

# Arden Ratzlaff

PETROLEUM GEOLOGIST

Phone: 262-8938

107 N. Market & 808 Bitting Bldg. Wichita, KS 67202

DRILLING TIME

AND

SAMPLE LOG

ELEVATIONS

KB 1400

IF 1398

GL 1389

Measurements Are All  
From K.B.

CASING

1 3/4" @ 35' w 578.5x

5/8" @ 5604 w 225.5x

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

COMMENCED DRILLING **9-19-15**

COMPLETED DRILLING **9-28-15**

RTD **5610** FEET LTD. **5600** FEET

MUD UP AT **3215** FEET MUD TYPE **CHEMICAL**

ELECTRICAL SURVEYS

NUMBERS ~ COMPENSATED  
NEUTRON & DENSITY. P. E.  
LOG, DRILL INDUCTION AND  
MICRO LOG

COMPANY **CHIEFTAIN OIL CO. INC.**

LEASE **MOLZ No. 21**

FIELD **STRANATHAN**

LOCATION **NW SE SE NE**

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

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

**FORMATION TOPS**

**SAMPLE**

**ELECTRIC LOG**

BERNER  
KANSAS CITY  
ENERGORE  
MISSISSIPPIAN  
CHATTANOOGA  
VIOLA  
SIMPSON  
SIMPSON SAND  
REBUCKLE  
TOTAL DEPTH

3825 (-2425)  
4185 (-2981)  
4758 (-3552)  
4813 (-3607)  
5150 (-3944)  
5234 (-3859)  
5325 (-3768)  
5342 (-3751)  
5755 (-4153)  
5810 (-4210)

3820 (-2420)  
4361 (-2981)  
4752 (-3552)  
4813 (-3607)  
5152 (-3952)  
5234 (-3854)  
5325 (-3762)  
5346 (-3746)  
5750 (-4150)  
5811 (-4211)

REMARKS AFTER ANALYZING ALL OF THE PERTINENT AND CRITICAL INFORMATION, IT WAS THE DECISION THAT PRODUCTION CASING BE SET IN EXPECTANCE OF A GOOD PRODUCER. *Arden Ratzlaff*

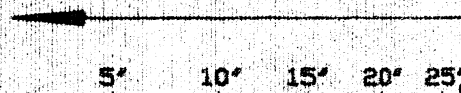
NOTE! BARCAS (NATIVE MUD) FURNISHED THE MUD ~ SAMPLES DEPOSITED AT THE K.G.S. SURVEY.

## LEGEND



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

DRILLING TIME IN MINUTES  
PER FOOT  
Rate of Penetration Increases



LITHOLOGY

DEPTH

SAMPLE DESCRIPTIONS

REMARKS

DEPTH

SAMPLE DESCRIPTIONS

REMARKS

3700

SH - MED TO BK GRY SCOT BLK W SCOT  
CARB BLK. GRN. TAN. BRN. FM YLN.  
SUB-CHLY TO DENSE. HARD LM

20

SH AS ABOVE W SCOT GRY. TAN. BRN.  
MED DENSE. HARD LM

40

SH AS ABOVE W LTY. MED GRN & LTY  
CORRODING TO LT GRY/SH BLK. SCS SILST.

60

SILST. LT GRY W BLK GRN'S & BLK'S W  
SCOT GRY. SHAS ABOVE BY SCOT BLK.  
CARB SH.

80

SILST AS ABOVE W CONS. MED GRY.  
TO GRY-CRN & PART BLK. CARB SH

3800

SH AS ABOVE W SCOT BLK. GRY. TAN.  
& BRN. FM YLN. SUB-CHLY TO DENSE  
& HARD LM. - STILL SH SILST.

20

NEEDLER 3823  
2425

SH AS ABOVE. MED GRY. GRN-CRN &  
BLK (CARB IN PART) - STILL SILST.

40

LM. CARB. BLK. GRY. TAN. & BRN. SUB-  
CHLY TO DENSE & HARD W SCOT MED  
GRY. GRY-CRN & BLK (PART CARB) SH

50

LM. CARB. BLK. GRY. TAN. & BRN. SUB-  
CHLY TO DENSE & HARD W SCOT MED  
GRY. GRY-CRN & BLK (PART CARB) SH

80

SH. MED TO DV GRY. GRN-CRN & BLK  
SH (STILL SCOT CARB)

3900

SOME AS ABOVE W BLK. TAN. & BRN  
FM YLN. SUB-CHLY TO MED DENSE  
HARD LM



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SAME AS ABOVE W. SCAT LT GRN BLK  
SPY'S & PARTLY OLIGO SILT

SH. MED GRY GRN GEN BLK W. SCAT  
SILT AS ABOVE

SH. AS ABOVE V. SLT SILTY SCAT GRN  
BLK TAN & BRN EN YLN. PROD DENSE  
HARD LN

SH W. SCAT LN AS ABOVE

SH. MED GRY GRN GRN V. SLT SILTY  
LN PART

SAME AS ABOVE

SH. PROD MED GRY V. SCAT DK GRY &  
GRY-GRN V. SLT SILTY

SH. MED GRY. SILTY OLIGO TAN BLK  
SPY DK GRN LT BLK & V. SCAT BLK TAN  
EN YLN. DENSE HARD LN

SH. MED GRY GRN GRN SILTY TO SCAT  
LT GRY V. EN GRAINED SILT

SAME W. V. SCAT BLK TAN EN YLN.  
DENSE HARD LN

SH. MED GRY V. SLT SILTY W. V. SCAT  
GRY-GRN DK GRN & BLK SH



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SH. MED GRAY & GRAY-GRN SILTY IN  
PARTS. LT GRAY SILTY SILT

SOME W. BLUE-TAN & BRN. IN XIN  
PROD. DENSE. HARD LM

SH. MED TO DK GRAY SILTY GRAY-GRN  
FEW PIECES SILTY & SH. ABOVE

SH. MED GRAY TR. SILTY & TR. LT GRAY,  
SILTY SILT

SOME AS ABOVE

SH. MED & SM. DK GRAY, SH. GRAY-GRN  
STILL SILTY

SH. MED TO DK. V. ALL SILTY

SH. MED TO DK GRAY GRAY-GRN &  
RARE BLK. TR. BLUE-TAN & BRN.  
IN XIN. SH. ONLY TO BEALSE.  
HARD LM

SH. MED TO DK GRAY GRAY-GRN & BLK.

SH. GRAY-GRN MED TO DK GRAY & BLK.  
W. FEW PIECES. IN XIN. TAN &  
BRN. MIXED FOSS. LM

SH. MED TO DK GRAY & BLK & SH. GRAY-GRN

60

SH AS ABOVE

80

60° DIPS

KANSAS CITY 4893

3583

SH-ELY V CORR. 800 GAS BUBBLES  
IN MED. GRAY SH AS ABOVE

4400

LM AS ABOVE - STILL ADD BLY / GRAY SH

20

LM - WH. GRAY. BLYX. GRAY. TAN. BARN.  
FN. YIN. ONLY. SUB. THICK. TO DENSE  
HARD

40

LM - BUEX. GRAY. TAN. WH. YIN. BLYX.  
CHILKY TO DENSE & HARD IN WH. GRAY  
FRESH. MED. SUB. TRANSL. STR. BLYX

60

LM AS ABOVE IN V. SCAT. WH. CHILKY  
LM & DENSE IN FRESH CHRT.

80

LM - BUEX. TAN. GRAY. SM. BLYX. WH. YIN.  
SUB. CHILKY TO CHILKY IN MED. TAN.  
GRAY. BLYX. CORR. IN PART. WH. SCAT  
CHRT. AS ABOVE

4500

LM - WH. BUEX. GRAY. TAN. BARN. FN.  
YIN. BARN. DENSE & HARD IN GRAY. F.  
TAN. FRESH. SUB. TRANSL. CHRT  
& V. SCAT. MED. TAN. GRAY. SH. TAN. BLYX  
SH AS ABOVE

20

STARK

4529

3129

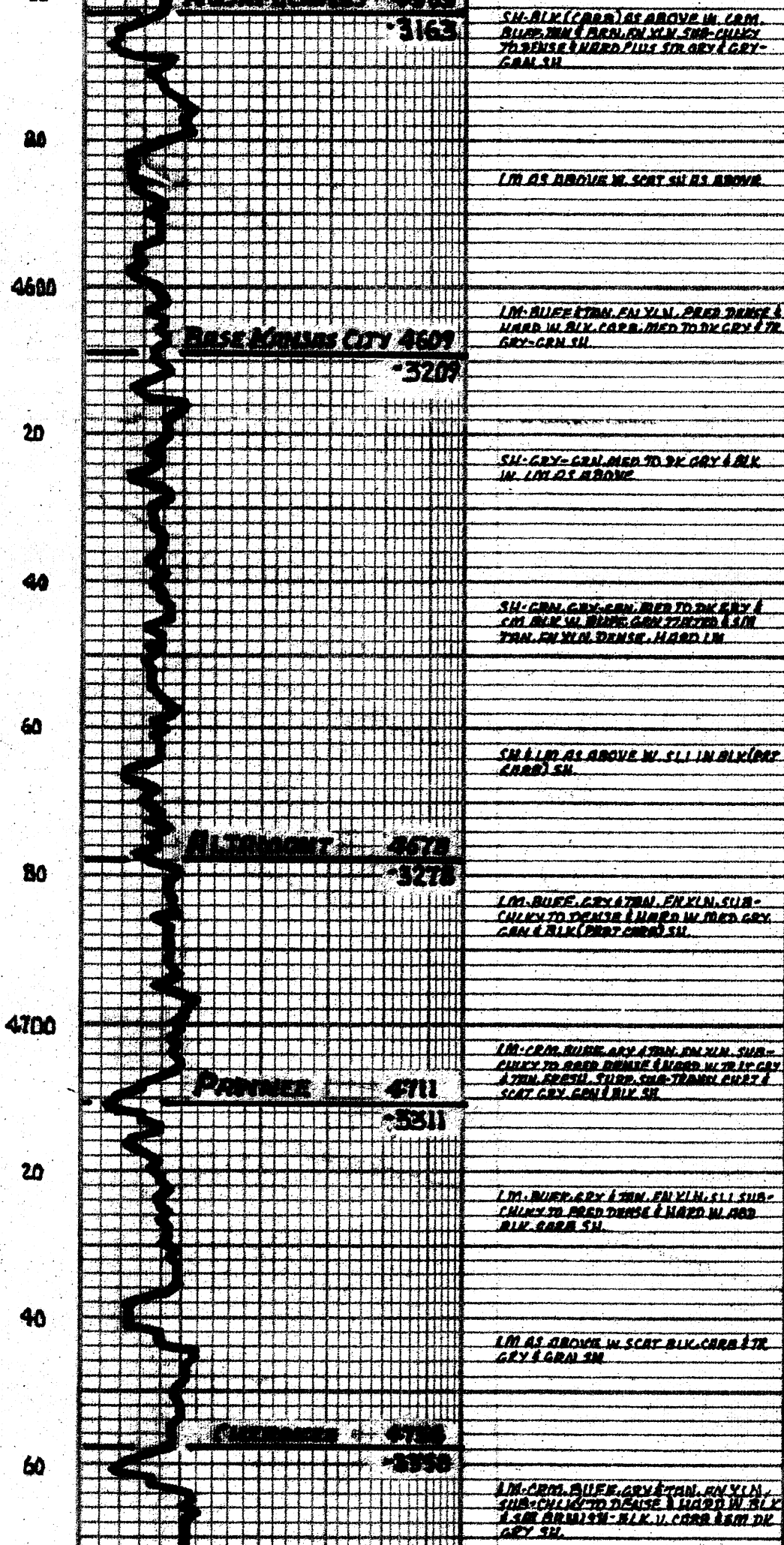
LM - BUEX. TAN. BARN. FN. YIN. BARN.  
DENSE & HARD IN MED. TAN. GRAY. CORR.  
GRAY. CORR. & BLYX. SH

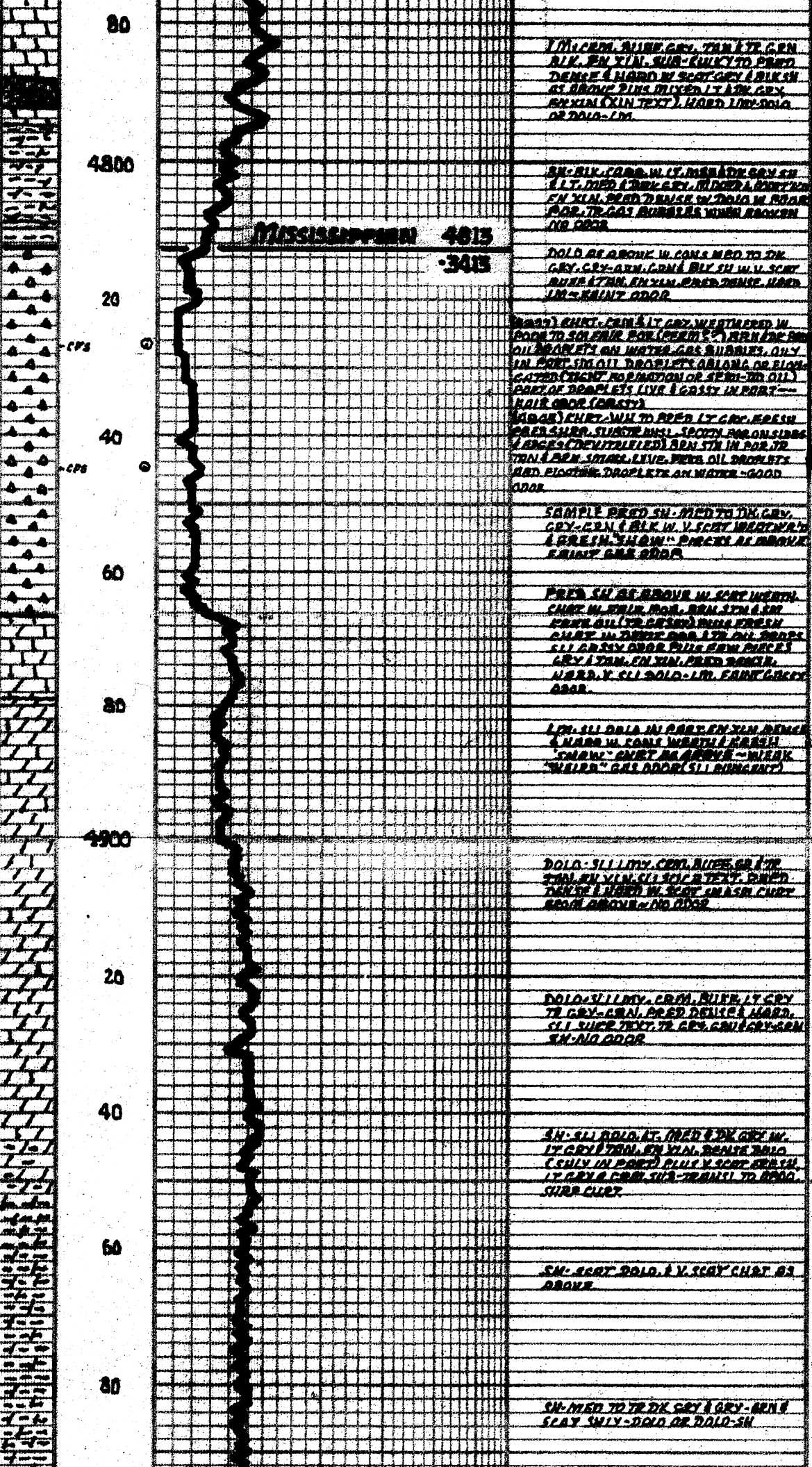
40

SH. BLYX. BARN. TAN. BLYX. V. CORR.  
GAS BUBBLES PLUS LM AS ABOVE

60

MISSOURI 4543





MISSISSIPPIAN 4013-343

DST No. 1 (4025-0843)  
 20-45-60-90  
 WEAK BLOW (1/2-1 1/2 INCH)  
 1 3/4" OPEN  
 WEAK BLOW (1/2-2 1/2 INCH)  
 2 3/4" OPEN  
 REC: 95' DRILG MUD, 60'  
 GASSY MUD W. OIL SPK'S,  
 CLEAN OIL TOP OF TOL  
 51P/B47# F51P/B29#  
 TEMP N.C.  
 NOTE! SLID TOOL APPROX.  
 16' TO BOTTOM & CHARTS  
 SHOW SOME PLUGGING  
 DURING 80% FLOW  
 PERIODS.

M. COAL, BLUE GRAY, TAN & TP. GRN  
 BLK. EN. TAN. SUB-CULCY TO PRWD  
 DENSE & HARD BY SCOT. GRAY BLK. SH  
 AT ABOVE PINS MIXED LT TAN. GRAY  
 BKXIN (XIN TEXT), HARD LIMP-DOLA  
 OR DOLA-LM.

SH. SILT. CLAY, W. LT. REDDISH GRAY SH  
 1 LT. MED & TH. GRAY, MUDGRY PART  
 EN. TAN. BEAD DENSE IN DOLA M. BOLD  
 FOR. TR. GAS BUBBLES WHEN BROKEN  
 NO ODOR

DOLD. GR. BRNK. W. CANE. MED TO TH.  
 GRAY. GRAY-GRN. GRAY BLK. SH. W. V. SCAY  
 BURET. TAN. EN. TAN. BEAD DENSE. HARD  
 LM. - BRINT. ODOR

(GAS) CHRT. CRIM. LT. GRAY, WEATHERED W.  
 BOLD TO SO. FINE FOR (GAS) BURET. TAN. GRAY  
 OIL DRAPETS ON WATER-GAS BUBBLES, OILY  
 IN PORT. SH. OIL DRAPETS ALONG OR BLOW  
 GATED TIGHT. NO ACTION OR. SEMI-TO OIL  
 PART OF DRAPETS LIVE & GASSY IN PART--  
 BRINT. ODOR (GAS)  
 (GAS) CHRT. TAN. TO PRWD. LT. GRAY. FRESH  
 FRESH. SUGAR. BOLD. SPOTTY. BOLD. SIDES  
 (LARGE) (CONTRILLED) BOLD. SH. IN PORT. TO  
 TAN. & EN. SPARK. LIVE. PERS. OIL DRAPETS  
 AND FLOTTING DRAPETS ON WATER-GOOD  
 ODOR

SAMPLE PRWD. SH. MED TO TH. GRAY.  
 GRAY. GRN. & BLK. W. V. SCAY. MED TO TH.  
 & FRESH. TAN. GRAY. BRINT. AT ABOVE  
 BRINT. GAS. ODOR

FRESH. SH. GR. BRNK. W. SCAY. WERTH.  
 CHRT. W. BRNK. BOLD. BRINT. TAN. GRAY  
 FRESH. OIL. TO. BOLD. BOLD. FRESH  
 BOLD. IN. BOLD. BOLD. BOLD. BOLD.  
 SH. GRAY. ODOR. FINE. FINE. BOLD.  
 GRAY. TAN. EN. TAN. PRWD. BOLD.  
 HARD. Y. SH. DOLA-LM. FINE. GRAY.  
 ODOR

LM. SH. DOLA. IN. PART. EN. TAN. BOLD.  
 & HARD. W. CANE. WERTH. FRESH  
 (GAS) CHRT. BRINT. BRINT. - WERTH  
 "WERTH" GAS. ODOR (SH. BOLD. GRAY)

DOLA. SH. LIMP. CRIM. BLUE. LT. GRAY  
 TAN. EN. TAN. SH. OIL. BOLD. BOLD.  
 TAN. EN. TAN. W. SCAY. MED. CHRT.  
 BOLD. BRNK. - NO ODOR

DOLA. SH. LIMP. CRIM. BLUE. LT. GRAY  
 TO GRAY. GRAY. PRWD. DENSE. HARD.  
 SH. SH. GRAY. TO GRAY. GRAY. GRAY. GRAY  
 SH. NO ODOR

SH. SH. DOLA. AT. MED. & TH. GRAY. W.  
 LT. GRAY. TAN. EN. TAN. BOLD. DOLA  
 (SH. IN. PART) BOLD. Y. SCAY. GRAY. SH.  
 LT. GRAY. CRIM. SUB. TAN. TO. BOLD.  
 SH. GRAY.

SH. GRAY. DOLA. & V. SCAY. CHRT. BOLD.  
 ABOVE

SH. MED TO TH. GRAY & GRAY-GRN &  
 SCAY SWLY-DOLD OR DOLD-SH

5000

20

40

60

80

5100

20

40

60

80

5200

SH. MED GRAY W. SM. GRAY-GRN LTR  
DK GRAY.

SHLY-DOLA OR DOLA-SH. MED GRAY &  
TR. DK GRAY. NO. APPARENT POR.

SHLY-DOLA OR DOLA-SH AS ABOVE

SHLY-DOLA OR DOLA-SH AS ABOVE W.  
MIN. CON. QUARTZ & GRN. EN. MIN. SUB-  
CULY LTR. CULY TO SHALE. HARD LTR  
CURTY. LM

**KINDERHOOK 5087**

5087

FM. MIN. CON. QUARTZ. LTR. GRAY LTR. OR  
YLN. CULY & SUB-CULY TO SHALE &  
HARD W. HARD TO DK GRAY. GRN. GRAY-  
GRN. LTR. SH

SH. MED TO DK GRAY. BLK (HARD) SPA.  
GRAY-GRN LTR. PALE GRN W. RED LTR.  
AS ABOVE.

SH. MED TO DK GRAY. BLK (CORN).  
GRN. GRAY-GRN LTR. PALE GRN W. CON.  
BLK. & SUB LTR. GRAY. FACIL. FRED.  
TENSE. HARD LTR. CURTY. IN. TEN. LTR.  
GRAY. FRESH. SUB-SUB-TOTAL. CURT.

SH. MED. GRAY. FM. DK GRAY. GRAY-GRN.  
W. BLK. F. BRNISH-BLK (HETEROSH)

**CHATTANOOGA 5180**

5180

SH. BLK. BRNISH-BLK LTR. GRAY.  
CORN & SH. DOLA W. HARD SPORES &  
TR. RYALIC.

**VALERIE 5172**

5172

(5180) SDST. LTR. GRAY W. BLK. SPK'S. MN.  
GABINER. SUB-RANDED TO SH. WELL-  
BANDS. CLEAR. GABINER. FAIR TO GOOD  
INTER. GRN. POR. N.S.

SH. MED GRAY. GRAY-GRN. GRAY-GRN.  
& DK GRAY. TRILL-OUT PLUS TO SDST. AS  
ABOVE.



40

60

80

5500

20

40

60

80

5600

TOTAL DEPTH 5610

-4210

GRAINED CLUSTERS IN SAND TO 6000 FOR  
BLK MED GRAY BLK GRN (SAND) SUSH. MED GRAY SAND. DENSE & MED. GRAIN  
NON-COM. INT. GRN. SAND. NO GRANULES  
CLUSTERS IN SAND TO 6000 FOR N.S.SH. GRN. SAND. MED TO BK GRAY. GRN. SAND  
& BLK W. SDST AS ABOVESH. SAND. GRN. MED GRAY. GRN. SAND & BLK  
STILL CONS. LMA SDST AS ABOVE

LAWSON SANDSTONE 5500

-4095

SH AS ABOVE W. LT MED GRAY. PREP  
MED. GRAINED SANDY DOLD OR DOLD  
AND DENSE & HARD (MIXED) IN DOLD  
INTER-CRAN BIRK - STILL CONS. MED  
GRN. SAND & GRAY SU & SDST AS ABOVEDOLD - SDST - AS ABOVE IN CRAN SAND &  
GRN SH IN SCOT SDST KTR DOLD ABOVE.

SDST. DOLD - GRAY. SH. IN AS ABOVE.

HARDENED 5550

-4195

SAME AS ABOVE W. V. SCOT GRAY SAND.  
EN. V. N. SLI DOLD. EN. V. GRADE & HARD

SAME AS ABOVE

SH. SAND. GRN. GRAY & TR. BLK W. GRAY  
BLK & TR. V. EN. EN. IN SH. MED. GRAIN  
AND FOR & TR. FOR INTER-CRAN FOR  
N.S.LM. V. SLI DOLD. BLUE. GRAY & TR. EN. EN. IN  
AND DENSE & HARD W. VARI-COLORED  
SANDS W. VARI-SIZED GRAIN. SAND  
SM. SAND. SAND - ALSDOLD - LAY IN PART GRAY & TR. EN.  
V. N. DOLD DENSE & HARD IN SCOT  
DOLD. GRAY & TR. BLK GR.KNO DOLD - LAY AS ABOVE THIS BEW  
PIECES W. CHUKY LM & SM. SAND. EN  
V. N. SAND - CHUKY LM.