



Musgrove

Petroleum Geology
212 Main Street, Claflin KS

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY <u>Hupfer Operating, Inc.</u>	ELEVATIONS
LEASE <u>Burmeister 'A' #2</u>	KB <u>1784'</u>
FIELD <u>Chase-Silica</u>	DF _____
LOCATION <u>W2-SW-SE-SE (360' FSL & 430' FWL)</u>	GL <u>1778'</u>
SEC <u>33</u> TWSP <u>19S</u> RGE <u>11W</u>	Measurements Are All From <u>KB</u>
COUNTY <u>Barton</u> STATE <u>Kansas</u>	
CONTRACTOR <u>Discovery Drilling, inc. (Rig # 2)</u>	CASING
SPUD <u>08/13/2018</u> COMP <u>08/20/2018</u>	SURFACE <u>8 5/8"@258'</u>
RTD <u>3355'</u> LTD <u>3337'</u>	PRODUCTION <u>5 1/2"@3365'</u>
MUD UP <u>2500'</u> TYPE MUD <u>Chemical</u>	ELECTRICAL SURVEYS
	Gemini Wireline;
	DIL, CDNL, Micro Log

SAMPLES SAVED FROM _____ 2600' TO _____ RTD

DRILLING TIME KEPT FROM _____ 2800' TO _____ RTD

SAMPLES EXAMINED FROM _____ 2800' TO _____ RTD

GEOLOGICAL SUPERVISION FROM _____ 2800' TO _____ RTD

GEOLOGIST ON WELL Jim Musgrove

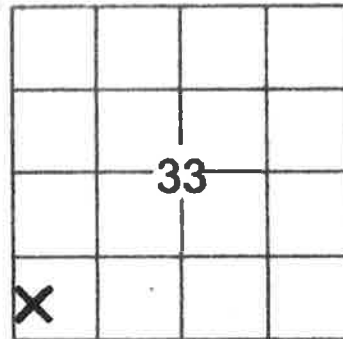
FORMATION TOPS	LOG		SAMPLES	
Anhydrite	517	+1267	RTD	3365 (-1581)
B. Anhydrite	541	+1243	LTD	3355 (-1571)
Heebner	2919	(-1135)		
Toronto	2936	(-1152)		
Douglas	2949	(-1165)		
Douglas Sd.	2980	(-1196)		
Brown Lime	3043	(-1259)		
Lansing	3063	(-1279)		
Base KC	3306	(-1522)		
Conglomerate Chert	3316	(-1532)		
Arbuckle	3335	(-1551)		

33

X

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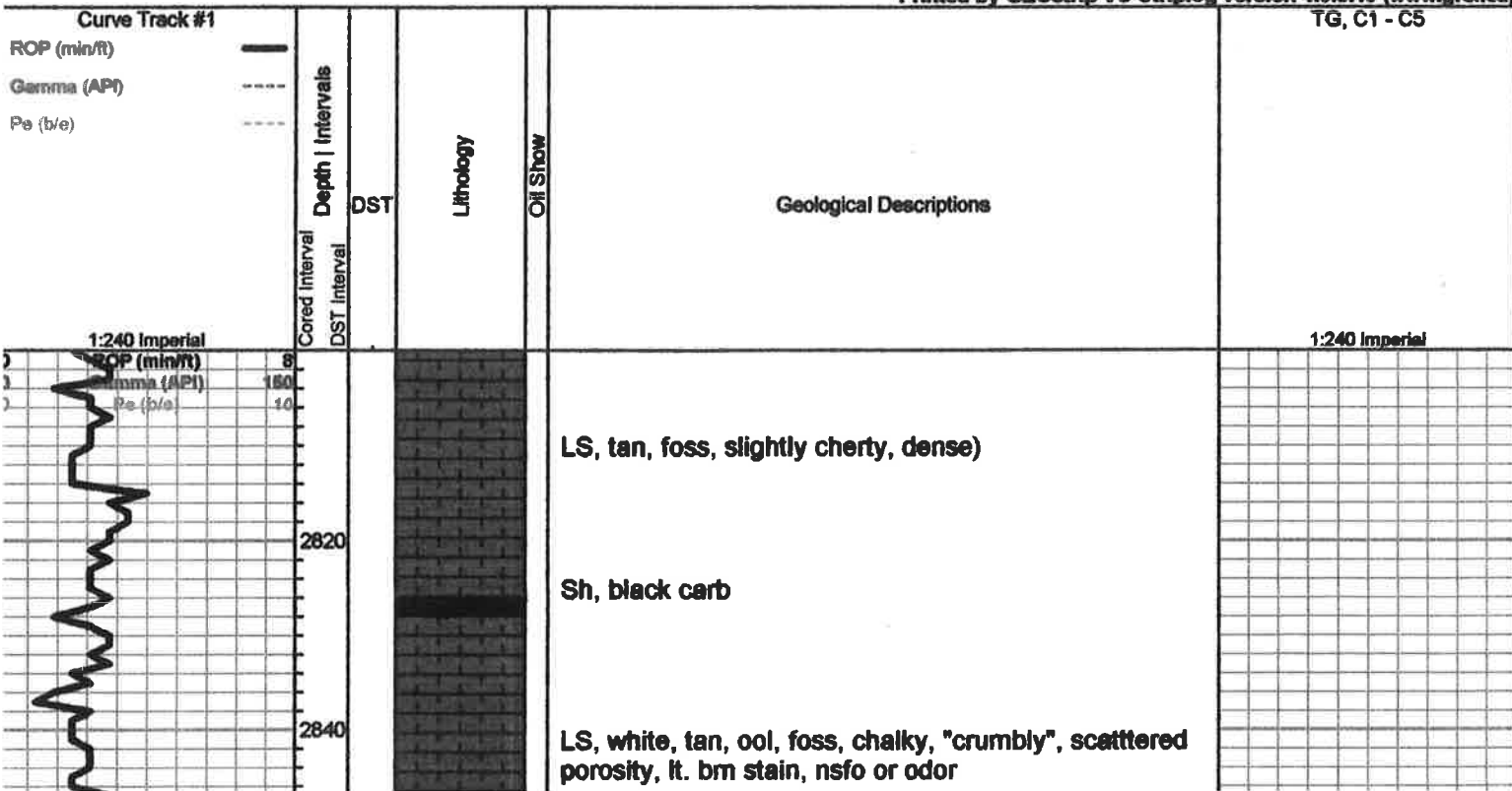
LEGEND

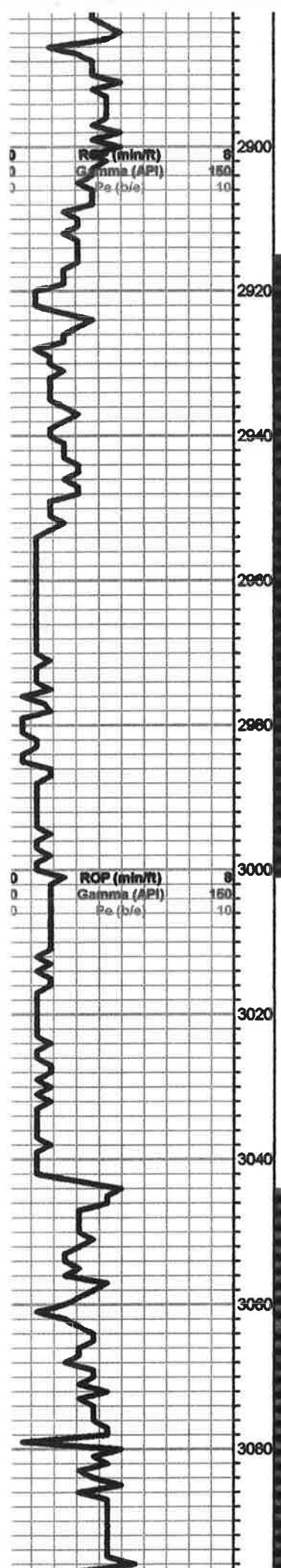
- Oil Show**
- Good Show
 - Fair Show
 - Poor Show
 - Spotted or Trace
 - Questionable Str
 - D Dead Oil Str
 - Fluorescence
 - * Gas
- DST**
- DST Int
 - DST alt
 - Core
 - || tail pipe

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TG, C1 - C5

1:240 Imperial





LS, a/a

LS, white, cream, tan, fxl, chalky--> cherty, tr. gry chert

Heebner 2919.0 (-1135.0)

Sh, black carb

Toronto 2934.0 (-1150.0)

LS, white, cream, fxl, scattered inxln porosity, brown/blk stain, sfo, no odor

Douglas 2949.0 (-1165.0)

Sh, gry/ gryish, green, silty

DST#1 2914-3000

30-30-45-60

1st Open:
BOB 18 mins.

2nd Open:
BOB 3.5 mins

Recovery;
585' GIP

240' SOGCM
(16%G, 13%O, 0%
W, 71%M)

ISIP 645 psi
FSIP 795 psi
IFP 89-101 psi
FFP 98-115 psi
HSH 124-1279 psi

Douglas Sd 2978.0 (-1194.0)

Sd. white, gry, vfg, qtz, sub rounded, friable, fair ingranular porosity, blk/bm stain, sat. sfo, ??? odor

Sh, gry, gryish green silty

Sh, a/a

Brown Lime 3042.0 (-1258.0)

LS, tan/ bm, fxl, slightly cherty, dense

Sh, gry, gryish green

Lansing 3060.0 (-1276.0)

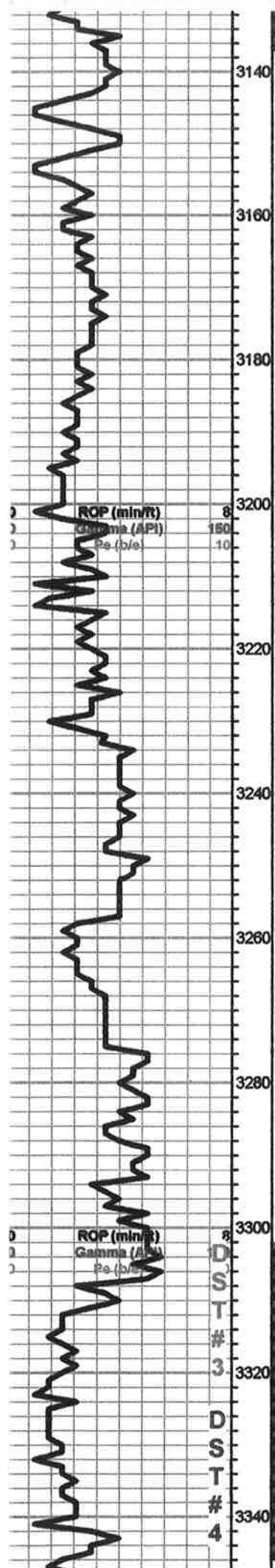
LS, white, cream, chalky, poor vis. porosity, tr. bm spity stain, nsfo, no odor

DST#2 3045-3136

30-30-45-60

1st Open
BOB 1.5 min

LS, white, cream, fxl, chalky in part, fine vuggy-p.p. porosity, golden brown stain, sfo, ft. odor



LS, tan, oom, fair oom porosity, ft. bm stain, tr. fo, no odor

LS, a/a, ft. odor

LS, white, cream, tan, fxl, cherty in pts, few chalky

Tr. Sh, black carb

LS, white/ cream, oom, chalky in pt, dk brown -blk stain, nsfo, no odor

LS, white, tan, ool, chalky poor vis. porosity, bm stain, tr. fo, ft. odor

LS, white/ gry, ool, sub oom, chalky, tr. brown/ blk stain, nsfo, ft. odor

LS, white/ gry, slightly cherty (dense)

Tr. gry/ maroon- blk shale

LS, white, ool, chalky, tr. brown/ blk stain, tr. fo, no odor
Sh, black carb

BKC 3307.0 (-1523.0)

Sh, maroon-green, tr. white chert

Chert, gry, opaque, & gry ool chert

Tr. gry soft sh/ clay

Arbuckle 3335.0 (-1551.0)

Dol. tan, buff., suc. scattered p.p. porosity, bm stain/ sat. sfo, odor

Dol. a/a, inc. cherty, tr. stain, tr. fo

(3%G, 53%O, 8%W, 36%M)

310' O&GCMW
(33%G, 10%O, 17%W, 40%M)

250' SLO&GCMW
(17%G, 39%O, 8%W, 15%M)

Pressures
ISIP 696 psi
FSIP 700 psi
IFP 84-236 psi
FFP 227-362 psi
HSH 1442-1432 psi

DST#3 3303-3345
30-30-45-45

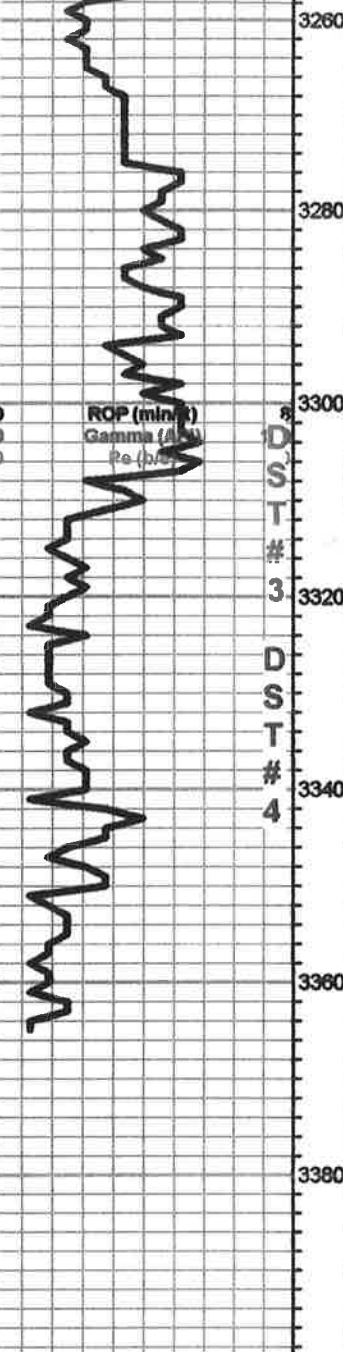
1st Open:
weak

2nd Open:
weak
Recovery:
30' mud, tr. oil

Pressures:
ISIP 164 psi
FSIP 195 psi
IFP 30-33 psi
FFP 34-34 psi
HSH 1560 - 1559 psi

DST #4 3303-3355
30-30-45-45

1st Open:
Weak



3260
3280
3300
3320
3340
3360
3380

LS, white/ gry, slightly cherty (dense)

Tr. gry/ maroon- blk shale

LS, white, ool, chalky, tr. brown/ blk stain, tr. fo, no odor
Sh, black carb

BKC 3307.0 (-1523.0)

Sh, maroon-green, tr. white chert

Chert, gry, opaque, & gry ool chert

Tr. gry soft sh/ clay

Arbuckle 3335.0 (-1551.0)

Dol. tan, buff., suc. scattered p.p. porosity, bm stain/ sat. sfo, odor

Dol. a/a, inc. cherty, tr. stain, tr. fo

Dol. tan, white, fxl, suc. fr. p.p. porosity, blk/ bm, stain, sfo, odor, + white & cream, chalk

Dol., a/a, poor - fair porosity, + cream, boney chert; tr. stain, wk sfo, ft./ fr. odor

*RTD 3365.0 (-1581.0)

LTD 3337.0 (-1553.0)

30-30-45-45

1st Open:
weak

2nd Open:
weak

Recovery:
30' mud, tr. oil

Pressures:

ISIP 164 psi
FSIP 195 psi
IFP 30-33 psi
FFP 34-34 psi
HSH 1560 - 1559 psi

DST #4 3303-3355

30-30-45-45

1st Open:
Weak

Recovery:
20' Mud w/ tr. oil

Pressures:

ISIP 266 psi
FSIP 305 psi
IFP 20-23 psi
FFP 24-26 psi
HSH 1524-1571 psi