

# DARRRAH OIL

## Geologic Report

For the

### #7 Rathbun

15-053-21282

840' FSL & 1840' FEL

Sec 16 T17S R8W

Ellsworth County KS

KB: 1745'

GL: 1740'

All measurements taken from KB.

\*Please note depth correction +5 feet to all sub-sea datums.

Contractor: Mallard JV

Spud date: January 23<sup>rd</sup>, 2013

Field: Geneseo-Edwards

Drilling Complete: January 29<sup>th</sup>, 2013

Geologist Seth Evenson on location 4:35 am January 27<sup>th</sup>, 2013 @ 2649' MD.

TD: 3197' (-1447)

1 foot drill time kept from 2300' to TD.

Samples examined from 2300' to TD.

E-logs ran:

None

## Sample Tops:

\*Note: All tops are in measured depth below rotary table. All sub-sea datums are corrected up five feet.

Severy	2369' (-619)	Lansing B zn	2835' (-1085)
Topeka	2407' (-657)	Base B zn	2847' (-1097)
Oread	2590' (-840)	Lansing G zn	2911' (-1161)
Heebner	2674' (-924)	Base G zn	2941' (-1191)
Douglas sh	2703' (-953)	BKC	3142' (-1392)
Douglas snd	2713' (-963)	Simpson	3156' (-1406)
Brown Lm	2790' (-1040)	Arbuckle	3189' (-1439)
Lansing	2808' (-1058)	RTD	3197' (-1447)

## Structural Comparison:

	<u>#7 Rathbun</u> SW/NE/SW/SE 16-17S-8W	<u>#3 Rathbun</u> N2/SE/SE 16-17S-8W	<u>#5 Rathbun</u> SE/NW/SE 16-17S-8W
Topeka	-657	-645 (-12)	NA
Oread	-840	-823 (-17)	NA
Heebner	-924	-903 (-21)	NA
Douglas	-953	-931 (-22)	NA
Brown Lm	-1040	-1025 (-15)	-1056 (+16)
Lansing	-1058	-1046 (-12)	-1076 (+18)
Lansing B	-1085	-1076 (-9)	-1103 (+18)
BKC	-1392	-1362 (-30)	-1387 (-5)
Simpson	-1406	-1375 (-31)	-1401 (-5)
Arbuckle	-1439	-1432 (-7)	-1436 (-3)

## Formation Tests:

### DST #1

Lansing B

2825'-2852'

15-30-30-60

IHP 1374#

IFP 18#-20#

### DST #2

Arbuckle

3088'-3197'

MIS-RUN

Packer failure

### DST #3

Arbuckle

3059'-3197'

15-30-45-60

IHP 1532#

IFP 33#-178#

IFP 18#-20#  
ISIP 722#  
FFP 21#-28#  
FSIP 851#  
FHP 1350#

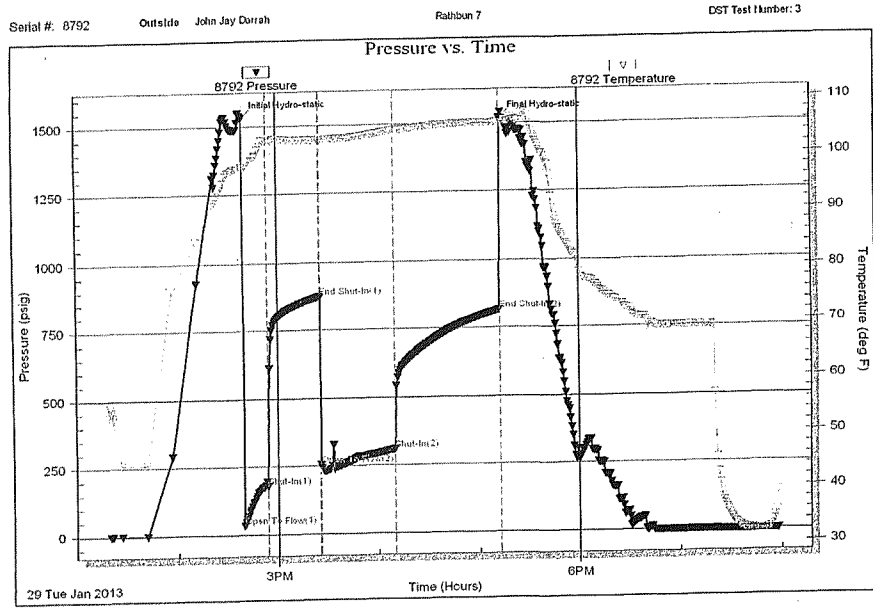
IFP 25#-27#  
ISIP 878#  
FFP 254#-309#  
FSIP 818#  
FHP 1518#

Rec:  
GTS @ final shut-in. Gas was highly flammable & burned with a bright orange flame.

Rec:  
2370' mud

Rec:  
483' HGCMO (40% oil)  
252' HGCOM (18% oil)  
64' HGC&SOCM (10% oil)  
126' SG&SOCM (13% oil)

12' mud



Tribore Testing, Inc      Ref. No: 49724      Printed: 2013.01.29 @ 20:23:07

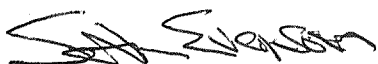
After being denied approval to drill the primary location for the #7 Rathbun within the draw; an alternate location was picked outside of the draw on the west end of the lease. While this location came in low compared to surrounding wells; sufficient enough quantities of gassy, oil cut mud were recovered by DST #3 to warrant casing the well for production. The

slightly lower datum of the #7 may not be of great concern as some formerly producing wells on adjacent leases to the east were producing from much lower datums. Furthermore evidence from sub-surface and seismic work may indicate that the #7 Rathbun was drilled into a structural nose of the Arbuckle, which hopefully will help funnel oil into the vicinity for years to come.

Once again, as in the #11 Kratzer, the B zone of the Lansing was drill stem tested due to the presence of gas & oil in samples. Again, no oil was recovered & gas recovery was very much less; with gas only reaching the surface just as the tool was being closed for the final shut-in period. With such a weak flow of gas, and at a much lower datum it is very doubtful that the B zone will ever produce commercial quantities of gas in the #7 Rathbun. That said, the test does help prove the extent and potential for the B zone to hold commercial gas reserves in the North Geneseo-Edwards field.

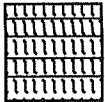
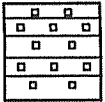
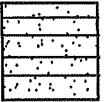

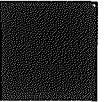
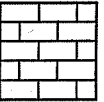
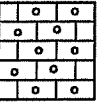
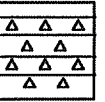
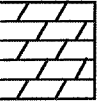
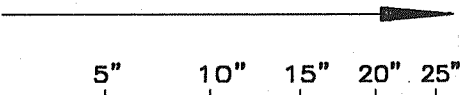
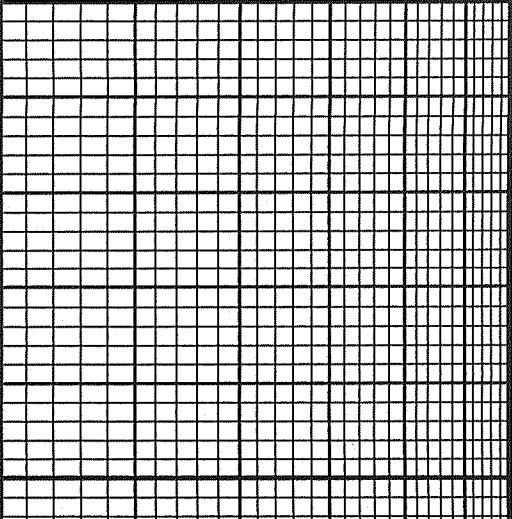
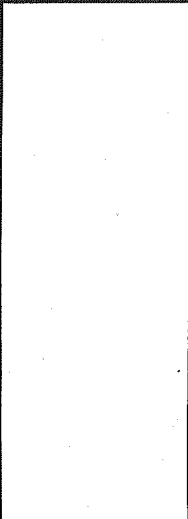

Pipe strap after final DST revealed the drill string to be five feet shorter than the geolograph reading. Bo Darrah stayed on location and made sure 5 1/2 production casing was ran & set at 3185', 7 feet off bottom (new TD 3192'); with the plug down and holding at 9:15 am on January 30<sup>th</sup>, 2013.

Respectfully submitted by,



Seth Evenson  
Geologist  
Darrah Oil Company  
June 19<sup>th</sup>, 2013

*Seth Evenson on Location 2649 @ 4:35 am  
Sunday January 27<sup>th</sup>, 2013*

LEGEND								
								
Anhydrite	Salt	Sandstone	Shale	Carb sh	Limestone	Ool. Lime	Chert	Dolomite
<p>DRILLING TIME IN MINUTES PER FOOT</p> <p>Rate of Penetration Decreases</p>  <p>5" 10" 15" 20" 25"</p>	DEPTH	LITHOLOGY	SAMPLE DESCRIPTIONS	OIL SHOWS	REMARKS			
								

LOG 7710

2300'

Shale gry, red brwn platy

Some H gry - off wht vry hrd  
res micro xth lms w gd yell  
mineral flwr, tr tite shaley ss.

20

Shale gry platy &

Start  
20' samples

Lms tan-gry micro xth  
med-hrd res tite, shrp edges  
no vis &

40

Shale gry & gry

tite hrd res lms  
no vis &

50'

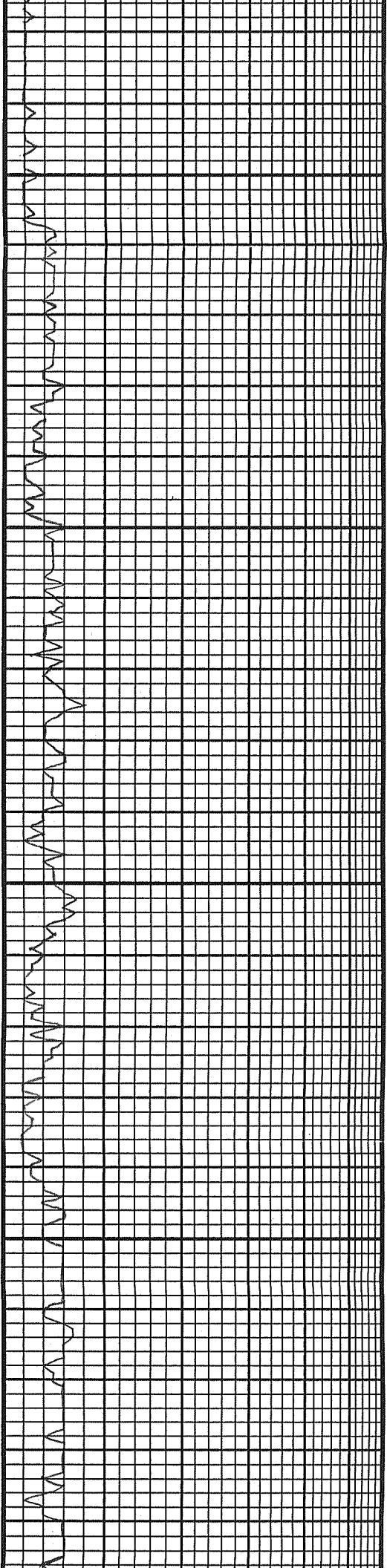
60

Lms tan-gry, vry fn

xth, hrd res tite, some

Severy Shale  
2369' (-624)

+5 (19)



2400'

50'

2500'

50'

80  
20  
40  
60  
80  
20  
40  
60  
80

Sli tuss, no vis ⌀  
 Lms gry hrd res vry fn xtlh  
 no vis ⌀ & much gry platy  
 Sli shaly shale, w/some gry  
 vry shaly ss. no shw.  
 Shale gry, grn sli  
 silty, w/mica & trc  
 pyrite grains no vis ⌀  
 Lms lt gry-gry  
 tite no vis ⌀ sli  
 fossiliferous hrd res  
 fn - vry fn xtlh  
 Lms tan-gry, micro-  
 vry fn xtlh, no vis ⌀  
 much sli chalky to shaly  
 Lms gry-tan vry fn xtlh  
 hrd res, no vis ⌀, sli  
 foss. 1pc lt gry shp chrt  
 Lms, tan-lt gry, micro-  
 vry fn xtlh, sli dicty  
 (shaly/ratty) pr-no vis ⌀  
 vry hrd res.  
 Lms crm-tan micro-vry  
 fn xtlh, med-hrd res  
 sli foss, some sli chalky  
 no vis ⌀  
 Lms crm-tan ds dbv  
 trc of black carbonaceous  
 shale  
 Lms crm-lt gry vry fn -  
 micro xtlh, mstly hrd-  
 vry hrd res some sli foss  
 no vis ⌀  
 Lms tan-brwn, micro-  
 vry fn xtlh hrd-vry hrd  
 res, no vis ⌀ Some brwn-  
 lt gry/offwit shp foss chrt.  
 Lms tan-lt gry, vry fn  
 xtlh, med-hrd res, sli  
 chalky, sli foss, pr-no vis ⌀

Topeka  
 2407 (-662)  
 +5 (-657)

Oread  
 2590' (-845)  
 +5 (-840)

2600

Lms gry, vry fn xth, sh  
shaley, ratty looking,

slt fcs, no gry cherty  
lms. all no vis  $\phi$  pyrite xls

20

Lms tan, micro-vry fn xth  
hrd res, pr-no vis  $\phi$ ,

fossiliferous

40

50'

Shale gry, purple,

red-brwn, drk gry  
Lms no vis  $\phi$

60

Shale gry, grn,

red brwn & Lms gry,  
micro xth, hrd res like no vis  $\phi$

80

Shale black carbonaceous  
& gry, also much Lms crm-

gry micro xth no vis  $\phi$

2700'

Shale gry, red, blk. & Lms  
gry-tan micro xth no vis  $\phi$

Start 10  
samples

Douglas Group

2703' (-958)  
+5 (-953)

Lms wht-off wht chky, micro  
xth, med res no vis  $\phi$

Douglas Sand

2713' (-968)  
+5 (-963)

Lms crm, vry fn xth, med  
res, much less chky than abv  
no vis  $\phi$

Sandy shale gry & lt gry  
shaley S.S. med-hrd res, semi-  
friable pr-no vis  $\phi$

Shaley S.S. vry fn grained, sft-  
med res, slt micaceous, abndt shale/clay  
matrix pr-no vis  $\phi$

50'

S.S. lt gry fn grained, hrd res, well  
cemented w/ silica cement, pr-no vis  $\phi$ ,  
much lt gry slt silty shale

Lms gry fn xth med res  
slt fcs, no vis  $\phi$

Shale gry platy some red &  
lms gry-tan vry fn xth hrd res  
no vis  $\phi$

Shale drk gry blk, some  
red & Lms gry-brwn, vry fn  
xth hrd res, no vis  $\phi$

2800'

Shale drk grey blk &  
platy tight lms as abv

Lms drk grey, fn xth  
hrd res no vis  $\phi$  slt fcs

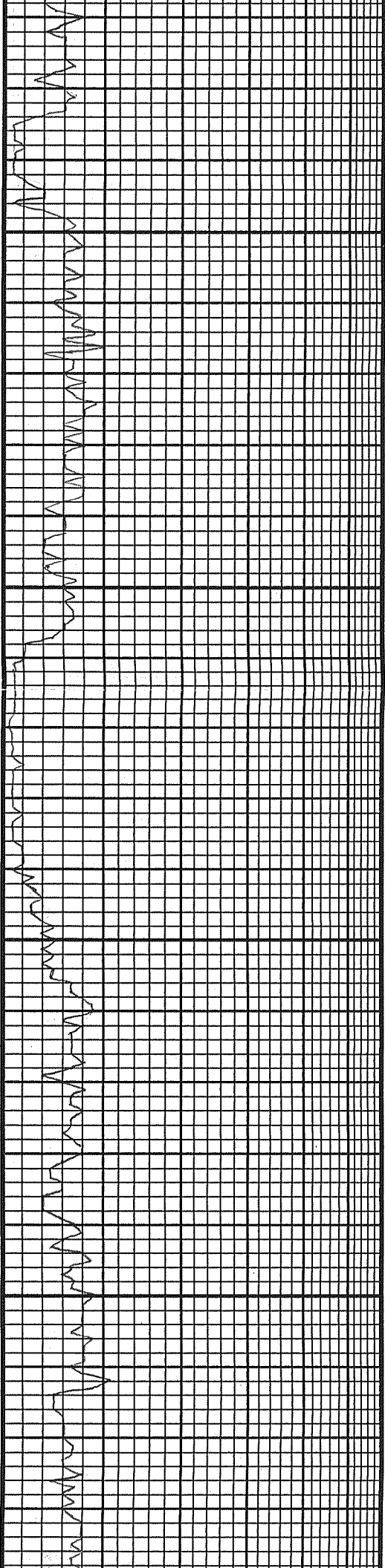
Lms drk gry as abv, some brwn  
vry fn-micro xth, much lt gry

Brown Lime

2790' (-1045)  
+5 (-1040)

Lansing

2808' (-1063)  
+5 (-1058)



		Lms crm - lt gry w/tinge grn, micro-very fn xthn, non foss, hrd res no vis ♂
		Lms off wht - crm vryfn-micro xthn, non allochemical, hrd res some sli chky pr-no vis ♂
		Lms, crm-off wht, micro-very fn xthn, sparse ltrc xthn & oolitic vngs, blk spx, str in vngs & fractures, vry sl. odr, gd brk, oil flow, SSFO on brk, ss gas bbls, trc - gas bearing cut, etc.
CF52845'	50'	Shale gry, red, grn. Much gry lms tite, sli chky med-htd res vry fn xthn no vis ♂
CF52852'		Lms gry micro-very fn xthn, non-allochemical pr-no vis ♂ hrdres
		Lms gry ds abv
		Shale gry, grn, blk & Lms gry sli shaley catty looking no vis ♂
		Lms crm-tan sli chky, hrdres trc foss, no vis ♂, shale gry, red, grn.
	2900'	Lms lt gry - gry vryfn-fn xthn med-htd res sli foss no vis ♂ shale ds abv
CF52912'	Lms G	Lms crm-tan, micro-very fn xthn med-htd res, abndt oolitic vngular some w/abndt oolids. Poss sli trc gas bubbles upon brk pr-fr inter xthn ♂, blk dull flwr
2911 (-1166)		Lms ds abv, but some lt gry oolitic vngy w/shallow sps vngs, micro xthn vry pr-inter vngular ♂, fr to blk oil str in vngs fr yell flwr, SSFO upon brk trc - gas bearing cut.
CF52935'		Lms tan - lt brwn, vryfn-micro xthn med-htd res abndt oolitic shallow vngs fr-gassy ♂ pr-inter xthn ♂ Dull yell mineral flwr, no cut no shv.
	50'	Lms tan - lt brwn, vryfn-micro xthn abndt oolitic, w/frly abndt shallow oolitic vngs, mthy partially dissolved oolids, less well developed vngs than abv, pr-inter xthn ♂
		Lms tan - lt gry micro-very fn xthn hrd res, frly abndt vry small oolids, occasional sps and vngs, no inter xthn ♂ vry pr-vngular ♂
		Shale gry - vry drk gry shardy & fissile.
		Shale gry & narrow trc blk carb shale Lms tan - gry vry fn xthn hrd res sli oolitic no vis ♂
		Shale gry & red brwn, some blk carb to blk coal.
		Lms crm-tan micro-very fn xthn med-htd res non allochemical no vis ♂, much gry & grn shale
	3000'	Shale gry, blk, red, yell grn/gry also lms tan-gry no vis ♂
		Shale ds abv. Lms crm-tan vry fn xthn sli chky no vis ♂
		Shale gry, red, grn, purple, & hrd res shaley lms red gry to brwn. fn xthn no vis ♂
		Lms gry - yellow shaley, mthy fn xthn hrd res sli oolitic no vis ♂ some blk yell shaley

Lansing B zone  
2835' (-1090) +5 (-1085)

CF5@2845' 15min:  
mthy lms crm-gry, vryfn xthn hrd res no vis ♂, a few scatt pecs, sli vngy oolitic lms, 2pc w/lt blk oil str in vngs & shv gas bubbles on brk. fr brk yell flwr trc fr hazy drying cut, mst oolitic pecs no shv.

30min: Lms, vryfn xthn tan oolitic vngular, w/brn vngs dissolved to partial dissolv oolids. med-htd res, frly abndt surface & internal oolitic vngs fr-inter xthn ♂, fr-vg vngular ♂, SSFO's bubbles upon brk, trc seem (drabow oil upon brk, some vngs, vry dull blk yell-grn flwr, trc - fr staining & drying cut blk - fr bloom. poss sli odr.

45min: Lms crm-tan, vryfn xthn oolitic & frly oolitic vngular fr-inter xthn ♂ pr-fr vngy ♂ SS gas bubbles upon brk mst pecs, lt brwn to str mst pecs in vngs sli trc drabow seem upon brk only trc brwn FO upon brk in a couple hly sat & str drk brwn xthn pecs, fr odr in cap. vry ul. some flwr, trc - fr staining cut no bloom abndt ♂ of pecs hly stud pecs have gd staining cut & bloom.

60min: Lms ds abv, seems to be becoming less vngy/were odr trc many pecs sli blk xthn blk build out of sizeable internal vngs upon brk, blk yell flwr in drabow pecs, fr-vg staining cut, fr-gd bloom only vry sli odr, some pecs in drabow cut upon brk, vry lt mstr, fr-gd sat?

CF5@2852' 15min: Lms gry, micro-very fn xthn abndt oolitic vngular & oolitic, med res, trc - fr shv drk brwn FO upon brk, spx blk str & sli - fr odr, fr yell flwr fr staining cut in best sat pecs.

30min: Lms gry, micro xthn sli shaley abndt oolitic vngular, pr-inter xthn ♂ fr-vg vngular ♂, fr sporadic str in vngs, fr odr, fr-vg show bleeding gassy FO in many pecs upon brk - blk str - oil. mst pecs pty yell flwr, trc - fr drying cut, fr - fr staining vry gd cut upon brk. blk str oil does not flow. SSFO.

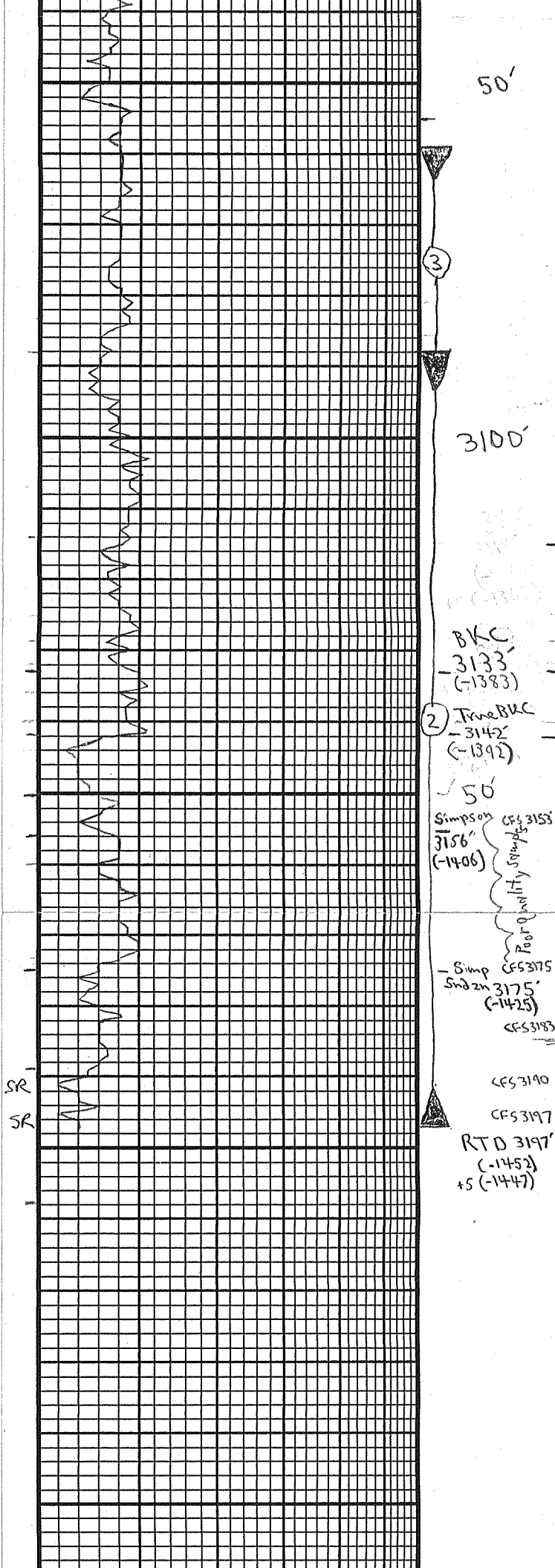
45min: A few pecs gry-crm oolitic vngy lms w/SSFO upon brk, mthy lost ♂. Sample 96% Lms crm-gry vry fn xthn hrd res, non vngy, non oolitic. no vis ♂

CF5@2912' 15min: Lms crm-gry fn xthn hrd res, some sli chky non allochemical, no vis ♂.

30min: Lms, crm, vry fn xthn med res abndt oolitic vngy, gd vngular ♂ pr-fr inter xthn ♂ some w/undissolved & partially dissolved oolids. fr brk yell mineral flwr, trc gas upon brk, no oil drabow.

45min: Lms abndt oolitic ds abv, sli, trc gas bubbles upon brk, med-htd res, pr





Lms tan - lt gry vry fn - micro xthn, hrd res pr - no vis of much gry, grn & red shale
Shale tri-colored drv-gry, red & bln / trn noise grn. Also Lms crm - tan chlk - micro xthn med res no vis of sli oolitic.
Lms crm - lt gry micro - vry fn xthn non allochemical hrd res no vis of
Lms crm - lt gry micro - vry fn xthn non allochemical no vis of med res
Lms crm - lt gry ds dbv
Shale gry, grn, red & lms as dbv
Lms crm - lt gry micro - vry fn xthn, non allochemical, some sli shaley no vis of
Lms crm - Hary as dbv no vis of a few pcs ratty shaley lms to purple reddish lms shale hrd res no vis of
Lms crm as dbv, some gry vry fn xthn no vis of Trc drk gry shale sli pyritic
Shale drk gry red brwn & brite bln green / trn noise w/ sli waxy luster, Also trc gry - varicolored ratty shaley, no vis of fossil coral lms
Sandy lms off wht - lt gry ultra fn grains, med res, fine calc matrix no vis of highly effervescent. Vry abndt vtrabn grains in dish after dissolving
Sample caught @ 3167 Vry abndt tan-gry micro xthn lms, some sli study gry lms hrd res some shaley lms yell, drk gry blk to purplish mottled shale.
Mxly lms, Sample poor quality. Trc shrp red chrt (jasper) tiny brite / blood red pcs. Some mottled xtra & varicolored shale trc varicolored shaley lms.
3175 sample shale red brwn / purple red lms, sli study, w/ earth luster & chrt, shrp brn blood red.
Varicolored shale & chrt, 1 pc oolitic chrt shrp. Scat sprse pcs vry fn xthn off wht, crm, gry sli sli siliceous lms no vis of

CFS @ 2935' 15min: Lms tan-brwn abndt oolitic vry abndt hrd res, low por, pr - frienter xthn, no shw.

30min: Lms tan abndt oolitic vry abndt, more abndt small chlk vry than drk, sli - med res, appear to have improved perm, no chlk, no shw.

45min: Lms tan-gry micro xthn vry abndt oolitic & oolitic abndt oolitic vry of partially drk abndt oolitic vry of partially drk acid. vss gas bubbles, scat dull yell flwr armp vry mineral, most n, no cut, med - hrd res pr - frienter xthn

CFS @ 3153' 15min: Study lms & sli study / silty shale ultra fn grains no vis of shale gry red brwn, & trn noise grn Trc off wht shaley chlk mndy

30min: Shaley lms, yell grn - red brwn, micro xthn hrd res no vis of study shale lms as dbv. Fragment fn subnd loose & 2 of sli in bottom of tray, no observable shw.

45min: Mix of lt gry ultra fn study lms, somewhat varicolored shaley / lms & lms shale (purple, yell, gry, grn, brwn) no vis of vry spr loose fn grained & 2 sand grains in bottom of tray.

40min: Lms gry, micro xthn sli shaley, some sli study / silty as dbv no vis of, some varicolored mottled shale, 1 crs loose yellow wellnd & 2 grains, vry few grains loose sand in bottom of tray.

CFS @ 3175' 15min: Varicolored shale, gry, blk, red, purple, grn / trn noise, several vry hrd pcs crs xthn pyrite. Abndt lms loose & 2 grains in botm of tray. may be assoc w/ red sand shale.

30min: Chrt shrp frsh, mostly tan (amber) red, orange & yellow, also varicolored shale as dbv, mnded study shale, loose fn & 2 grains 1 pyritized bivalve.

45min: Varicolored shale as dbv Trc red orange scint. trns chrt. A couple pcs off wht crs sli grnt vry fn xthn, vry hrd res siliceous dolomite, no vis of.

CFS 3178' 15min: Varicolored mottled shale - tan, grn & maroon also off wht & maroon sli study, chrt amber to orange shrp.

30min: Varicolored shale & chrt. Chrt mostly crm, smly - drk shrp. a few pcs tan - yellowish siliceous dol / lms, vry hrd res sli - thin shw effervescent. trc off wht siliceous dol, vry fn xthn, vry hrd res sli shly efferv no vis of. Shales mostly tan / red brwn maroon - mottled, xtra shales are waxy.

45min: Varicolored shale as dbv Chrt shrp frsh, amber, pink orange red. Also, off wht, crm, sli yellow siliceous to sli siliceous lms. vry fn xthn med - hrd res, some readily efferv, some sli shaley varicolored no vis of

CFS 3183' 15min: Shale gry, varicolored shale & chrt as dbv. some ratty shaley lms in hrd lms varicolored / brwn no vis of

Arb 3189 (1447) (-1457)

30min: Same

CFS 3190 15 min: Shale gry, in brown red, some mottled tan & s. sh. trc. qn. A few pct cut with off wht - gry. x. trc sli. silic. castles no v. is s.

30min: Dolomite, lt gry to gry brwn, fin xthn med-hrd res, pr-no inter xthn, non wavy, no shw, much var colored sh. as sh. otherwise sh. is thin, s. v. s. of Dill to gd brt yell flwr in a few pct, trc. being cut upon brk. sli. odr.

45min: Dolo, tan-off wht/lt gry, fin xthn med res, fr inter xthn, brt yell to wht flwr present in pinpoint surface vngs of some pct, vry lt to no noticeable str, fr-gd straining cut upon brk only, pass vry fast odr.

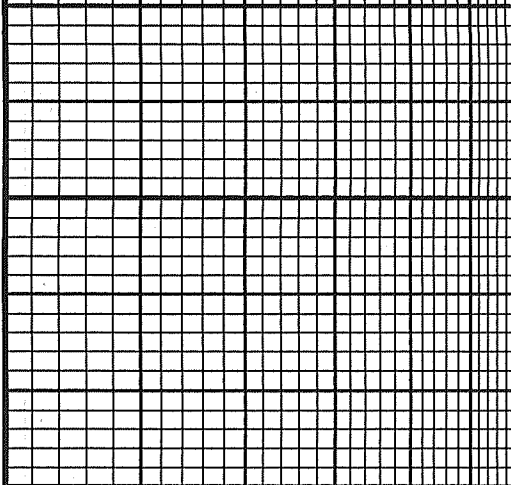
60min Dolo lt brwn-tan fr translucent xthn, fr inter xthn, med-hrd res, spty gd brt yell w/lt flwr in pinpoint inter xthn, trc cut, vry gd slw straining cut upon brk.

CFS@3197 15min: Dolo brwn, vry fin xthn, some sandstone fr-gd inter xthn, SSFO upon brk. Fr-gd even str & sat, sli-gd brt even flwr, trc cut, fr shw cut upon brk in pct w/ sli vng in inter xthn surface.

30min: Dolo, cm-brown, fin xthn, sli-gd str & sat, fr odr, sli-GSFO upon brk also fr shw gas bubbles upon brk, fr-gd brt yell flwr, fr-vry gd straining cut upon brk, hrd res, some dark, dull, tan m. w/ shw

45min: Dolo, off wht, tan, lt brwn, fr odr, med-hrd res, about 1/2 appear off wht - lt gry tize & unsat. most pct brt wht to yell shw nearly all pct, trc being cut upon brk most pct. Sp. s. pct w/ gd decp sat vngs (not m. w/ s) appears to be titer & less sat than abv. Still vry much droplets brown FO, floating in titer. Several pct still w/ GSFO.

60min: Dolo off wht, lt gry to tan, vry fin xthn, hrd-vry hrd res, pr inter xthn & much less sat than abv many pct, hard to brk, tiny fnt droplets FO upon brk, still sli shw gas bubbles, less oil equivalent inter xthn & upon brk than in 30 or even 45 min sample fr odr. most pct only fnt trc cut upon brk, a few pct w/ lt str gd straining cut w/o brk, brt yell to wht flwr most pct, definitely titer & w/ less FO shw than in 30 & 45 min samples.



5" 10" 15" 20" 25"  
 DRILLING TIME Minutes/Foot

Rate of Penetration Decreases 

DEPTH

LITHOLOGY

SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

CONTRACTOR Mallard JV

LEASE Rathbun #7 IP 95 BOPD

ELEVATION KB: 1745 GL: 1740 RTD 3197 = 3192 corrected

LOCATION 840' FSL & 1840' FEL<sup>SW/NE/SW/SE</sup>

SEC 16 TWP 17S RNG 8W

COUNTY Ellsworth STATE Kansas