

Marc A. Downing
Consulting Petroleum Geologist

Geologic Report
Drilling Time and Sample Log

Operator Downin-Nelson Oil Co., Inc.		Elevation KB 2077 DF 2075 GL 2069	
Lease Ruder		No. 1-31	
API# 15-051-26944-0000		Casing Record Surface 8 5/8" @ 1320' Production 5 1/2" @ 3705'	
Field Wildcat		Electrical Surveys CNDL / DIL MEL	
Location 330' FNL & 330' FWL			
Sec. 31	Twsp. 14s	Rgc. 18w	
County Ellis	State Kansas		
Formation	Sample tops	Log Tops	Datum Struct Comp
Top Anhydrite	1314	1314	+763 -4
Base Anhydrite	1356	1354	+723 -1
Topeka	3087	3087	-1010 -4
Heebner	3342	3342	-1265 -4
Toronto	3361	3361	-1284 -5
LKC	3388	3388	-1311 -3
BKC	3627	3626	-1549 -9
Marmaton	3655	3655	-1578 -4
Arbuckle	3703	3703	-1626 -10
Total Depth	3711	3711	-1634

Reference Well For Structural Comparison **DNOCI**
Virginia #1-30 770' FSL & 1390' FWL Sec. 30-14s-18w

Discovery Drilling, Rig #4
 Commenced **1-31-19** Completed **2-8-19**
 Samples Saved From **3050** To **RTD**
 Drilling Time Kept From **2950** To **RTD**
 Samples Examined From **3050** To **RTD**
 Geological Supervision From **3050** To **RTD**

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

Respectfully Submitted,
 Marc A. Downing

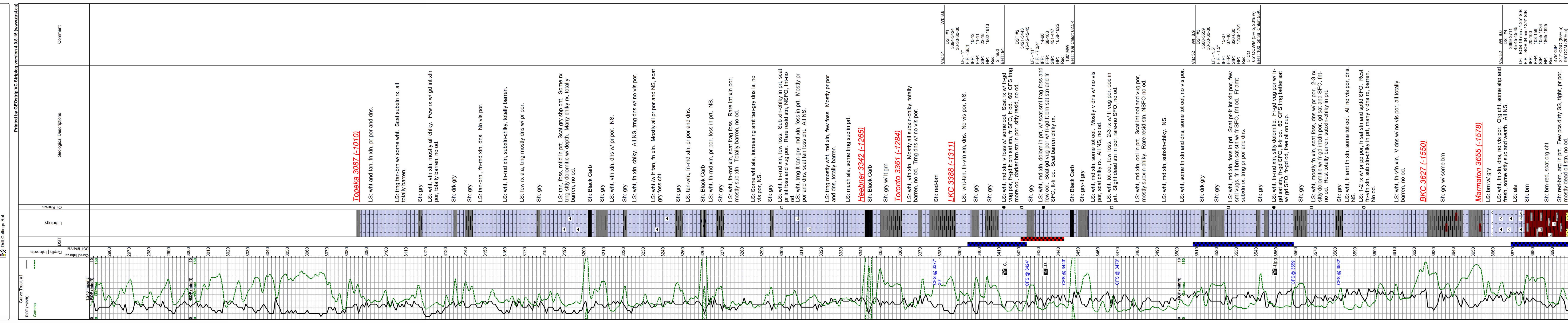
ROCK TYPES
 Carbon Sh shale, red
 Lmsst fm?> shale, gry
 Chrt Dolprsm

ACCESSORIES
 STRINGER Sandstone
 Sandstone Shale red shale
 MISC Daily Report Digital Photo Document Folder Link Vertical Log File Horizontal Log File Core Log File Drill Cuttings Rpt

OTHER SYMBOLS
 DST DST Int DST alt Core tail pipe
 OIL SHOWS Even Stn Spotted Stn 50 - 75 % Spotted Stn 25 - 50 % Spotted Stn 1 - 25 % Questionable Stn Dead Oil Stn Fluorescence

MINERAL
 Chert dark Chert White

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Geological Descriptions
 Comment
 Vis: 51 WT: 8.8
 DST #1 3394-3424 30-30-30-30
 I.F. - 11" I.F. - 1.5"
 I.F. - Surf I.F. - 1.5"
 FFP: 10-12 FFP: 11-11
 FFP: 22-18 FFP: 22-18
 HP: 1662-1613 HP: 1662-1625
 Rec: 2 mud Rec: 2 mud
 BHT: 94 BHT: 94
 Vis: 52 WT: 8.9
 DST #3 3500-3559 30-30-30-30
 I.F. - 1.5" I.F. - 1.5"
 I.F. - 1.5" I.F. - 1.5"
 FFP: 37-46 FFP: 37-46
 FFP: 820-660 FFP: 820-660
 HP: 1728-1701 HP: 1728-1701
 Rec: 5 CO Rec: 5 CO
 65' OCWM (5% o. 20% w) 65' OCWM (5% o. 20% w)
 BHT: 100 BHT: 100
 Vis: 52 WT: 9.0
 DST #4 3669-3711 45-45-45-45
 I.F. - BOB 34 min / 1.25' SB I.F. - BOB 34 min / 1.25' SB
 F.F. - BOB 34 min / 3/4" SB F.F. - BOB 34 min / 3/4" SB
 20' OIL 20' OIL
 FFP: 1055-1034 FFP: 1055-1034
 HP: 1865-1825 HP: 1865-1825
 Rec: 475' GIP Rec: 475' GIP
 317' CGO (65% o) 317' CGO (65% o)
 95' OCM (20% o) 95' OCM (20% o)
 BHT: 109 BHT: 109
 G = 26

Oil Shows
 Oil Shows
 Heebner, Toronto, LKC, BKC, Marmaton, Arbuckle

Geological Descriptions
 Comment
 Heebner 3087 (-1010)
 LS: wht and tan, fn xin, pr por and dns.
 LS: trng tan-brn w/ some wht. Scat subxln rx, all totally barren.
 Sh: gry
 LS: wht, vfn xin, mostly all chiky. Few rx w/ gd int xln por, totally barren, no od.
 Sh: drk gry
 Sh: gry
 LS: tan-brn, fn-md xin, dns. No vis por.
 LS: wht, fn-md xin, subxln-chiky, totally barren.
 LS: few rx ala, trng mostly dns w/ pr por.
 Sh: gry
 LS: tan, foss, mtld in prt. Scat gry shp cht. Some rx trng silty dolomitic w/ depth. Many chiky rx, totally barren, no od.
 Sh: Black Carb
 Sh: gry
 LS: wht, vfn xin, dns w/ pr por. NS.
 Sh: gry
 LS: wht, fn xin, chiky. All NS, trng dns w/ no vis por.
 LS: wht /w lt tan, fn xin. Mostly all pr and NS, scat gry foss cht.
 Sh: gry
 LS: tan-wht, fn-md xin, pr por and dns.
 Sh: Black Carb
 LS: wht, fn-md xin, pr por, foss in prt. NS.
 Sh: gry
 LS: wht, fn-md xin, scat frag foss. Rare int xln por, mostly sub xln. Totally barren, no od.
 LS: Some wht ala, increasing amt tan-gry dns ls, no vis por, NS.
 Sh: gry
 LS: wht, fn-md xin, few foss. Sub xln-chiky in prt, scat pr int foss and vug por. Rare resid stn, NSFO, fnt-no od.
 LS: wht, trng lt tan-gry, md xin, foss in prt. Mostly pr por and dns, scat tan foss cht. All NS.
 LS: trng mostly wht, md xin, few foss. Mostly pr por and dns, totally barren.
 LS: much ala, some trng suc in prt.
 Heebner 3342 (-1265)
 Sh: Black Carb
 Sh: gry w/ lt grm
 Toronto 3361 (-1284)
 LS: wht, vfn xin. Mostly all subxln-chiky, totally barren, no od. Trng dns w/ no vis por.
 Sh: red-brn
 LKC 3388 (-1311)
 LS: wht-tan, fn-vfn xin, dns. No vis por, NS.
 Sh: gry
 Sh: gry
 LS: wht, md xin, v foss w/ some ool. Scat rx w/ fr-gd vug por, fr-gd lt brn sat stn, fr SFO, it od. 60' CFS trng more ool, darker brn stn in por, silty resid, no od.
 Sh: gry
 LS: wht, md xin, dolom in prt, w/ scat sml frag foss and few ool. Scat gd vug por w/ fr-gd lt brn sat stn and fr SFO, it-fr od. Scat barren chiky rx.
 Sh: Black Carb
 Sh: gry-lt gry
 LS: wht, md xin, some tot ool. Mostly v dns w/ no vis por, scat chiky rx. All NS, no od.
 LS: wht, tot ool, few foss. 2-3 rx w/ fr vug por, ooc in prt. Slight dead stn in por, rare-no SFO, no od.
 LS: wht, md xin, ool in prt. Scat int ool and vug por, mostly subxln-chiky. Rare resid stn, NSFO no od.
 LS: wht, md xin, subxln-chiky. NS.
 LS: wht, some fn xin and dns, some tot ool, no vis por.
 Sh: drk gry
 Sh: gry
 LS: wht, md xin, foss in prt. Scat pr-fr int xln por, few sml vugs. fr it brn sat stn w/ fr SFO, fnt od. Fr amt subxln rx, trng pr and dns.
 Sh: gry
 LS: wht, fn-md xin, silty dolomitic. Fr-gd vug por w/ fr-gd sat stn, fr-gd SFO, it-fr od. 60' CFS trng better sat w/ gd SFO, fr-gd od, free oil on cup.
 Sh: gry
 LS: wht, mostly fn xin, scat foss, dns w/ pr por. 2-3 rx silty dolomitic w/ fr-gd int xln por, gd sat and SFO, int-no od. Rest totally barren, subxln-chiky in prt.
 LS: wht, fr amt fn xin, some tot ool. All no vis por, dns, NS.
 LS: 1-2 rx w/ pr pp por, fr sat stn and spnt SFO. Rest fn-vfn xin, sub xln-chiky in prt, many v dns rx, barren. No od.
 LS: wht, fn-vfn xin. V dns w/ no vis por, all totally barren, no od.
 BKC 3627 (-1550)
 Sh: gry w/ some brn
 Marmaton 3655 (-1578)
 LS: brn w/ gry
 LS: wht, fn xin, dns, no vis por. Org cht, some ship and fresh, some silty suc and weath. All NS.
 LS: ala
 Sh: brn
 Sh: brn-red, scat org cht
 Sh: red-brn, arg in prt. Few pos dirty SS, tight, pr por, mostly dead oil stn, no od.
 Arbuckle 3703 (-1626)
 Dole: wht, fn-md from xin. Many tight rx in top w/ pr int xln por, fr sat stn and fr SFO, it-fr od. 60' CFS trng fr int xln and vug por, fr-gd sat w/ gd SFO, fr od. Still carrying many tight rx.