



Mudgrove

Petroleum Geology
212 Main Street, Claflin KS

NOTES

Company: RF Hembree Oil, LLC.

Lease: Schwartzkopf A#3

Location: W2-NE-NE-NE (330' FNL & 400' FEL)

Sec: 34 Twsp: 18S Rge: 24W

County: Ness State: Kansas

Field: McDonald Northeast

KB: 2301' GL: 2294'

Contractor: Pickrell Drilling Company, Inc. (Rig #10)

Spud: 11/15/2016 Comp: 11/24/2016

RTD: 4328' LTD: 4329'

Mud Up: 3500' Type Mud: Chemical

API #: 15-135-25932-00-00

Samples Saved From: 3600' to RTD

Drilling Time Kept From: 3600' to RTD

Samples Examined From: 3600' to RTD

Geological Supervision from: 3600' to RTD

Geologist on Well: Wyatt Urban

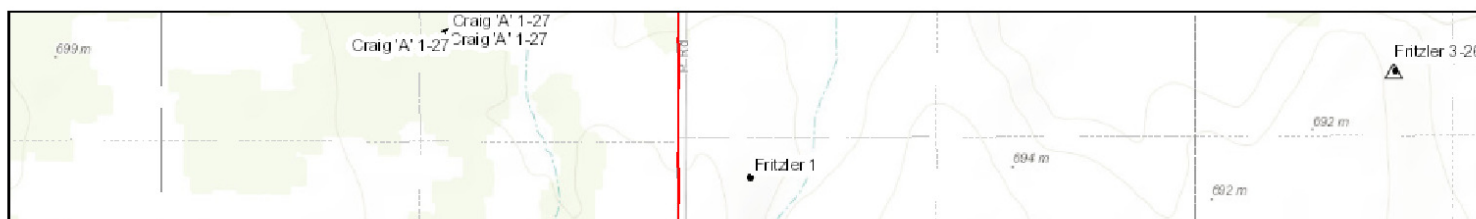
Surface Casing: 8 5/8"@ 210'

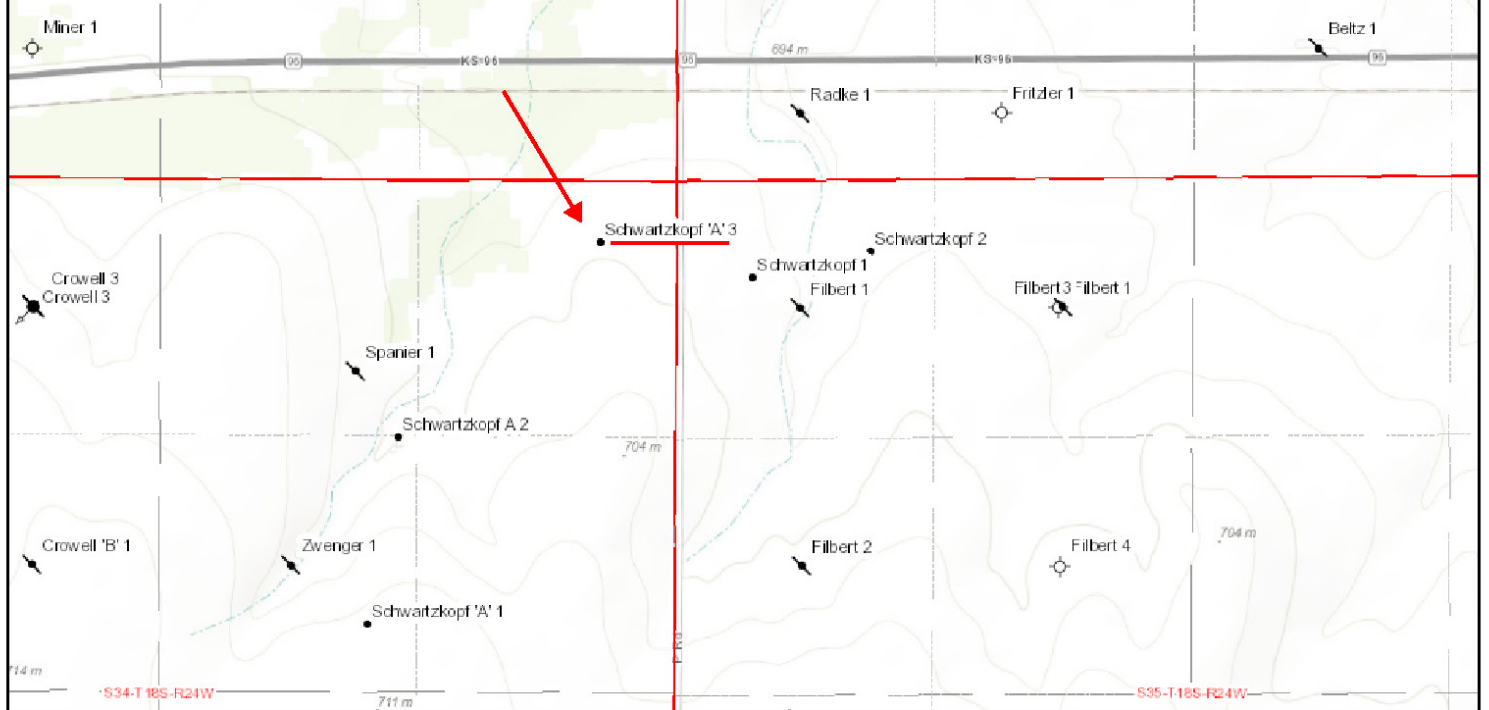
Production Casing: 5 1/2" @ 4316'

Electronic Surveys: Logged by Pioneer: DIL, MEL, CNL/CDL

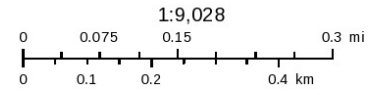
Local Area Map

RF HEMBREE OIL- SCHWARTZKOPF A#3





November 28, 16



Well Comparison

RF HEMBREE OIL, LLC

DRILLING WELL					COMPARISON WELL				COMPARISON WELL			
RF HEMBREE-SCHWARTZKOPF "A"3					RF HEMBREE- SCHWARTZKOPF 1				RF HEMBREE- SHCWARTZKOPF #2A			
● W2-NE-NE-NE oil 34-18S-24W					● SE-NW-NW-NW oil 35-18S-24W				● SE NE SE oil 34-18S-24W			
2301 KB					2302 KB		Structural Relationship		2308 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
ANHYDRITE	1557	744	1557	744	1559	743	1	1	1570	738	6	6
B. ANHYDRITE	1593	708	1593	708	1594	708	0	0	1604	704	4	4
HEEBNER	3681	-1380	3680	-1379	3679	-1377	-3	-2	3690	-1382	2	3
TORONTO	3703	-1402	3698	-1397	3701	-1399	-3	2	3710	-1402	0	5
LANSING	3721	-1420	3720	-1419	3721	-1419	-1	0	3737	-1429	9	10
BKC	4014	-1713	4013	-1712	4016	-1714	1	2	4028	-1720	7	8
MARMATON	4057	-1756	4056	-1755	4055	-1753	-3	-2	4068	-1760	4	5
PAWNEE	4138	-1837	4141	-1840	4137	-1835	-2	-5	4155	-1847	10	7
FT. SCOTT	4213	-1912	4210	-1909	4214	-1912	0	3	4224	-1916	4	7
CHEROKEE SH	4241	-1940	4240	-1939	4239	-1937	-3	-2	4253	-1945	5	6
MISS	4314	-2013	4314	-2013	4310	-2008	-5	-5	4329	-2021	8	8
MISS DOL.	4317	-2016	4317	-2016	4313	-2011	-5	-5				
RTD	4328	-2027	4328	-2027	4332	-2030	3	3	4340	-2032	5	5
LTD	4329	-2028	4329	-2028	4363	-2061	33	33				

DST #1

	DRILL STEM TEST REPORT	
	RF Hembree Oil LLC	34-18-24 Ness, Ks
	P.O. Box 542 Ness City, Ks 67560	Schwartzkopf A #3
	ATTN: Wyatt Urban	Job Ticket: 65642 DST#: 1 Test Start: 2016.11.23 @ 09:56:26

GENERAL INFORMATION:

Formation: Ft Scott

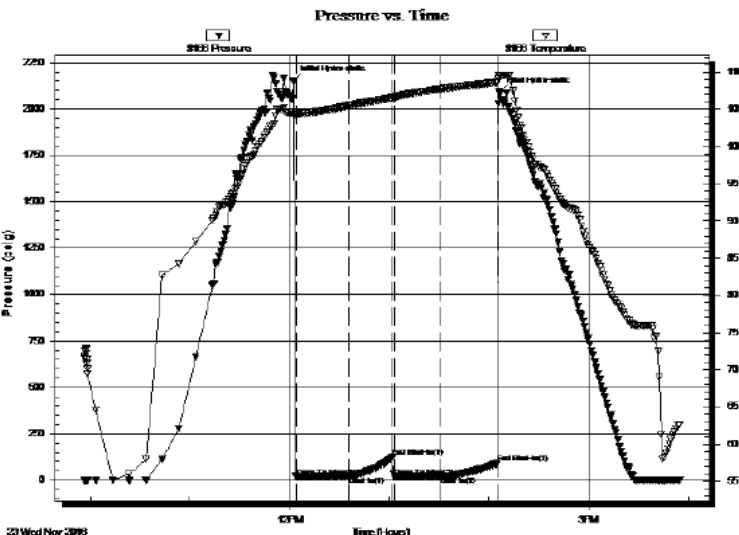
Formation: **FL Scott**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:03:56
Time Test Ended: 15:54:56
Test Type: Conventional Bottom Hole (Initial)
Tester: Brandon Turley
Unit No: 79
Interval: **4196.00 ft (KB) To 4240.00 ft (KB) (TVD)**
Reference Elevations: 2301.00 ft (KB)
Total Depth: 4240.00 ft (KB) (TVD) 2294.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 7.00 ft

Serial #: 8166

Outside

Press@RunDepth: 21.05 psig @ 4197.00 ft (KB)
Capacity: 8000.00 psig
Start Date: 2016.11.23 End Date: 2016.11.23
Start Time: 09:56:31 End Time: 15:54:55
Last Calib.: 2016.11.23
Time On Btm: 2016.11.23 @ 12:01:56
Time Off Btm: 2016.11.23 @ 14:05:56

TEST COMMENT: IF: 1/4 blow died in 19 min.
IS: No return.
FF: Surface blow built to 3/4.
FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2150.73	104.60	Initial Hydro-static
2	19.81	104.31	Open To Flow (1)
34	23.01	105.52	Shut-h(1)
60	123.79	106.52	End Shut-h(1)
61	18.23	106.53	Open To Flow (2)
89	21.05	107.74	Shut-h(2)
123	90.61	108.63	End Shut-h(2)
124	2092.52	109.57	Final Hydro-static

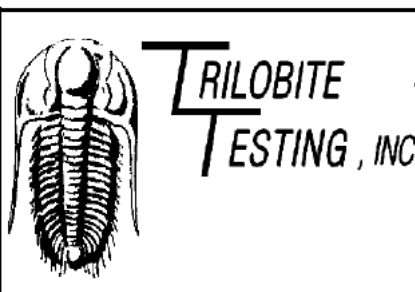
Recovery

Length (ft)	Description	Volume (bbl)
15.00	mud 100%m	0.21
0.00	45 GP	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/c)
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DST#2



DRILL STEM TEST REPORT

RF Hembree Oil LLC

34-18-24 Ness, Ks

P.O. Box 542
Ness City, Ks 67560

Schwartzkopf A #3

ATTN: Wyatt Urban

Job Ticket: 65643 **DST#: 2**

Test Start: 2016.11.24 @ 06:38:41

GENERAL INFORMATION:

Formation: **Miss**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 08:35:41
Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley

Interval: 4252.00 ft (KB) To 4328.00 ft (KB) (TVD)

Reference Elevations: 2301.00 ft (KB)

Total Depth: 4328.00 ft (KB) (TVD)

2294.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 7.00 ft

Serial #: 8166

Outside

Press@RunDepth: 166.10 psig @ 4253.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.11.24 End Date: 2016.11.24

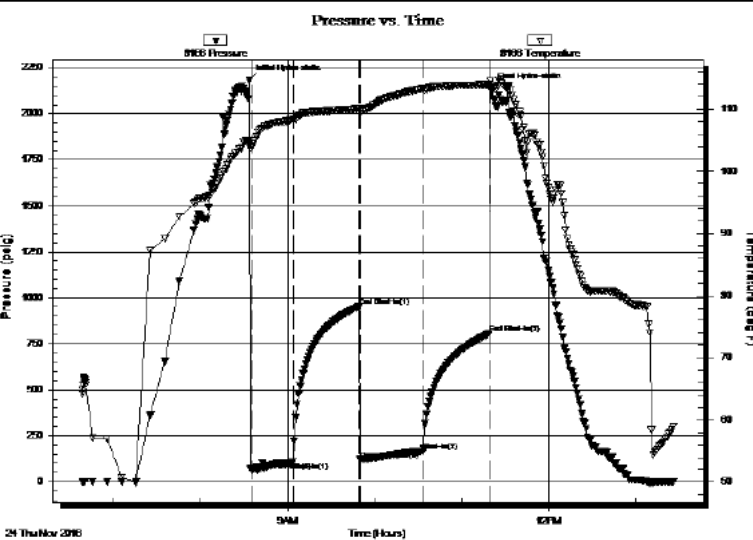
Last Calib.: 2016.11.24

Start Time: 06:38:46 End Time: 13:26:10

Time On Btm: 2016.11.24 @ 08:33:41

Time Off Btm: 2016.11.24 @ 11:19:41

TEST COMMENT: IF: BOB in 11 min.
IS: Surface blow died in 20 min.
FF: BOB in 15 min.
FS: Surface blow died in 10 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2184.66	104.48	Initial Hydro-static
2	57.61	104.05	Open To Flow (1)
30	105.81	108.33	Shut-In(1)
76	950.29	110.11	End Shut-In(1)
76	121.64	109.78	Open To Flow (2)
120	166.10	113.26	Shut-In(2)
165	805.34	113.96	End Shut-In(2)
166	2137.87	114.47	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 30%g 10%o 60% m	0.87
217.00	gocm 10%g 20%o 70% m	3.04
108.00	go 20%g 80% o	1.51
0.00	169 GIP	0.00

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

ROCK TYPES

Cht vari	Lmst fw<7 shale, grn	shale, gry	shale, red	Ss
Dolprim	shale, grn	Carbon Sh	Shcol	

OTHER SYMBOLS

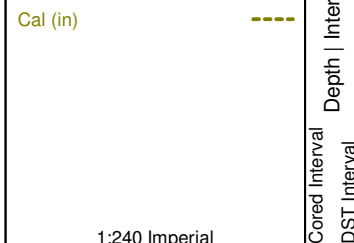
EVENTS
 JL Casing Shoe
 ▷ RTF
 ▶ Sidewall
 ▲ Left Casing Shoe
 ▼ Right Casing Shoe

INTERVALS
 ■ Core
 · DST

Oil Show
 ● Good Show
 ○ Fair Show
 ⊙ Poor Show
 ◌ Spotted or Trace
 ○ Questionable Strn
 D Dead Oil Strn
 ■ Fluorescence
 * Gas

DST
 ■ DST Int
 ■ DST alt
 ■ Core
 || tail pipe

Curve Track #1		TG, C1 - C5
ROP (min/ft)	—	Total Gas (units) —
Gamma (API)	—	C1 (units) —

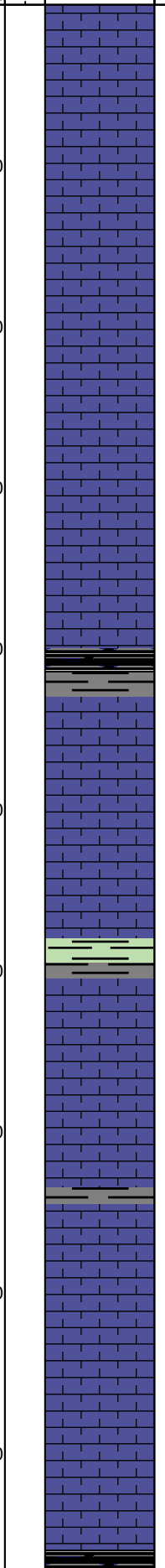
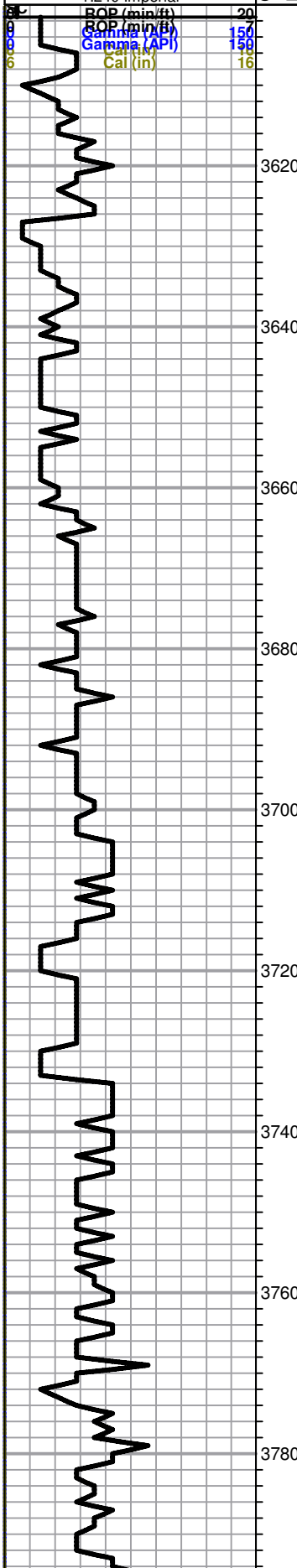


DST

Lithology

Oil Show

Geological Descriptions



LS, tan, cream, few foss, poor visible porosity, chalky in pts, no shows

LS, tan, buff, cream, poor visible porosity, cherty, no shows,

LS, tan, ool, poorly developed, poor scattered visible porosity,

Heebner 3681.0 -1380.0

Black carb Sh,

LS, tan, cream, dense, foss, poor visible porosity, no shows, slug, V.C. shales, no shows

Toronto 3703.0 -1402.0

LS, tan, buff, FXL, dense, few scattered P.P. porosity, no shows, no odor

Sh, maroon, greenish, gry, trc. pyrite

Lansing 3721.0 -1420.0

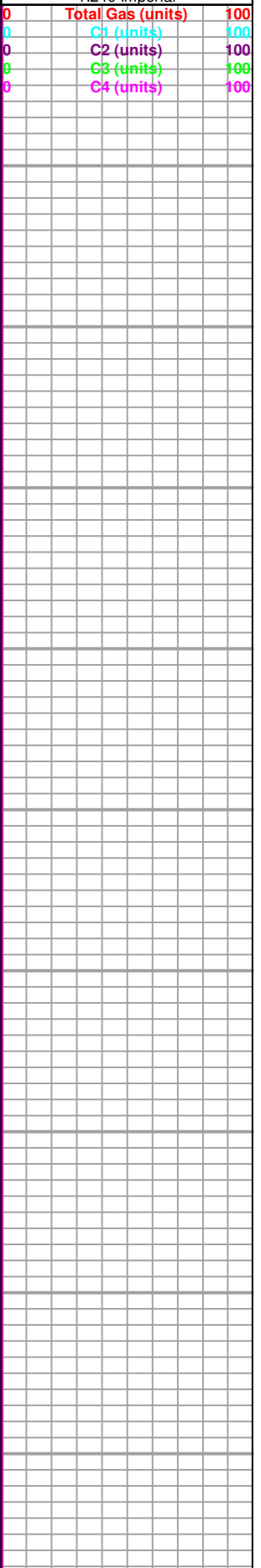
LS, white, cream, FXL, poor visible porosity, few P.P. porosity, no shows, few ool, trc. white cherts

LS, cream, white, few ool, poor visible scattered porosity, chalky in pts, no shows

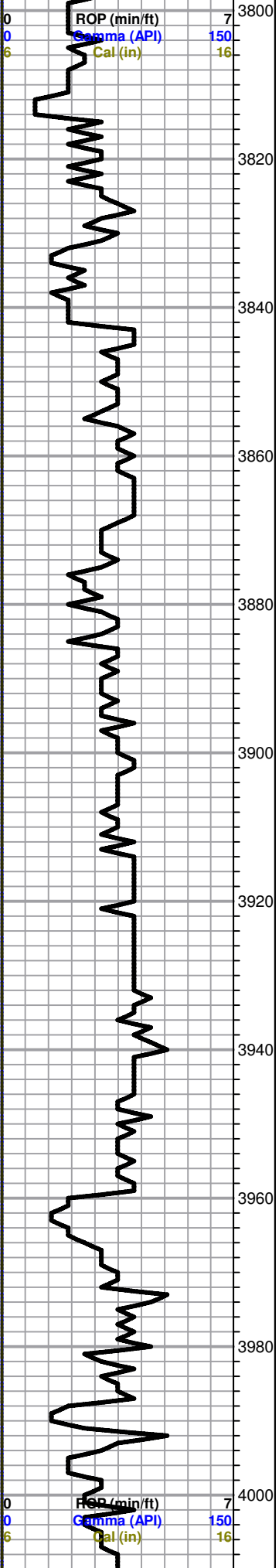
LS, cream, white, few foss, poor visible porosity, chalky, no shows

LS, tan, ool, poorly developed, poor scattered porosity, chalky, no shows

Sh, gry, maroon, greenish



Sh, gry, maroon, greenish



LS, cream, white, ool, poor visible porosity, chalky, no shows

LS, cream, white, ool, poor scattered/ P.P. porosity, no shows, (Slug maroon soft shale)

LS, cream, white, ool, poorly developed, few oom vuggy porosity, no shows, Sh, gry/ silty, mica

LS, crema, white, FXL, few foss, poor scattered porosity, cherty, no shows

LS, cream, to tan, poor-fair scattered visible porosity, chalky, no shows

Black carb Sh

LS, A/A, trc. opaque, white, cherts

LS, cream, white, few foss, poor visible porosity, V. chalky, no shows

LS, cream, tan, FXL, dense, poor visible porosity, cherty, no shows

Sh, gry, greenish, mica

LS, tan, brown, FXL, dense poor scattered porosity, cherty in pts, no shows,

Slug maroon, greenish, brick red shale

LS, cream, white, chalky, poor - fair scattered vuggy porosity, Lt. brown stain, NSFO,

LS, cream, tan, FXL, dense, poor visible P.P. porosity cherty, trc. white, opaque, cherts

Sh, black carb.

LS, tan, buff, foss, poor scattered porosity, chalky, no shows, trc. pyrite

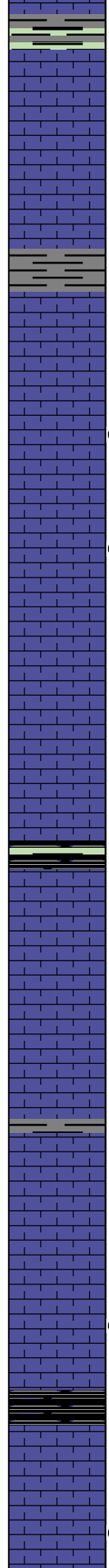
Base Kanab City 1014.0 -1713.0

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

Base Kallas City 4014.0 -1715.0

4020
4040
4060
4080
4100
4120
4140
4160
4180
4200
4220



Sh, black, carb, maroon, green/ aqua green, mica

LS, tan / brn, cream, poor scattered proosity, dense, no shows,

LS, tan, buff, foss, few ool, poor scattered vuggy porosity, chalky, no shows, trc. white, cherts

Sh, gry, greenish, few black carb, silty, mica

Marmaton 4057.0 -1756.0

LS, tan, brown, few mottled, FXL, dense, poor visible porosity, cherty, no shows,

○ LS, cream, tan, F-Med XLN, slightly dolo, poor to fair visible porosity, chalky, Lt. SFO, fair UV, no odor

○ LS, cream, tan, poor scattered vuggy porosity, Lt. brown stain NSFO, no odor

LS, cream, white, FXL, dense, poor visible porosity, cherty, N/S

LS, cream, white, FXL, dense, poor visible porosity, cherty, no shows

Black carb shale

Pawnee 4141.0 -1840.0

LS, cream, tan, FXL, dense, poor visible porosity, few suc., no shows,

LS, white, gry, tan, poor visible porosity, dense, cherty

Sh. maroon, gry, green

LS, white, gry, tan, poor visible porosity, dense, few chalky, no shows

○ LS, cream, white, few foss, poor visible porosity, poor scattered P.P. porosity, Lt. tan/brown stain, Lt. Flor. cut, no odor

Ft. Scott 4213.0 -1912.0

Black carb Sh

LS, tan, FXL, poor scattered porosity, visible porosity, dense, slightly chalky,

● LS, tan, cream, poor to fair scattered vuggy porosity, SFO, Lt. golden brown stain, strong odor

DST #1 4196-4240

30-30-30-30

1st Open:
Weak 1/4" blow
died in 19 mins

2nd Open:
Weak 3/4"

Recovery:

45' GIP

15' mud

Pressures:

ISIP 123 psi

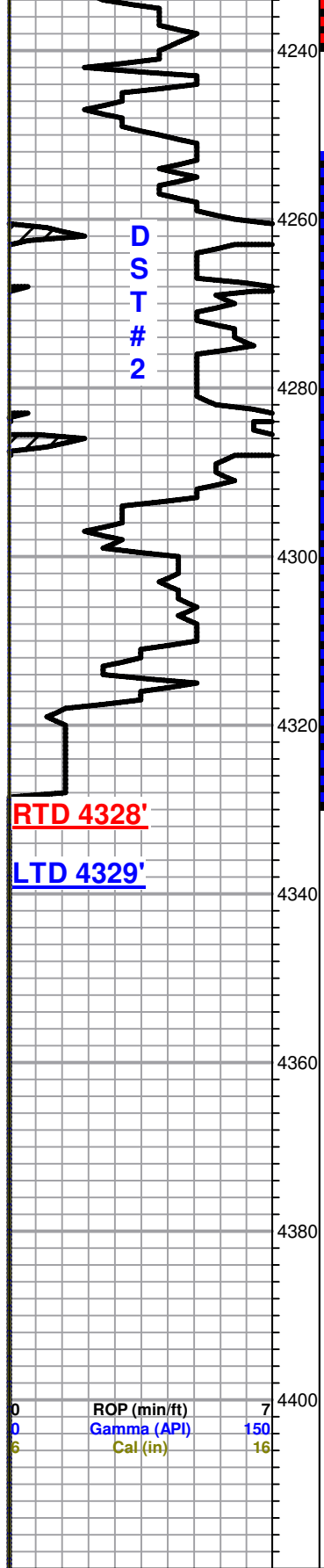
FSIP 90 psi

IFP 19-23 psi

ROP (min)
Gamma (API)
Cal (in)

**D
S
T

1**



RTD 4328'

LTD 4329'

0	ROP (min/ft)	7
0	Gamma (API)	150
6	Cal (in)	16

Cherokee Shale 4241.0 -1940.0

Black carb Sh

LS, tan, buff, F- MedxIn, poor-fair scattered porosity, Lt. SFO, fair /strong odor, trc. white cherts

V.C. Cherts, slug black/gry shales

Chert white, opaque, few yellow, trc. yellow shale, soft,silty

LS, tan, buff, FXL, dense, poor visible porosity, cherty in pts,

Chert, V.C. few ool, no shows

Sd, Clr, qtz, poorly sorted, sub rounded, friable, no shows, no odor

Mississippian 4314.0 -2013.0

Dol, tan, brown, fair INXLN porosity, suc. SFO/sat, strong odor, Lt. brown stain

Dol, tan, brown, fair scattered vuggy porosity, suc. fair SFO/sat. good strong odor, trc. pyrite inclusion

RTD 4328.0 -2027.0

LTD 4329.0 2028.0

FFP 18-21 psi
HSH 2150-2092

DST # 2 4252-4328
30-45-45-45

1st Open:
BOB 11 mins.

Weak return on 1st shut in died in 20 mins

2nd Open:
BOB 15 mins

Weak return on 2nd shut in died in 10 mins

Recovery:

169' GIP

108' Gassy Oil (20%G, 80%O)

217' GOCM (10%G, 20%O,70%M)

62' GOCM (30%G, 10%O, 60%M)

Pressures:

ISIP 950 psi
FSIP 805 psi
IFP 57-105 psi
FFP 121-166 psi
HSH 2184-2137 psi

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100