

Max R. Lovely

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY Raymond Oil Co.
 LEASE Michaelis #2
 FIELD Rose Garden West
 LOCATION SE SE SE NW
 SEC 3 TWSP 14 RGE 32W
 COUNTY Logan STATE KS

ELEVATIONS
 KB 2840
 DF _____
 GL 2835
 Measurements Are All
 From KB

CONTRACTOR LD Drilling
 SPUD 4-7-14 COMP 4-19-14
 RTD 4655 LTD 4654
 MUD UP 3452 TYPE MUD Chem

CASING
 SURFACE 8 7/8" @ 261'
 PRODUCTION 5 1/2"
 ELECTRICAL SURVEYS
 DUAL IND, MICRO
 COMP N/D, SONIC

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION		
				A	B	C
Base Anhydrite	2344	2340	500	504		
Stotler	3468	3468	-628	-620		
Heebner	3819	3824	-984	-975		
Lansing	3864	3864	-1024	-1019		
Stark	4117	4115	-1275	-1254		
Marmaton	4215	4211	-1371	-1359		
FT. Scott	4373	4373	-1533	-1518		
Cherokee	4401	4401	-1561	-1545		
Johnson	4443	4446	-1606	-1588		
Base Johnson	4473	4476	-1636	-1616		
Mississippi	4541	4558	-1718	-1664		


REFERENCE WELLS FOR STRUCTURE


A Raymond Michaelis #1 1258'FNL, 836'FEL NE/4 3-14-32W
 B _____
 C _____

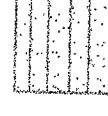
REMARKS

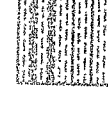
Blank lines for recording remarks.


LEGEND


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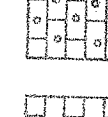
Anhydrite
- 


Salt
- 

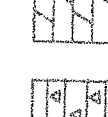
Sandstone
- 

Shale
- 

Carb sh
- 

Limestone
- 

Ool.Lime
- 

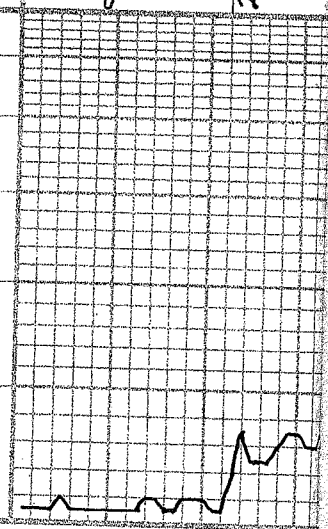
Chert
- 

Dolomite

DRILLING TIME IN MINUTES
PER FOOT

Rate of Penetration Decreases

5" 10" 15" 20" 25"



LITHOLOGY



DEPTH

ANHYDRITE
2322 +518

OIL SHOWS

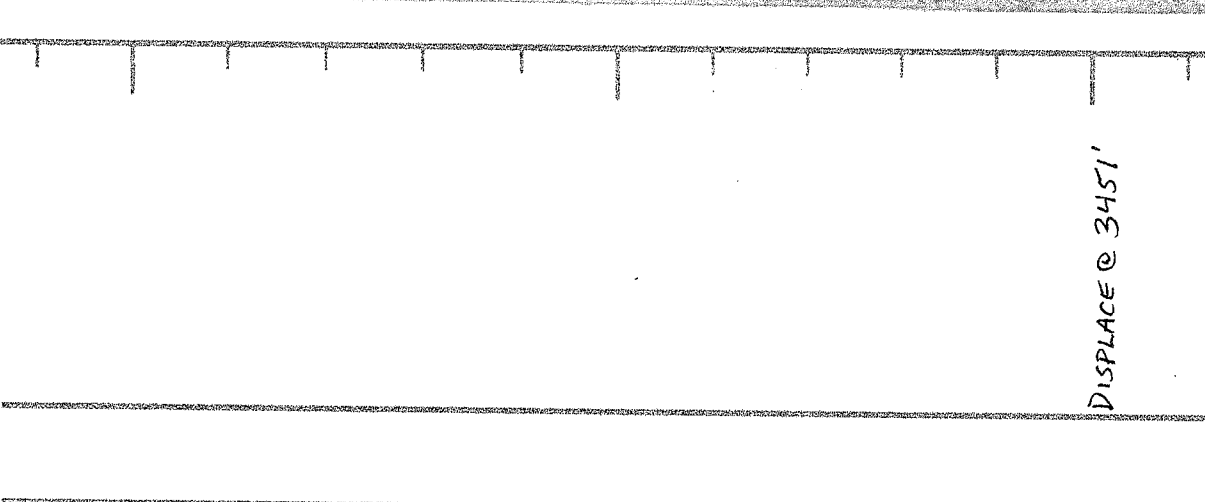
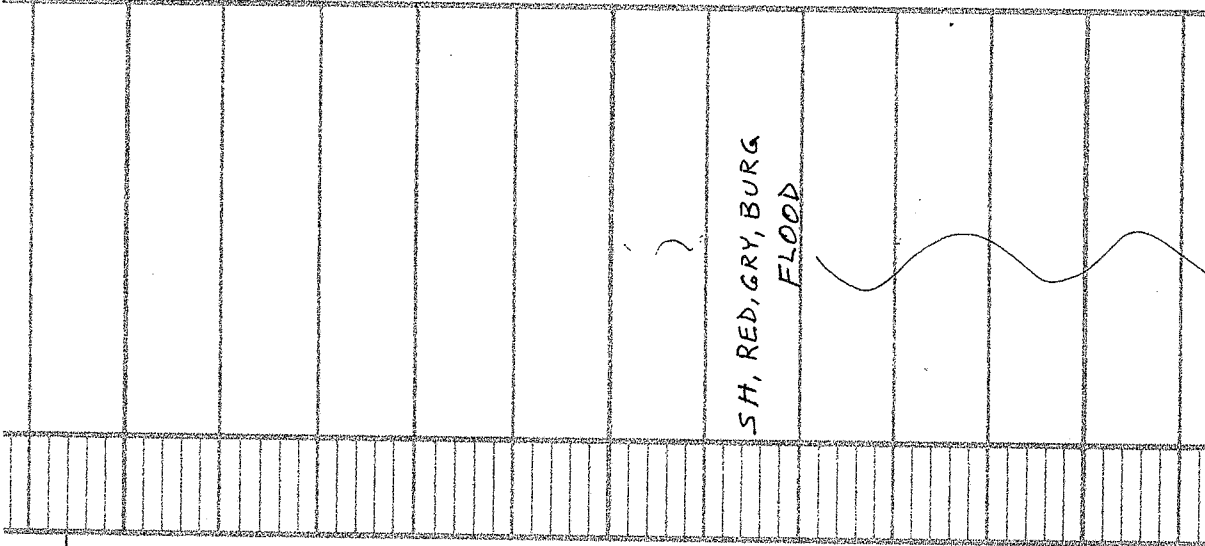
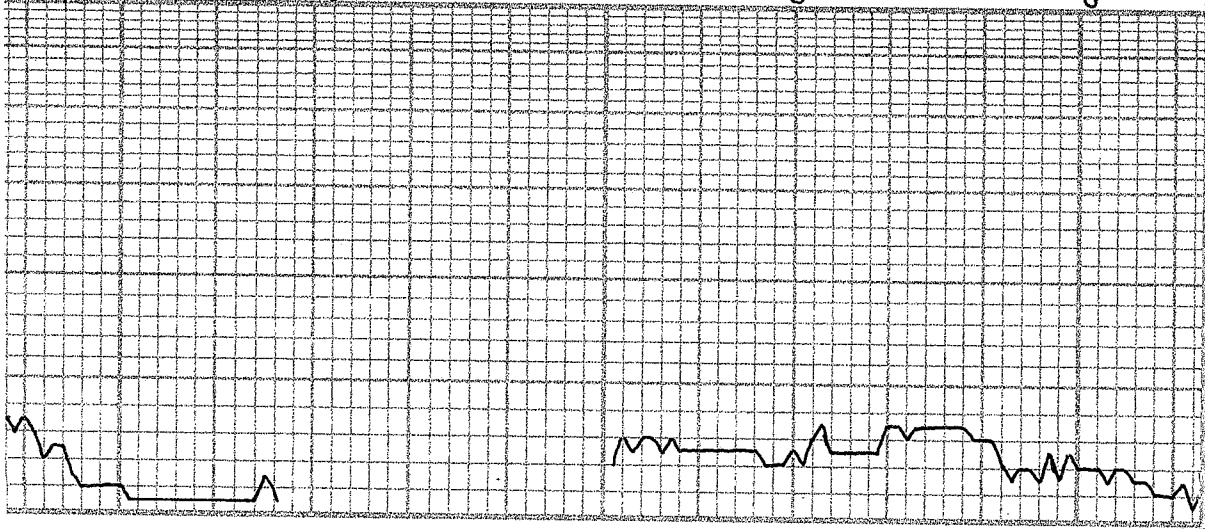
REMARKS

BASE
ANHYDRITE
2344 + 496
2350

3400

SH, REDIGRY, BURG
FLOOD

DISPLACE @ 3451'



SH, GRY, LT GRY

SH, AA.

LS, CRM, TAN, F → M XTLN, M HRD
BRTL, SCT WHT CHT

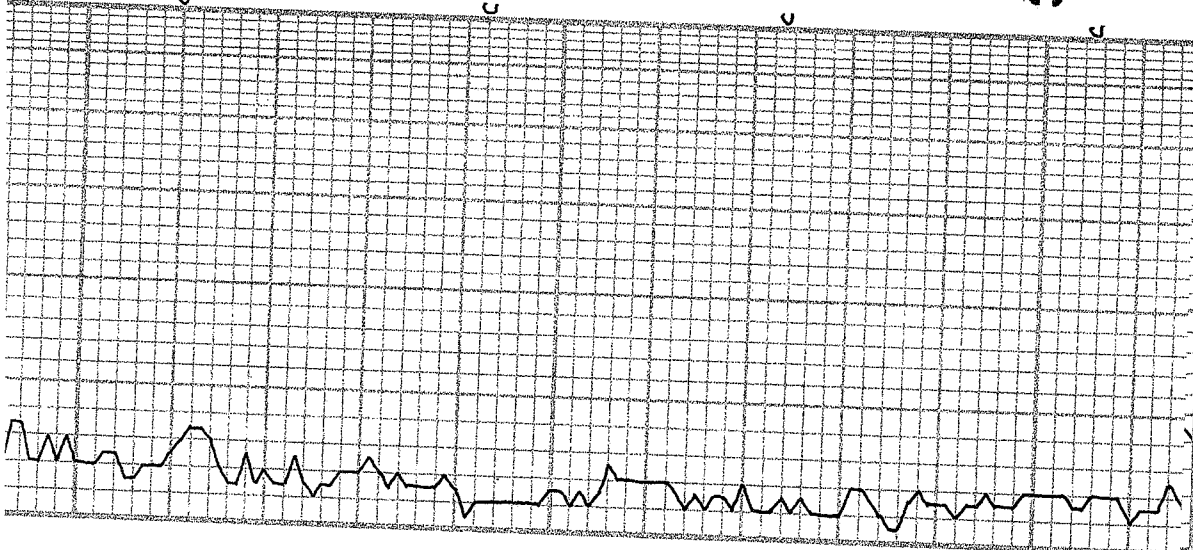
NO SAMPLES

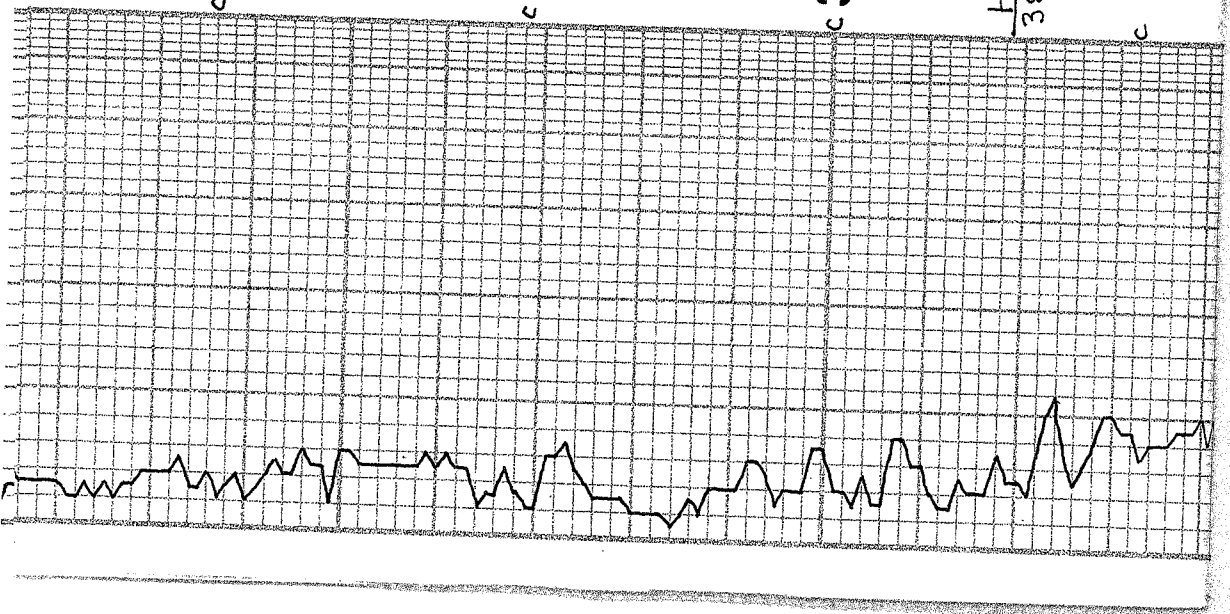
LS TAN, BRTL - SOFT, FXTLN,
Pcs SCT VUG @ .NS

SH, GRY

3600

3700





3800

HEEBNER
3819-979

7:AM 4-12-14
DRLG @ 3774'

SH GRV

LS. CRM, V CHLKY, SOFT, NS

LS. WHT, CRM, F XTLN, SOFT,
LG PBLS W/N, P → F, NS

LS. TAN, VF XTLN, DMS, HRD, TITE
NS

LS. TAN, CRM, ALGAL, SOFT,
BRITL, VG P, NS

LS. CRM, F XTLN, SOFT, V CHLKY,
NS

LS. CRM / TAN, F → M XTLN, SOFT,
BRITL, V FOSS / ALGAL, G FOSS
NS

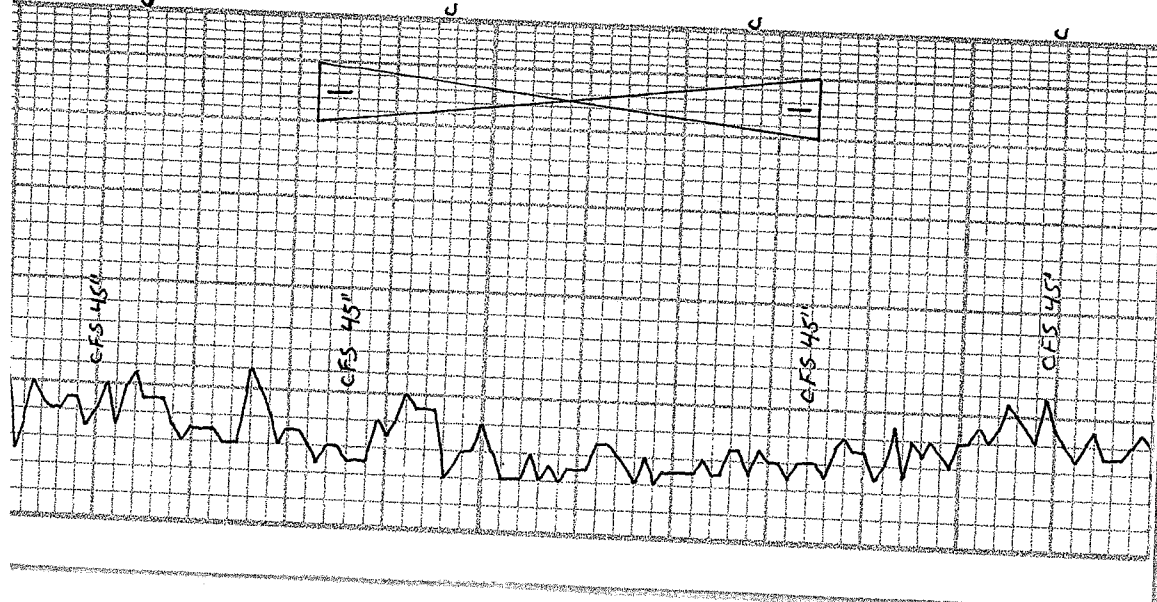
SLTSTN, CRM / WHT

LS. TAN, BRN, F → M XTLN, BRITL,
FOSS, NS

SCH. BLK

LS. BRN, F XTLN, DMS, HRD, A BUN
FOSS + FRAGS, TITE, NS

LS. WHT, V E XTLN, DMS, HRD, NP, FOSS



LAWNSING
3864-1024

3900

DEV 1/4

LS, WHIT, GRABBY, STAMP, F, XTLN, HRD, ND VIS P, NS	LS, WHIT, VE, XTLN, S, M HRD, STRKS OF PP → SML VUG, PK & LT OIL FILL, TR GAS, LT ODOR, F → G, F O N BRK	LS, TAN, F, XTLN, M HRD, SL BRTL, FOSS, P, SGT P, NS	LS, BUFF, M, XTLN, M HRD, SGT VG XTLN, LT SHG, VLT OIL	SH, BLK, STICKY, CARB S, BRN, F, XTLN, M HRD, EVEN FLUOR STN, G, FLUOR F O N BRK, VLT FLUOR FO, 2 PCS W/ VG FLUOR SAT STNG & DIL FILL, TR GAS, PC
CHI, WHIT, GR, Y, BRN, SGT FOSS, NS	TRASHY SAMPLES			CHLKY W/ SHO
LS, WHIT, F, XTLN, HRD, V FOSS, 400L W CMTD FOSS, TITE, NS				20" LS, CRM / WHT, F, XTLN, HRD, G, EVEN FLUOR STNG + F O N BRK
LS, CRM, F, XTLN, DNS, HRD, ABUN SML FOSS + FRAGS, W CMTD, TITE, NS				LS, DK, TAN, VE, XTLN, CLEAN LS, DNS, V HRD, TITE, NS
				LS, CRM, WHT, VE, XTLN, DNS, HRD, TITE, NS

RAWBOW
FO N CUP
LT ODOR

2 PCS

LT ODOR

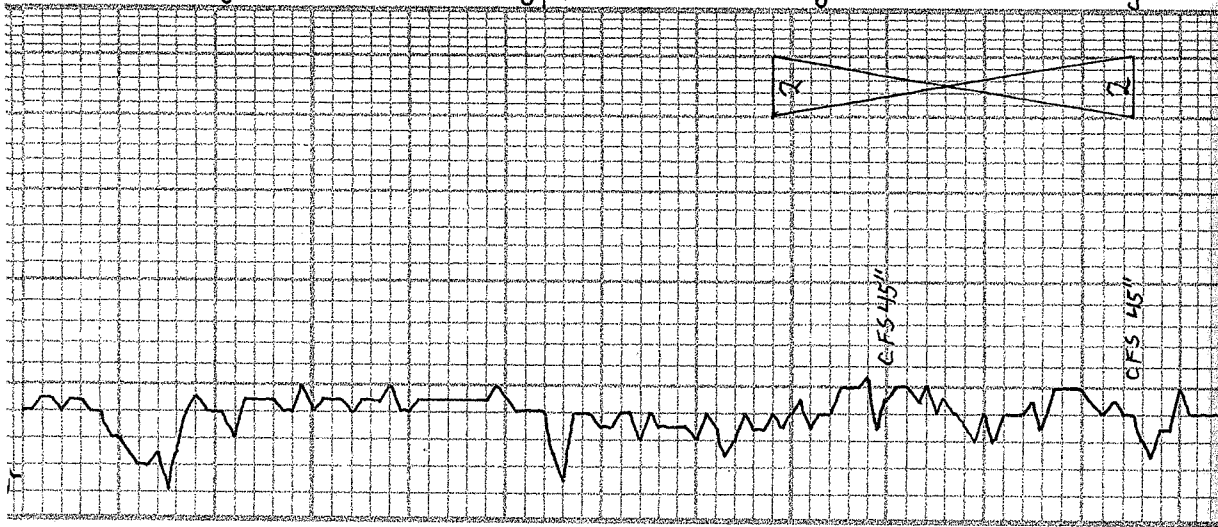
JET #1- ADD MUD
MUD CHECK
VIS 51 WT 8.9
CHLOR 3,500 LCM1
FILT 6.4

DST #1 3882-3934
30.60:45:90
IF: BOB.6MIN 151.NR
FF: BOB.7MIN F51.NR
REC: 1150' MW
45,000 CHLOR
FP: 19-260, 264-510
SIP: 1032-1019
HP: 1826-1820

STRAP BOARD 3959.15
3959.46
short .31

7:AM 4-13-14
DST #1 @ 3934'

MUD CHECK
VIS 64 WT 9.2
CHLOR 4,000 LCM1
FILT 6.4



4000

C MUDLOG
4024 - 1184

LS, WHT, F XTLN, M HRD, BRTL, SCT PP XTLN, NS	LS, CHLKY, WHT, SOFT, NS	LS, WHT, LT GRY, F XTLN, V HRD, DMS, NS	A.A.	A.A.	SH, BLK	LS, BRN, TAN, F XTLN, HRD, EASS, SCT P XTLN, NS	LS, CRM, LT GRY, VF XTLN, DMS, V HRD, TITE, NS	LS, RED/BRN, VF XTLN, V DMS, V HRD, TITE, NS	LS, WHT, F XTLN, MTD DOLS + FOSS, HRD, G SCT DK COATS VUGS, SCT PLS OIL FILL PP, NS SOME SCT FO N TRAY, F FOUBR	LS, WHT → LT GRY, VF XTLN, V DMS, V HRD, TITE, NS	LS, WHT, SLE GRYS W/L M HRD
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JET #1 - ADD PREMIX

DST #2 41048-41085
30.60.45.90
IF: DEAD N 10 MIN
FF: DEAD
REC: 2' M
FP: 8-5, 6-6
SIP: 40-26
HP: 1912-1903

7:10 AM 4-14-14
DST #2 @ 4085
MUD CHECK

4100

C STARK
4117 -1277

C HUSHPUCKNEY
4148 -1308

BKC

4200
4196 -1356

C MARMATON
4215 -1375

BRU FO

SOFT POS W/MICRO FLAVOR FO
SH, GRAY, GRN

LS GRAY, VF XTLN, V DWS + HRD,
VW CMT'D FOSS, TITENS

SH, BLK, GASSY

LS TAN, FXTLN, HRD, FEW PCS W/
FLOR EDGE STNG, NSFO, NO ODOR
LS, AA, FEW PCS W/SET FLAVOR STN +
MICROED SPTE

LS, WHT, VF XTLN, DWS, HRD, CLEAN
LS, TITENS

SH, BLK, STICKY

LS, WHT, SOFT, F M XTLN, G EVEN
BRN STNG, G OIL FILL XTLN
LS, CRM, F XTLN, S M HRD, BR TL,
G EVEN, BRN STNG, SCT OIL FILL, PPM
V SL BLEED -> VG GASSY + SL DULL
FLOR STNG + FO BLEED

LS, GRAY, VF XTLN, V HRD, DWS,
CLEANLS, TITE, NS

LS, WHT, F M XTLN, M HRD, FOSS

SET LG BLK MIN W/M, P XTLN
NS

LS, CRM, GRAY, F M XTLN, HRD,
PCS G XTLN PWS

LS, TAN, FXTLN, DWS, HRD, NO
APP OINS

LS, BUFE, FXTLN CMT'D ODS
+ FOSS, HRD, W CMT'D, TITE

CASSY
SH

STR
ODOR
BLEED

STR
ODOR
FO-TRAY
RAINBOW

CHLOR: 4500
FILT: 6.4

LCM: 1

7:AM 4-15-14
DST #3 @ 4165

MUD CHECK

VISSZ WT: 91.3

CHLOR: 4,400 LCMV

FILT: 7.2

DST #3 4145-4165
30.60.45.90

IF: 4" ISI: NR

FF: 4 1/2" FSI: NR -> SURF BB

REC: 35 GIP

20 CO - 280 API

8 HOCM - 20% OIL

FP: 6-9, 14-14

SIP: 1012-990

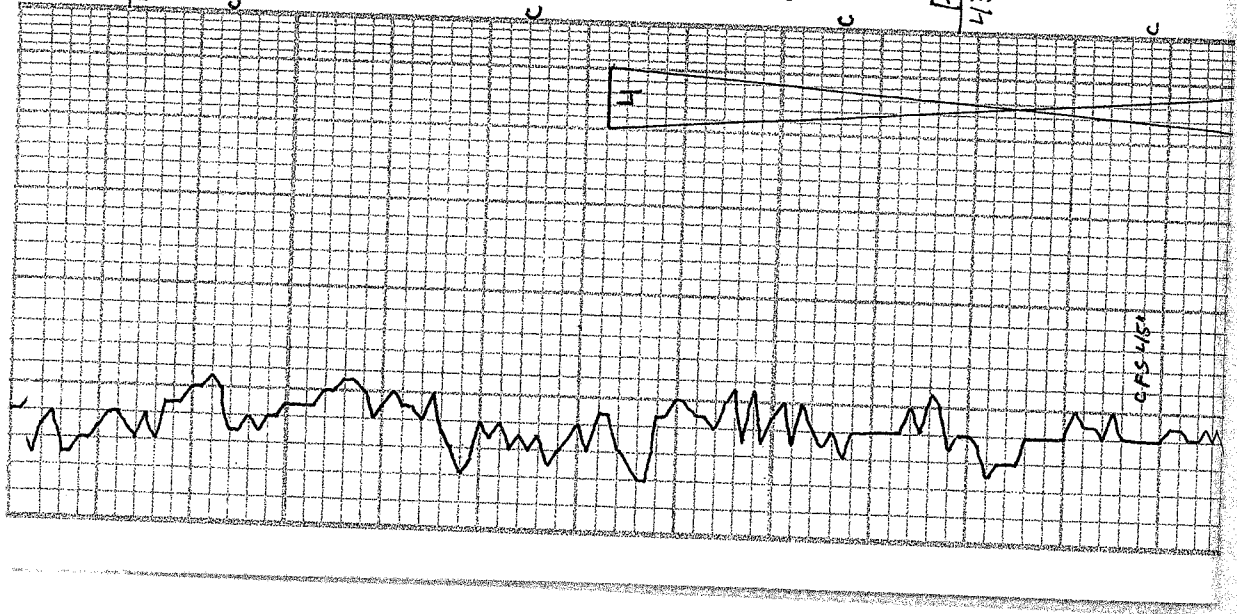
HP: 1959-1933

CFS 450

CFS 450

CFS 450





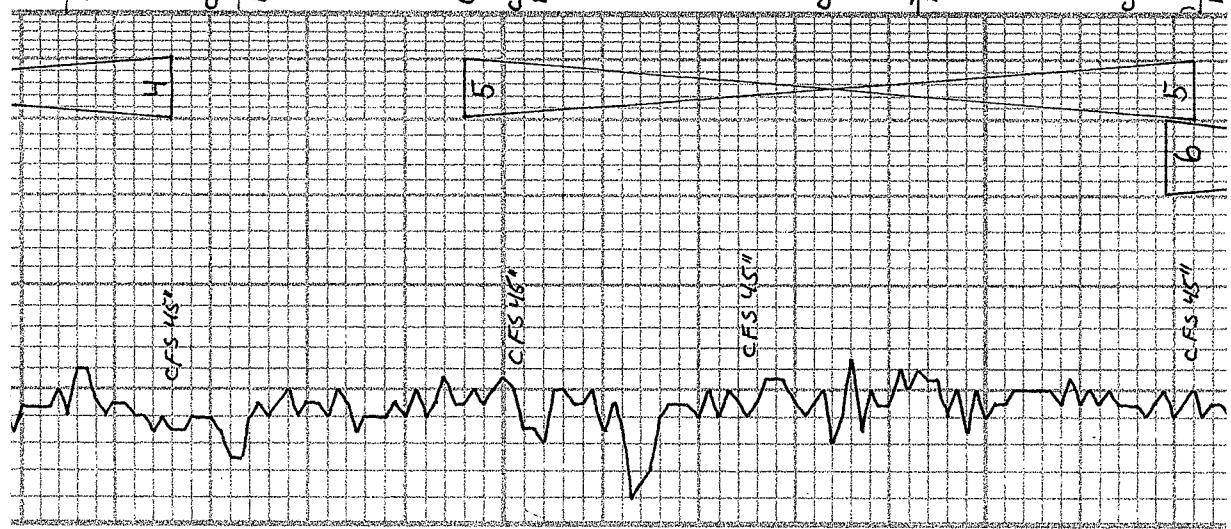
ALTAHMENT
4232 - 1392

4300

PAWNEE
4318 - 1478

SH. GRAY	NS
LS, YELLOW BUFF, F → M XTLN, SOFT F → G XTLN Ø, F → G INT XTLN, RING	
SS, F GRUS, W SORT, WHT, TAN, + GRY CMT'S, P CMT'D, FRIABLE, SOFT, G. M.S.	
AA - SLTY, SHLY	
LS TAN, CRM F XTLN, DNS, HRD, FEW SCT PCS W/ FOSS, NO APP	NS
LS, GRY/WHT, V F XTLN, DNS, HRD, TLTE, NS	
LS, GRY, BRN, F XTLN, HRD, SCT FOSS, SCT PP → SML VUG Ø, SCT BRN OIL STNG, F → P FO ON BRK, NO ENERGY	LT ODOR
LS, BUFF, TAN, F XTLN, NS SH, GRY, GRN	
SH, GRM GRY	
SH, GRY, DK GRY LS, BUFF, F XTLN, S → M HRD, VG. OIL SPTRD PP XTLN Ø, F FO ON BRK, NO V'S ENERGY, DULL FLOOR, SCT WHT ORA CRCH	G ODDOR RAINBOW SPTS
20" IPC DNS W/OIL FILL VUG Ø. GSY BAFED	G ODDOR DK OIL
LS, BRN, V F XTLN, DNS, HRD, TITE NS	
LS, BRN, F XTLN, HRD, V FOSS, W, CMT'D, FOSS, PCS BRTL, NO	

D ST #4 4282-4366
30.60.45.90
IF: DIED 10 MIN
FF: dead, flush, dead
REC: 25' 50 SM
TOOL: M w/ TR OIL
FP: 7-12, 12-17
SP: 1073-1072
HP: 2060-2049



MYRK
4355 - 1515

c FT. SCOTT
4373 - 1533

CHEROKEE
c 4400
4401 - 1561

c JOHNSON
4443 - 1603

c BASE
JOHNSON
4473 - 1633

LS, CRIM, VF XTLN, V DMS, V HRD, SL FOSS, SST EDGE + FRAC FILL OIL + STNG, NO V.S.G, NO ENERGY

LS, WHT, VF XTLN, DMS, HRD, G. VUG + FRAC FILL OIL, TR GAS, LT MED BRN OIL, G OIL ON BRK, PP XTLN

SH, BLK

LS, TAN, BRN, VF XTLN, HRD, ABUN FOSS + BOLS, W CMT'D FOSS, VP XTLN, B, NS

CHT, WHT, BRN, DPAQ, V FOSS, Pes SL AGATE

LS, DK BRN, CRIM, VF XTLN, DMS, HRD, TITE, NS

SH, BLK, GRY

LS, BUFE, ABUN, LG BOLS, F. CMT'D, FAIR STWD OOL, HRD, G FO ON BRK

LS, LT BRN, VF XTLN, DMS, HRD, SCT. PR. SML VUG, SCT. DK OIL STNG, Pes FO ON BRK

SH, BLK, GRY

A.A.

LS, CRIM/TAN, VF XTLN, V HRD, G VARI SIZE OIL CONT'D VUGS, P SHO FO ON BRK

LS, BRN, F + M XTLN, HRD, G OIL SAT, G PP XTLN, HRD, VY SFD ON BRK TR GAS

LS, GRY, VF XTLN, DMS, HRD, FEW FOSS, NO APP, NS

LS, GRY WHT, F XTLN W/ FRAGS + PBLS W/ V, HRD, NS

LS, TAN, GRY, F XTLN, DMS, HRD, TITE, NS

SS, WHT CMT, CLR GRNS. F + M GRAS

FAIR SHO
FO W CDP
VIT ODOR

G ODOR
ON BRK

LT ODOR

LT ODOR

A ODOR

7:AM 4-16-14
DST # 4 @ 4366
MUD CHECK
VIS: 54 WT: 9.3
CHLDR: 5,000 LCM 1
FILT: 9.2

DST # 5 4396-4472
30.60.45-90
IF: SURF BAO ISI: HR
FF: DEAD FSI: NR
REC: 10' M
FP: 8-15, 10-15
SIP: 810-776
HP: 2156-2145

7:AM 4-17-14
DLG @ 4460
MUD CHECK
VIS: 51 WT: 9.5
CHLDR: 4,500 LCM 1
FILT: 9.0

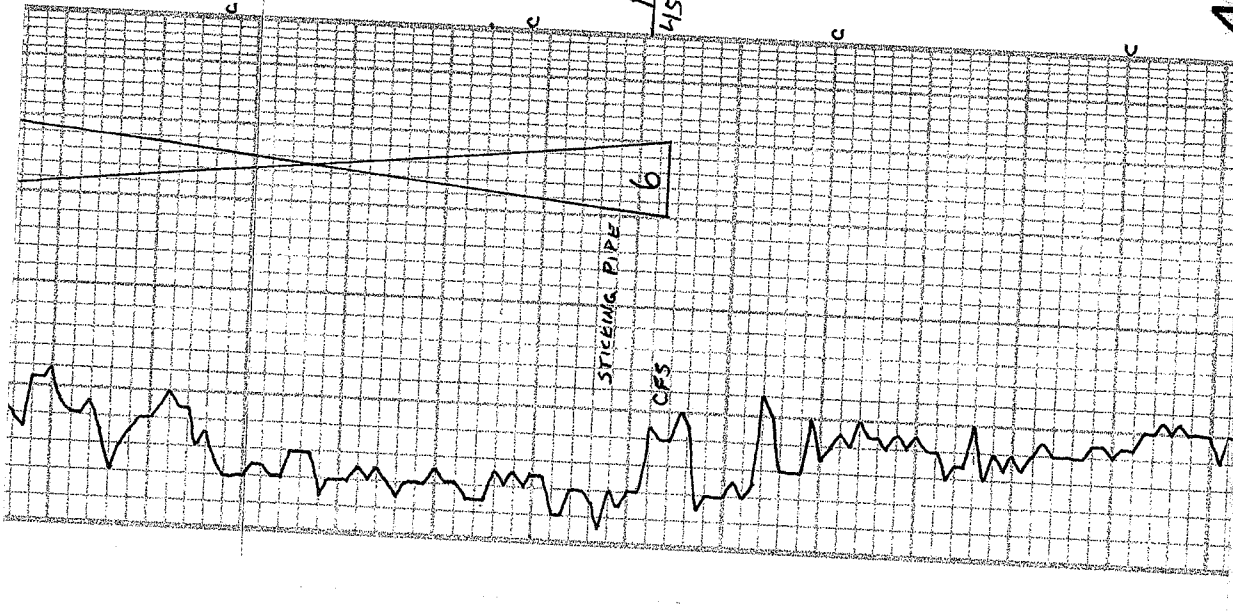
FAIR SHO
FO W CDP
VIT ODOR

G ODOR
ON BRK

LT ODOR

LT ODOR

A ODOR



4500

Miss
4541-1701

4600

PSORT, F. CNTID, G. INT GRNLR NS	
SH, VARI COLOR	
GRY, RED, GRN, MUSTARD	
SS, WHT, F. GRNS, HRD, VW CNTID, NO VIS. F. GRN	
LS, CRM, F. XTLN, HRD, TITE, NS	
SH, GRY	
SS, CLR GRMS, PSORT, SUB ANG, LG, EM GRNS, YC, G, FO + ODOR, G BLEED, BRN OIL, GASSY, LT FLUR	G. ODOR FO. TRAY FO. CUP
SS, CLR GRNS, WHT CNT, FINE GRMS, OIL SAT, LT BRN OIL, G. BLEED, GASSY BLEED	G. ODOR FO. CUP FO. TRAY
SS, CLR FINE GRNS, GRN SLTY CNT, FRABLE, NS	
LS, WHT, F. XTLN, C. HTY, HRD, NO VIS. F. MS	
SH, DK GRV (CHALKY - 3 OIL SHD)	
LS, CRM / TAN, M. XTLN, M. HRD, VP XTLN, NS	
M.A.	
LS, BUFF / BRN, VF XTLN, HRD, PES ABUN FOSS, TITE, NS	
LS, BRN, F. XTLN, HRD, SL BRTL, NO FOSS, TITE, NS	
LS, AA, GRY	

101.0.0

HVV ODOR ON BRK
HVV RAINBOW

7:AM 4-18-14 VISGO
DST#6 @ 4543' WT 9.2
MUD CHECK
VIS: 59 WT: 9.3
CHLDR: 5.000 LCM: 1
FILT: 7.2

DST#6 4469-4543
30.60.45.90
IF: BOB 5mm 151: BOB 23'
FF: BOB IMMED FS: BOB 16"
REC: 706' GIP
587' ... CGO - 15% G, 85% D
126 MCGO - 15% G, 60% D
Tool: 100% DIL 320 API
FP: 13-143, 155-295

DIP: 115Z-1148
HP: 2133-2113

@TD - COMDY 2 HRS
7:AM 4-19-14
OUT FOR LOGGING

NO ODR
MSFO

LS.TAN, WHT, M XTLN, V BRIL
N PCS, NO VIS P, 3 BLK DD STNG

LS.BRM, VFXTLN, V DMS + HRD,
TITE, NS

LS.CRM, TAN, VFXTLN, V DMS + HRD,
TITE, NS

LS.TAN, F → M XTLN, SCT LG, XTLN
W/N, V BRIL, PINS

A.A.

CTD

