

Arden Ratzlaff

PETROLEUM GEOLOGIST

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DRILLING TIME

AND

SAMPLE LOG

COMPANY CHIEFTAIN OIL CO., INC.

LEASE YATES No. 2

FIELD STRANATHAN

LOCATION NE SW SE SE

SECTION 36 TOWNSHIP 34S RANGE 12W

COUNTY BARBER STATE KANSAS

CONTRACTOR MAVERICK RIG NL 10A

COMMENCED DRILLING 5-28-10

COMPLETED DRILLING 6-07-10

RTD 5441 FEET LTD 5440 FEET

MUD UP AT 3500 FEET MUD TYPE CHEMICAL

ELEVATIONS

KB 1400

IF 1398

G 1391

Measurements Are All
From K.B.

CASING

1 3/8" @ 312' W 340 SX

5 1/2" @ 5438' W 200 SX

ELECTRICAL SURVEYS

SUPERIOR - GAMMA RAY DUAL
INDUCTION COMPENSATED MERTON
DENSITY & P.F. CALIPER

FORMATION TOPS

SAMPLE

ELECTRIC LOG

RESERVOIR
STARK
BASE KANSAS CITY
CHEROKEE
MISSISSIPPIAN
KIMBERLY
FIELD
SIMPSON
SIMPSON SAND
TOTAL DEPTH

3792 (-2392)
4480 (-3080)
4545 (-3145)
4699 (-3299)
4750 (-3350)
4994 (-3594)
5151 (-3751)
5241 (-3841)
5264 (-3864)
5441 (-4041)

3792 (-2392)
4480 (-3080)
4545 (-3145)
4699 (-3299)
4745 (-3345)
4904 (-3504)
5153 (-3753)
5244 (-3844)
5365 (-3965)
5440 (-4040)

REMARKS AFTER ANALYZING ALL OF THE PERTINENT INFORMATION GATHERED WHILE DRILLING, IT WAS THE DECISION THAT PRODUCTION CASING BE SET EXPECTING A VERY GOOD PRODUCING WELL

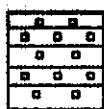
Arden Ratzlaff, Petroleum Geologist

NOTE! AMTIVE AMERICAN FURNISHED THE MUD - SAMPLES DEPOSITED AT THE K.C. & SNEY

LEGEND



Anhydrite



Salt



Sandstone



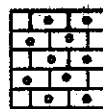
Shale



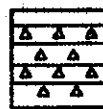
Carb sh



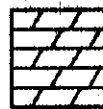
Limestone



Dol. Line



Chert



Dolomite

DRILLING TIME IN MINUTES
PER FOOT

Rate of Penetration Increases



LITHOLOGY

SAMPLE DESCRIPTIONS

REMARKS

DEPTH

3400

20

40

60

80

3500

20

40

60

80

3600

SAMPLE DESCRIPTIONS

REMARKS

SH-100 TO 102 GRY GRN-GRN L MED W
MICE TRAIL BDN FALVIN SUB-CHUKY TO
DENSE HARD LIM

1 M-10 GRY BDN G GRN-GRN FALVIN
DENSE MIDDLE ARGILL IN PART W MED
L D GRY & DARE GRY-GRN TH

SH-102 TO 104 GRY SILTY M L M AS
ABOVE

SH-104 MED GRY W LBY-SH & ARGILL L M
AS ABOVE

SH-105 MED & DV GRY SH GRY-GRN W SCRY
MICE SUB-CHUKY TO BDN FALVIN
DENSE HARD ARGILL IN PART LIM

SH-106 AS ABOVE W SCRY BLK TO CRSS SH
BLK CRN MICE TRAIL & BDN FALVIN, SUB-
CHUKY TO DENSE HARD LIM

20

100% AS ABOVE IN TRAIL & BAN EN YLN DUNE HARD LM

40

SM-MED TO DK GRY & BROWN BLK Y SILTY IN BUCS TAN & BDN EN YLN GALL SUB-CHYKY TO DENSE HARD LM

60

(SILT) SILTY INHLET GRY TO TAN CLOR Y BN QTY GRANIS WHEN BROKEN PORE FRI & PORE HLL BDN N S - SOFT HARD TO DK GRY & GRY-GRN SH

80

SILTY LT GRY TO BROWN SILTY QTY GREENS IMBEDDED BDR TO TR FRI FOR N S PLUS MED TO DK GRY SH

5700

SILT AS ABOVE IN TRAIL & BAN EN YLN RED DENSE HARD LM PORE HLL TO DK GRY GRY-COM & BLK (COR IN BDR) SH

20

SH-MED GRY SCOT GRY-GRN TO BDN BLK SCOT GRY TO BDN DENSE HARD LM & COME SILTY AS ABOVE

40

SH-MED TO DK GRY BLK (COR IN BDR) GRY-COM IN SCOT BLK GRY TRAIL BAN SILTY-CHYKY TO DENSE & HARD PLUS COME SILTY AS ABOVE

60

SH AS ABOVE - STILL BDN BLK COR BLK BLK GRY & TAN EN YLN SILTY-CHYKY TO DENSE HARD LM - STILL SILTY AS ABOVE

80

SH IN SCOT LM AS ABOVE

HEEDNER

3792

-2392

3800

SH-MED GRY TO SILTY IN SCOT DK GRY & BLK - SCOT LM & SILTY AS ABOVE

20

100% CRM BLUE GRY & TAN EN YLN SILTY-CHYKY TO DENSE & HARD IN SCOT BLK

40

60

80

3900

20

40

60

80

4000

20

40

1.0M. W. CRAY & GRAY - GRN. SH.

1.0M. W. CRAY & GRAY - GRN. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN
MID. GRAY - GRN. - GRN. SH. BLK. CORR. SH.

SH. AS ABOVE IN CRAY & GRAY - GRN. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN

1.0M. & SH. AS ABOVE

1.0M. CRAY & GRAY - GRN. SH. BLK. CORR. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN
MID. GRAY - GRN. - GRN. SH. BLK. CORR. SH.

SH. WOOD GRAY & GRAY - GRN. SH. BLK. CORR. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN

SAME AS ABOVE

SH. WOOD GRAY & GRAY - GRN. SH. BLK. CORR. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN

SAME AS ABOVE IN SCOT. WOOD GRAY & GRAY - GRN. SH. BLK. CORR. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN

SAME AS ABOVE. SH. SILTY IN PART. TR. FEW
PIECES LT. GRAY SILT.

SH. WOOD GRAY & GRAY - GRN. SH. BLK. CORR. SH.
YIN. SH. - GRAY TO WHITE & WOOD IN

60
80
4100
20
40
60
80
4200
20
40

SAME AS ABOVE

SIL. MED. GR. V. SCOT. TO SIL. FINE M. SCOT.
BY GR. & GR. GRN. PLANK. SOME BUCK
TIN. & BUL. EN. YIN. FINE. SIL. CHLEY
TR. DENSE. HARD. LM.

SIL. AS ABOVE IN SCOT. BUCK. & TR. TIN. EN.
YIN. SIL. CHLEY TO DENSE. HARD. LM.

SIL. MED. GR. & GR. GRN. TR. BUL. IN SCOT.
LM. AS ABOVE

SAME AS ABOVE IN V. SCOT. BUL. IN YIN.
WASS. DENSE. HARD. LM.

SIL. MED. GR. & GR. GRN. IN V. SCOT.
CHRY. BUCK. & TR. EN. YIN. BUL. DENSE.
HARD. LM.

SIL. AS ABOVE. SIL. SILTY IN BUL. & LM. AS
AS ABOVE.

SIL. MED. GR. GR. GRN. TR. DL GR. &
BUL. IN V. SCOT. BUCK. & TR. EN. YIN. BUL.
DENSE. HARD. LM.

SIL. & LM. AS ABOVE

SIL. MED. TO DL GR. V. SCOT. BUL. TR.
SILTY. & TR. GRITTY. TEST. IN BUL.

SIL. MED. TO DL GR. GR. GRN. & BUL. IN
IN V. SCOT. BUCK. & TR. EN. YIN. BUL.
DENSE. HARD. LM.

60

80

4300

20

40

60

80

4400

20

40

60

SAME AS ABOVE

SH-DED TO DR GRY GRY-GRA & TR BLK
W. V. SGT TRAIL BRN EN YAL DENSE
HARD IN

SH-BLK V. COBB (BAR GRS BUBBLES)
W. SH. IN AS ABOVE

LANSING-K.C. 4511
-2911

LM-BLUE GRY TAN & BRN EN YAL SUB-
TO DENSE & HARD IN AND SH AS ABOVE

LM AS ABOVE - DENSE (HARD
STILL CONSIDERED TO BE GRY & BLK (COBB)
EASY IN PART SH

LM-BLUE GRY TAN & BRN EN YAL SUB-
CALKY TO DENSE & HARD IN AND SH AS
ABOVE

LM-IML CRN BLUE GRY & TAN EN YAL
SUB-CALKY & SORT CALKY TO DENSE &
HARD IN CONS SH AS ABOVE

LM-IML CRN BLUE GRY & TAN EN YAL
CALKY & SUB-CALKY TO DENSE & HARD IN
V. SGT AT GRN EDEN SUB-TRANSI
CALRY

LM-IML CRN BLUE GRY TAN & TR BRN
EN YAL SUB-CALKY & TR CALKY TO DENSE
& HARD IN SORT SH AS ABOVE

LM-IML CRN BLUE GRY & TAN EN YAL SUB-
CALKY & TR CALKY TO DENSE & HARD IN SORT
IN AS ABOVE

LM AS ABOVE IN SORT TAN EN YAL IN
SHP TO GOOD DED TO CRSE DENSE DOR-
N. S. BLK TR LY GRY FRESH SHOR SUB-
TRANSI DED TO BLK COBB IN

80
4500
20
40
60
80
4600
20
40
60
80

STARK 4480

-3080

SM. BLK. CORR. W/ BUE. GR. & TAN. EN. YIN
SUB-CHLKY TO DENSE. HARD. CURT. IN
10' L. GR. & GR. - GR. SU

BIT TRIP @ 4486'
STRAP FIVE @ 4486'
BOARD 4515'89"
STRAP 4515'89"
STRAP SHORT .80'

MUSHPUCKNEY 4511

-3111

23 UNITS

10' WH. & CRN. CHLKY IN PART TO PDB
BUE. GR. & TAN. EN. YIN. TAN. CHLKY TO
DENSE. HARD. CURT. IN

10' WH. CRN. BUE. EN. YIN. CHLKY &
SUB-CHLKY TO DENSE. HARD. CURT. IN.
BLK. CORR. SU

BASE K.C. 4508

-3144

SU. MED. TO DV. GR. GR. GRN. BLK. CORR.
IN PART. 10' AS ABOVE

10' CRN. BUE. GR. TAN. EN. YIN.
SUB-CHLKY TO CHLKY TO DENSE & JAMED
IN MED. TO DV. GR. BLK. CORR. TO GRN. SU

10' AS ABOVE

SM. GRN. W. MED. TO DV. GR. & BLK. PLUS
CRN. BUE. GR. & TAN. EN. YIN. SUB-CHLKY
TO DENSE. HARD. IN

ALTAMONT 462A

-3224

10' AS ABOVE IN SUB-GR. TAN. SU. GRN.
TANED. EREN. SEMI-DBR. CURT. W. DBR.
SU AS ABOVE

10' WH. CRN. BUE. GR. TAN. EN. YIN.
CHLKY & SUB-CHLKY TO DENSE & HARD.

PANNEE 4661

-3261

20 UNITS

SU. DV. GR. BLK. (PARTY CORR.) GRN.
IN 10' AS ABOVE - BOOR. TOLEMAN. VIS.

SM. BLK. CORR. W/ DV. GR. PLUS BUE. GR.

4700
20
40
60
80
4800
20
40
60
80

CHEROKEE 4630

-3299

30 UNITS

SH. BLK. V. P. (GR. BUBBLES) SORT BY
GRY & GRN. W. GRN. BUST. GRY. TRN. TR. BBN.
EN. VLN. SUB. CULVY TO DENSE. HARD IN.

1 IN. COIL. BLK. GRY & TRN. EN. VLN. PROD
DENSE & HARD IN SORT. HARD TRN. GRY.
GRN. & SH. BLK. PAPA. SU.

SH. MED TO DK. GRY. GRN. GRY. GRN. GRN.
W. L. AS ABOVE.

MISSISSIPPIAN 4750

-3350

100+ UNITS

(700) CURT. UNCL. GRY. BRS. VLN. DENSE &
HARD. BUST. DENT. FOR. W. GRN. GRN. TRN.
BUST. & VLN. FOR. TRN. & BRL. SORT. TR.
TR. STN. GAS. BUBBLES & TRN. OIL. PRODUCT.
WHEN BRASSED OR BROWN. GOLDEN. HIDE
GOOD ODR.

100+ UNITS

(700) CURT. UNCL. GRY. BRS. VLN. DENSE &
HARD. BUST. DENT. FOR. W. GRN. GRN. TRN.
BUST. & VLN. FOR. TRN. & BRL. SORT. TR.
TR. STN. GAS. BUBBLES & TRN. OIL. PRODUCT.
WHEN BRASSED OR BROWN. GOLDEN. HIDE
GOOD ODR.

100+ UNITS

(700) CURT. UNCL. GRY. BRS. VLN. DENSE &
HARD. BUST. DENT. FOR. W. GRN. GRN. TRN.
BUST. & VLN. FOR. TRN. & BRL. SORT. TR.
TR. STN. GAS. BUBBLES & TRN. OIL. PRODUCT.
WHEN BRASSED OR BROWN. GOLDEN. HIDE
GOOD ODR.

30 UNITS

CURT. SORT. CURT. AS ABOVE. BRS. VLN. DENSE &
HARD. BUST. DENT. FOR. W. GRN. GRN. TRN.
BUST. & VLN. FOR. TRN. & BRL. SORT. TR.
TR. STN. GAS. BUBBLES & TRN. OIL. PRODUCT.
WHEN BRASSED OR BROWN. GOLDEN. HIDE
GOOD ODR.

CURT. AS ABOVE. W. GRN. BUST. & TRN. EN.
VLN. SUB. CULVY TO DENSE. HARD. W. GRN.
ODR.

CURT. & LTR. AS ABOVE. W. SORT. TRN. & BRL.
EN. VLN. DENSE. HARD. LTR.

1 IN. BLK. GRY & TRN. EN. VLN. SUB. CULVY
TO DENSE & HARD. STILL SORT. CURT. AS
ABOVE. FINEST ODR.

1 IN. AS ABOVE. W. SORT. CURT. AS ABOVE
& BRS. MED. GRY. TO TR. GRY. GRY. GRN.
BLK. & TR. GRN. SU.

4900

SH-MED TO DK GRY GRN-GRAVY SCPT
BLK & TR GRN IN CRD. BLUF & TRAL. BR
YLN. SH-CHUKY TO DENSE. HARD IM.

20

SH-LIM. AS ABOVE BUT TR & BRN. IN
XLN. DENSE. HARD (IN FILE SCAT GRY &
TRAL. BLU. XLN. SLI SUCR TEXT. DENSE. HARD
DOLD.

40

SAME AS ABOVE

60

SH-MED TO DK GRY GRN-GRAVY SCPT BLK IN
CRD. BRUF. GRX. TR & BRN. SLI XLN. SH-
CHUKY TO DENSE. HARD IM.

80

SH-MED GRY GRN-GRAVY SCPT BLU. BRN &
LT GRN IN SCAT IM. AS ABOVE

KINDERHOOK 4994

-3599

5000

SAME AS ABOVE

20

SH-MED TO DK GRY GRN-GRAVY SCPT
GRN & BLK

40

SH-SPILT & DRED. MED GRY. SM GRV-GRAV
TR BRN. GRV-BRN & BLK

60

SH-MED TO DK GRV GRV-BRN. TR GRV-GRAV
& BLK

CHATTANOOGA 5077

-3677

80

SH-MED TO DK GRV GRV-BRN. TR GRV-GRAV
(AND GRV-BLUES SLI DOLD IN CRD.
AND SPRES (60 MIN'S) SCPT V. CRV. SH-CHUKY

MADONKETA 5101

-3701

5100

SH-BRUSH-BLK. GRV-BRN & BLK. DOLD &
CRD. IN BRD SPRES

20

40

60

80

5200

20

40

60

80

5300

20

VIOLA

5151

-3751

SIMPSON

5241

-3841

SIMPSON SAND

5264

-3864

SH-LT GR(Y)LL SILTY TEXTURE HARD TO RW
RND(SILTY TEXT) & SPRT GR(Y)-GRN

SAME IN SORT W/LL GRN & LT GR(Y) & TAN
EN YLN SUB-CHLN TO SORT DENSE & HARD

1 IN W/LL GRN EN YLN CHLN & SUB-CHLN
IN GRN & TAN EN YLN SILTY TEXT HARD DENSE
HARD SLL LRY TONG

1 IN W/LL GRN EN YLN CHLN & TAN EN YLN
COLO AS ABOVE) SUB-CHLN & CHLN
TO CHRTY DENSE & HARD

SAME AS ABOVE IN TR LT GR(Y) FRESH
TULL IN TIRY RND SORT SUB-TONG CHRT

1 IN FWH BLUE GR(Y) & TAN EN YLN SHA-
CHLN & TR CHLN TO DENSE & HARD IN
CHRT AS ABOVE

1 IN DOLD IN BODY GRN BLUE TAN LARK
EN YLN RND SILTY TEXT SUB-CHLN TO DENSE
SUB-CHLN TO DENSE DENSE & HARD IN TONG
TAN FRESH TULL SHR DPOO CHRT

1 IN AS ABOVE W/ SORT GRN RND & GR(Y)
SB & SORT PIECES RND EN EN RND W/LL
DENSE HARD DOLD SEV PIECES DOLD W/
WEARD EDGES IN BODY POR IN RND ONLY
CHLN RNDING TO SEV PIECES W/ ENL INTER-
STN RND TAN ONLY SUB TR RND(SILTY)
'FLAGERS' WHEN BROKEN IN BODY OR C. W.

5700) SORT LT & SH MED C. EN GRN LUSKAC
IN BODY POR (SILTY MATRIX) TO SORT RND
LT GRN W/ ENL INTER-GRN POR FRI-N.S.
DOR OR R. K.

5200) SORT AS ABOVE IN SUPR & LT GR(Y) EN &
EN GRNED TICE TO SORT EN GRNED
FRI W/ ENL POR-N.S.

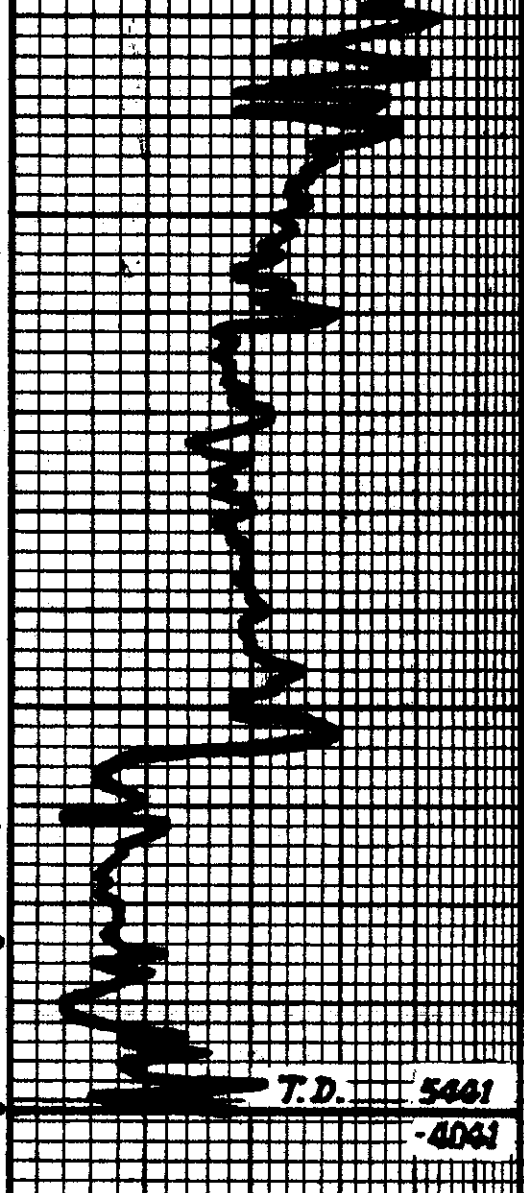
SORT AS ABOVE W/ LT GR(Y) (W/LL CLEAR
GRANED CLUSTERS) EN GRANED FRI
IN INTER-GRN POR-N.S.

SORT AS ABOVE IN MED TO DK GR(Y) &
RND SH

SH-DOLD MED TO DK GR(Y) PLUS COAL
TEXT AS ABOVE



40
60
80
5400
20
40



SH. SAND. MED TO DK GR. BLK. & BRN.
GRN IN CONS. SST AS ABOVE

SH. MED TO DK GR. SAND & BLK IN CONS.
L.M. & SST FROM UP-HOLE

SH. SAND. MED TO DK GR. & BLK IN
CONS. L.M. & SST & TEL FROM ABOVE

(5415) SST. INH. 1 FT. GR. FILLED IN. 2 1/2
SUN. ANG. TO DRILL. DIR. BLIND. WELL.
RAISED CUTTER 1/2 FT. IN. GOOD WATER.
GRN. BOB. N.S.

(5420) SST. INH. 1 FT. GR. FILLED IN. 2 1/2
FOOT. TO EAR. WATER. CORN. BOB. N.S. 1/2 L.S.
IT'S. INH. GR. FILLED IN. 2 1/2 FT. GR. FILLED IN.
CUTTER. CORN. BOB. N.S. 1/2 L.S. 1/2 L.S.
NEAR. CLEAR. FOR. 2 1/2 FT. CORN. BOB. N.S.
WELL. RATED. SINGLE. CORN. BOB. N.S.
BOTTOM. N.S. - CORN. BOB. N.S.

(5421) SST. INH. 1 FT. GR. FILLED IN. 2 1/2
CUTTER. CORN. BOB. N.S. 1/2 L.S. 1/2 L.S.
FOR. WATER. CORN. BOB. N.S. 1/2 L.S. 1/2 L.S.
MED. FROM. WELL. RATED. SINGLE. CORN. BOB. N.S.
FLUOR. CORN. BOB. N.S. 1/2 L.S. 1/2 L.S.
SST. AS ABOVE

T.D. 5461
-4041

STRAIGHT HOLE IN 5461'
DEVIATION = 3/4°

STRAP PIPE @ 5461'
BOARD 5460.66'
STRAP 5449.02'
STRAP SHORT 1.63'

