Marc A. Downing

Consulting Petroleum Geologist

Geologic Report

Drilling Time and Sample Log

Operator **Downing-Nelson Oil Co., Inc.**

Lease **Thompson-Nuckolls Unit** No. **1-17**

API # **15-145-21846-0000**

Field **Wildcat**

Location **170' FSL & 2090' FEL**

Sec. **17** Twp. **21s** Rge. **20w**

County **Pawnee** State **Kansas**

Elevation

KB **2110**
DF **2108**
GL **2102**

Casing Record

Surface
8 5/8" @ 1230'
Production
5 1/2" @ 4453'

Electrical Surveys

CNDL, DIL
MEL, Sonic

Formation	Sample tops	Log Tops	Datum	Struct Comp
Top Anhydrite	1221	1224	+886	-1
Base Anhydrite	1254	1251	+859	-1
Krider	2201	2198	-91	-21
Heebner	3612	3609	-1499	-12
LKC	3664	3661	-1551	-12
BKC	3996	3992	-1882	-7
Fort Scott	4172	4170	-2060	-7
Cherokee Sh	4193	4190	-2080	-8
Mississippi	4233	4230	-2120	+9
Gilmore City	4279	4276	-2166	Not Reached
Kinderhook Sand	4326	4322	-2212	Not Reached
Viola	4405	4402	-2292	Not Reached
Total Depth	4456	4453	-2343	

Reference Well For Structural Comparison **Schreiner Petroleum - Thompson #1**
C SE NW - Sec. 17-21s-20w

Drilling Contractor		**Discovery Drilling, Rig #4**	
Commenced	**2-14-19**	Completed	**2-23-19**
Samples Saved From	**3600**	To	**RTD**
Drilling Time Kept From	**3500**	To	**RTD**
Samples Examined From	**3600**	To	**RTD**
Geological Supervision From	**3600**	To	**RTD**

Summary and Recommendations

Due to structural position, DST recovery, and log evaluation, it was decid to set 5 1/2" production casing for completion.

Respectfully Submitted,

Marc A. Downing

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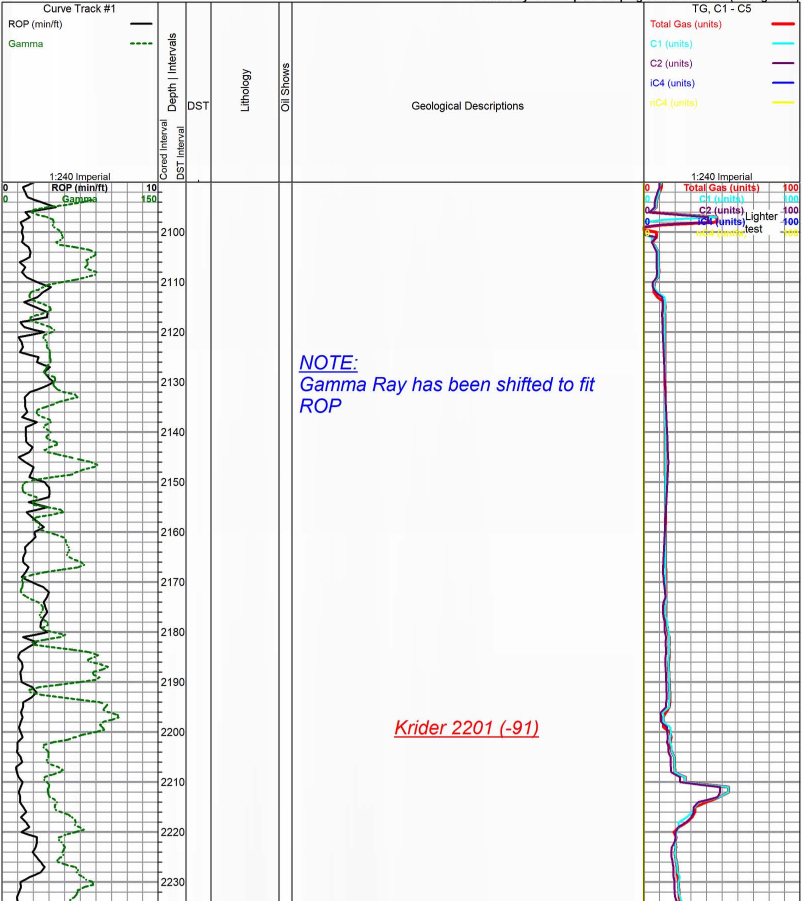
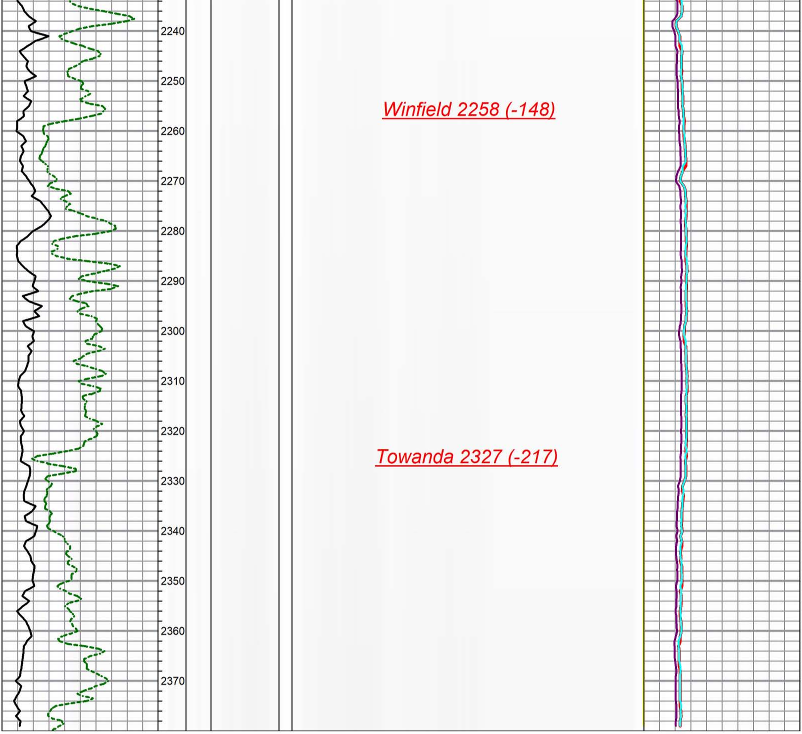


NOTE:
Gamma Ray has been shifted to fit ROP

Krider 2201 (-91)



ROCK TYPES

△ Cht	▤ Lmst fw7>	■ Carbon Sh	▨ Ss
🟥 Dolprim	▤ shale, gry	🟥 shale, red	

ACCESSORIES

MINERAL
- ▲ Chert, dark
- △ Chert White

STRINGER
- Sandstone
- Shale
- green shale
- red shale

OTHER SYMBOLS

OIL SHOWS
- ● Even Stn
- ● Spotted Stn 50 - 75 %
- ◑ Spotted Stn 25 - 50 %
- ○ Spotted Stn 1 - 25 %
- ○ Questionable Stn
- D Dead Oil Stn
- ■ Fluorescence

MISC
- DR Daily Report
- Digital Photo
- Document
- Folder
- Link
- Vertical Log File
- Horizontal Log File
- Core Log File
- Drill Cuttings Rpt

DST
- ■ DST Int
- ■ DST alt
- ■ Core
- ‖ tail pipe

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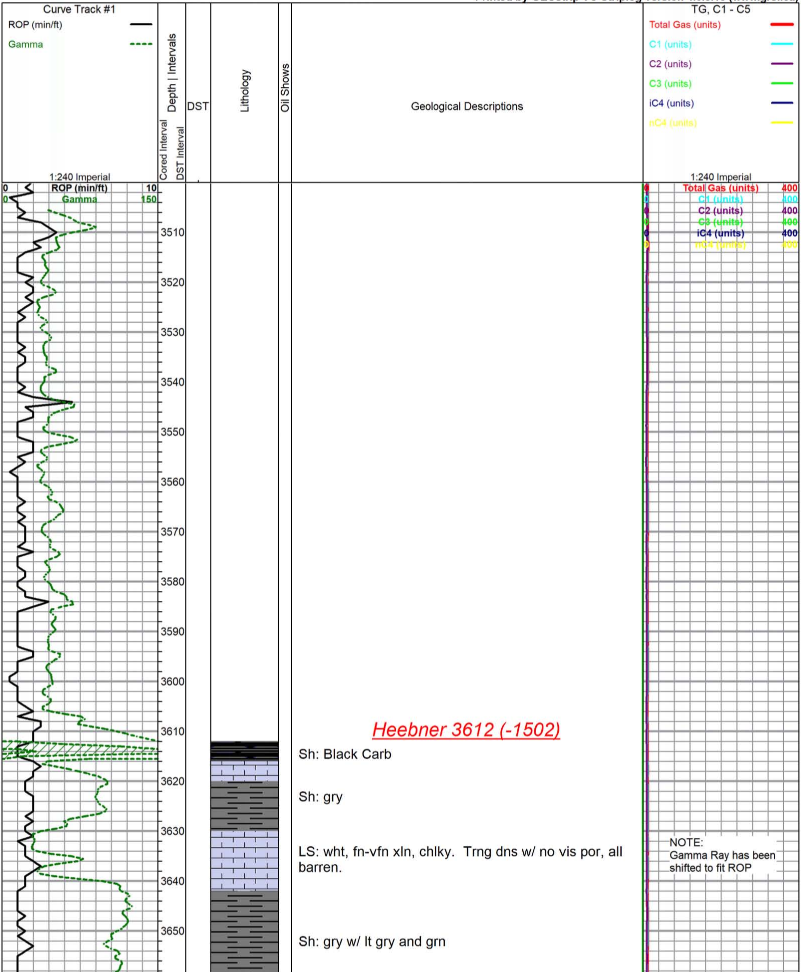


Heebner 3612 (-1502)

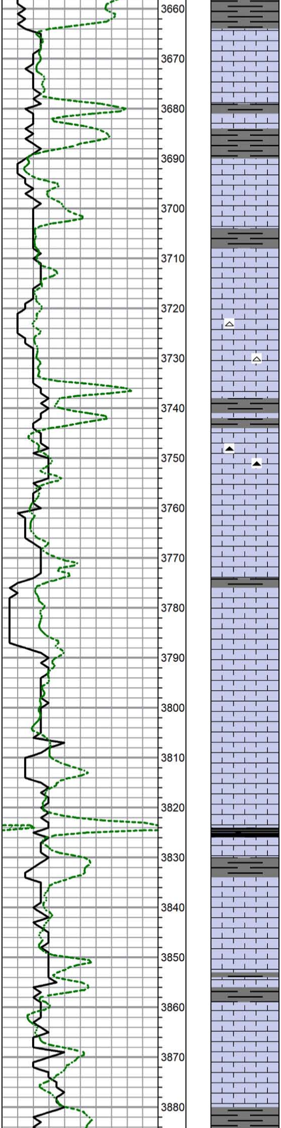
Sh: Black Carb

Sh: gry

LS: wht, fn-vfn xln, chlky. Trng dns w/ no vis por, all barren.

Sh: gry w/ lt gry and grn

NOTE:
Gamma Ray has been
shifted to fit ROP



Lansing 3664 (-1554)

LS: wht, vfn xln, few foss, suc in prt. Dns w/ no vis por, all NS.

Sh: drk gry-blk

Sh: gry w/ lt grn

LS: wht, fn-vfn xln, chlky. Few rx w/ gd vug and ooc por, all totally barren, no od.

Sh: gry

LS: wht, fn-vfn xln, dns w/ no vis por. Trng fr amt sml ool, scat gd ooc por, fr amt chlky. Totally barren, no od. Scat wht shp cht.

LS: wht, fn xln. Trng pr por and dns.

Sh: drk gry-blk, some brn w/ depth

LS: wht, fn xln, pr por. Fr amt tan-brn shp cht, all NS and no od.

LS: wht, fn xln. Subxln-chlky, all NS, no od.

LS: trng pr por and dns

Sh: gry

LS: wht-lt tan, fn-md xln. Fr amt subxln-chlky rx, scat gd ooc por. Totally barren, no od.

LS: wht and tan, mostly fn xln, some md xln. Pr por and dns, all NS.

LS: wht, fn xln, subxln-chlky, totally barren.

Sh: Black Carb

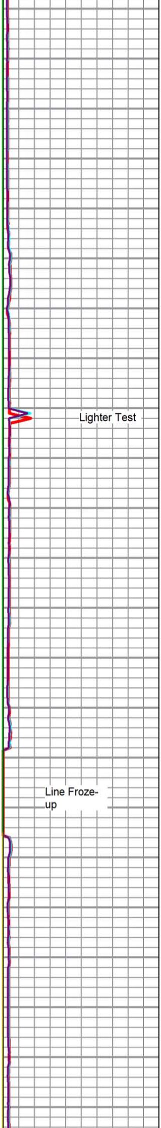
Sh: gry w/ brn

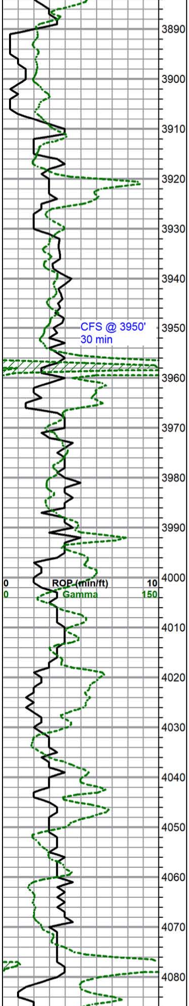
LS: tan w/ wht, fn-md xln. V dns w/ no vis por, all NS, no od.

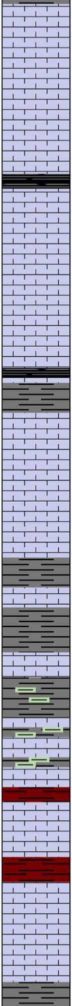
Sh: lt gry-lt grn

LS: wht, some totall ool, dns w/ pr por. Trng scat ooc por, many chlky rx. All Totally barren, no od.

Sh: gry







LS: wht, totally ool. V gd ooc por, totally barren, no od.

LS: ala

Stark 3919 (-1809)

Sh: Black Carb

LS: wht, fn xln, mostly subxln-chlky. Scat ooc por, poss carry from "J". All NS and no od.

LS: wht w/ tan, fn-md xln, pr por and dns, NS.

Sh: Black Carb

LS: wht, ool, fr-gd ooc por, scat chlky rx. Totally barren no od.

LS: wht-tan, fn xln. Pr por and dns, all NS.

LS: wht-tan, fn xln. Subxln in prt, mostly dns, NS.

BKC 3996 (-1886)

Sh: gry

LS: tan-wht, fn xln, pr por and dns. All totally barren, no od.

Sh: gry w/ lt grn

Shales trng lt grn/tourq w/ brn

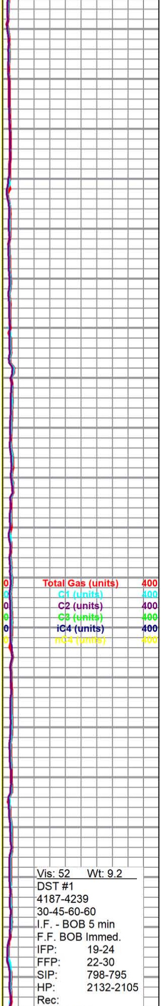
LS: tan-wht, fn xln

Sh: brn

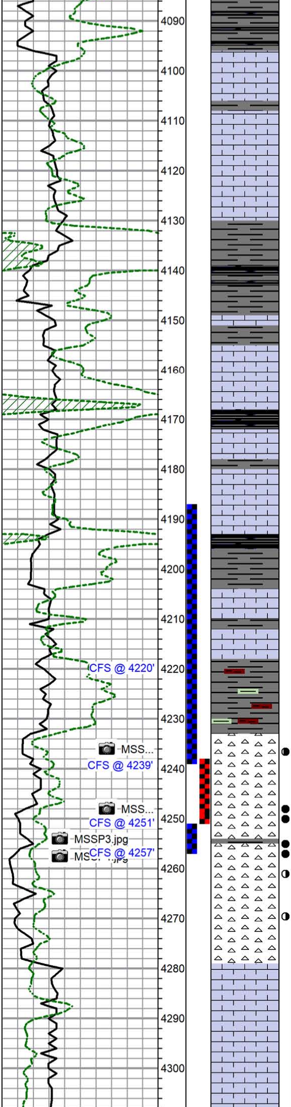
LS: wht, fn xln. Pr por, scat subxln-chlky, all NS.

Sh: brn

LS: much ala, more chlky rx. NS.



Vis: 52 Wt: 9.2
DST #1
4187-4239
30-45-60-60
I.F. - BOB 5 min
F.F. BOB Immed.
IFP: 19-24
FFP: 22-30
SIP: 798-795
HP: 2132-2105
Rec:



Sh: drk gry w/ some black

LS: wht, fn-vfn xln, no vis por, dns.

LS: mostly ala, some lt tan.

LS: ala

Sh: drk gry w/ much black carb

Sh: gry w/ drk gry, poss carry from above. Dns LS stringers

LS: wht-tan, fn xln, pr por. Scat subxln rx, NS.

Sh: Black Carb

Fort Scott 4172 (-2062)

LS: tan, fn xln. V dns w/ no vis por, totally barren, no od.

LS: mostly ala, dns w/ pr por, NS.

Cherokee Sh 4193 (-2083)

Sh: Black Carb

Sh: trng gry

LS: tan, fn-md xln. Mostly dns w/ pr por, totally barren, no od.

LS: ala

Sh: much gry w/ scat brn and lt grn.

Miss 4233 (-2123)

◐ Cht: wht, some tan, some yel. Scat shp and fresh, mostly sltly weath, frac in prt, some pp por. Scat fr edge stn w/ rnbw SFO, rare spttd SFO. Dull Flour, no od.

Cht: much ala w/ fr amt gry sh, poss trip trash

● ● Cht: mostly wht, some tan and yel. Scat fresh w/ gd rnbw stn on frac plain, mostly weath-v weath, scat gd vug and pp por. Gd stn and some gd sat w/ gd SFO, fr od. Gd grn flour and streaming cut.

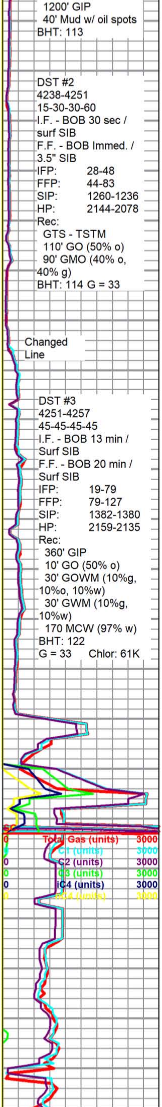
● ● ◐ Cht: trng mostly wht-smoke, some lt tan-brn. V weath w/ large vugs, gd sat blk stn, gd-v gd SFO, gssy when broken. Gd grn flour and streaming cut, fr od. 60' cfs trng mostly wht, some fresh and shp, mostly weath w/ gd vug por, gd lt brn sat stn, gd SFO, gd od. Free oil on cup.

◐ Cht: wht, still mostly weath w/ gd vug por, increasing amt fresh and shp. Scat fr lt brn stn and SFO, many barren rx. Fnt-no od, scat fr flour.

Gilmore City 4279 (-2169)

LS: wht-lt tan, fn-md xln, scat vfn xln. V dns w/ no vis por, totally barren, no od. fr amt gry sh.

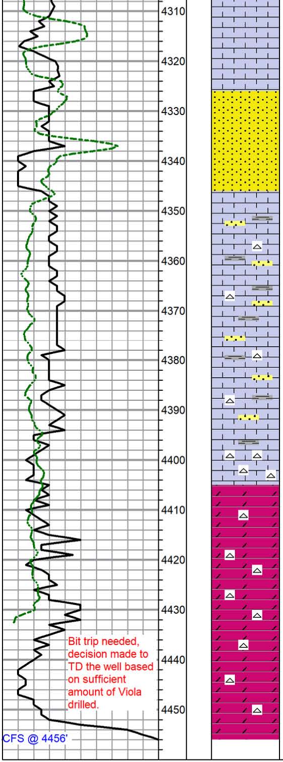
LS: mostly ala, totally barren, scat ool. Increasing amt sh.



1200' GIP
40' Mud w/ oil spots
BHT: 113

DST #2
4238-4251
15-30-30-60
I.F. - BOB 30 sec / surf SIB
F.F. - BOB Immed. / 3.5" SIB
IFP: 28-48
FFP: 44-83
SIP: 1260-1236
HP: 2144-2078
Rec:
GTS - TSTM
110' GO (50% o)
90' GMO (40% o, 40% g)
BHT: 114 G = 33

DST #3
4251-4257
45-45-45-45
I.F. - BOB 13 min / Surf SIB
F.F. - BOB 20 min / Surf SIB
IFP: 19-79
FFP: 79-127
SIP: 1382-1380
HP: 2159-2135
Rec:
360' GIP
10' GO (50% o)
30' GOWM (10%g, 10%o, 10%w)
30' GWM (10%g, 10%w)
170 MCW (97% w)
BHT: 122
G = 33 Chlor: 61K



Bit trip needed, decision made to TD the well based on sufficient amount of Viola drilled.

CFS @ 4456'

LS: wht, fn xln, chlky. Totally barren, no od.

Kinderhook Sand 4326 (-2216)

SS: clr-wht qtz clust, fn-vfn grain, well rnd, fr-well sort. Fr IG por, frly friable, totally barren, no od.

SS: clr-wht qtz clust, fn-vfn grain, well rnd, fr-well sort. Gd IG por, friable, totally barren, no od.

Abundant Shale, mostly gry and drk gry, fr amt brn. Scat dns tan LS, scat SS ala, scat wht cht.

Mostly ala, some sh trng lt grn.

Mostly ala, abnt shale, still carrying much SS. Scat wht cht, some fresh, some weath

Still mostly ala, increasing amt wht cht, some fresh, some weath, few pcs sltly dolomitic. All NS.

Viola 4405 (-2295)

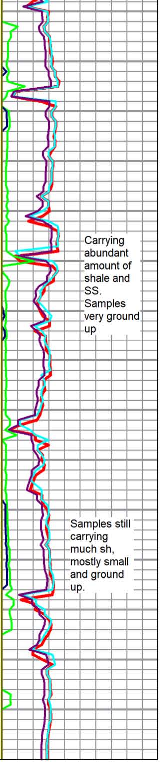
Scat vfn suc xln dolo, mostly wht, 1-2 pcs tan. Pr por and v tight, NS. Trng much v chlky LS. Fr amt shp wht LS, less sh than above, still carrying much SS.

Dolo: 2-3 pcs wht, vfn suc xln, 1 pc lt tan. Tight w/ p pr, mostly v chlky LS. Fr amt shp wht cht.

Dolo: wht w/ some lt tan, fn-vfn suc xln. Tight in prt, trng gd int xln por. Abnt v chlky LS, scat-fr amt shp wht cht. All totally barren, no od. Still carrying SS.

Dolo: much ala, w/ gd vug por. All NS.

RTD 4456 (-2346)



Carrying abundant amount of shale and SS. Samples very ground up

Samples still carrying much sh, mostly small and ground up.