

Arden Ratliff

PETROLEUM GEOLOGIST

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DRILLING TIME

AND

SAMPLE LOG

COMPANY **CHIEFTAIN OIL CO. INC.**

LEASE **MOLZ NO. 17**

FIELD **STRANATHAN**

LOCATION **SE. NW NW SE**

SECTION **11** TOWNSHIP **35S** RANGE **12W**

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

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

COMMENCED DRILLING **7-7-12**

COMPLETED DRILLING **7-21-12**

RTD **5587** FEET LTD **5590** FEET

MUD UP AT **3200** FEET MUD TYPE **CHEMICAL**

ELEVATIONS

KB **1404**

IF **1402**

GL **1391**

Measurements are All
From **K.B.**

CASING

13 5/8" x 320' w. 350 gr.

5 1/2" x 5570' w. 225 gr.

ELECTRICAL SURVEYS

LOG-TECH-CAMMA RADIAL
INJECTION COMPENSATED DENSITY
& SENSIT. S.P. & CALIBER

FORMATION TOPS

SAMPLE

ELECTRIC LOG

NEENNER
KANSAS CITY
CHEROKEE
MISSISSIPPIAN
CHATTANOOGA
VIOLA
SIMPSON
SIMPSON SDST
ARBUCKLE
TOTAL DEPTH

3837 (2483)
4287 (2283)
4738 (3394)
4826 (3402)
5160 (3796)
5253 (3847)
5338 (3934)
5393 (3990)
5359 (4155)
5587 (4181)

3832 (2428)
4092 (2989)
4762 (3358)
4828 (3424)
5161 (3757)
5248 (3844)
5337 (3933)
5356 (3952)
5364 (4160)
5590 (4186)

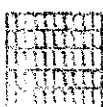
REMARKS AFTER ANALYZING ALL OF THE SAMPLES AND ALL OTHER PERTINENT INFORMATION THE DECISION WAS MADE TO SET PIPE IN EXPECTANCE OF GOOD PRODUCTION FROM THE MISSISSIPPIAN FORMATION.

Arden Ratliff, Petroleum Geologist

ADAMCAN

NOTE: NATIVE FURNISHED THE MUD -- SAMPLES DEPOSITED AT THE U.S.S. SURVEY

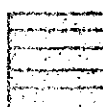
LEGEND



Anhydrite



Salt



Sandstone



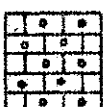
Shale



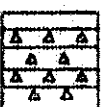
Carb sh



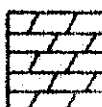
Limestone



Dol. Lime

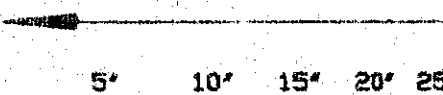


Chert



Dolomite

DRILLING TIME IN MINUTES
PER FOOT
Rate of Penetration Increases



LITHOLOGY

III

SAMPLE DESCRIPTIONS

REMARKS

ISSG

20

40

60

30

3600

20

40

60

20

3700

30-0000 GRY 1 GRY-CRM IN 300 IN GRY 4
MEN EN VIN DEACE. 1000 IN 1.5 CRT
CRM. LT GRY. MUST. 1 TR GRY-CRM EN
VIN DRED SIM-CHLRY 100

~~SUBJECT: BERNARD A. BROWN~~

STATUS ABOVE

SH-RED GRAY SANDS/GRY/ITGRY-
GRN & Y SCAT LMS AS ABOVE

SARIN, AKA, INACTIVE

~~CONFIDENTIAL~~

SOME AS ABOVE IN CONSIDERATION
THAT THERE SHALL BE IN THE
SUN COLONY TO BE AISE LORD L

LDN-PRED AS ABOVE. W. MED. RISK. CRY,
SM. CRY. CRY. 4 BUX. CORR. 5N.

SOME AS ABOVE IN 1M COY & COY-GRN,
V. S/LI SILTY SH.

50-GRY-GOV. PARTY SILTY & SO. MUD TO
DN GRY IN U. SO. LN. AS ABOVE

SHST. 17 GRV. R. 511 TRICKS & SALLY W.
GRV. FRN. CARD GRV. & TR. BLK. GR.

20

SILT & V. FINE GRAINED SDST. LT. GRAY
FROM 8000 INTR. GRAY. FOR-A. 1
STILL IN TO AS ABOVE

40

SAME AS ABOVE

60

SAME IN. SLT INCR. IN SH. CONTENT

80

SILT & V. FINE GRAINED SDST. LT. GRAY
V. SCAR. MED. GR. SDST. GRAY. IN SH.

3800

SAME IN. INCR. IN SH. CONTENT

20

SAME AS ABOVE IN. INCR. IN BLK.
CARB. SH.

HEEDNER

3837

-2453

40

LT. MED. GRAY. BLK. & GR. IN. & TR. MED.
V. IN. SUB. CHLY. TO DENSE & HARD IN
AND BLK. CARB. SH. AS ABOVE

60

LT. GR. BLK. & GR. IN. & TR. MED.
V. IN. SUB. CHLY. TO DENSE & HARD IN
AND BLK. CARB. SH. AS ABOVE

80

SAME GR. GR. GR. IN. & TR. MED.
BLK. SH.

3900

SH. MED. GR. GR. GR. IN. & TR. MED.
TR. MED. IN. IN. DENSE. HARD. SLT
SH. IN. & V. SCAR. MED. GR. SDST. GRAY. IN SH.
PROD. DENSE. IN. & TR. BLK. CARB. SH.

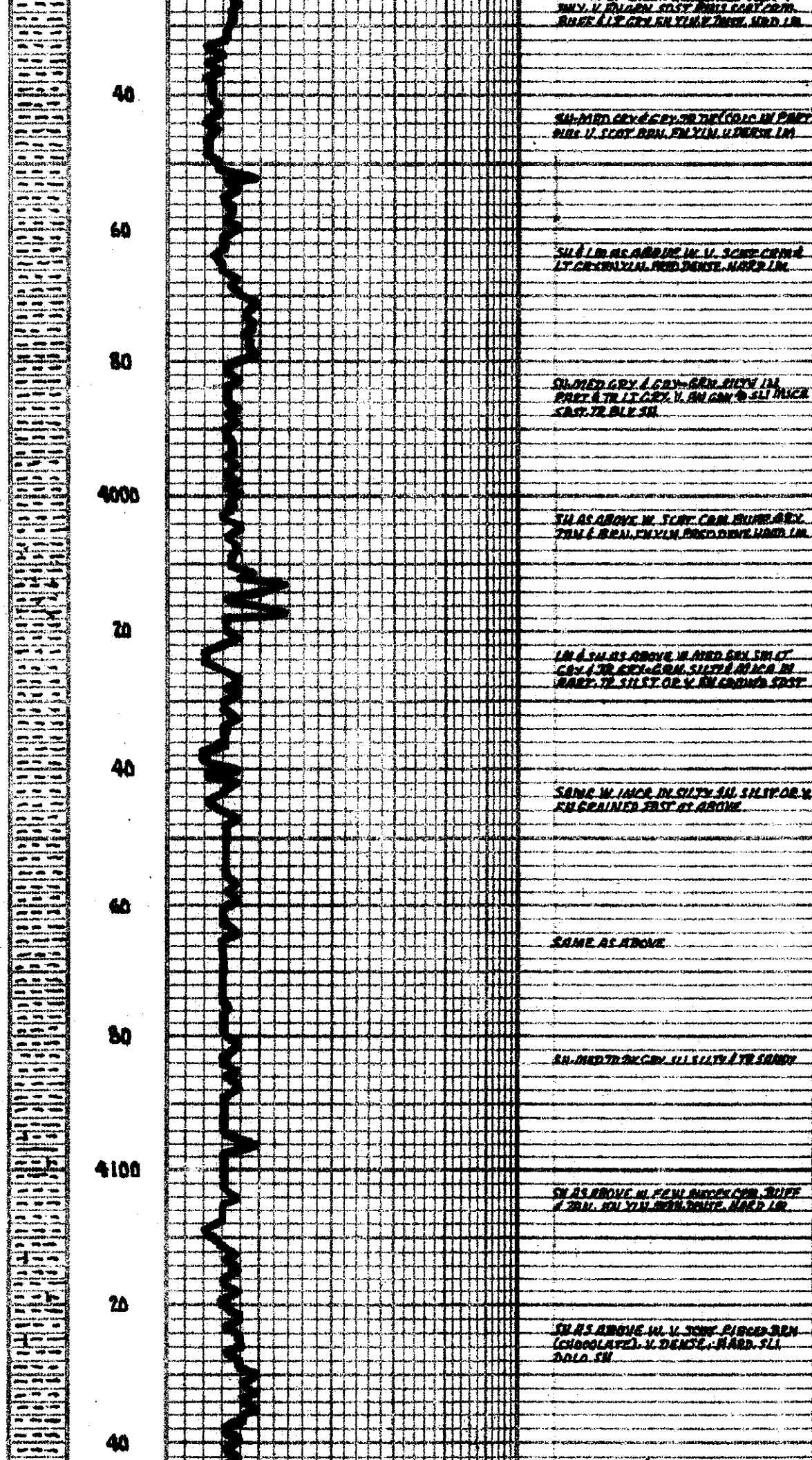
20

SH. MED. & TR. MED. GR. GR. GR. IN. & TR. MED.
V. SCAR. MED. GR. SDST. GRAY. IN SH.

3857

1407

1457



DRY, V. FINE, SANDY, SOFT, BROWN, HARD, IN
BLUE, LIT, GRY, EN, YL, W, DENSE, IN

SIL, DR, GRY, L, GRY, TR, TR, GRY, IN, PATT
BLUE, V. SOFT, DR, EN, YL, W, DENSE, IN

SIL, L, DR, AS, ABOVE, IN, V. SOFT, GRY, L
LT, GRY, YL, W, DENSE, HARD, IN

SH, DR, GRY, L, GRY, GRY, SIL, IN
PATT, L, TR, GRY, Y, EN, GRY, W, SIL, W, L
CAST, TR, BLK, SH

SIL, AS, ABOVE, W. SOFT, CAR, BROWN, GRY
TR, L, DR, EN, YL, W, DENSE, HARD, IN

IN, L, SIL, AS, ABOVE, W. HARD, GRY, SIL, CT
GRY, L, TR, GRY, GRY, SIL, L, W, L, IN
PATT, TR, SIL, Y, OR, Y, EN, GRY, W, SOFT

SAME, W. IN, DR, IN, SIL, Y, SIL, Y, OR, Y
EN, GRY, W, SOFT, TR, AS, ABOVE

SAME, AS, ABOVE

EN, DR, TR, DR, GRY, SIL, SIL, Y, Y, TR, SANDY

SIL, AS, ABOVE, W. FEW, DR, GRY, CAR, TR, L
TR, L, EN, YL, W, DENSE, HARD, IN

SIL, AS, ABOVE, W. V. SOFT, P, DR, GRY
(CHOCOLATE), V. DENSE, HARD, SIL
DOL, SH

60
80
4200
70
40
60
80
4300
20
40

SH-MED GRY LG GRN W V SCAT BRN
DIO-SILY SCAT CRN & LT GRN IN LIM
THINSE LIM

SAME AS ABOVE PLUS FEW PIECES
LT GRY SILT OR V FINE GRAINED SDST

SAME AS ABOVE

SH-MED TO DK GRY & SM GRY-GRN
PRAD SILTY SN

SH MED GRN-STILL SILTY IN PART

SH AS ABOVE W FEW LT GRY SILT TO
V FINE GRAINED SILTY & SILY SDST

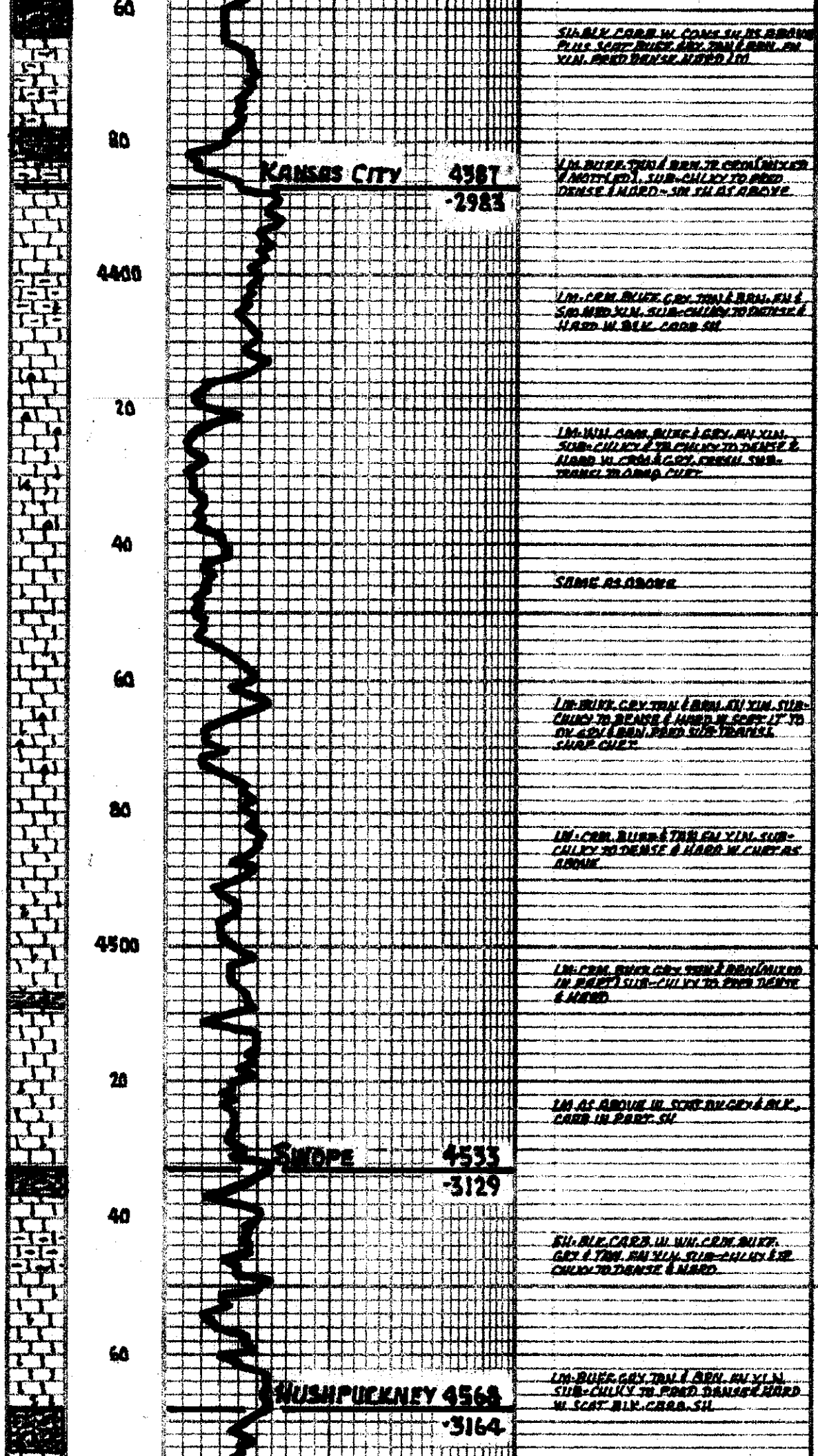
LM-TAN TO BRN MED GRN W LIME
HARD SLIPARTY LIM & SH AS ABOVE
V SCAT BLK TR CORR SN

SH-LT. MED & BK GRY PLUS CONS LIM
AS ABOVE

SH-MED GRY & GRN-GRN W FEW
PIECES V SL SILTY SN

SAME AS ABOVE W TR BRN, RESE
HARD LIM

SH-MED GRY & SM GRY, SM GRY-
GRN & TR BLK



80
4600
20
40
60
80
4700
20
40
60
80

LM. CRD. BLK. LY. GRY. TAN. & TO
BRN. KN. YL. DENSE. HARD. IN.
MED. TO DK. GRY. GRY. GRN. & BLK.
PLUS BLK. COB. SU.

LM. & SU. AS ABOVE. W. CONS. TAN. &
BRN. CHRTY. DENSE. HARD. LM. STILL
MED. TO DK. GRY. GRY. GRN. & BLK.
COB. IN BKT. SU.

BASE K.C. 4614
-3210

LM. CRD. BLK. GRY. GRN. GRY. TAN. &
SM. BRN. KN. YL. PRO. TAN. & HARD
W. CRD. GRN. STICKY & BLK. SM. & GRY.
GRN. FRESH. SUB. TRANS. SUB. CHRT.

LM. BLK. GRY. TAN. SM. BRN. & TO
CRD. (CHLY). SUB. CHLY. TO DENSE
& HARD. W. GRN. GRY. GRN. MED. TO DK
GRY. & TO BLK. SU.

LM. CRD. BLK. GRY. & TAN. KN. YL. SUB.
CHLY. TO DENSE. & HARD. IN. SOME. SM.
AS ABOVE. PLUS V. SCOT. BLK. COB. SU.

ALTNMONT 4678
-3274

SAME AS ABOVE. IN. SCOT. BRN. KN. YL.
DENSE. HARD. LM.

LM. CRD. BLK. GRY. & TAN. KN. YL.
SUB. CHLY. & TO CHLY. TO. HARD
DENSE. & HARD.

PAWNEE 4724
-3320

SM. BLK. COB. W. MED. GRY. GRN. & GRY.
GRN. SU. PLUS BLK. CHLY. TAN. TO GRY.
GRN. PRO. DENSE. HARD. LM.

SH. & LM. AS ABOVE

CHEROKER 4758
-3354

SM. BLK. COB. W. CRD. BLK. TAN. &
BRN. LM. KN. YL. SUB. CHLY. TO V.
DENSE. & HARD.

SU. MED. GRY. GRN. & GRY. GRN. IN. BLK.
GRY. GRN. TAN. & BRN. KN. YL. MED.
DENSE. HARD. LM. STILL. SM. BLK. COB. SU.

4800

20

40

60

80

4900

20

40

60

80

5000

MISSISSIPPIAN 4826 3422

70 UNITS X 1

75 UNITS X 1

SH. 1/2 M. AS ABOVE IN SCOT. BRAL. & CRY.
V. SILTY SH. NOT IN PINK. LT. CRY. V. POOR
GRAINED SILTY SAND. POOR FOR N.S.

SH. MED. GR. CON. & GR. CON. IN. CONS.
RED (CLAY-LIKE) SAND. IN. BLUE V.
SCOT. LT. GR. SAND. DENSE. CRY. IN.
SCOT. BRAL. SAND. TO. TR. SCOT. IN. IN. V.
POOR FOR. NO. SHOW. EXCEPT. SH. (NO
ODOR. FLUOR. OR G.V.

BRAL. CRY. LT. GR. CON. & TR. TON. FRESH. TR.
DEVIT. AS ABOVE. PLUS. BRAL. SAND. &
FRESH. IN. TON. & CRY. STN. POOR FOR. FRESH.
OIL. GAS. BUBBLES. PLUS. SCOT. MOUTH. &
TR. PA. CRY. & TR. V. C. FOR. IN. TON. STN. AND
ONLY. GAS. BUBBLES. LT. OIL. BUBBLES. ONLY.
FILM. ON. WATER. FLAT. V. GOOD. OOD.

BRAL. CRY. LT. GR. CON. & BRAL. FRESH. BRAL.
SUB. TRANS. SCOT. MOUTH. DEVIT. BRAL.
BRAL. STN. IN. FOR. TR. AL. TON. STN. FRESH. IN. IN.
& CRY. BRAL. CRY. MOUTH. TR. TON. & BRAL. GOOD.
POOR. BRAL. & CRY. STN. AND. BRAL. OIL. BUBBLES.
(TR. GAS. BUBBLES. V. GOOD. OOD. (OIL))

SAME. AS. ABOVE. STILL. PIECES. IN. GOOD.
FOR. & BRAL. TON. STN. IN. SCOT. PIECES.
TON. & BRAL. IN. IN. & TR. V. FRESH. IN. TON. STN.
HARD. TR. CRY. Lm.

SAME. AS. ABOVE. STILL. AND. OIL.
BUBBLES. IN. MOUTH. CRY. OIL. FILM. ON.
WATER. TR. GAS. BUBBLES. FOUR. OOD.

SAME. IN. SCOT. CRY. IN. POOR. DEVIT.
FOR. POOR. FOR. TON. STN. & TON. STN.
NO. FREE. OIL. OR. OOD. PLUS. GR. SIL.
Lm. & CRY. V. IN. IN. TR. SCOT. TEXT.
DENSE. HARD. TON.

DOLO. LT. GR. & BRAL. IN. XIL. SIL. CRY.
TEXT. SIL. Lm. & CRY. BRAL. DENSE.
& HARD. IN. V. SCOT. TON. & BRAL. IN. XIL.
DENSE. HARD. Lm. TON.

DOLO. AS. ABOVE. SIL. BRAL. & V. BRAL. I.
IN. BRAL. PLUS. V. SCOT. IN. CRY. TR.
IN. XIL. SUB. CRY. TO. DENSE. HARD. Lm.

SAME. AS. ABOVE.

SAME. IN. IN. IN. IN. IN. V. SIL.
SIL. SIL. DOLO. OR. DOLO. IN. IN.
Lm. AS. ABOVE.

SAME. AS. ABOVE. IN. DOLO. BRAL. V.
BRAL. FROM. DOLO. IN.

20

40

60

80

100

20

40

60

80

100

20

SH. MED. GR. BRNISH-BL. TO SLT
TO SUCR. TEXT. PART. DOL. & V. SCAT
LM. AS ABOVE.

SAME AS ABOVE

LM. MED. GR. TO GR. & BLK. SH. YLM.
PYRITIC. SH. CH. TO WHITE &
HARD. W. DOL. IN AS ABOVE

LM. AS ABOVE. IN TO AN. DENSE. HARD
LM. BLK. V. SCAT. DOL. GR. IN YLM.
DENSE. HARD. SLT. ARG. IN SCAT
MED. TO BL. AN. GR. GR. GR. GR. GR.

SH. MED. TO BL. GR. & BLK. (SLT. GR. IN
PART) GR. GR. GR. GR. GR. GR. GR.
LM. AS ABOVE

KINDERHOOK 5131

3727

SH. MED. & SCAT. GR. GR. GR. GR. GR. GR.
BRNISH-BL. & GR. GR.

CHATTANOOGA 5160

3756

SH. AS ABOVE. W. DOL. & V. SCAT. GR.
MED. SCAT. PL. GR. GR. GR. GR. GR. GR.

(5160) SH. MED. TO BL. GR. BLK. SH. GR. GR. GR.
AS ABOVE (SH. GR. IN "1") SH. BLK. & BRNISH-
BLK. SLT. DOL. GR. & SCAT. BEARING

SH. AS ABOVE. BEARING. SH. AS ABOVE. PL. SH.
CLUST. SILT. W. DOL. MED. TO SCAT. DOL. GR.
IT GR. IN GR. GR. GR. GR. GR. GR. GR. GR.
FAIR. INTER. GR. GR. GR. GR. GR. GR. GR.

SH. AS ABOVE (SCAT. BEARING) SCAT.
MED. GR. GR. GR. GR. GR. GR. GR. GR.

AFTER BIT TRIP @ 5187 - SH. MED.
GR. GR. GR. GR. GR. GR. GR. GR. GR. GR.
PL. SCAT. GR. GR. GR. GR. GR. GR. GR. GR.
YLM. MED. DENSE. HARD. LM.

SAME. W. SCAT. GR. GR. GR. GR. GR. GR. GR. GR.
BRNISH-BL. DOL. SH. GR. GR. GR. GR. GR.

