

Arden Ratzlaff

PETROLEUM GEOLOGIST

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COMPANY **CHIEFTAIN OIL CO., INC.**

LEASE **RATHGEBER #4**

FIELD **STRAWATHAN**

LOCATION **NE SW NW SW**

SECTION **6** TOWNSHIP **35S** RANGE **11W**

COUNTY **BARBER** STATE **KANSAS**

CONTRACTOR **FOSSIL DRILLING** RIG NO. **3**

COMMENCED DRILLING **5-26-14**

COMPLETED DRILLING **6-5-14**

RIG **5555** FEET **LTD 5553** FEET

MUD UP AT **3170** FEET MUD TYPE **CHEMICAL**

DRILLING THE

AND

SAMPLE LOG

ELEVATION

TO **1404**

OF **1402**

EL **1392**

Measurements Are All From **K.B.**

CASING

13 3/8" @ 326' w. 300 YR.

5 1/2" @ 5550' v. 200 YR.

ELECTRICAL SURVEYS

TUCKER ENERGY LOG

(NT-LDT-MLR-PIT)

FORMATION TOPS

SAMPLE

ELECTRIC LOG

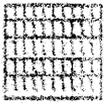
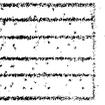
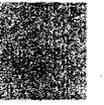
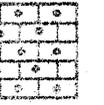
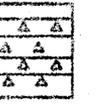
WEBNER 3814 (2410)
 LANING 4355 (2949)
 CHEROKEE 4735 (4531)
 MISSISSIPPIAN 4789 (4585)
 KINDERHOOK 4945 (4541)
 VIOLA 5196 (4792)
 SIMPSON 5296 (4892)
 SIMPSON SAND 5319 (4915)
 ARBUCKLE 5501 (4097)
 TOTAL DEPTH 5555 (4151)

3816 (2412)
 4355 (2951)
 4750 (4526)
 4796 (4592)
 4944 (4540)
 5194 (4791)
 5296 (4892)
 5322 (4913)
 5500 (4056)
 5555 (4149)

REMARKS AFTER ANALYZING ALL OF THE PERTINENT INFORMATION OF THE ABOVE CAPTIONED WELL, IT WAS THE DECISION THAT CASING BE SET IN EXPECTANCE OF A GOOD PRODUCING WELL. *Arden Ratzlaff, Petroleum Geologist*

NOTE: NATIVE FURNISHED THE MUD -- TRILOBITE FURNISHED THE DRILL STEM TEST -- SAMPLES DEPOSITED AT THE K.G.S. SURVEY.

LEGEND

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

DRILLING TIME IN MINUTES PER FOOT
 Rate of Penetration Increases

LIT

DEPTH

5' 10' 15' 20' 25'

SAMPLE DESCRIPTIONS

REMARKS

3500

SH-MED TO DK GRY & BLK. PLUS
SHLY LM IN PART W SCAT LT GRY.
TR. MED. GRN & IM BLUE. FN XLN.
SUB. CRLY LM

20

SH-PRED LT & MED GRY & BLK W
SCAT SHLY LM & LM AS ABOVE

40

SH-MED TO DK GRY RARE BLK W
SCAT TAN & BRN. FX LM AS ABOVE
ALLS V SCAT DK GRY. PRED SUB-
CRLY LM

60

SH & LM AS ABOVE

80

SH-PRED MED & DK GRY W SCAT
GRY-TAN & BRN. FN XLN. PRED MED
HARD LM

3600

LM-LT GRY TAN & BRN. PRED DENSE
MED HARD & HARD W SH AS ABOVE

20

SH-MED TO DK GRY & BLK W LM AS
ABOVE

40

SH AS ABOVE W INCR IN LM AS ABOVE.

60

SH-MED TO DK GRY & RD BLK (CORN)
IN PART W SCAT LM AS ABOVE

80

SH-MED GRY V SLT SILTY TR. GRN. IM
& CONS. BLK SH AS ABOVE - STIP
LM AS ABOVE

3700

3100
20
40
60
80
3800
20
40
60
80
3900

SH. LT. MED. GR. SILTY IN PART W.
SCAT. LM. AS ABOVE

LM. MED. GR. & FM. LT. GR. (LL. SILTY)
& SCAT. BLK. CARB. IN PART. SH. LM.
MED. HARD & DENSE. SILTY GR. &
HARD

LM. AS ABOVE BECOMING FINE GR.
& MED. DENSE & HARD - STILL SCAT.
BLK. SH.

SAME AS ABOVE W.

SH. MED. GR. W. FM. BLK. CARB. SILTY
N. SILTY GRASS TO LT. GR. & TAN SILTY
SCAT. W. COAR. CARB. N. S.

SH. LT. GR. SILTY TO LT. GR. FINE
SILTY TO SCAT. LT. GR. FINE GRAINED
CL. SNKY. ST. N. S.

HEEBNER 3814
2410

SH. SILTY & SNKY AS ABOVE PLUS
BLK. & BRNISH. BLK. CARB. IN PART. SH.

SH. & SILTY SH. AS ABOVE W. SCAT.
SCAT. AS ABOVE & V. SCAT. CARB.
SILTY ABOVE

LM. WH. GR. BLUFF. LT. GR. & SH.
TAN. SNKY. SUB. CHALKY TO CHALKY
75% MED. HARD W. SH. AS ABOVE & SCAT.
BLK. PART. CARB. SH.

LM. WH. GR. TAN. & BRN. SNKY.
SUB. CHALKY TO DENSE & HARD W. LT.
GR. GR. & FM. GR. GR. SH. BLK.
(CARB. IN PART) SH.

LM. AS ABOVE CONS. GR. & GR. GR.
W. SILTY SH.

20

SH. MED GRY. TR. GRY-GRN W. CRM.
BLUE TAN & BRN. FN XLN. LM & SCAT
LT GR. SILTY SILT. SO GRADING TO
NIBB. SST.

40

SAME AS ABOVE

60

SH. MED GRY-GRN W. V. SCAT BLK
(TR CARB) SH. GRY-GRN TAN & BRN. FN
XLN. SLI SILTY TINT. PRED HARD LM.

80

SH. MED GRY. V. SLI SILTY W. V. SCAT LT
GRY. BLK. SPK'D. SHLY SILTY W. V. SCAT
CRM. BLUE TAN GRY-TAN. FN XLN. LM.

4000

SAME AS ABOVE

20

SH. PRED. MED. GRY. W. SCAT. LM &
SILTY AS ABOVE

40

SAME AS ABOVE

60

SAME AS ABOVE

80

SAME ~ PRED SH

4100

SH. MED GRY. TR. GRY-GRN TINT. ~ TR
LM & SILTY AS ABOVE

20

SH AS ABOVE W. SLI IN CR. IN CRM &
BLUE. CAL XLN. SUB ONLY TO TAN & BRN.
FN XLN. TANSE. HARD LM.

40

SH. RED MED. GR. W. SCAT. IM. AS ABOVE

60

SH AS ABOVE W. SCAT. IM. AS ABOVE

80

SH. MED. GR. & TR. GR. GRN. TR. SLT. SILTY

4200

SAME AS ABOVE

20

SH AS ABOVE

40

SH. MED. GR. V. SLT. SILTY W. SCAT. GR. GRN. SH

60

SAME AS ABOVE

80

SH AS ABOVE W. INCR. IN GR. GRN. TR. DUFF. GR. TR. & GR. IM. SH

4300

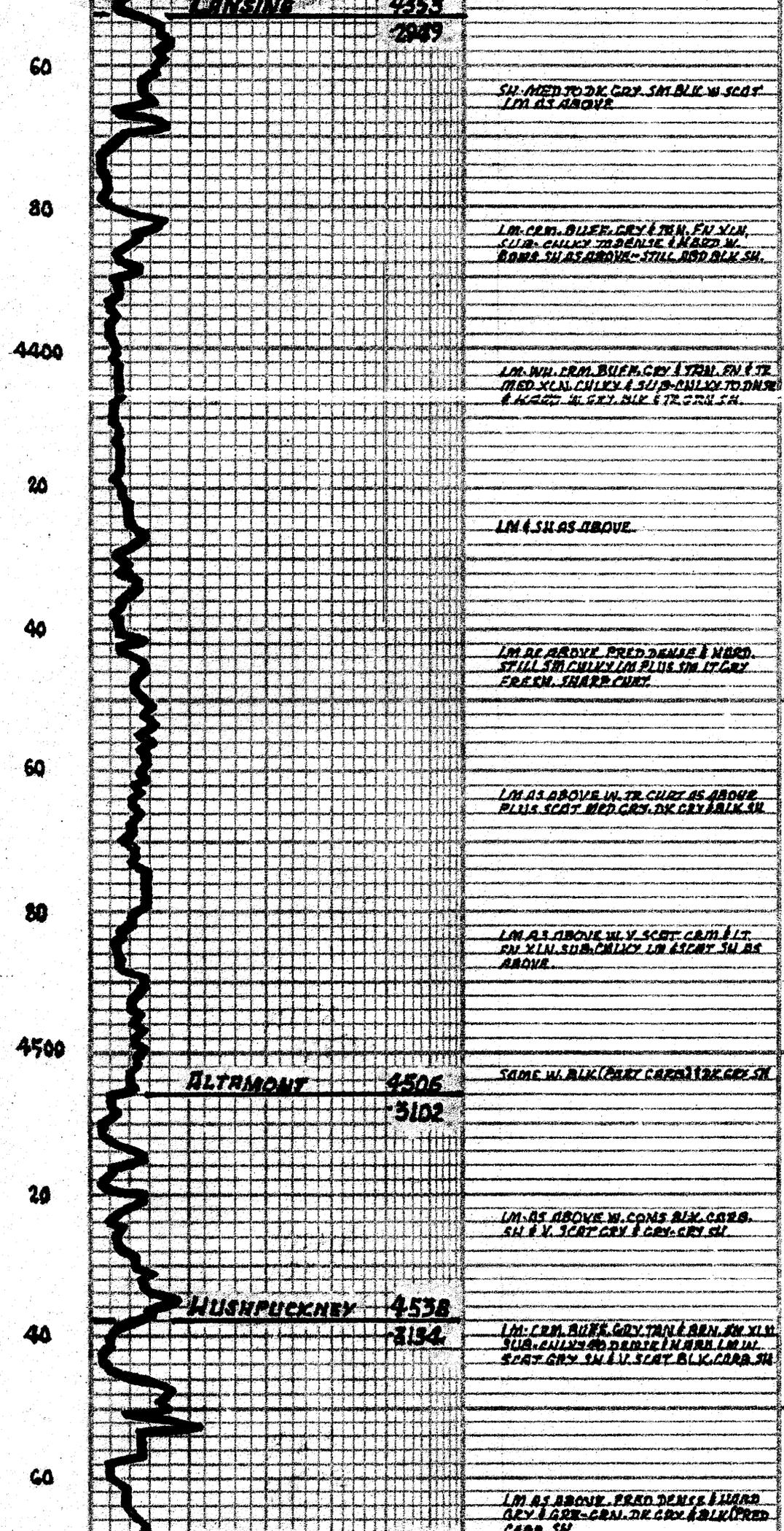
SH. TR. GR. BLK. (SL. GRN.) W. GRN. BLK. TR. GR. GRN. EN. SL. SILTY TO DENSE L. BLK. GR. SH AS ABOVE

20

SH. BLK. BRNISH-RED GR. W. SCAT. IM. AS ABOVE & INCR. IN GR. SH. CONTENT

40

SAME IN CONS. CONTENT & GRN. EN. YLN. RED. DENSE. MED. IM.



BASE K.C. 4572

3168

80

LM. WH & GRN. CHLKY & SUB-CHLKY
IN GR. STR. ENCL. PRED DENSE &
HARD

4600

LM. BLUE GR. & TR. EN & SP MED XLM
SUB-CHLKY TO DENSE & HARD IN GR.
GR. BY GR. & BLK (CARB) IN PARTS IN

20

LM. AS ABOVE IN SCAT. INCL. CHLKY
& GR. EN XLM. DENSE. HARD LM.

40

LM. LT GRN. GR. & TR. EN XLM.
PRED DENSE & HARD. CONS. SH. AS
ABOVE

60

SH. GR. GR. & GRN. DK GR. (BLK) IN
CARB) PLUS MED. LT GRN. SH. PLUS
GRN. GR. & TR. EN. PRED DENSE
& HARD. IN SCAT. LT GR. & BLUE SUB-
CHLKY LM.

80

LM. BLUE TR. & GRN. & SP. LT GR.
PRED DENSE & HARD. IN SCAT. BLK,
TR. CARB. SH.

PAWNEE 4692

3288

4700

SAME W. RLX. PRED. CARB. SH.

20

LM. BLUE GR. & TR. EN XLM.
PRED DENSE & HARD. SCAT. GR.
& BLK. CARB. IN PARTS IN

CHEROKEE 4735

3351

40

SAME W. SH. MED. GR. & GRN. SH.
KEIN. PICKY GRN. DENSE. HARD LM.
BLUE SCAT. DK GR. & BLK. CARB. SH.

60

LM. BLUE GR. & TR. EN XLM. ENCL.
PRED DENSE & HARD. IN MED. GR. GR.
GRN. (BLK) (CARB) SH.

80

SAME W. INCL. IN GR. & GR. GRN. TR.

MISSISSIPPIAN 4789

-3385

4800

30 UNITS

CHRY. WH TO LT GRAY. SURF & GRAIN TO FINE WEATHERED. D.V. V. (TR. TRIP. SCOT. VILCS. TRIN. MEN. E. TE. BLK. ST. IN. SP. POOR TO SCOT. AIR. A. SEU. PIECES IN. GOOD. VILGAY. FOR. GRAY. DIL. DROPLET IN. WTR. GAS. OIL. DROPLET IF. BRK. AIR. ~. AIR. ODO.

20

145 UNITS

CHRY. WH. CR. & LT. GRAY. FINE. D.V. V. WEATH. AIR. FOR. W. TR. & B. N. Y. SCOT. FOR. ERG. & VILG. FOR. OIL. DROPS. WHEN. BOON. (GRAY. IN. PART). OIL. FILM. ON. WHT. NUMEROUS. DIL. DROPLET. FLOATING. JE. SAMPLE. FOR. A. WALK. ~. V. GOOD. ODO.

40

100 UNITS

CHRY. WH. TO. CR. & GR. TO. WEATHERED. FOR. TO. FINE. & TE. GOOD. FOR. ALL. OR. FOR. W. TR. B. N. IN. PART. D.V. V. & BLK. STILL. V. SCOT. OIL. DROPLET. & FINE. PIECES. IN. ALL. OIL. GAS. BUBBLES. HANGING. ON. SIDES. & EDGES. AIR. ODO.

60

CHRY. AS. ABOVE. W. TR. TO. D.V. V. & GR. IN. A. SCOT. TR. W. GR. & B. N. Y. W. TR. DEN. & SURF. ~. STILL. FINE. OIL. ODO.

80

CHRY. W. TR. IN. AS. ABOVE. FINE. CR. GR. & TR. IN. W. TR. SURF. CHLKY. & TR. HARD. L.M. & B. N. TR. GR. & CR. SIL.

4900

L.M. AS. ABOVE. IN. CONS. FINE. GR. CR. & GR. IN. SCOT. CR. & BLK. SH. ~. STILL. V. SCOT. CHRY. AS. ABOVE.

20

DOLD. CR. & LT. GR. IN. XIN. CHRY. & LAY. IN. FINE. IN. XIN. SURF. FINE. IN. PART. POOR. IN. TR. W. TR. ~. IN. TR. GR. IN. & FINE. IN. W. TR. B. N. Y. DENSE. HARD. L.M.

40

KINDERHOOK 4945

-3541

DOLD. AS. ABOVE. W. TR. GR. & SH. BLK. SH.

60

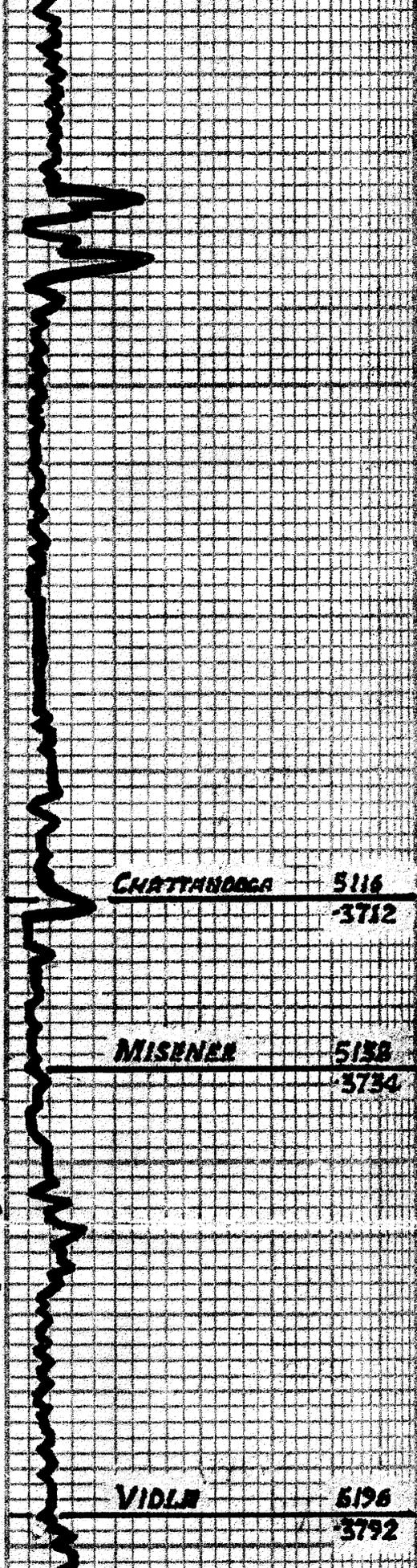
SAMP. AS. ABOVE. ~. CONS. SH. & SCOT. GR. & TR. GR. ~. B. N. Y. W. TR. SURF. CHLKY. & DOLD. L.M. & SCOT. BURE. ~. TR. IN. XIN. DENSE. HARD. L.M.

80

SH. TR. TO. DK. GR. & CR. ~. B. N. Y. (DOLD) STILL. V. SIL. L.M.

5000

20
40
60
80
5100
20
40
60
80
5200



SH. MED. GRAY. DIRT. BRN. BRK. GR. W. MED. GR. & GR. BRN. SUCC. TEXT. DOL. & CH. KY. TO DENSE. HARD L. IN DOL. & CH. AT ABOVE.

1.5" CR. BUFP. & TR. FM. Y. L. SUB. CH. KY. TO DENSE. HARD L. IN DOL. & CH. AT ABOVE.

SAME AS ABOVE

SH. DK. GR. BRNISH. BK. & BK. SH. IN L. & DOL. AT ABOVE.

SAME AS ABOVE.

SH. L. IN DOL. AS ABOVE.

CHATTANOOGA 5116
5112
SH. BK. & BRNISH. BK. PARTLY GAS BUBBLES WHEN PRESSED OR BROKEN CARB. AND PYRIT. NOTE (CONT. RED) GR. IN (BLAKE?) CONS. SPRES

MISNER 5138
5134
SIB (CS) SOME W. AND BUFP. 1/3 CLUSTERS. FM. GRAINED (SM. MED. GRAIN. IN BRN.) WELL RND. TO THE SUB. BING. CARB. SET TANTO BRNISH. IN GOOD. INTER. CARB. DOG. FM. IN. AND. PLANTER. MOLE. BROKEN. V. BRIGHT FLUOR & GOOD ADOP.

SH. MED. GR. BK. COND. SLUFF (AND RED. GR. SH. & L.)

SH. MED. TO DK. GR. SMT. RED. W. SCAT. BUFP. GR. & BRN. FM. Y. L. SUB. CH. KY. TO DENSE. HARD L.

SAME AS ABOVE IN CONS. SLUFF.

VIDLER 5196
5192
L. W. DOL. OR DOL. L. AT GR. & GR. FM. Y. L. SUCC. TEXT. W. SH. AT ABOVE. L. GR. TR. & BRN. SUB. CH. KY. TO DENSE. HARD L.

DST No. 1 (5142-5166)
30-40-50-60
WEAK SLOW (SURF) DEAD
IN 9 MIN. - FLUSH TOOL
NO HELP
NO BLOW (2" OPEN) - -
FLUCTUOL - NO HELP
REC: 180' DRILLING MUD.
(TRACE OIL)
5117/224# 5519/167#
157/84-121# 157/92-95#
TEMP 125°

STRAIGHT HOLE @ 5166'
DEVIATION = 1°
PIPE STROP @ 5166' ~ ~
1.58' SHORT

20
40
60
80
5300
20
40
60
80
5400
20

DOL. MED. GRAY & GRAY-BRN. FN. V. BL.
SILT. TEXT. W. SCAT. LM. AS ABOVE

DOL. & LM. AS ABOVE

LM. CRN. BLUE, GRAY, TR. & BRN. FN.
PRD. DENSE & MED. W. (MED. TO DK
GRAY & BLK (TR. CAR.) SH. & SCAT. DOL.
AS ABOVE.

LM. AS ABOVE W. SCAT. MED. & DK. GRAY.
BLK. & GRN. SH. V. SCAT. DOL. AS
ABOVE.

SIMPSON 5296

3892

LM. AS ABOVE W. CONS. MED. TO DK.
DK. GRAY & GRAY-BRN. SH.

LM. & SH. AS ABOVE

SIMPSON SDST (1) 5319

3915

SDST. LT. GRAY. SM. GRN. TINTED. FN. GRAINS.
CLUSTERS ALL SHLY & SILTY. W. PROB. POOR.
FOR ? - N.S.

SDST. CLUSTERS AS ABOVE W. CONS. FN. &
MED. GRAINED. WALL. RND. PRD.
CLARE. SINGLE GRAINS ON BOTTOM OF
TRAY - N.S. - ADD. LITH. (SH. & SLUFF?)

SD. PRD. SINGLE. FN. & SM. MED. GRAINS ON
TRAY. BOTTOM. PRD. WALL. RND. SMOOTH.
FN. CLUSTERS. LT. GRAY. FRI. - N.S. - SCAT.
ALL. - GRN. SH. & SLUFF FROM ABOVE.

SILT. PRD. "SLUFF" W. V. SCAT. ED. AS
ABOVE. (TR. UN. CRN. & LT. GRAY. BLK.
SPK'D SILT.

SH. MED. TO DK. GRAY & GRAY-BRN. (SM.
RED & GRN. SLUFF?) W. SCAT. SILT.
AS ABOVE.

SAME AS ABOVE

SH. MED. GRAY & GRAY-BRN. TR. WAXY.
W. TR. SILT. AS ABOVE.

40

SH AS ABOVE

60

SIMPSON SOST (2) 5460

4056

SH-GRY-GRN & BLUE-GRN W. RINISTERS
FN & MED GRAINED, PROB WALL RINDED.
SOST. HARD BUT FAL. FAIR INTER.
POR-N.S.

80

SAME AS ABOVE W. INCR. IN GRY-
GRN & BLUE-GRN SH. CONTANT.

5500

ARBUCKLE 5501

4097

DOLD-BLUFF. THIN & BRN. FN. XIN. TR
SUCR. TEXT. POOR. INTER. XIN. POR.
N.S. - TR BRN. DENSE. HARD IN L. CORES
SOST. SH. AS ABOVE

20

DOLD-BLUFF. BRN & SM. GRY. FN. XIN. TR
SUCR. POOR. PAR. N.S. - STILL "SLAEP."

40

DOLD AS ABOVE. POOR INTER. XIN.
N.S. - SPK. PRED. SOST. GRY-GRN. GRY-
GRAY-BLUE SH. (SIMP) TO R-2-14

TOTAL DEPTH 5555

4151

60