

OPERATOR

Company: TDI, INC.
Address: 1310 BISON ROAD
HAYS, KANSAS 67601-9696

Contact Geologist: TOM DENNING
Contact Phone Nbr: 785-628-2593
Well Name: WITTMAN # 1
Location: NW SW SE NW SEC.3-T15S-R16W
API: 15-051-26,866-00-00
Pool: WILDCAT
State: KANSAS

Field: UNNAMED
Country: USA



Scale 1:240 Imperial

Well Name: WITTMAN # 1
Surface Location: NW SW SE NW SEC.3-T15S-R16W
Bottom Location:
API: 15-051-26,866-00-00
License Number: 4787
Spud Date: 3/7/2017 Time: 6:00 PM
Region: ELLIS COUNTY Time: 10:33 AM
Drilling Completed: 3/14/2017
Surface Coordinates: 2000' FNL & 1340' FWL
Bottom Hole Coordinates:
Ground Elevation: 1902.00ft
K.B. Elevation: 1912.00ft
Logged Interval: 2550.00ft To: 3530.00ft
Total Depth: 3530.00ft
Formation: ARBUCKLE
Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
Longitude: -99.0914807
Latitude: 38.7784731
N/S Co-ord: 2000' FNL
E/W Co-ord: 1340' FWL

LOGGED BY

Company: SOLUTIONS CONSULTING, INC.
Address: 108 W 35TH
HAYS, KS 67601

Phone Nbr: (785) 639-1337
Logged By: GEOLOGIST

Name: HERB DEINES

CONTRACTOR

Contractor: SOUTHWIND DRILLING, INC.
Rig #: 1
Rig Type: MUD ROTARY
Spud Date: 3/7/2017
TD Date: 3/14/2017

Time: 6:00 PM
Time: 10:33 AM

ELEVATIONS

K.B. Elevation: 1912.00ft
K.B. to Ground: 10.00ft

Ground Elevation: 1902.00ft

NOTES

AFTER LOG ANALYSIS DECISION MADE TO RUN PRODUCTION CASING TO FURTHER TEST LKC.

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) CONVENTIONAL TESTS.

WITTMAN # 1
NW SW SE NW
SEC.3-15S-16W
1912'KB

ROBBEN FAMILY #1
NW NE SW NE
SEC.3-15-16W
KB 1903'

HUSER B-1
NW NW SW
SEC.3-15-16W
KB 1908'

<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1027 +885	+ 892	+ 872
B-Anhydrite	1064 +848	+ 855	+ 842
Topeka	2905 - 993	- 986	- 999
Heebner Sh.	3127-1215	-1207	-1221
Toronto	3144-1232	-1226	-1239
LKC	3176-1264	-1258	-1270
BKC	3396-1484	-1481	-1494
Arbuckle	3504-1592	-1523	-1590
RTD	3530-1618	-1672	-1642

SUMMARY OF DAILY ACTIVITY

3-07-17 Spud 6:00 PM, drilling
3-08-17 1033', set 8 5/8" surface casing to 1031' w/ 375 sxs Common 2%gel 3%CC, WOC 12 hrs, slope 1 degree.
3-09-17 1287', drilling
3-10-17 2330', drilling, twisted off drill pipe at 2613', fishing with overshot
3-11-17 2633', recovered collars, TIWB, drilling at 11:30 AM
3-12-17 3084', CFS 3212', CFS 3240', short trip 20 stands, CCH, TOWB, DST # 1 3186'-3240' "A" to "D" LKC, slope ¾ degree
3-13-17 3270', drilling, CFS 3395', CCH, TOWB, DST # 2 3302'-3395' "H" to "K" LKC

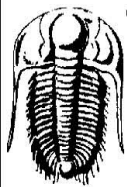
3-14-17

3470', TIWB, CFS 3460', CFS 3470', CFS 3480', RTD 3530'

@10:33AM, CCH, TOWB, logs, TIWB, LDDP, run production casing

3-15-17

3530', finishing cementing bottom stage, RD


**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

3-15S-16W Ellis, KS

Wittman #1

Job Ticket: 58119

DST#: 1

Test Start: 2017.03.12 @ 18:30:48

GENERAL INFORMATION:

Formation: **LKC "C&D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:17:34

Time Test Ended: 02:59:34

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: **3186.00 ft (KB) To 3240.00 ft (KB) (TVD)**

Total Depth: 3240.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1912.00 ft (KB)

1902.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8524

Outside

Press@RunDepth: 28.18 psig @ 3187.00 ft (KB)

Start Date: 2017.03.12

End Date:

2017.03.13

Capacity: 8000.00 psig

Last Calib.:

2017.03.13

Start Time: 18:30:49

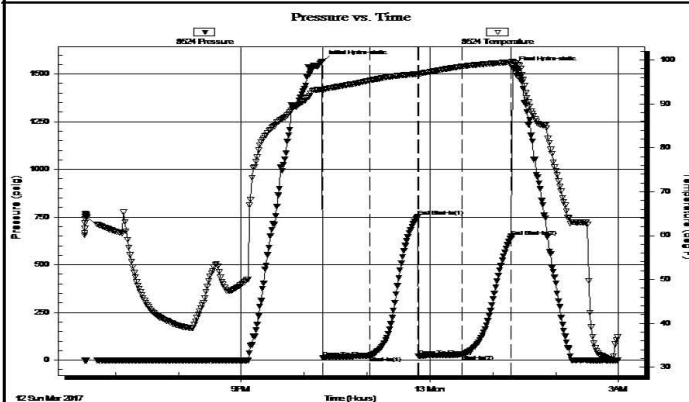
End Time:

02:59:34

Time On Btm: 2017.03.12 @ 22:17:19

Time Off Btm: 2017.03.13 @ 01:18:49

TEST COMMENT: 45- IF- Slow ly built to 3"
45- IS- No blow
45- FF- Slow ly built to 1"
45- FS- No blow



PRESSURE SUMMARY

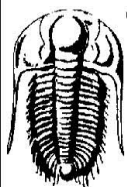
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1566.35	93.34	Initial Hydro-static
1	12.86	92.79	Open To Flow (1)
46	20.90	95.33	Shut-In(1)
91	752.90	96.81	End Shut-In(1)
92	20.55	96.71	Open To Flow (2)
134	28.18	98.51	Shut-In(2)
181	648.56	99.46	End Shut-In(2)
182	1533.02	99.67	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
40.00	SOCM, 5% O 95% M	0.57

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

3-15S-16W Ellis, KS
Wittman #1
Job Ticket: 58120 **DST#: 2**
Test Start: 2017.03.13 @ 16:34:58

GENERAL INFORMATION:

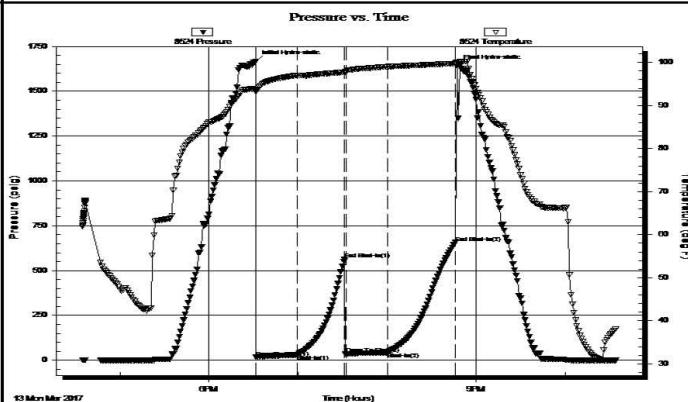
Formation: **LKC "H-K"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 18:31:44
Time Test Ended: 22:34:14
Interval: **3302.00 ft (KB) To 3395.00 ft (KB) (TVD)**
Total Depth: 3395.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Reset)
Tester: Brannan Lonsdale
Unit No: 73
Reference Elevations: 1912.00 ft (KB)
1902.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8524

Outside

Press@RunDepth: 43.04 psig @ 3303.00 ft (KB)
Start Date: 2017.03.13 End Date: 2017.03.13
Start Time: 16:34:59 End Time: 22:34:14
Capacity: 8000.00 psig
Last Calib.: 2017.03.13
Time On Btm: 2017.03.13 @ 18:31:29
Time Off Btm: 2017.03.13 @ 20:46:59

TEST COMMENT: 30- IF- BOB 15mins
30- ISL- Surface blow died in 2mins
30- FF- 6" initial surge BOB 2mins
45- FSL- Surface blow died in 3mins



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1666.67	93.68	Initial Hydro-static
1	16.43	93.24	Open To Flow (1)
29	30.44	97.02	Shut-In(1)
60	562.38	97.74	End Shut-In(1)
61	34.40	97.85	Open To Flow (2)
89	43.04	99.03	Shut-In(2)
135	656.02	99.75	End Shut-In(2)
136	1640.50	100.01	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
78.00	GOCM, 10%G 15%O 75%M	1.11
0.00	361' GIP	0.00

* Recovery from multiple tests

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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Trilobite Testing, Inc

Ref. No: 58120

Printed: 2017.03.14 @ 07:24:07

ROCK TYPES

	Clystgy		Dolprim		Lmst fw7>		shale, gry		shale, red
	Chtcong1		Lmst fw<7		shale, grn		Carbon Sh		

ACCESSORIES

ACCESSORIES

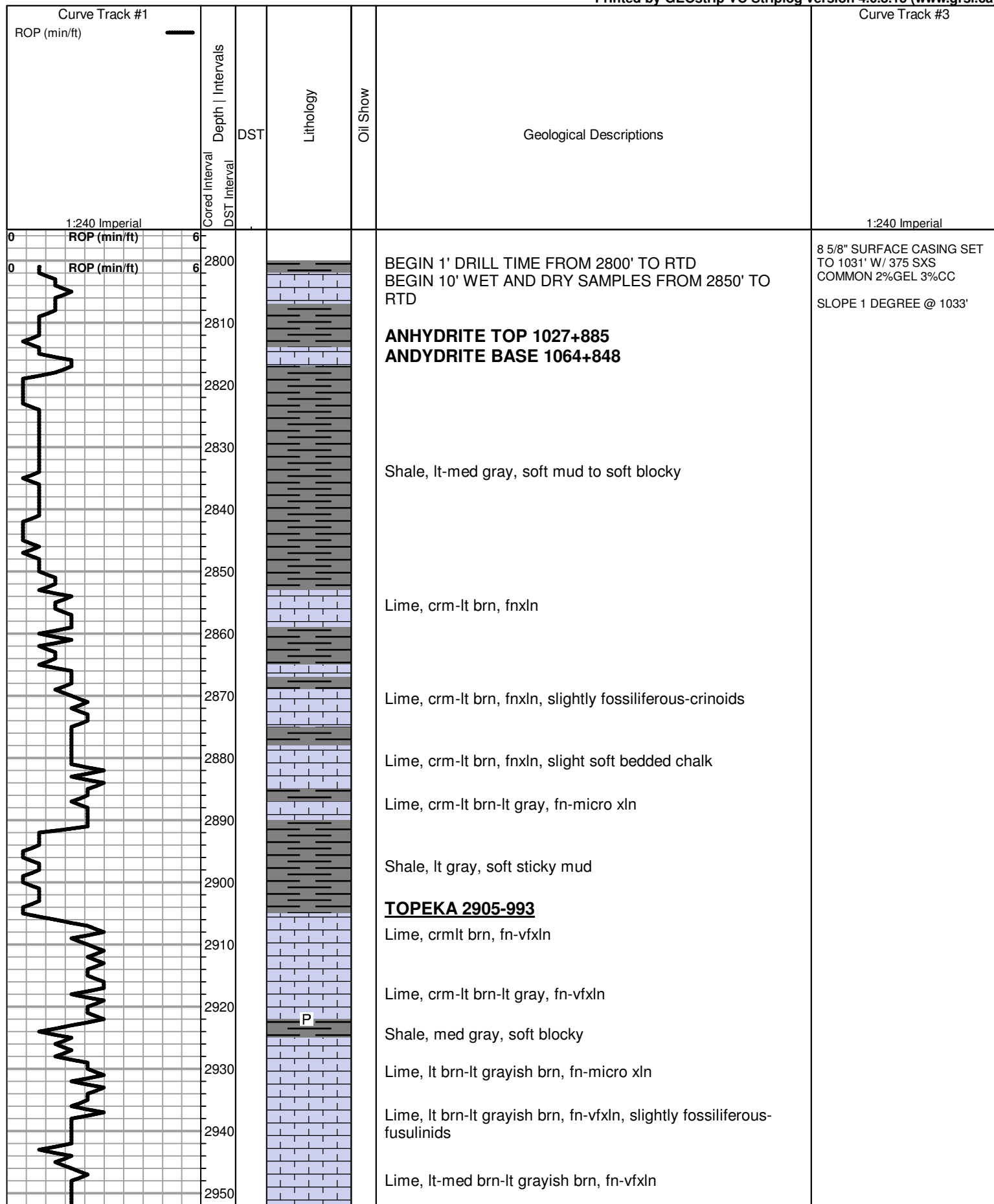
MINERAL

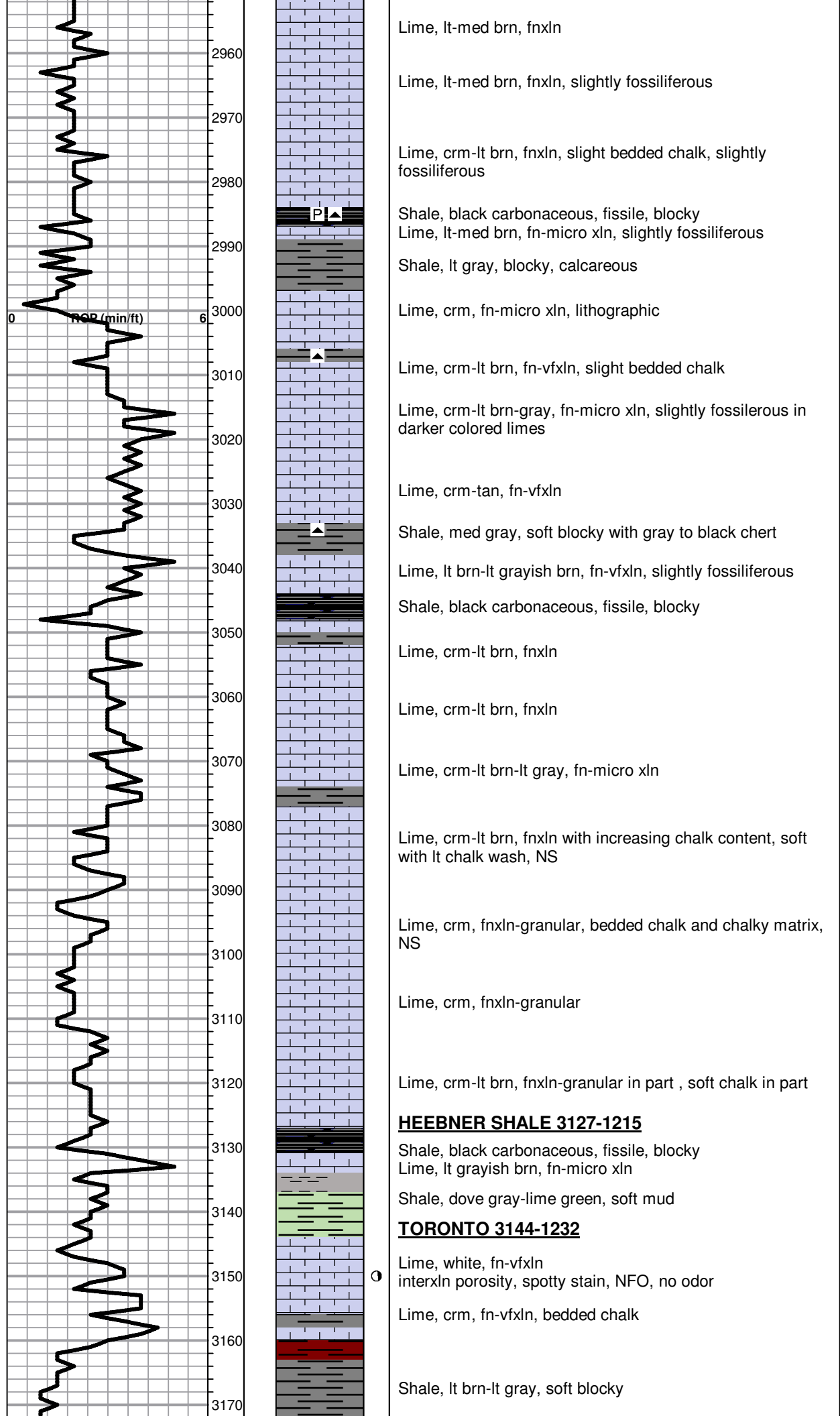
▲ Chert, dark
P Pyrite

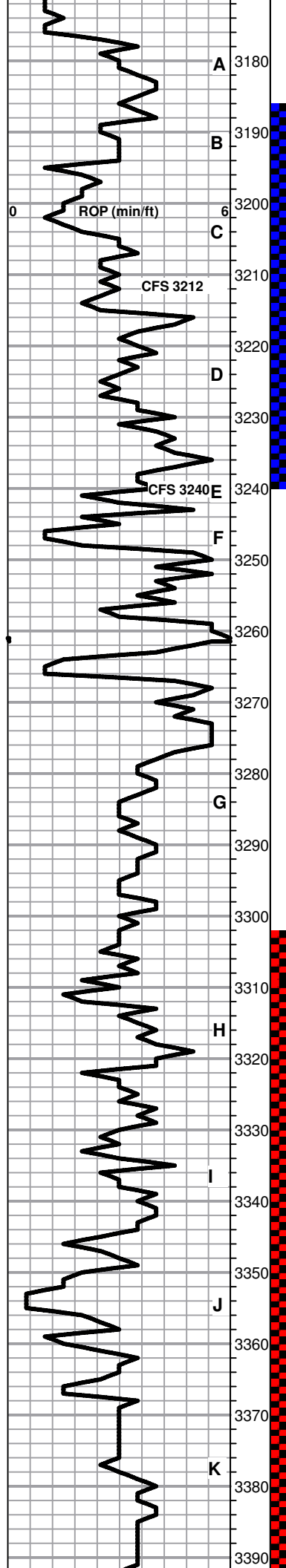
FOSSIL

F Fossils < 20%
○ Oolite
⊕ Oomoldic

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







LKC 3176-1264

Lime, crm-tan, fn-micro xln, bedded chalk, NS, No Odor

Lime, crm-tan-dark brn in part, fn-vfxln, slight bedded chalk

○ Lime, crm-lt brn, fnxln with zone of oolitic/oomoldic with fossil fragments, spotty stain, NFO, VLT odor

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

○ Lime, crm-lt brn, fnxln with few oolitic chips with dark staining, NFO, very lt odor

Lime, crm-lt brn, fn-micro xln, bedded chalk

Lime, crm-lt-med brn, fn-micro xln

Shale, black carbonaceous, blocky
Lime, pale, gray, micro xln

○ Lime, crm-lt brn, fossiliferous, spotty staining in casts and fossil fragments, NFO, very lt detectable odor

Lime, crm, fnxln with few oolitic/oomoldic chips, barren, NS

Lime, crm-tan, fn-micro xln, lt white chalk wash

Lime, crm-lt brn, fn-vfxln, bedded chalk

Lime, crm, fnxln, lot of bedded chalk

Shale, black carbonaceous, blocky
Lime, crm-lt gray, fn-micro xln

Lime, lt grn-lt gray, fn-micro xln

Lime, offwhite-lt-med brn, fn-micro xln

○ Lime, lt brn-crm, fnxln with scattered oolitic chips with scattered to saturated dark staining, very lt odor, NFO

Lime, crm-lt brn, fn-vfxln

● Lime, lt-med brn-lt gray, fnxln with zone of good oomoldic chips, saturated staining, good odor

Lime, crm-lt brn, fn-vfxln

Lime, crm-tan, fnxln, with white bedded chalk, NS

Lime, crm-tan, fnxln, bedded chalk

Lime, white-crm, fnxln

DST # 1 3186' TO 3240' SEE
HEADER FOR TEST
SUMMARY

SLOPE 3/4 DEGREE @3240'

BRAKES HOT AFTER TIWB
DUE TO BROKEN WATER LINE
TO BRAKES

DST # 2 3302' TO 3395' SEE
HEADER FOR TEST
SUMMARY

