. BOLD. BOLD. BOLD. BOLD. BOLD.
 BOLD. BOLD. BOLD. BOLD. BOLD. BOLD. BOLD. BOLD.

BIT TRIP @ 5387'

PIPE STRAP @ 5410'
STRAP **5425.06'**
BOARD **5426.76'**
STRAP LONG **.31'**
STRAIGHT HOLE SURVEY 5410'
DEVIATION = 1/4°