Musgrove
Petroleum Geology
212 Main Street, Claflin KS

NOTES

Company: H&D Exploration, LLC

Lease: FARRIS #1

Field:

Location: SW-NE-SW-SE (938' FSL & 1743' FEL)

Sec: 5 Twsp: 25S Rge: 12W

County: Stafford State: Kansas

KB: 1901' DF: 1894' GL: 1892'

Contractor: Southwind Drilling Inc. (Rig #3)

Spud: 11/13/2019 Comp: 11/21/2019

RTD: 3450' LTD: 3452'

Mud Up: 2900' Type Mud: Chemical

Samples Saved From: 3300' to RTD
Drilling Time Kept From: 3300' to RTD
Samples Examined From: 3300' to RTD
Geological Supervision from: 3400' to RTD

Geologist on Well: JIM MUSGROVE

Surface Casing: 8 5/8" @ 348'
Production Casing: None

Electronic Surveys: Logged by ELI WIRELINE Services, SONIC,DIL ,CNL/CDNL

	DRILLING				OIL / SWD/						D&A						D&A					
	H&D EXPLORATION				PARAMOUNT PETRO.						ZETCO PETROLEUM						ICER ADDIS OIL OPERATIONS					
	FARRIS # 1				McCUNE #3 (WAS MCUNE #1B)						MCCUNE "B" 1						AUSHERMAN #1					
	5-25S-12W (938' FSL & 1743' FEL)				4-25S-12W						8-25S-12W (4950' FSL & 990' FEL)						5-25-12W (1890 FSL & 1980 FWL)					
	KB	1901	GL	1892	KB	1893					KB	1892					KB	1898				
	LOG		SAMPLE		LOG		LOG		SMPL.		SAMPLE		LOG		SMPL.		LOG		LOG		SMPL.	
FORMATION	DEPTH	DATUM	DEPTH 2	DATUM3	DEPTH	DATUM4	CORR.5	Column5	CORR.6	Column7	DEPTH8	DATUM9	CORR.10	Column11	CORR.12	Column13	DEPTH14	DATUM15	CORR.16	Column17	CORR.18	Column19
ANHYDRITE TOP	701	1200	700	1192	710	1183	+	17	-	18							717	1181	+	19	+	20
ANHYDRITE BASE	728	1173	730	1171													725	1173	+	0	+	2
HEEBNER SHALE	3395	-1494	3393	-1492	3383	-1490	-	4	-	2	3388	-1490	-	4	-	2	3401	-1503	+	9	+	11
TORONTO	3411	-1510	3410	-1509							3407	-1509	-	1	+	0	3420	-1522	+	12	+	13
DOUGLAS	3439	-1538	3439	-1538													3446	-1548	+	10	+	10
DOUGLAS SD.	3457	-1556	3456	-1555																		
BROWN LIME	3552	-1651	3551	-1650	3539	-1646	-	5	-	4							3558	-1660	+	9	+	10
LANSING	3576	-1675	3575	-1674	3562	-1666	-	9	-	8	3571	-1673	-	2	-	1	3584	-1686	+	11	+	12
BKC	3861	-1960	3864	-1963							3859	-1961	+	1	-	2	3868	-1970	+	10	+	7
CONGLOMERATE	3907	-2006	3907	-2006	3914	-2021	+	15	+	15												
VIOLA	3981	-2080	3980	-2079	3980	-2087	+	7	+	8	3959	-2061	-	19	-	18	4052	-2154	+	74	+	75
SIMPSON SH.	4099	-2198	4099	-2198	4074	-2181	-	17	-	17	4093	-2195	-	3	-	3	4160	-2262	+	64	+	64

SIMPSON SD.	4110	-2209	4111	-2210																	
ARBUCKLE	4161	-2260	4162	-2261	4146	-2253	-	7	-	8	4153	-2255	-	5	-	6					
RTD	4230	-2329	4230	-2329	4217	-2324	-	5	-	5	4165	-2267	-	62	-	62	4175	-2277	-	52	-	52
LTD	4231	-2330	4231	-2330																	

Musgrove

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

H & D Exploration, LLC.

165 West 1st
P.O.Box 387
Hoisington, Ks. 67544
ATTN: Jim Musgrove

5-25s-12w Stafford Co. Ks.

Farris #1

Job Ticket: 65455 **DST#: 1**

Test Start: 2019.11.18 @ 14:23:18

GENERAL INFORMATION:

Formation: **Lansing I-L Zones**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:00:33
Time Test Ended: 20:55:03

Test Type: Conventional Bottom Hole (Initial)
Tester: Matt Smith
Unit No: 68

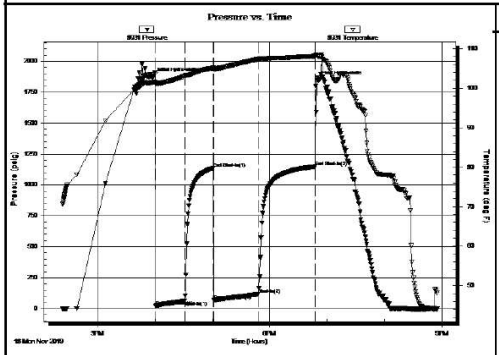
Interval: 3727.00 ft (KB) To 3820.00 ft (KB) (TVD)
Total Depth: 3820.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1901.00 ft (KB)
1892.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8931 **Inside**
Press@RunDepth: 116.05 psig @ 3728.00 ft (KB)
Start Date: 2019.11.18 End Date: 2019.11.18
Start Time: 14:23:23 End Time: 20:55:02

Capacity: 8000.00 psig
Last Calib.: 2019.11.18
Time On Btm: 2019.11.18 @ 15:57:48
Time Off Btm: 2019.11.18 @ 18:49:33

TEST COMMENT: IF: Fair - Strong Blow . Built to 11.09".
ISI: No Blow .
FF: Fair - Strong Blow . Built to 10.71".
FSI: No Blow .



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1870.98	101.42	Initial Hydro-static
3	22.27	101.07	Open To Flow (1)
33	61.90	102.99	Shut-In(1)
63	1135.48	105.05	End Shut-In(1)
64	67.52	104.82	Open To Flow (2)
111	116.05	107.28	Shut-In(2)
170	1148.40	108.02	End Shut-In(2)
172	1843.99	108.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GMCW 5%g 20%m 75%w	0.88
64.00	GMCW 5%g 10%m 85%w	0.90
63.00	GOspecWCM 5%g 25%w 70%m	0.88
32.00	GOsoecWCM 5%g 45%w 50%m	0.45
0.00	31' G.I.P. 100%g	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

H & D Exploration, LLC.

PO Box 387
Hoisington, KS 67544

ATTN: Jim Musgrove

5-25s-12w Stafford,KS

Farris #1

Job Ticket: 65456 **DST#: 2**

Test Start: 2019.11.20 @ 11:08:13

GENERAL INFORMATION:

Formation: **Arbucke**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:36:58
Time Test Ended: 18:55:13

Test Type: Conventional Bottom Hole (Reset)
Tester: Matt Smith
Unit No: 68

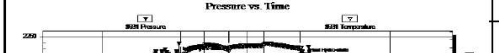
Interval: 4164.00 ft (KB) To 4172.00 ft (KB) (TVD)
Total Depth: 4172.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1901.00 ft (KB)
1892.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8931 **Inside**
Press@RunDepth: 343.10 psig @ 4165.00 ft (KB)
Start Date: 2019.11.20 End Date: 2019.11.20
Start Time: 11:08:18 End Time: 18:55:12

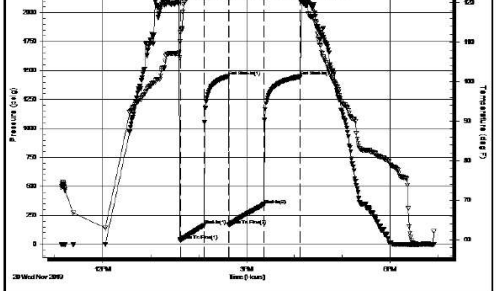
Capacity: 8000.00 psig
Last Calib.: 2019.11.20
Time On Btm: 2019.11.20 @ 13:34:28
Time Off Btm: 2019.11.20 @ 16:12:28

TEST COMMENT: IF: Strong Blow . B.O.B. in 10 mins. Built to 32.45".
ISI: No Blow .
FF: Strong Blow . B.O.B. in 11 mins. Built to 43.89".
FSI: No Blow .



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation



0	2079.35	107.23	Initial Hydro-static
3	34.06	110.24	Open To Flow (1)
33	163.26	122.39	Shut-In(1)
63	1450.77	121.59	End Shut-In(1)
64	165.72	121.04	Open To Flow (2)
107	343.10	122.57	Shut-In(2)
153	1448.36	121.87	End Shut-In(2)
158	2070.16	120.13	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GVSOMCW 1%g 2%o 3%m 94%w	0.88
63.00	GVSOMCW 1%g 5%o 20%m 74%w	0.88
630.00	GOspecCW 1%g 3%m 96%w	8.84
32.00	GVSOMCW 1%g 5%o 40%m 54%w	0.45
0.00	94' G.I.P. 100%g	0.00

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/c)

ROCK TYPES

Cht
Cht vari
Dolprim
Lmst fw<7
shale, grn
shale, gry
Carbon Sh
shale, red
Ss

ACCESSORIES

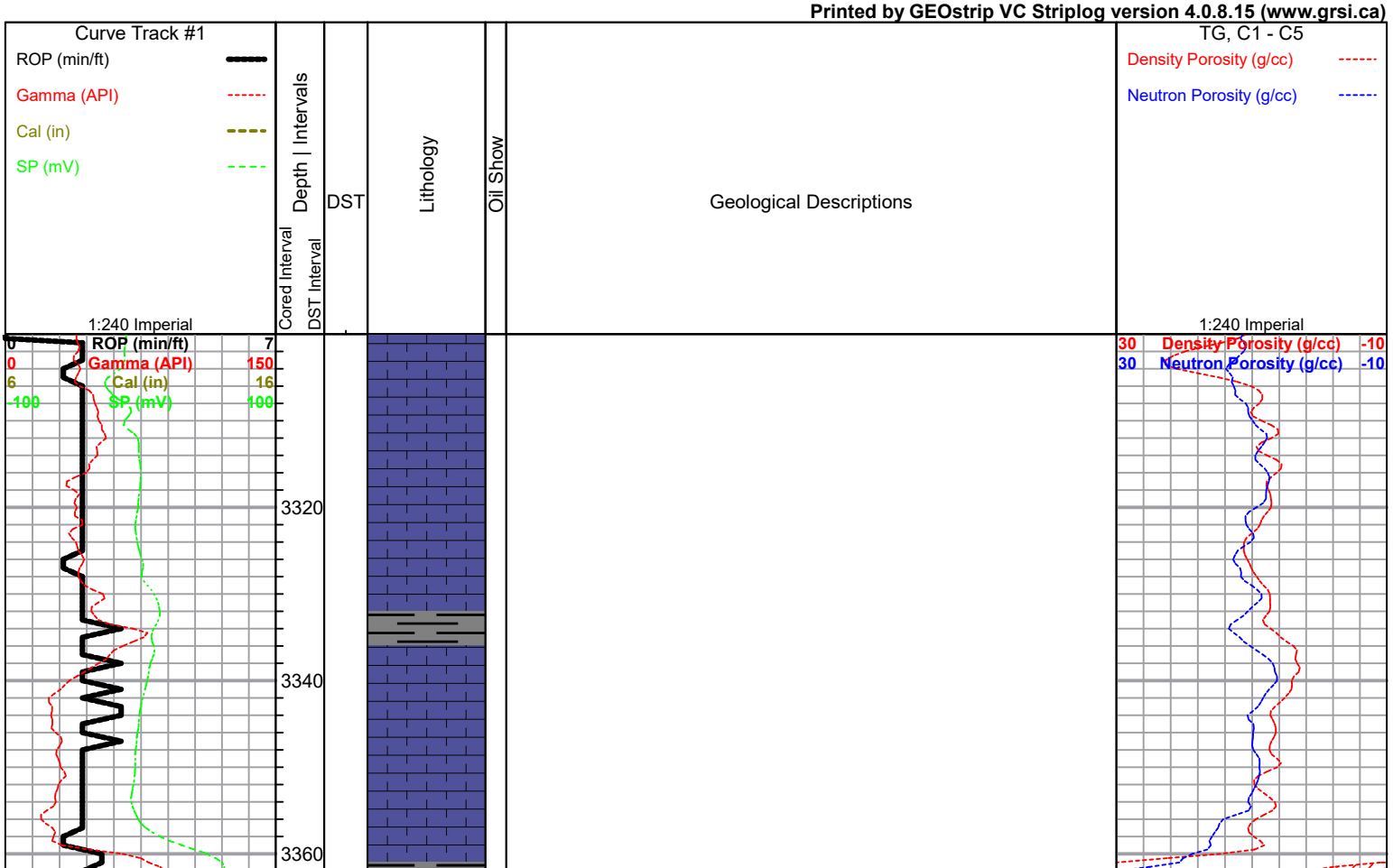
MINERAL
△ Chert White

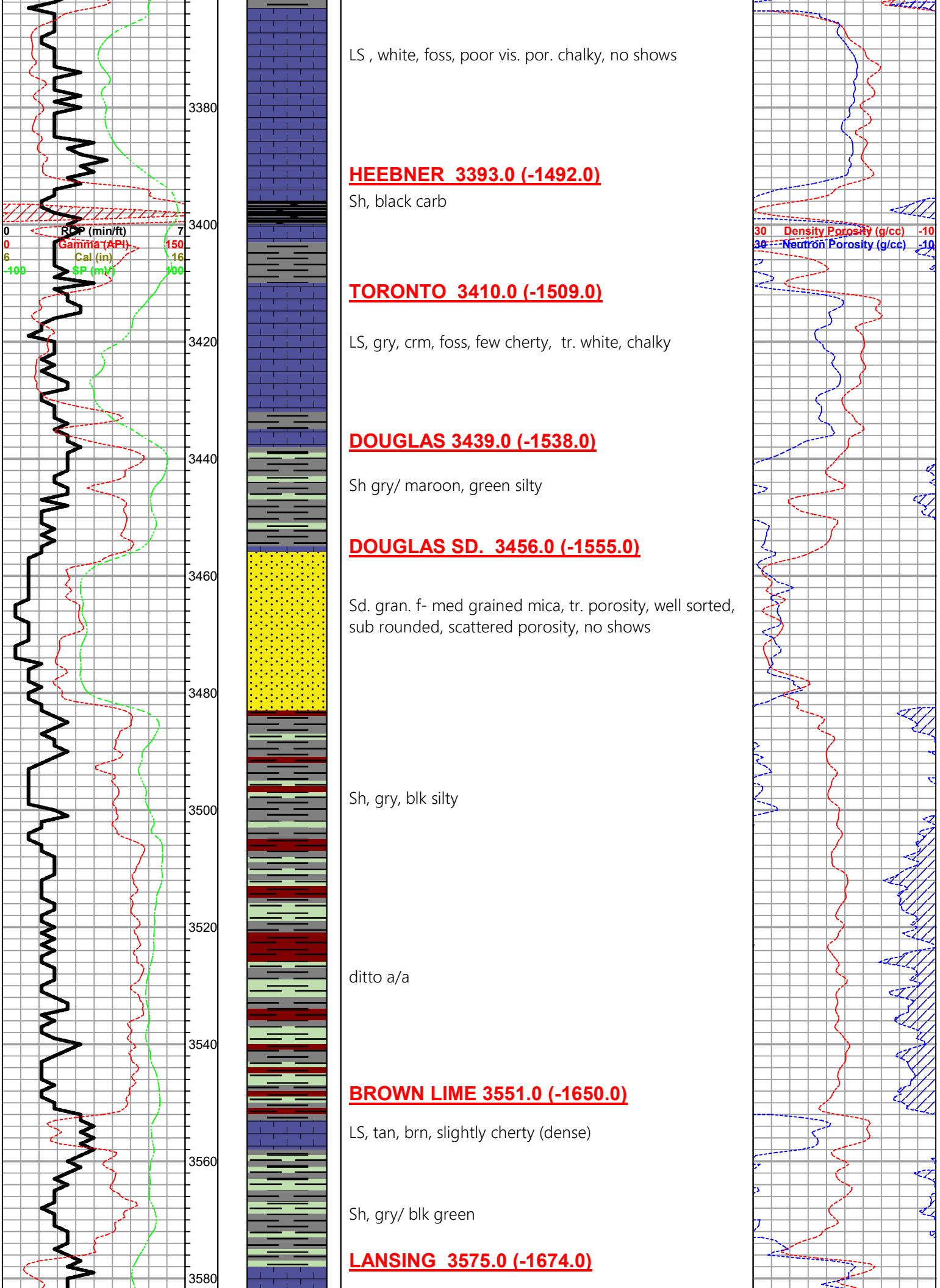
OTHER SYMBOLS

Oil Show
● Good Show
◐ Fair Show
◑ Poor Show
◑ Spotted or Trace
○ Questionable Stn
D Dead Oil Stn
■ Fluorescence
✷ Gas

DST
DST Int
DST alt
Core
tail pipe

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





LS , white, foss, poor vis. por. chalky, no shows

HEEBNER 3393.0 (-1492.0)

Sh, black carb

TORONTO 3410.0 (-1509.0)

LS, gry, crm, foss, few cherty, tr. white, chalky

DOUGLAS 3439.0 (-1538.0)

Sh gry/ maroon, green silty

DOUGLAS SD. 3456.0 (-1555.0)

Sd. gran. f- med grained mica, tr. porosity, well sorted, sub rounded, scattered porosity, no shows

Sh, gry, blk silty

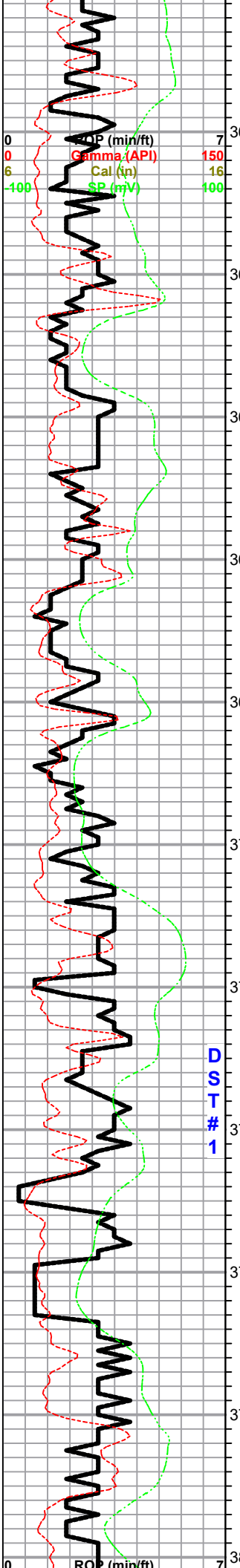
ditto a/a

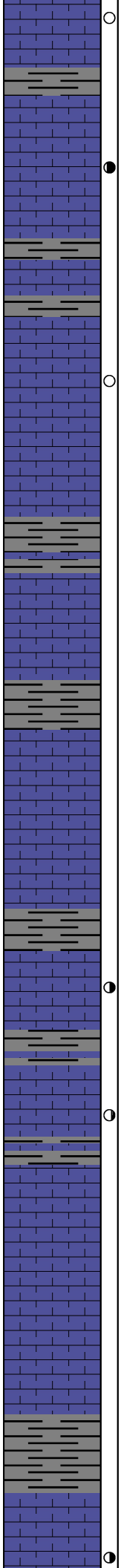
BROWN LIME 3551.0 (-1650.0)

LS, tan, brn, slightly cherty (dense)

Sh, gry/ blk green

LANSING 3575.0 (-1674.0)





LS, white, gry, fxl, foss, chalky, sptty brn stain , nsfo , ft. odor

LS, brn foss, scattered foss / cast/ oom type porosity, brn stain, sfo, ft. odor

LS, white, gry, fxl, slightly foss, chalky, t.r. brn stain, nsfo ,ft. odor

Sh, gry, greenish, blk

LS, brn, f-med xln, chalky, poor vis. porosity, +white/cream, boney chert

Sh, gry, green, blk

LS, white/ crm, fxl, slightly chalky, white/ gry boney chert

Sh, black carb

LS, white/ tan, oom, scattered oom porosity, brown - blk stain , ??? odor no sfo

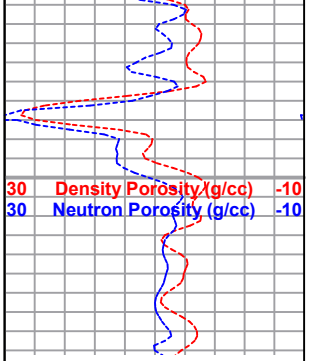
LS, gry, oom, poorly developed porosity, tr. gry / dk stain , tr. fo , no odor

LS, brn, fxl, oom, fair oom porosity, barren , no odor

LS, tan, crm, fxl, / chalky (dense)

Sh, gry, silty soft

LS, white, f-med xln, scattered porosity, tr. brown / blk



DST #1 3727-3820

1st Open:
Blow, good (11.5")

2nd Open:
Blow good, (10.75")

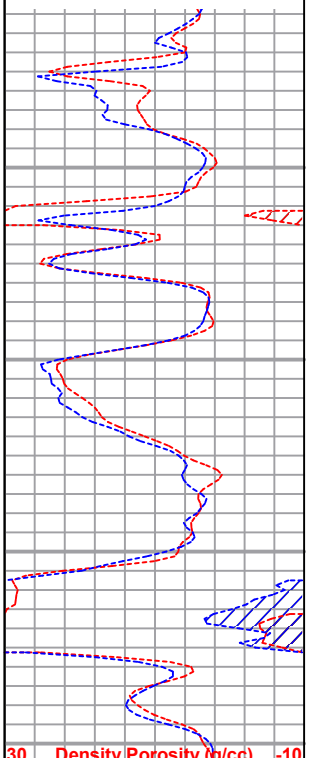
Recovery:
31' GIP

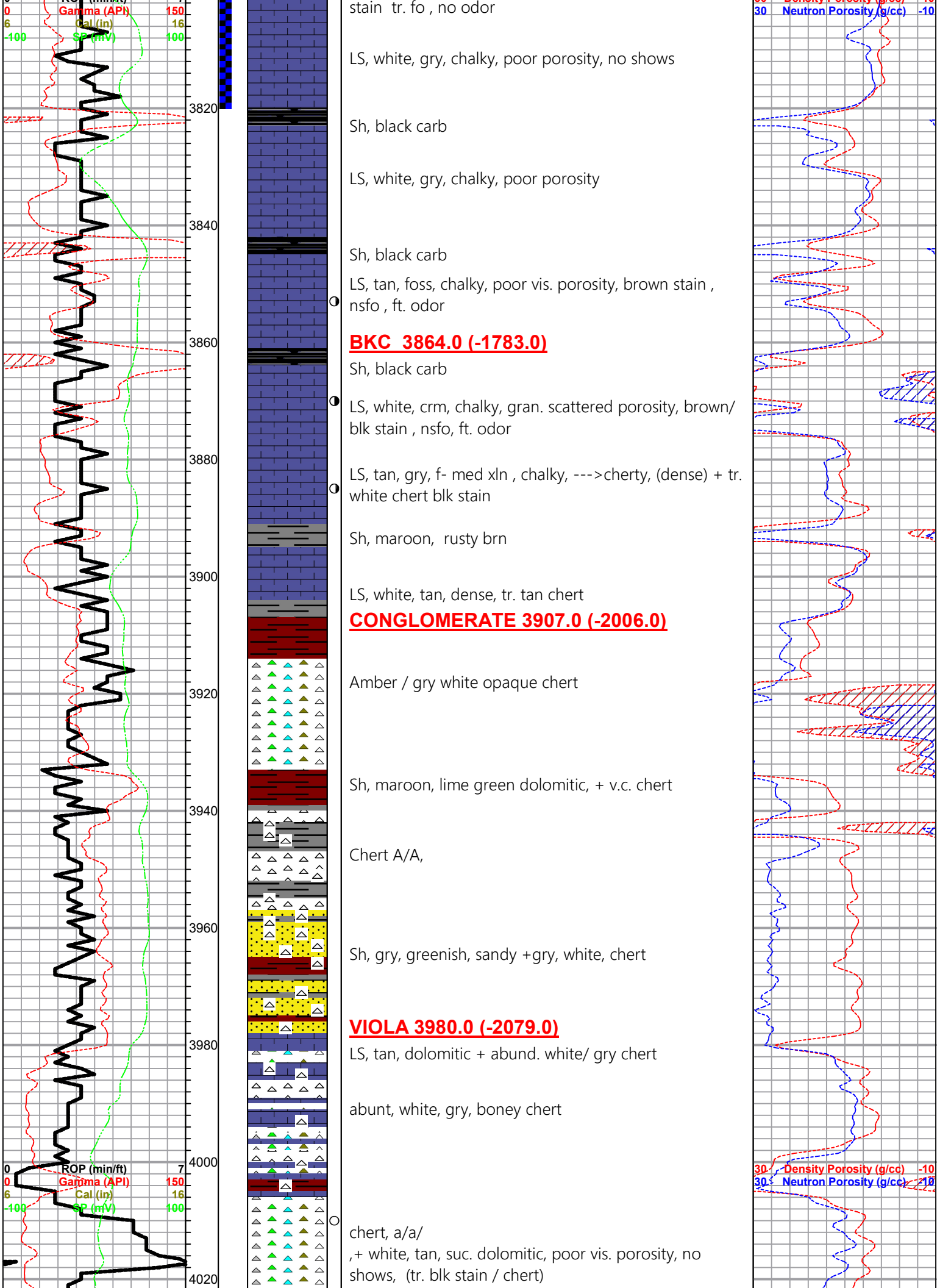
32' Muddy Gassy water
(5%g, 45%m, 50%w)

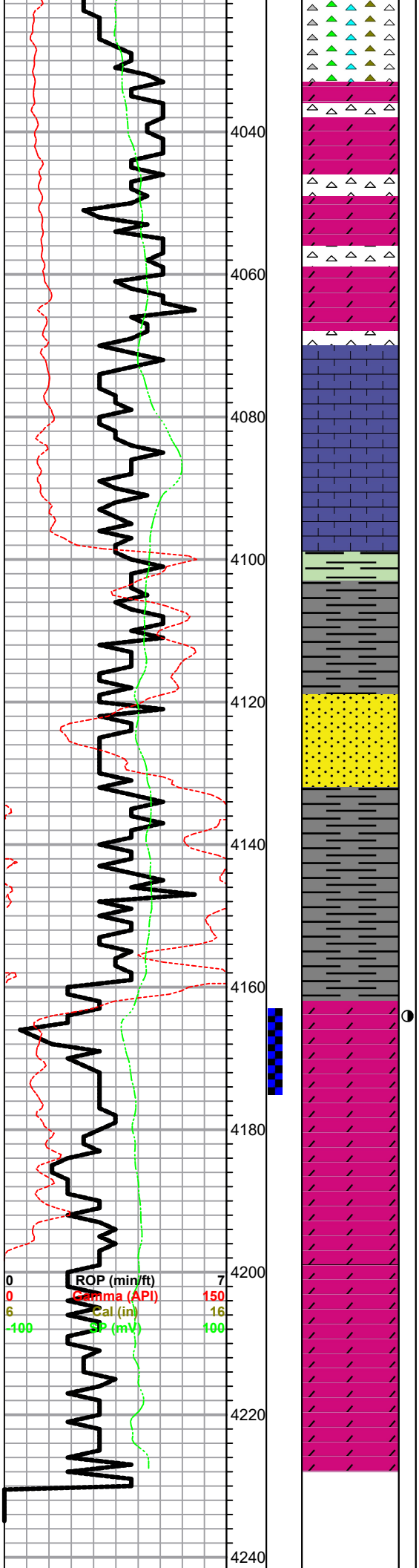
63' Muddy water
(5%g, 25%w, 65m)

127' muddy water

Pressures:
ISIP 1135 psi
FSIP 1148 psi
IFP 22-62 psi
FFP 68-116 psi
HSH 1871-1844 psi




0 ROP (min/ft) 7
0 Gamma (API) 150
6 Cal (in) 16
-100 SP (mV) 100
3820
3840
3860
3880
3900
3920
3940
3960
3980
4000
4020
30 Density Porosity (g/cc) -10
30 Neutron Porosity (g/cc) -10
stain tr. fo , no odor
LS, white, gry, chalky, poor porosity, no shows
Sh, black carb
LS, white, gry, chalky, poor porosity
Sh, black carb
LS, tan, foss, chalky, poor vis. porosity, brown stain , nsfo , ft. odor
BKC 3864.0 (-1783.0)
Sh, black carb
LS, white, crm, chalky, gran. scattered porosity, brown/ blk stain , nsfo, ft. odor
LS, tan, gry, f- med xln , chalky, --->cherty, (dense) + tr. white chert blk stain
Sh, maroon, rusty brn
LS, white, tan, dense, tr. tan chert
CONGLOMERATE 3907.0 (-2006.0)
Amber / gry white opaque chert
Sh, maroon, lime green dolomitic, + v.c. chert
Chert A/A,
Sh, gry, greenish, sandy +gry, white, chert
VIOLA 3980.0 (-2079.0)
LS, tan, dolomitic + abund. white/ gry chert
abunt, white, gry, boney chert
chert, a/a/
,+ white, tan, suc. dolomitic, poor vis. porosity, no shows, (tr. blk stain / chert)



Dol. chert, a/a, no shows

Slug, gry, gryish green, pyritic sh.

LS, gry, tan, f- med xln , foss. in pt.,

SIMPSON 4099.0 (-2198.0)

Tr. blue green sh.

White, gry, dolomitic, sandy , v. f.g., shaley, no shows

SIMPSON SD. 4099.0 (-2210.0)

Sd. a/a , + gry, olive green sh.

Sd. gry, highly dolomitic tr. pyrite no shows

Sh, blue, green

ARBUCKLE 4162.0 (-2262.0)

Dol, tan, fxl, suc. in pt. dense

Dol, tan, oom, scattered oom vuggy porosity, tr. sd. tr. fo ft. odor

Dol, gry, dol, gry, fxl, fair suc. slightly chert , no shows chalky luster on samples

Dol, white, gry, f- med xln, fair slightly cherty , poor porosity +white/ gry opaque chert

A/A, tr. white chert & white chalk

RTD 4230.0 (-2329.0)

LTD 4231.0 (-2330.0)

DST#2 4164-4172
30-30-45-45

1st Open:
BOB 10 mins.

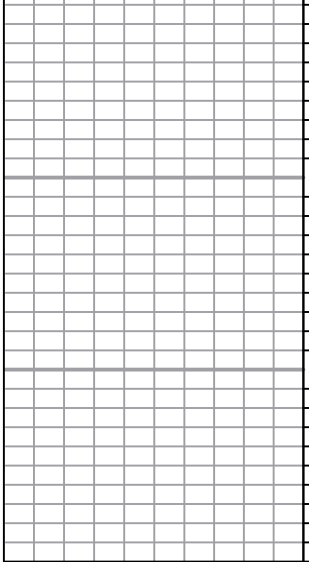
2nd Open:
BOB 11 mins.

Recovery:
94' GIP

32' VSOCMW
(1%G, 5%O, 54%W40% M)

63' Oil Specked Mud
(1%g 5%o, 74 %w, 20% m)

63 ' VSO&GCMW
(1%g, 5%o, 94%w, 3% m)



m)

63' VSO&GCMW
(1%g, 2%o, 74%w, 3% m)

Pressures:
ISIP 1451 psi
FSIP 1448 psi
IFP 34-163 psi
FFP 166-343 psi
HSH 2079- 2070 psi