

OPERATOR

Company: TDI, INC.
 Address: 1310 BISON ROAD
 HAYS, KANSAS 67601

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MUNSCH B # 4
 Location: NW SW SE SW SEC.4-T15S-R18W
 API: 15-051-26,757-00-00
 Pool:
 State: KANSAS

Field: RUDER NORTHEAST
 Country: USA



Scale 1:240 Imperial

Well Name: MUNSCH B # 4
 Surface Location: NW SW SE SW SEC.4-T15S-R18W
 Bottom Location:
 API: 15-051-26,757-00-00
 License Number: 4787
 Spud Date: 12/3/2014 Time: 4:00 PM
 Region: ELLIS COUNTY
 Drilling Completed: 12/8/2014 Time: 2:00 AM
 Surface Coordinates: 360' FSL & 1635' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 2006.00ft
 K.B. Elevation: 2016.00ft
 Logged Interval: 2900.00ft To: 3700.00ft
 Total Depth: 3700.00ft
 Formation: ARBUCKLE
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -99.3314683
 Latitude: 38.7704905
 N/S Co-ord: 360' FSL
 E/W Co-ord: 1635' FWL

LOGGED BY

Company: SOLUTIONS CONSULTING, INC.
 Address: 108 WEST 35TH STREET
 HAYS, KANSAS 67601

Phone Nbr: 785-625-3380
 Logged By: GEOLOGIST Name: HERB DEINES

CONTRACTOR

Contractor: SOUTHWIND DRILLING, INC.
 Rig #: 1
 Rig Type: MUD ROTARY
 Spud Date: 12/3/2014 Time: 4:00 PM
 TD Date: 12/8/2014 Time: 2:00 AM

ELEVATIONS

K.B. Elevation: 2016.00ft
K.B. to Ground: 10.00ft

Ground Elevation: 2006.00ft

NOTES

RECOMMENDATION TO PLUG AND ABANDON WELL BASED ON NEGATIVE RESULTS OF TWO DSTS, LOW ARBUCKLE STRUCTURE AND LACK OF ANY RESERVOIR DEVELOPMENT THROUGH THE LANSING-KANSAS CITY

OPEN HOLE LOGGING BY PIONEER ENERGY SERVICES: DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRORESISTIVITY LOG

DRILL STEM TESTING BY TRILOBITE TESTING INC: TWO (2) STRADDLE TESTS

FORMATION TOPS COMPARISON

	MUNSCH B-4 NW SW SE SW SEC.4-15S-18W 2006'GL 2016'KB	MUNSCH B-2 SE SW SW SEC.4-15-18W KB 2014'	MUNSCH B-3 SW NE SE SW SEC.4-15-18W KB 2023'
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1189 +827	+ 829	+ 824
B-Anhydrite	1226 +790	+ 794	+ 790
Topeka	2994 - 978	- 981	- 982
Heebner Sh.	3253-1237	-1242	-1244
Toronto	3277-1261	-1266	-1266
LKC	3302-1286	-1289	-1292
BKC	3525-1509	-1518	-1520
Conglomerate	3602-1586	NONE	-1590
Arbuckle	3626-1610	-1577	-1622
RTD	3700-1684	-1598	-1720

SUMMARY OF DAILY ACTIVITY

12-03-14 RU, spud 2:00 PM, set 8 5/8" surface casing to 219' w/150 sxs
Common 2%Gel 3%CC, plug down 10:45PM, slope ¾ degree

12-04-14 249', drill plug 6:45AM


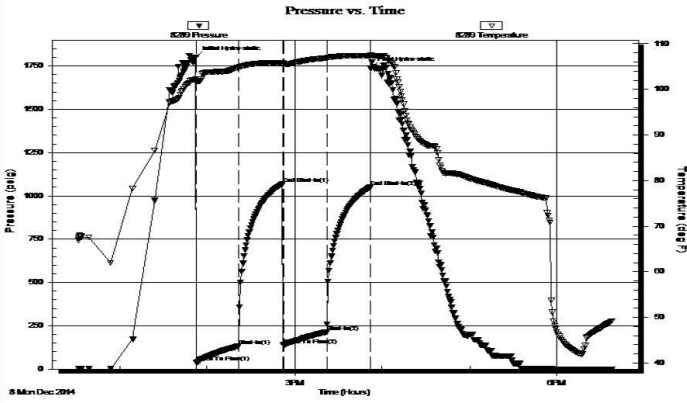
12-05-14 2010, drilling'

12-06-14 2820', drilling, displaced 2875'-2900'


12-07-14 3340', drilling

12-08-14 3700', RTD 3700' @ 2:00AM, short trip, TOWB, logs, Straddle DST
1 3578'-3637' Conglomerate and Arbuckle, start Straddle DST # 2
3580'-3627' Conglomerate

DST # 1 TEST SUMMARY

	<p>DRILL STEM TEST REPORT</p>																																				
<p>TDI Inc 1310 Bison Rd Hays KS 67601-9696 ATTN: Herb Deines</p>	<p>4 15s 18w Ellis Munsch B-4 Job Ticket: 61380 DST#: 1 Test Start: 2014.12.08 @ 12:32:00</p>																																				
<p>GENERAL INFORMATION:</p> <p>Formation: Arbuckle Deviated: No Whipstock: ft (KB) Time Tool Opened: 13:52:30 Time Test Ended: 18:37:00</p> <p>Interval: 3578.00 ft (KB) To 3637.00 ft (KB) (TVD) Total Depth: 3697.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair</p> <p>Test Type: Conventional Straddle (Initial) Tester: Jim Svaty Unit No: 76</p> <p>Reference Elevations: 2020.00 ft (KB) 2010.00 ft (CF) KB to GR/CF: 10.00 ft</p>																																					
<p>Serial #: 8289 Outside</p> <p>Press@RunDepth: 214.34 psig @ 3596.00 ft (KB) Capacity: 8000.00 psig Start Date: 2014.12.08 End Date: 2014.12.08 Last Calib.: 2014.12.08 Start Time: 12:32:02 End Time: 18:37:15 Time On Btm: 2014.12.08 @ 13:52:15 Time Off Btm: 2014.12.08 @ 15:52:15</p> <p>TEST COMMENT: 30-IFP- BOB in 8min. 30-ISIP- No Blow 30-FFP- BOB in 11min. 30-FSIP- No Blow</p>																																					
	<p style="text-align: center;">PRESSURE SUMMARY</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Time (Min.)</th> <th>Pressure (psig)</th> <th>Temp (deg F)</th> <th>Annotation</th> </tr> </thead> <tbody> <tr><td>0</td><td>1800.51</td><td>102.16</td><td>Initial Hydro-static</td></tr> <tr><td>1</td><td>37.61</td><td>101.57</td><td>Open To Flow (1)</td></tr> <tr><td>30</td><td>132.72</td><td>104.82</td><td>Shut-In(1)</td></tr> <tr><td>60</td><td>1069.13</td><td>105.84</td><td>End Shut-In(1)</td></tr> <tr><td>60</td><td>137.37</td><td>105.54</td><td>Open To Flow (2)</td></tr> <tr><td>90</td><td>214.34</td><td>106.87</td><td>Shut-In(2)</td></tr> <tr><td>120</td><td>1049.91</td><td>107.35</td><td>End Shut-In(2)</td></tr> <tr><td>120</td><td>1735.75</td><td>107.56</td><td>Final Hydro-static</td></tr> </tbody> </table>	Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation	0	1800.51	102.16	Initial Hydro-static	1	37.61	101.57	Open To Flow (1)	30	132.72	104.82	Shut-In(1)	60	1069.13	105.84	End Shut-In(1)	60	137.37	105.54	Open To Flow (2)	90	214.34	106.87	Shut-In(2)	120	1049.91	107.35	End Shut-In(2)	120	1735.75	107.56	Final Hydro-static
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<p style="text-align: center;">Recovery</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Length (ft)</th> <th>Description</th> <th>Volume (bbt)</th> </tr> </thead> <tbody> <tr><td>188.00</td><td>OSMCW 2%o 23%m 70%w</td><td>2.64</td></tr> <tr><td>188.00</td><td>WOCM 10%w 30%o 60%m</td><td>2.64</td></tr> <tr><td>10.00</td><td>WMCO 20%w 35%m 45%o</td><td>0.14</td></tr> <tr><td>45.00</td><td>CO 100%</td><td>0.63</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Length (ft)	Description	Volume (bbt)	188.00	OSMCW 2%o 23%m 70%w	2.64	188.00	WOCM 10%w 30%o 60%m	2.64	10.00	WMCO 20%w 35%m 45%o	0.14	45.00	CO 100%	0.63							<p style="text-align: center;">Gas Rates</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th> </th> <th>Choke (inches)</th> <th>Pressure (psig)</th> <th>Gas Rate (Mcf/d)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)											
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DST # 2 TEST SUMMARY

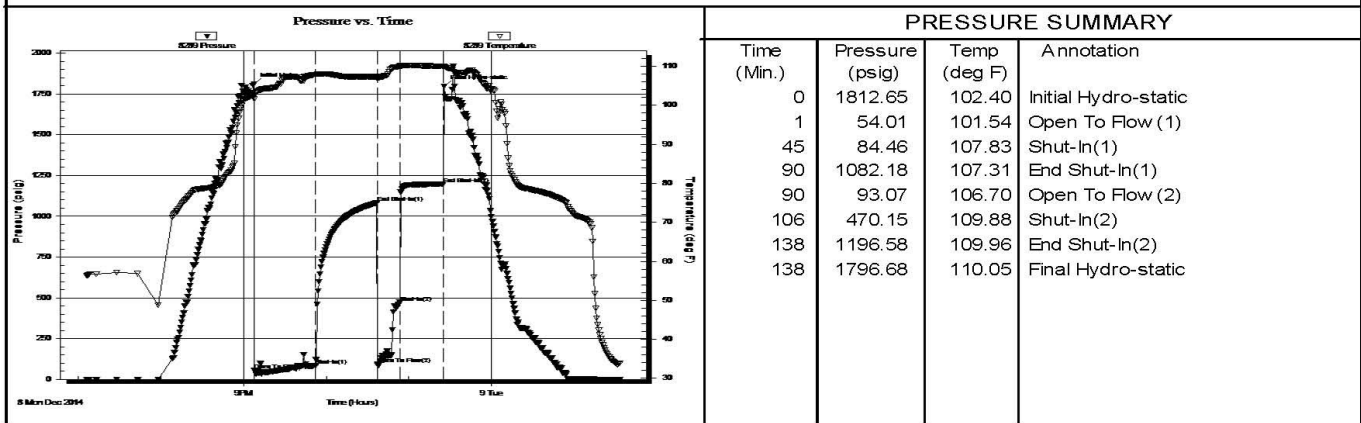
	DRILL STEM TEST REPORT		
	TDI Inc 1310 Bison Rd Hays KS 67601-9696 ATTN: Herb Deines	4 15s 18w Ellis Munsch B-4 Job Ticket: 61381 Test Start: 2014.12.08 @ 19:06:00	DST#: 2

GENERAL INFORMATION:

Formation: Arbuckle	Test Type: Conventional Straddle (Reset)
Deviated: No Whipstock: ft (KB)	Tester: Jim Svaty
Time Tool Opened: 21:07:45	Unit No: 76
Time Test Ended: 01:33:00	Reference Elevations: 2020.00 ft (KB)
Interval: 3580.00 ft (KB) To 3627.00 ft (KB) (TVD)	2010.00 ft (CF)
Total Depth: 3697.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches	Hole Condition: Fair

Serial #: 8289	Outside	Capacity: 8000.00 psig
Press@RunDepth: 470.15 psig @ 3587.00 ft (KB)	Start Date: 2014.12.08	Last Calib.: 2014.12.09
Start Time: 19:06:02	End Date: 2014.12.09	Time On Btm: 2014.12.08 @ 21:07:30
End Time: 01:33:30	Time Off Btm: 2014.12.08 @ 23:25:30	

TEST COMMENT: 45-IFP- BOB in 19min.
 45-ISIP- No Blow
 45-FFP- BOB in 12min.
 45-FSP- No Blow



Recovery			Gas Rates			
Length (ft)	Description	Volume (bbl)		Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
315.00	MCV 40% m 60% w Show of Oil	4.42				
126.00	WCM 20% w 80% m Show of Oil	1.77				
219.00	WOCM 10% w 25% o 65% m	3.07				

* Recovery from multiple tests

TriLOBITE Testing, Inc

Ref. No: 61381

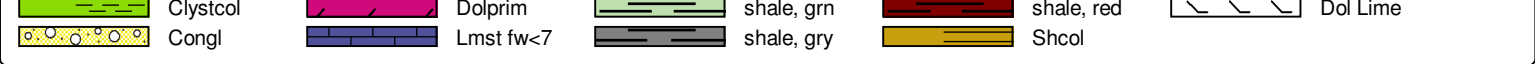
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Image Header 04

Image Header 05

ROCK TYPES





ACCESSORIES

MINERAL

- ▲ Chert, dark
- P Pyrite

OTHER SYMBOLS

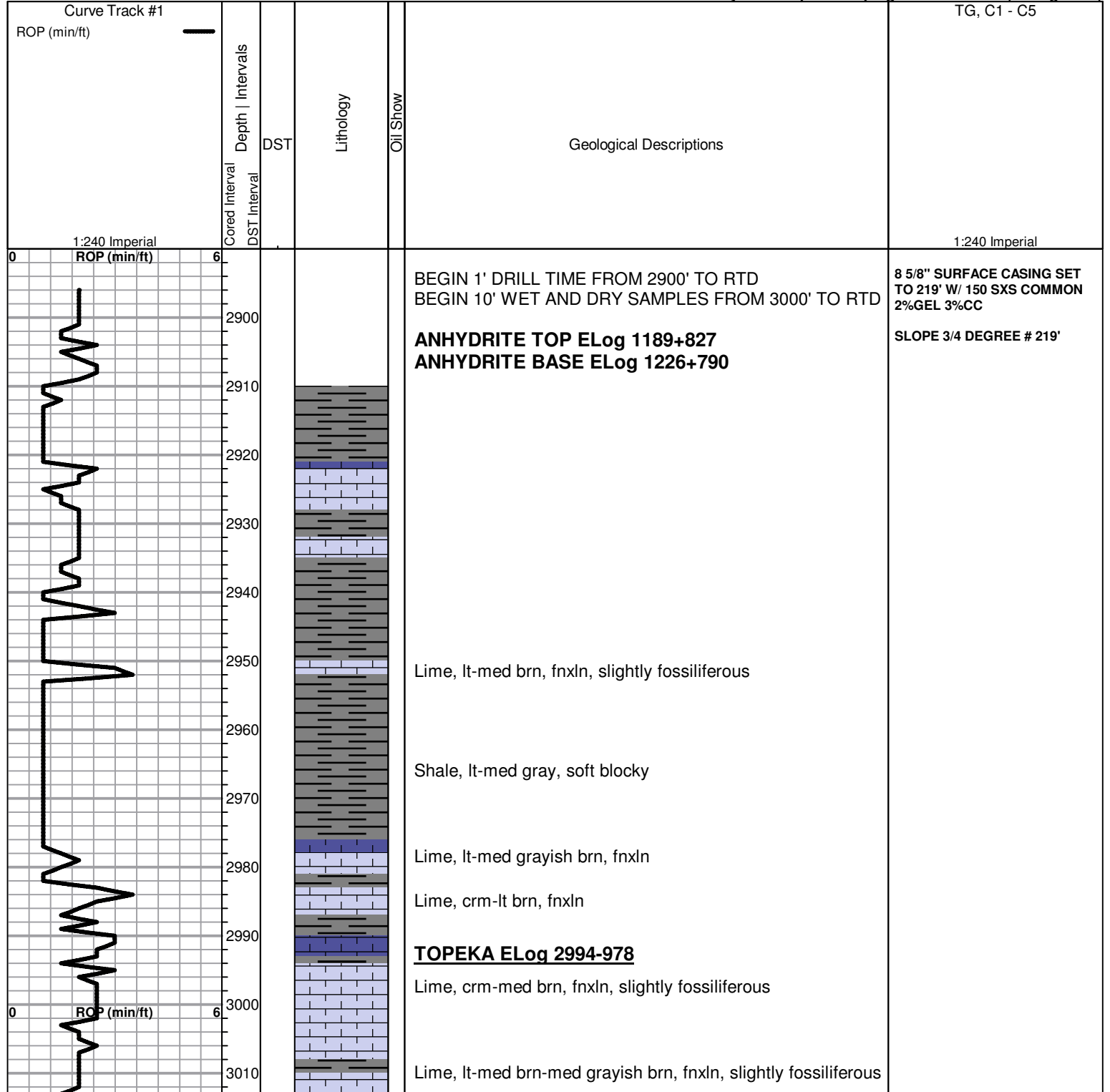
Oil Show

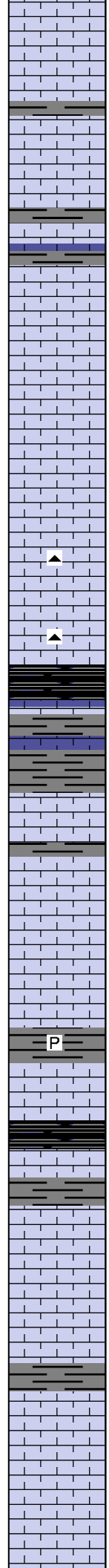
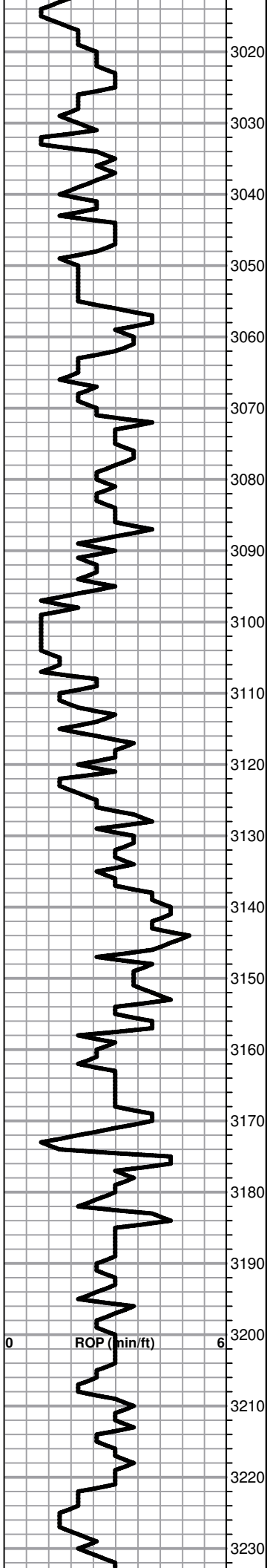
- Good Show
- Fair Show
- Poor Show
- Spotted or Trace
- Questionable Stn
- D Dead Oil Stn
- Fluorescence
- * Gas

DST

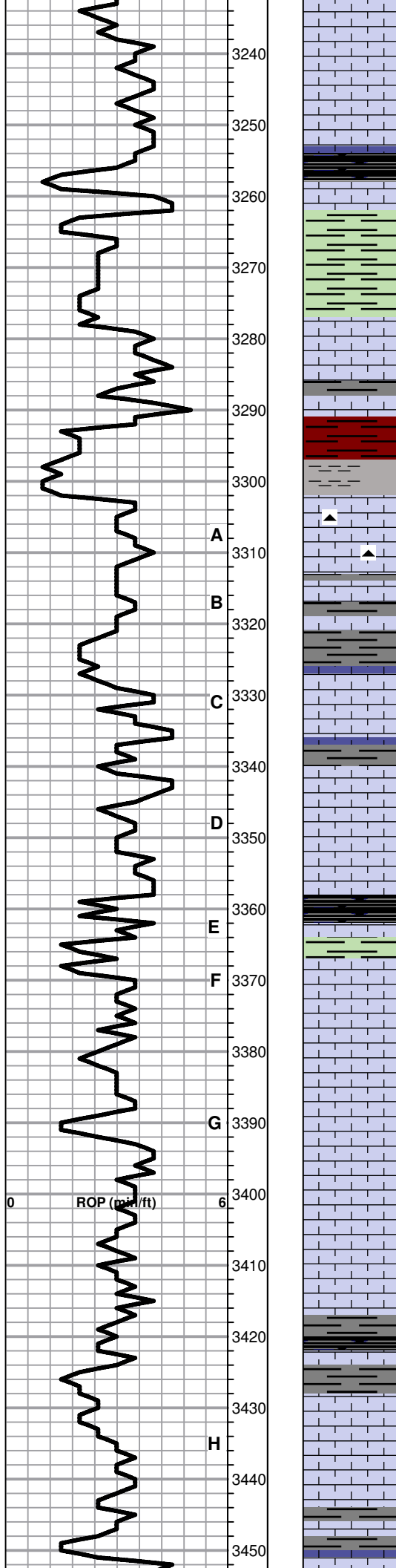
- DST Int
- DST alt
- Core
- tail pipe

Printed by GEOstrip VC Striplog version 4.0.8.9 (www.grsi.ca)





- 3020 Lime, med-dark brn-med grayish brn, fnxln, slightly fossiliferous
- 3030 Lime, lt-med brn-med grayish brn, fnxln, slightly fossiliferous
- 3040 Lime, lt brn-lt gray, fnxln, soft granular with chalky matrix, scattered fossil casts
- 3050 Lime, lt brn-lt grayish brn, fn-micro xln
- 3060 Lime, lt brn-lt grayish brn, fn-vfxln
- 3070 Lime, lt brn-lt grayish brn, fn-vfxln, slight bedded chalk
- 3080 Lime, lt brn-med grayish brn, fnxln with increasing chalk matrix with bedded chalk
- 3090 Chert, lt gray, fossiliferous, fresh, sharp
- 3100 Shale, black carbonaceous, blocky
- 3110 Lime, lt gray, fnxln
- 3120 Shale, med gray, soft, blocky, waxy slick
- 3130 Lime, lt brn, micro xln
- 3140 Lime, crm-lt brn, fn-vfxln, sublithographic
- 3150 Lime, lt brn, fn-micro xln
- 3160 Shale, med gray, calcareous, micro xln pyrite
- 3170 Lime, lt-med brn-lt grayish brn, fnxln
- 3180 Shale, black carbonaceous, blocky, fissile
- 3190 Lime, med grayish brn, fn-vfxln
- 3200 Lime, lt-med brn, fn-vfxln
- 3210 Lime, lt brn, fnxln, slightly fossiliferous
- 3220 Lime, lt-med gray, fnxln, chalky matrix in part
- 3230 Lime, crm-lt brn, fnxln-granular in part, slight bedded chalk in lt chalky matrix, NS



Lime, crm-lt brn, fnxln-granular

Lime, lt brn, fnxln

HEEBNER SHALE ELog 3253-1237
 Shale, black carbonaceous, fissile, blocky
 Lime, lt brn, fn-micro xln

Shale, med-grayish green, soft blocky

TORONTO ELog 3277-1261

Lime, crm-lt brn, fn-vfxln, NS

Lime, lt brn, fn-micro xln

Shale, red-med brn, soft blocky

LKC ELog 3302-1286

Lime, lt-med brn, fn-vfxln, very lt odor, very lt wet cut, fine interxln porosity, NFO

A

Lime, crm-lt brn, fn-vfxln

B

Shale, lt grayish green, soft blocky

Lime, lt brn, mostly fnxln, few oolitic chips with lt spotty stain, NFO, No Odor

C

Lime, crm, fn-vfxln, thin oolitic zone, interoolitic porosity, lt spotty stain, very lt odor, NFO

D

Lime, crm, fn-vfxln

Shale, black carbonaceous, fissile, blocky
 Lime, lt gray, fnxln

E

Lime, lt-med brn, fnxln, thin oolitic/fossil fragment zone, spotty staining, No Odor, NFO, appears poorly developed

F

Lime, lt brn, fnxln, cemented oolitic beds, NS, No stain

G

Lime, crm-lt brn, fnxln, NS

Lime, crm-lt brn, fnxln, slight bedded chalk

Lime, lt brn with tint of lt gray, fn-micro xln

Shale, med gray-black carbonaceous, blocky
 Lime, med brn, fn-vfxln

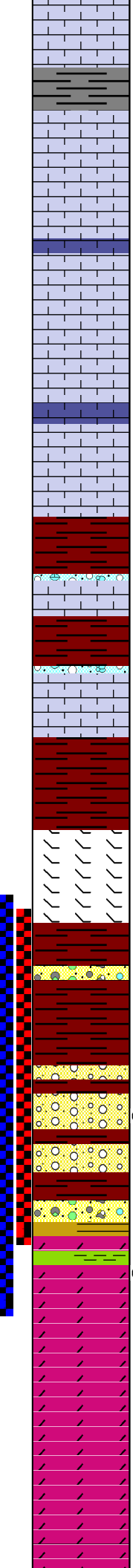
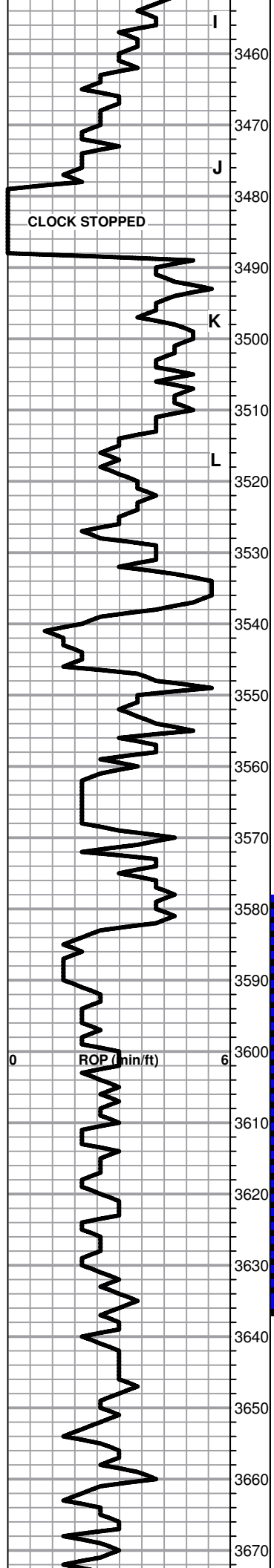
Lime, crm, fnxln, thin oolitic beds and oomoldic in part, NS

H

Lime, crm-lt brn, fnxln, NS

Shale, lt-med gray with green tinting, soft blocky

ROP (min/ft)



Lime, crm-lt brn, fn-vfxln, NS

Shale, gray-black, soft blocky

Lime, crm-lt brn, fn-vfxln, NS

Lime, crm-lt brn, fn-vfxln

Lime, lt-med brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln

Lime, crm, fn-vfxln, increasing bedded chalk

Lime, crm-tan, fnxln-chalky granular, NS

BKC ELog 3525-1509

Shale, red-dark brn, soft blocky, lt red wash

Lime, crm-lt brn, fn-vfxln, some clastic lime mix with red stain

Shale, red-med dark brn, soft blocky with lt red wash

Lime, crm-tan, fn-vfxln, some crumbly with chalk, NS

Shale, red-brn, red wash

Lime, lt brn, fnxln, dolomitic, some clastic mix in part

Shale, dark chocolate brn, firm blocky

Shale and clastic mix, very lt odor

CONGLOMERATE ELog 3602-1586

Clastic mix of dolomite, chert and lime, very lt odor with scattered saturated staining

Clastic mix of lt brn dolomite with fine-medium grained material, chert and lime, fair odor and spotty to saturated staining

ARBUCKLE ELog 3626-1610

Dolomite, tan-lt brn, fnxln-granular in part, fn-med grain, F-G odor, interxln porosity, appears not developed enough to have adequate porosity with good permeability

Dolomite, ivory-lt brn, fnxln-granular, decreasing lt odor and staining

Dolomite, ivory-lt brn, fnxln-granular

Dolomite, ivory-tan, fnxln-granular

Dolomite, ivory-tan, fnxln-granular, few lt green shale chips, lt chalk wash

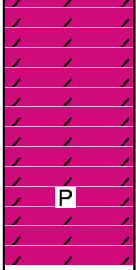
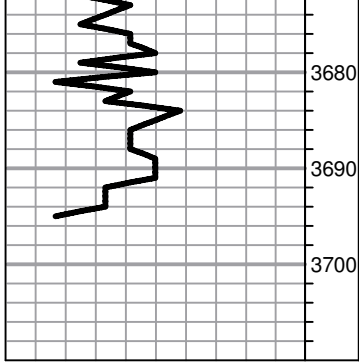
**DST # 1 STRADDLE TEST
3578' TO 3637' SEE HEADER
FOR TEST SUMMARY**

**DST # 2 STRADDLE TEST
3580' TO 3627' SEE HEADER
FOR TEST SUMMARY NOTE:
BOTTOM PACKER HELD INTO
SECOND OPEN WHEN IT
STARTED LEAKING BADLY
ALLOWING SALT WATER TO
ENTER TEST FLUID
RECOVERY**

**1ST PLUG @3599' W/ 50 SXS
2ND PLUG @1230' W/50 SXS
3RD PLUG @510' W/100 SXS
4TH PLUG @220' W/50 SXS
5TH PLUG @40' W/ 10 SXS
RATHOLE W/ 30 SXS
MOUSEHOLE W/ 15 SXS**

**JOB COMPLETE 10:30AM
12/09/2014**

**ORDERED 305 SXS 60/40 POS
4%GEL W/ 1/4# FLOCELE PER
SACK**



Dolomite, ivory-lt crm, fnxln-granular, lt white wash

Dolomite, ivory with tint of lt salmon, fnxln-granular with increasing white wash

Dolomite, ivory with lt salmon tint, fnxln-granular, pyritic

RTD 3700-1684