Marc A. Downing

Consulting Petroleum Geologist

Geologic Report

Drilling Time and Sample Log

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

Lease **Flemming** No. **1-24**

API # **15-023-21521-0000**

Field **Wildcat**

Location **1640' FNL & 990' FEL**

Sec. **24** Twp. **5s** Rge. **37w**

County **Cheyenne** State **Kansas**

Elevation

KB	**3307**
DF	**3305**
GL	**3299**

Casing Record

Surface
8 5/8" @ 474'
Production
5 1/2" @ 4937'

Electrical Surveys

CNDL, DIL
MEL, Sonic

Formation	Sample tops	Log Tops	Datum	Struct Comp
Top Anhydrite	3019	3019	+288	-1
Base Anhydrite	3056	3056	+251	-4
Heebner	4141	4141	-834	-5
Toronto	4178	4178	-871	-3
Lansing	4192	4194	-887	-4
Stark	4394	4395	-1088	-3
BKC	4469	4470	-1163	FL
Marmaton	4486	4487	-1180	-5
Pawnee	4574	4574	-1267	+2
Fort Scott	4632	4634	-1327	+6
Cherokee Sh	4654	4656	-1349	+6
Morrow Sh	4801	4803	-1496	-6
Mississippi	4866	4868	-1561	+18
Total Depth	4940	4941	-1634	

Reference Well For Structural Comparison **DNOCI - Kramer #1-24**
317' FSL & 1085' FWL, Sec. 24-5s-37w

Drilling Contractor		**Discovery Drilling, Rig #4**		
Commenced	**9-26-19**	Completed		**10-6-19**
Samples Saved From		**4100**	To	**RTD**
Drilling Time Kept From		**3900**	To	**RTD**
Samples Examined From		**4100**	To	**RTD**
Geological Supervision From		**4000**	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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ROCK TYPES

▨	Dolprim	▨	shale, gry	▨	shale, red	▨	Ss
▨	Lmst fw7>	▨	Carbon Sh	▨	Shcol	▨	Sltst

ACCESSORIES

MINERAL
- ▲ Chert, dark
- ⦤ Dolomitic
- ᔓ Glauconite
- •• Silty
- △ Chert White

STRINGER
- Sandstone
- Siltstone
- Shale
- green shale
- red shale

OTHER SYMBOLS

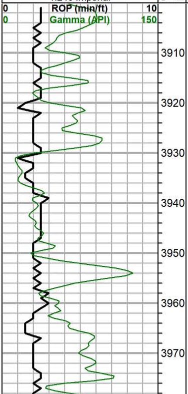
OIL SHOWS
- ● Even Stn
- ● Spotted Stn 50 - 75 %
- ◑ Spotted Stn 25 - 50 %
- ◔ Spotted Stn 1 - 25 %
- ○ Questionable Stn
- D Dead Oil Stn
- ■ Fluorescence

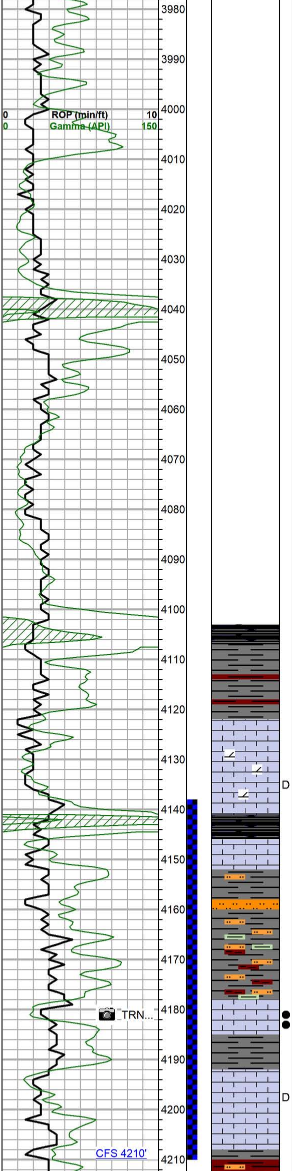
MISC
- DR Daily Report
- Digital Photo
- Document
- Folder
- Link
- Vertical Log File
- Horizontal Log File
- Core Log File
- Drill Cuttings Rpt

DST
- DST Int
- DST alt
- Core
- tail pipe

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track #1 ROP (min/ft) Gamma (API) 1:240 Imperial	Depth | Intervals Cored Interval DST Interval	DST	Lithology	Oil Shows	Geological Descriptions	Comment





Topeka 4009 (-702)

Sh: Black Carb

Sh: gry w/ scat brn

Oread 4122 (-815)

LS: wht, fn-vfn xln, many chlky rx. Scat suc/dolomitic rx w/ few foss, fr-gd intxln por, w/ dead tarry stn, NSFO, no od. Rest barren.

Heebner 4141 (-834)

Sh: Black Carb

LS: wht-tan, fn xln, dns. All NS.

Sh: mostly gry-lt gry, v silty/sndy. Scat lt gry-grn w/ some brn-red.

Toronto 4178 (-871)

LS: wht, md xln, many foss, frag in prt, w/ fr amt sml-md ool, few rx dolomitic. Fr-gd vug por, tight in prt, w/ vgd SFO in por, sltly hvy. Vfnt-no od (questionable), much free oil on cup.

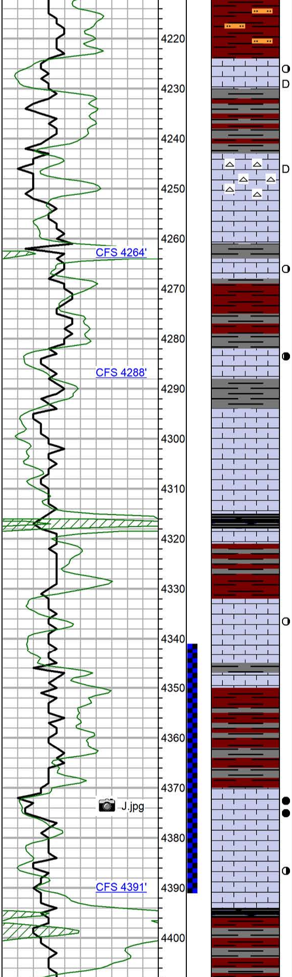
Lansing 4192 (-885)

LS: wht, fn-md xln, few foss. Scat fr vug por, some subxln-chlky. Few rx w/ hvy-dead blk stn, mostly barren. No od.

NOTE:
Gamma Ray has
been shifted to fit
ROP

Vis: 50 Wt: 8.9

DST #1
4138-4210
45-45-45-45
I.F. - BOB 24 min
F.F. - BOB 40 min
IFP: 17-122
FFP: 128-215
SIP: 1179-1147
HP: 2003-1916
Rec:
20' mud w/ oil spots
189' MW (50% w)
252' MCW (95% w)
BHT: 135 Chlor: 19K



Sh: brn-red, silty. Few pcs gry

LS: wht, fn-md xln, few sml foss. Subxln-chlky w/ v hvy SFO (some dead stn) in pr-fr pp por, no od.

Sh: gry w/ brn-red

LS: wht, mostly fn xln, subxln in prt, w/ scat dead blk stn. Abnt shp cht, mostly lt tan, some wht, org, tan. Few pcs w/ slt rnbw stn on edge, NSFO, no od.

Sh: gry

LS: wht, fn-md xln, mostly dns. 1-2 rx w/ hvy SFO in pr-fr vug por, no od.

Sh: red-brn

LS: wht, md xln, foss in prt. Fr pp por w/ scat sml vugs, sltly tight. Fr sat stn w/ fr-gd SFO in por, sltly hvy. No od.

Sh: gry w/ brn

LS: wht, md xln, few sml frag foss. Some fr-gd intxln por w/ few sml vugs, fr amt subxln-chlky. Totally barren, no od.

LS: trng tan-wht, fn xln, v dns, no vis por

Sh: Black Carb

Sh: brn-red, scat gry

LS: wht, md xln, scat foss. 2-3 rx w/ fr stn and sptd SFO in pr pp por, tight. Rest barren, all no od.

Sh: gry

Sh: brn-red, silty in prt. Scat gry

LS: tan-brn, md xln, tot ool w/ scat frag foss. Some gd int ool/foss por and friable, poss frac, some sltly tight. Gd sat w/ gd SFO, gssy in prt on break. lt-fr od, free oil on cup.

LS: wht, fn-md xln, 2-3 rx w/ few foss, fr-gd vug por, poss frac, w/ fr-gd lt brn stn and SFO. Many chlky rx w/ NS, no od.

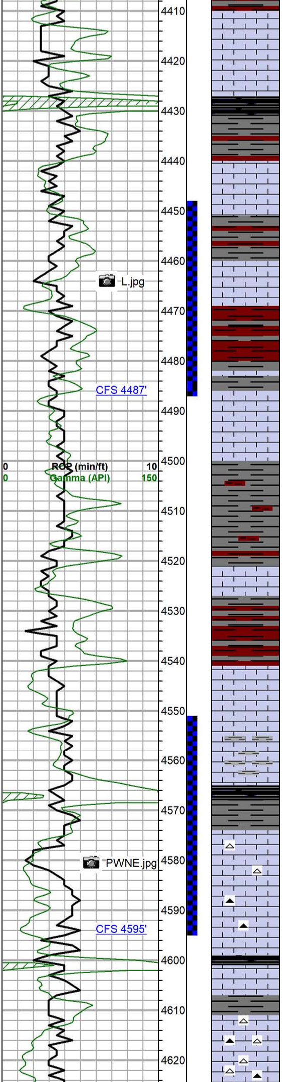
Stark 4394 (-1087)

Sh: Black Carb

Sh: red w/ brn and gry

Vis: 59 Wt: 9.1

DST #2
4341-4391
30-45-30-45
I.F. - BOB 6.5 min / 5" SIB
F.F. - BOB 7.5 min / 8.5" SIB
IFP: 42-115
FFP: 122-180
SIP: 1263-1230
HP: 2257-2058
Rec:
945' GIP
194' GO (80% o)
63' GMO (30% g, 35% o)
63' GMO (30% g, 40% o)
63' GWOCM (30% g, 25% o, 5% w)
63' GOWCM (15% g, 10% o, 10% w)
BHT: 139 G: 35 Chlor: NA



LS: mostly wht, fn xln, pr por and dns. Scat subxln-chlky rx, all w/ NS. 1-2 rx ool w/ frag foss, fr-gd int ool and vug por, w/ fr-gd sat stn and SFO (possible carry from J?). No od.

Sh: Black Carb

Sh: gry w/ brn-red

LS: wht, fn-md xln, scat foss and ool. Mostly pr por and dns, scat subxln-chlky rx. All NS, no od.

Vis: 67 Wt: 9.2

DST #3
4448-4487
30-30-30-30
I.F. - 2", died to 1.25"
F.F. - Dead, flush, surge, dead
IFP: 27-27
FFP: 27-28
SIP: 51-38
HP: 2207-2100
Rec:
15' mud
BHT: 128

Sh: gry w/ brn

LS: brn-tan, fn-md xln, foss. Gd vug por in tight mtx, w/ fr-gd sat, gd-vgd SFO-black, sltly hvy. Fr-gd od.

BKC 4469 (-1162)

Sh: red-brn w/ gry

Marmaton 4486 (-1179)

LS: wht-crm, fn xln, subxln in prt, mostly dns. Trng gry, fn-vfn xln. No vis por and v dns. All barren w/ no od. Fr amt gry limy sh.

Sh: gry w/ scat brn, limy in prt, silty in prt.

Sh: ala w/ increasing amt brn-red, silty in prt.

LS: tan, md xln, few sml frag foss. Mostly pr por and dns, totally barren, no od.

Sh: mostly brn-red, silty in prt, scat gry.

LS: tan-wht-crm, fn-vfn xln. Mostly dns w/ pr por and barren. 1 pc w/ pr stn and spttd SFO in fr intxln por, subxln in prt. No od.

Vis: 64 Wt: 9.2

DST #4
4551-4595
10-30-10-30
I.F. - BOB 25 sec (289"), GTS 4 min / BOB 5 min SIB
F.F. - BOB 25 sec / BOB 8 min SIB
IFP: 849-991
FFP: 1058-1172
SIP: 1374-1350
HP: 2300-2020
Rec:
GTS - TSTM
3369' GO (65% o)
BHT: 148 G: 32

📷 OilReversedOut.jpg

LS: wht-lt tan, some crm. Fn-vfn xln and dns, all NS. Much lt gry sh intbeds, firm. No od.

Sh: Black Carb

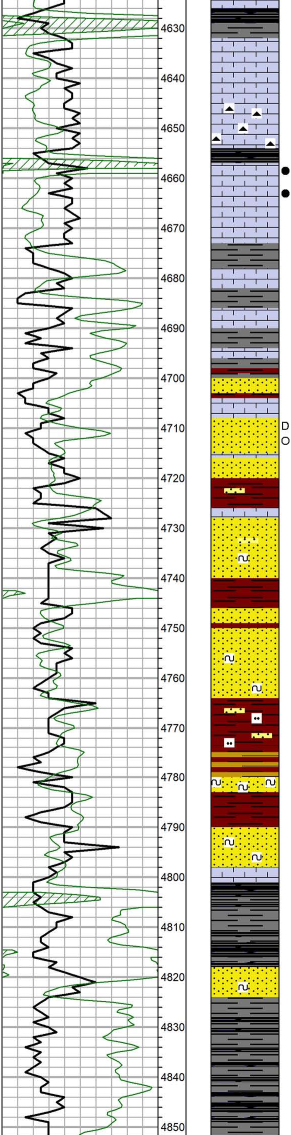
Pawnee 4574 (-1267)

LS: wht, tot ool, sml-md, few frag foss. Gd int ool por w/ scat gd vugs, some v friable, some sltly tight. Gd sat stn, 3-4 rx w/ vgd sat, w/ gd SFO, gssy in prt. Gd strong od, free oil on cup. Few pcs wht foss ang cht.
LS: trng tan-brn, mostly fn xln, some fn-md xln. V dns w/ no vis por, scat tan-brn shp cht.

Myrick Station 4601 (-1294)

LS: tan-wht, fn-md xln, mtld dark. Scat subxln-chlky rx, mostly dns w/ pr por. Totally barren, no od.

LS: wht, fn-vfn xln, dns w/ no vis por, scat chlky rx. Much shp cht, wht, tan, gry, foss in prt. Totally barren, no od.



Sh: Black Carb

Fort Scott 4632 (-1325)

LS: wht, fn xln, few foss. Scat subxln-chlky rx, mostlyv dns w/ no vis por. Totally barren, no od.

LS: wht-tan, much ala, w/ much shp blk cht, foss in prt. NS, no od.

Cherokee Sh 4654 (-1347)

Sh: Black carb

Vis: 64 Wt: 8.9

LS: tan, fn xln. Fr vug por trng fr-gd, in tight mtx, few rx w/ poss frac pln. Fr stn w/ fr-gd SFO in por, sltly gssy when broken. Fr od, slight free oil on cup.

Sh: gry-drk gry

Sh: ala

Sh: gry w/ brn, silty in prt

SS: clr-wht, much colorless, qtz clust, scat free grains. fn-md-crs grain, v pr sort, ang. Fr-gd IG por, friable. Abnt dead blk stn/gilsonite, rare v hvy/tarry SFO, lt od.

Sh: brn-red, silty/sndy, carrying sand from above

LS: tan-wht, fn xln, dns, NS

SS: clr-wht, fn-md-crs grain, many lrg qtz grains. Pr sort, sub-ang, fr IG por, sltly tight. Scat glauconite and K-spar, scat org cht. Some gilsonite, poss carry, mostly barren.

Sh: red-brn, v silty/sndy

SS: clr-wht clust, md-crs grain, mostly pr sort, sub-ang. Fr IG por, friable in prt, mostly barren, scat gilsonite. Some K-spar, few pcs glauconite.

Sh: brn-red, v silty/sndy, scat yel and lt grn. Scat clean SS clust, fn-md grain, well sort, sub rnd, NS.

SS: wht, fn-vfn grn, fr-well rnd, well sort, much glauconite. Pr-fr IG por, friable in prt. Totally barren, no od.

SS: mostly ala

abnt red shaly ls w/ tan-yel layered striations. V dns w/ no vis por, NS.

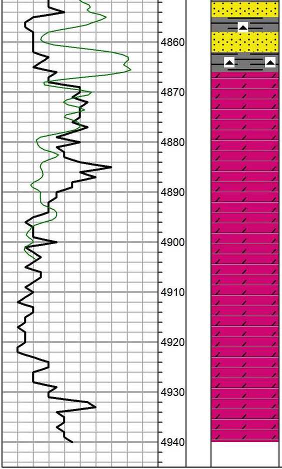
Morrow Sh 4801 (-1494)

Sh: trng drk gry w/ some blk carb, scat pyt flakes. Few SS clust, wht, md grain, sub-ang, well sort, friable, NS.

Vis: 56 Wt: 8.9

SS: wht, clust, md grain, sub-ang, well sort, friable. All NS, some glauconite.

Sh: much ala, more blk carb



SS: wht-clr, md-crs grain, fr rnd, well sort, glauc. Fr IG por, totally barren, no od. Still much drk gry-blk sh

Fr amt ss and sh ala, w/ lrg shp org cht.

Mississippi 4866 (-1559)

Dolo: tan-brn, vfn-mic xln, suc. Vdns w/ no vis por, totally barren, no od.

Dolo: trng lt tan-wht, vfn suc xln, scat glauconite. Fr-gd intxln por, totally barren, no od.

Dolo: much ala, w/ scat wht weath cht, w/ pyt inclusions. All NS.

Dolo: wht-lt tan, vfn suc xln. Gd intxln por, friable, totally barren. Scat cht ala.

Dolo: tan, fn-md xln. Trng dns w/ pr por, NS.

Total Depth: 4940 (-1633)