

Max R. Lovely

# GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY **Ritchie Exploration, Inc.**

LEASE **Sanko #2**

FIELD **Sanko**

LOCATION **NESE NW**

SEC **17** TWP **28** RGE **23W**

COUNTY **Ford** STATE **KS**

CONTRACTOR **Duke #10**

SPUD **7-31-2012** COMP **8-13-2012**

RTD **5270** LTD **5273**

MUD UP **3774** TYPE MUD **Chem**

ELEVATIONS  
KB **2519**

DF **2508**

Measurements Are All From **KB**

CASING SURFACE **8 7/8" @ 358'**  
PRODUCT ION **5 1/2"**

ELECTRICAL SURVEYS  
Comp **N/D**  
DI

## FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION
				A B C
Anhydrite	1519	1518	1001	1024
Base Anhydrite	1567	1552	967	969
Stoller	3618	3617	-1096	-1092
Heeber	4278	4278	-1759	-1752
Lansing	4414	4416	-1897	-1890
Muncie SH	4602	4602	-2083	-2081
Stark	4728	4726	-2207	-2203
Allamont	4888	4896	-2371	-2366
Pawnee	4946	4946	-2427	-2429
Cherokee SH	4990	4994	-2475	-2474
Atoka SH	5097	5098	-2579	-2588
Norow				
Mississippi	5118	5123	-2604	-2600

REFERENCE WELLS FOR STRUCTURE

A **Ritchie Sanko #1 S12 NW NW 17-28-23W**

B

C

### REMARKS

### LEGEND

Anhydrite	Salt	Sandstone	Shale	Carbon	Limestone	Dol. Lime	Chert	Dolomite

DRILLING TIME IN MINUTES PER FOOT  
Rate of Penetration Decreases

5" 10" 15" 20" 25"

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

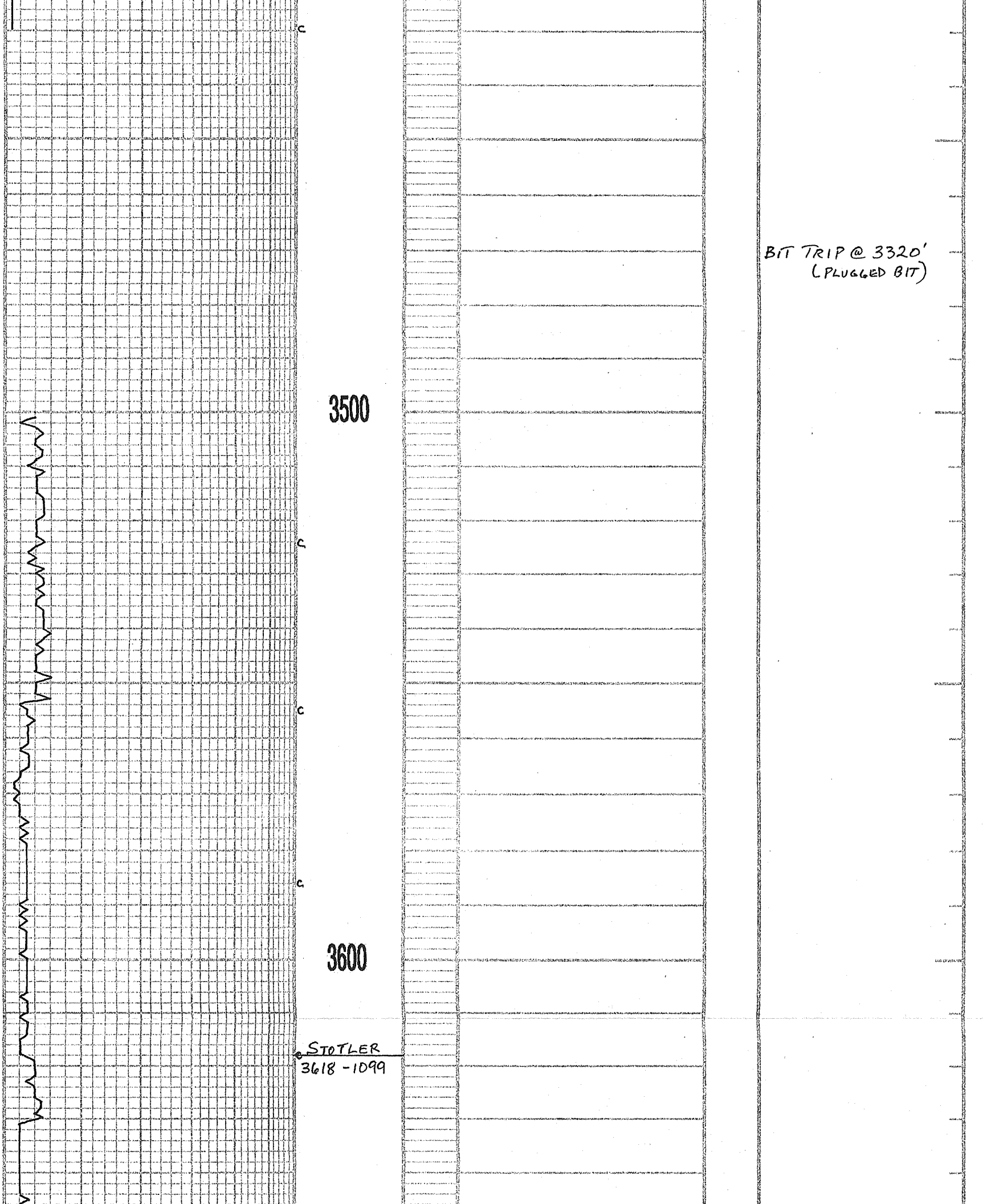
REMARKS

1500

ANHYDRITE  
1519 +1000

BASE  
ANHYDRITE  
1567 +952

1600



3500

P

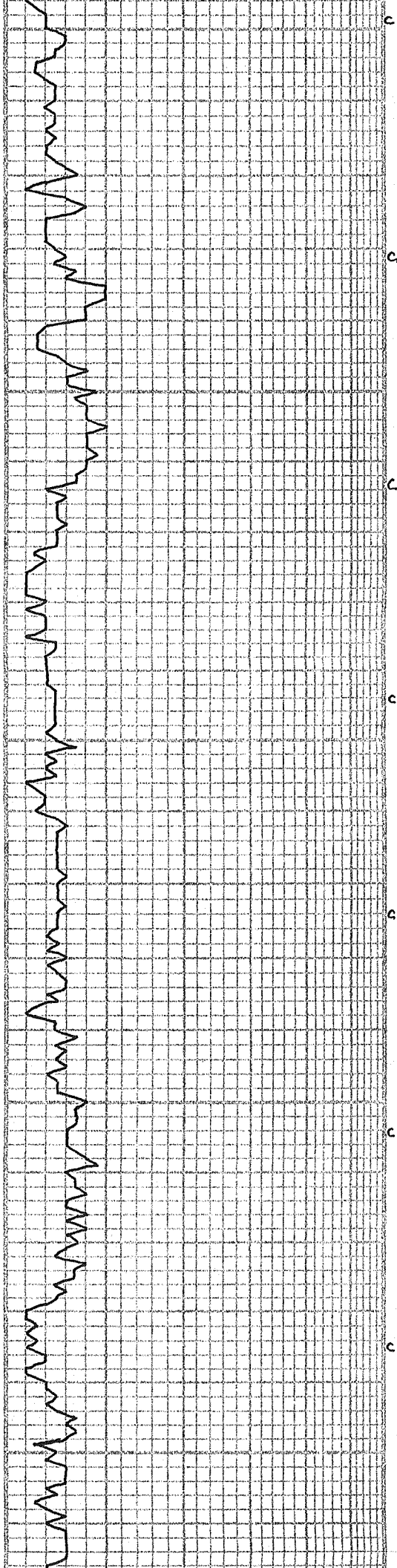
c

c

3600

STOTLER  
3618-1099

BIT TRIP @ 3320'  
(PLUGGED BIT)



3700

DEV 1/2°

3800

MUD CHECK  
VIS 118 WT 8.65  
CHLOR 1,900 LCM 4  
FILT 7.2



4100

LS, CRM, WHT, F → M XTLN, SOFT,  
CHLKY, GØ, NS

LS, LT GRY, F → M XTLN, HRD,  
DNS, V FOSS, TITE, NS

A.A

LS, WHT / CRM, VF XTLN, V HRD,  
V DNS, V FOSS, TITE, NS

A.A.

Δ Δ CHT, LT GRY

Δ Δ  
Δ Δ  
Δ Δ  
Δ Δ  
Δ Δ

4200

SH, GRY

LS, WHT, VF XTLN, DNS, SL CHLKY,  
HRD, TITE, NS

SH, BLK

LS, BUFF, GRY / TAN, FXTLN,  
W / MIXED M XTLN, NO V.S Ø  
NS

LS, TAN, VF XTLN, V OOL + FOSS,  
FOSS PRAGS, V W CMT & TITE NS

LS, LT GRN / GRY, VF XTLN, HRD,  
DNS, SL GRN / TXT, NO APP Ø  
NS

HEEBNER  
4278 - 1759

SH, BLK

LS, WHT, VF XTLN, V HRD, BLK  
MINS W / N, TITE, NS

TORONTO  
4293 - 1774

SH, GRY

LS, TAN / GRY, VF XTLN, DNS,  
CRYPTO XTLN, TITE, NS

4300



0 1 0  
0 1 0  
0 1 0  
0 1 0  
0 1 0  
CHALK

LS, WHT, F → M XTLN, G XTLN φ NS

C  
DOUGLAS  
4341 - 1822

SH, GRY, GRN

LS, WHT, V F XTLN, DNS, HRD,  
BR TL, V OOLY FOSS, W CRT'D  
FOSS, NO APP φ, NS

SH, GRY, BURG / BRN

SH, GRY, CARB PCS

7:AM 8-6-12  
DRLG @ 4386'

4400

MUD CHECK

C  
BROWN LIME  
4407 - 1898  
LANSING

LS, TAN, F XTLN, HRD, V FEW FOSS,  
? φ, NS

VIS 57 WT 9.0  
CHLOR 6,700 WCM 2 1/2  
FILY 10

4414 - 1895

LS, WHT, CRM, F XTLN, SL FOSS,  
HRD, DNS, TITE, NS

LS, WHT, F → M XTLN, CRUMBLY,  
G INT XTLN φ, NS

SH, GRY

C  
4458 - 1939

LS, BUFF / BRN, MAFIC MINS w/n,  
HRD, SL BR TL, NO VIS φ, NS

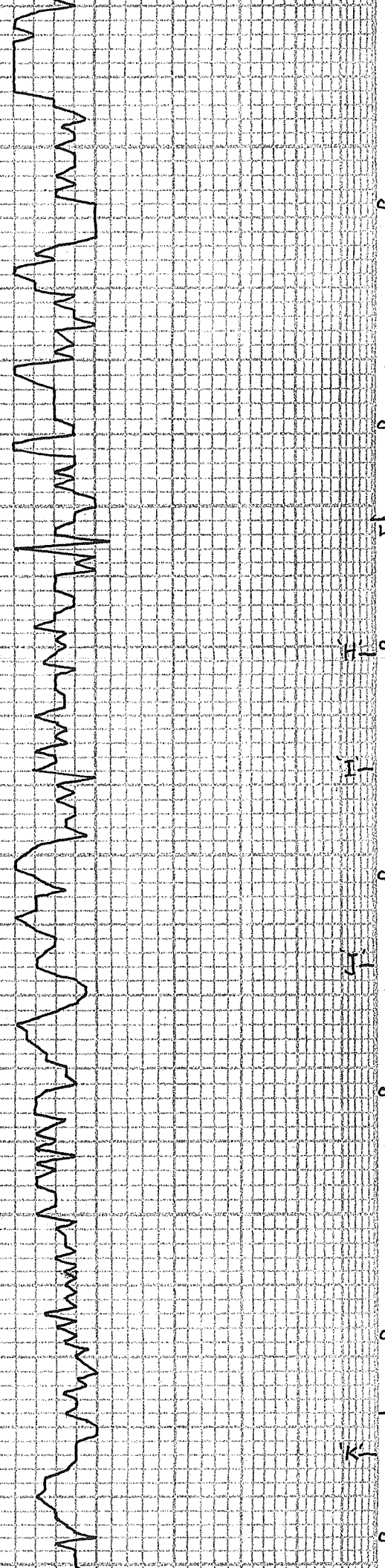
LS, GRY, WHT, V F XTLN, DNS, HRD,  
TITE, NS

SH, GRY

4500

LS, TAN, V F XTLN, CRYPTO, SCT  
FOSS, HRD, DNS, NS

LS, TAN, BUFF, F XTLN, V FOSS,  
ABUN CORAL, G FOSS φ, NS



LS, SANDY GRNS, WHT, V SOFT, V G Ø, FRIABLE, NS

LS, LT TAN, CRYPTO, V HRD, DNS, TITE, NS

LS, TAN, WHT, BUFF, V FXTLN, DNS, V HRD, TITE, NS

MUNCIE  
4600  
4602-2083

LS, WHT, CRM, BUFF, FXTLN, HRD, Pcs SCT CHLK, NS

SH, GRY, DK GRY

LS, BRN, V FXTLN, DNS, V HRD, TITE, NS

LS, BRN, WHT, FXTLN, HRD, NO VIS Ø NS

SH, GRY/GRN

LS, BRN, WHT, FXTLN, HRD, NO VIS Ø NS

LS, WHT, FXTLN, Pcs CHLKY, V ΔTY, NO VIS Ø, NS

LS. A.A.

LS, TAN/GRY, V FXTLN, DNS, HRD, TITE, NS

4700

LS, CRM, BUFF, FXTLN, V FOSS, VARISIZE FOSS, SCT PITTED → VUG Ø, NS

LS, TAN, BUFF, V FXTLN, FOSS LAYER ON EDGES, G FOSS Ø, MOSTLY TITE, NS

STARK  
4728-2209

SH, DK GRY, BLK

LS, GRY, V FXTLN, DNS, HRD, TITE, NS



LS, TAN, WHT, VFXTLN, SL FOSS,  
TITE, NS

HUSHPUCKNEY  
4773-2254

SH, BLK

Δ Δ CHT, V FOSS, SL OOL, TITE,  
FRESH, NS

LS, CRM, FXTLN, HRD, TITE

4800

LS, BUFF, FXTLN, S → M HRD,  
CRUMBLY, BRTL, P OF INT  
XTLN φ, NS

SH, GRV, GRN

LS, BUFF, TAN, CRM, S → M HRD,  
V FOSS, SL ALGAL, FCMT'D  
FOSS, VP FOSS φ, NS

LS, WHT, BUFF, M HRD, F → M  
XTLN, FOSS, FCMT'D FOSS,  
P FOSS φ, NS

SH, DK GRV

MARMATON  
4872-2353

LS, WHT, MXTLN, BRTL, SL HRD,  
V FOSS, FOSS CASTS, F φ, NS

ALTAMONT  
4888-2369

SH, GRV, GRN, SL SLTY

LS, TAN, VFXTLN, CRYPTO, V DNS,  
V HRD, TITE, NS

4900

SH, GRV

LS, BUFF, VFXTLN, HRD, BRHT VLLW  
FLUOR, FLUOR SAT STNG, TITE NO ODOR

LS, SAT FLUOR STNG, FIBROUS  
RESIDUE, FEW FO DROPS ON BRK NO ODOR

PAWNEE  
4946-2427

SH, GRV, BLK

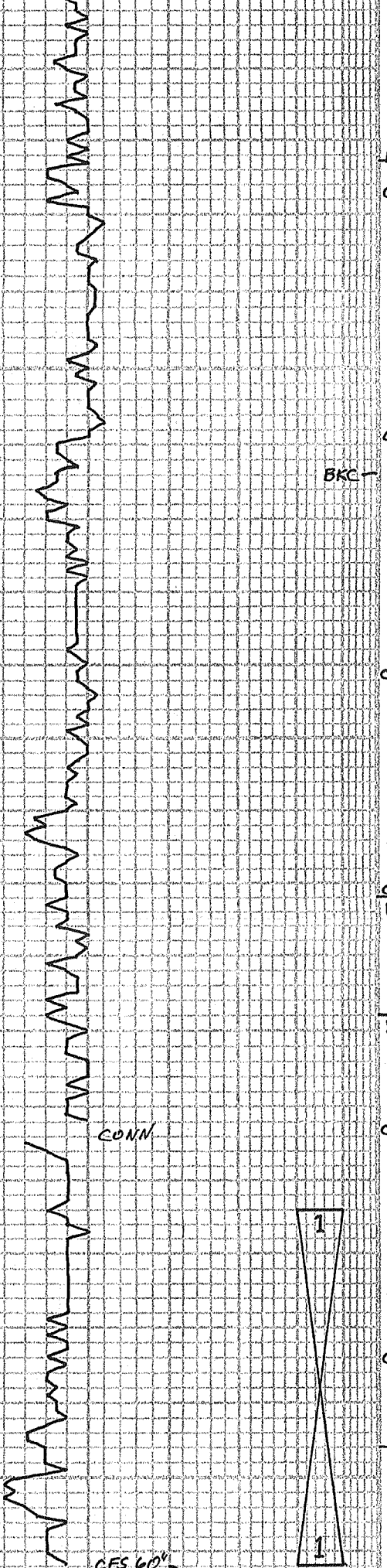
LS, BUFF, CRM, VFXTLN, V DNS,  
SPTY FLUOR STNG, TITE, NO FO  
ON BRK NO ODOR

LS, BUFF, VFXTLN, DNS, HRD,  
NO APP, NS

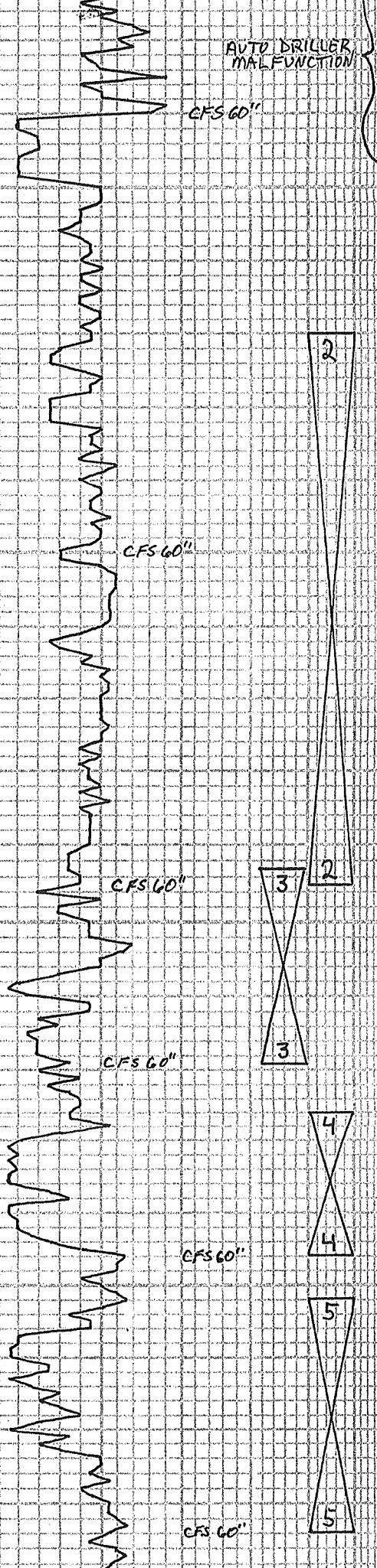
A.A.

7:AM 8-7-12  
DRLG @ 4784'  
MUD CHECK  
VIS 79 WT 9.2  
CHLOR 7,800 WCM 2  
FILT 13.2

7:AM 8-8-12  
DST #1 4962-TD  
MUD CHECK



GEOLOGRAPH  
HUNG UP



Ft Scott  
4975-2456

LS, CRM, TAN, VFXTLN, M HRD,  
Pcs CHLKY, NO VIS Ø, NS  
LS, GRN, FXTLN, HRD, V FEW  
FOSS, TITE, NS

VIS 46 WT 9.4  
CHLOR 8,400 LCM 2  
FILT 15.2

AUTO DRILLER  
MALFUNCTION

CHEROKEE  
4990-2471

SH, GRN, GRN

DST #1 19 STND SHTRIP  
STRAP  
BOARD

5000

LS, TAN, FXTLN, M HRD, LG  
UNCONSOL FOSS, PYR, NO  
APP Ø, NS

DST #1 4924-4962  
30.45.45.60

NS, CRM, VFXTLN, V HRD, DNS,  
TITE, NS

IF: 6" LSI: NR  
FF: BOB 40" FSI: NR  
REC: 60' SOWCM 1/0, 20%W  
75' WCM 40%W  
75' WCM 50%W

SH, BLK

LS, BUFF, FXTLN, V OOL, SML OOLS  
SPTY MICRO FLUOR ED ON BRK,  
DULL FLUOR STNG, F INT OOL Ø,  
GAS BBL, LT BRN STNG, NO VIS ENERGY

V LT  
ODOR  
M BRN  
OIL

FP: 95-133, 137-180  
SIP: 1093-1058  
HP: 2535-2393

SH, GRN, GRN, SLTY IN Pcs

SH, BLK, FISSLE

LS, CRM, SL OOL / FOSS, HRD,  
WCMT'D FOSS, NO APP Ø, NS  
SCT WHT, BRN CHT

7:AM 8-9-12  
DRLG @ 5055'  
MUD CHECK  
VIS 56 WT 9.4  
CHLOR 9,800 LCM 1  
FILT 11.6

LS, TAN, VFXTLN, DNS, HRD, TITE  
NS

Huck  
5083-2564

LS, TAN, VFXTLN, DNS, V HRD, RE  
XTL'D FRACS, SL FRAC Ø, NS

LS, AA, FLUOR EDGE & SCT SURE  
STNG, Pcs FLUOR Ø DROPS ON BRK,  
VV FNT ODOR

FLUOR  
FNT ODOR

7:AM 8-10-12  
GIH W/BIT 5095'.TD  
MUD CHECK  
VIS 140 WT 9.35  
CHLOR 16,800 LCM 2  
FILT 16.8

ATOKA  
5100  
5097-2578

SH, GRN, GRN

LS, CRM, TAN, FXTLN, HRD, VSL FRAC'D,  
FLUOR STNG IN FRACS, NO ODOR, NS

SS, CLR GRNS, PCMT'D, F GRNS, BAN DD  
OIL STNG, NO ODOR, NO FO

SS, LG MULTI COLOR GRNS, UNCONSOL, NS  
SS, S M GRNS, CLR, SMOKE, GRN SPK'D,  
GASSY

38U HW  
25U C1  
5U C2  
3U C3?

7:AM 8-11-12  
GIH W/BIT @ 5119'.TD  
MUD CHECK  
VIS 95 WT 9.15  
CHLOR 13,600 LCM 2  
FILT 20.8

MISS  
5118-2599

CHT, WHT, WEATH, G BRN O STNG, G SHO  
GAS + LT BRN FO, NAT FO, SL FRAC'D,  
NO ODOR, Pcs SHARP + FRESH

GAS  
FO

CHT, WHT, FRESH, SHARP, NS

DOLO, TAN, GRNLR, SOFT, G GASSING,  
VILT FO, FO IN TRAY + CUP, VG SAT  
FLUOR STNG, DULL FLUOR FO, G  
PERM

GASSING  
LT FO

CHT, WHT, WEATH, HVY STNG IN  
WEATH Ø, NO FO, NO ODOR

HVY STNG

DST #2 5020-5095  
30.45.45.60  
IF: 7" LSI: NR  
FF: BOB WST FSI: NR  
REC: 30'M  
FP: 70-67, 67-71  
SIP: 707-1100  
HP: 2587-2338

LS, DOLD, TAN, FXTLN, SCT VUG Ø,  
SCT FO IN TRAY, LT ODOR, VG O + G W/  
HVY ODOR, DN BRK, LT BRN + FLUOR FO  
FO SPTS, SOFT, FIZZY GAS

ODOR  
GASSY  
FO

LS, AA, NO SHOW

LS, BUFF, FXTLN, M HRD, OOC, P Ø, NS

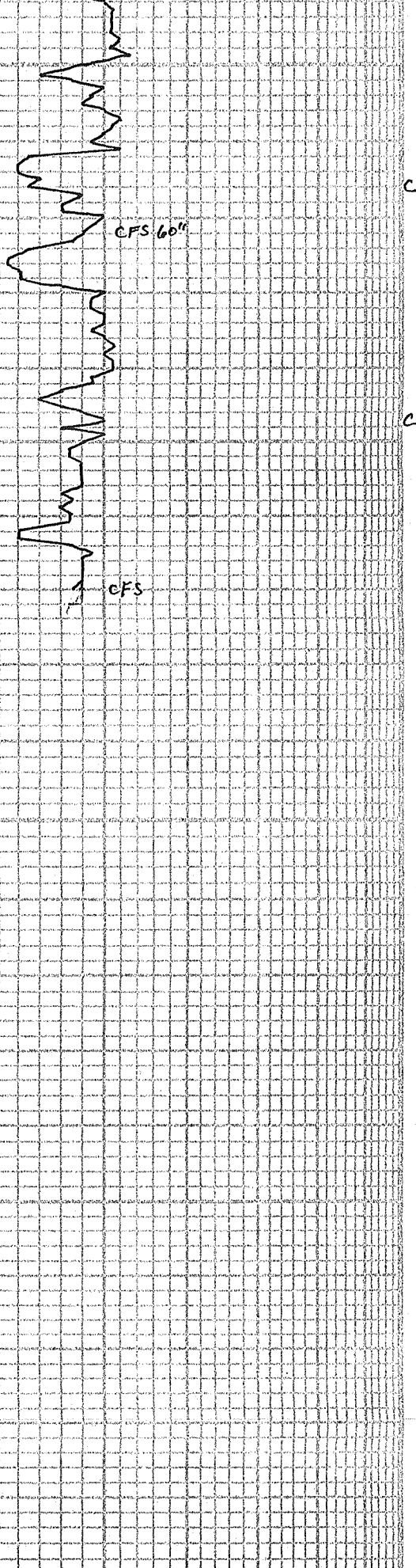
LS, CRM, VFXTLN, DNS, S M HRD,  
CHLKY, FLUOR DD Ø + SCT FO,  
FNT ODOR

FNT ODOR

LS, CRM, FXTLN, LG XTLs W/N, PCMT'D  
LG XTLs, M HRD, P Ø, NS

8-12-12 7:AM  
CFS @ 5184'  
MUD CHECK

5200



DEV 3/4°

DOLO, TAN, SUCR, HRD, TITE, NS

 CHT, WHT, TAN, CRM, WHT Pcs  
 W/FOSS, FRESH, NS

 LS. CRM, F XTLN, ABUN CRS FOSS  
 FRAGS, SOFT, CRUMBLY, F→G  
 FOSS Ø, NS

 DOLO, TAN, SUCR, VF GRNS, SOFT,  
 FRIABLE, VG Ø, NS

 LS, WHT, VF XTLN, DNS, HRD,  
 V FOSS, TITE, NS

 LS. WHT, VF XTLN, DNS, HRD,  
 V FOSS, TITE, SCT CHT, NS

 CHT, WHT, TAN, GRAY W/Δ FRAGS,  
 NO Ø, NS

CHLK

 CHT, WHT, TAN W/FINE FOSS + FRAGS  
 W/N, TITE, NS

 VIS 56 WT 9.0  
 CHLOR 14,800 LCMH  
 FILT 15.2

 DST#3 5093-5119  
 30.45-30.60  
 IF: BOB - 1 MIN ISI: NR  
 FF: BOB INST FSI: NR  
 GTS 10 MIN, ga. 120 MCF  
 REC: 80' M  
 FP: 76-201, 76-93  
 SIP: 1566-1534  
 HP: 2610-2439  
 GTS, GA. 120 MCF

 7:AM 8-13-12  
 DRLG @ 5254'

 MUD CHECK  
 VIS 53 WT 9.0  
 CHLOR 14,400 LCM2  
 FILT 16.8  
 TD @ 5270'  
 SHORT TRIP 5 STNDS

 DST#4 5126-5146  
 30.45-45.60  
 IF: BOB 1/2 MIN ISI: NR  
 FF: BOB INST FSI: NR  
 REC: 70' M  
 GTS ga 241 MCF  
 FP: 72-98, 87-97  
 SIP: 1296-1210  
 HP: 2586-2464

 DST#5 5152-5184  
 30.45-45.60  
 IF: BOB 2 MIN ISI: 1/2" BB  
 FF: BOB 1 MIN FSI: 1" BB  
 REC: 4984' GIP  
 20' G+OCMW  
 5%G, 20%O, 35%W, 40%M  
 90' WCMO  
 1%W, 49%M, 50%O  
 90' GCW+MO  
 10%G, 25%W, 25%M  
 25%O  
 FP: 77-116, 105-121  
 SIP: 1237-1206  
 HP: 2606-2449