



Scale 1:240 Imperial

Well Name: 3DR UNIT #1  
Surface Location: NE NE NW NW Sec. 14 -7S - 19W  
Bottom Location:  
API: 15-163-24380  
License Number: 34903  
Spud Date: 1/2/2019 Time: 2:00 PM  
Region: ROOKS COUNTY  
Drilling Completed: 1/8/2019 Time: 10:08 AM  
Surface Coordinates: 220' FNL & 1110' FWL  
Bottom Hole Coordinates:  
Ground Elevation: 1951.00ft  
K.B. Elevation: 1956.00ft  
Logged Interval: 2800.00ft To: 3550.00ft  
Total Depth: 3550.00ft  
Formation: LANSING - KANSAS CITY; ARBUCKLE  
Drilling Fluid Type: FRESH WATER / CHEMICAL GEL

#### OPERATOR

Company: JASPAR CO  
Address: P.O. BOX 1120  
HAYS, KS 67601  
Contact Geologist: SHANE VEHIGE  
Contact Phone Nbr: (785) 23-6982  
Well Name: 3DR UNIT #1  
Location: NE NE NW NW Sec. 14 -7S - 19W  
API: 15-163-24380  
Pool: State: KANSAS Field: GROVER  
Country: USA

#### SURFACE CO-ORDINATES

Well Type: Vertical  
Longitude: -99.4121846  
Latitude: 39.4514025  
N/S Co-ord: 220' FNL  
E/W Co-ord: 1110' FWL

#### LOGGED BY



Company: BIG CREEK CONSULTING, INC.  
Address: 1909 MAPLE  
ELLIS, KS 67637

Phone Nbr: (785) 259-3737  
 Logged By: GEOLOGIST

Name: JEFF LAWLER

**CONTRACTOR**

Contractor: WW DRILLING, LLC  
 Rig #: 8  
 Rig Type: MUD ROTARY  
 Spud Date: 1/2/2019  
 TD Date: 1/8/2019  
 Rig Release: 1/9/2019  
 Time: 2:00 PM  
 Time: 10:08 AM  
 Time: 11:00 PM

**ELEVATIONS**

K.B. Elevation: 1956.00ft  
 K.B. to Ground: 5.00ft  
 Ground Elevation: 1951.00ft

**NOTES**


DUE TO ECONOMICAL RECOVERY ON DST #6 DECISION WAS MADE TO RUN PRODUCTION CASING AND FURTHER EVALUATE THE ZONE UPON COMPLETION.

RESPECTFULLY SUBMITTED,  
 JEFF LAWLER

**WELL COMPARISON SHEET**

FORMATION	3DR UNIT #1				REED #1				REED OWWO #1				JACKSON #4				JACKSON OWWO#1			
	1956		1951		1961		1953		1956		1956		1966		1966		1966			
	LOG TOPS	SAMPLE TOPS	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.	LOG	SAMPL.		
	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM		
ANHYDRITE TOP	1463	493	1465	491	1451	510	-17	-19	1471	482	+11	+9	1460	496	-3	-5	1483	483	+10	+8
BASE	1497	459	1500	456	1504	457	+2	-1	1498	455	+4	+1	1492	464	-5	-8	1516	450	+9	+6
TOPEKA	2911	-955	2910	-954	2922	-961	+6	+7	2913	-960	+5	+6	2910	-954	-1	+0	2922	-956	+1	+2
HEEBNER SHALE	3111	-1155	3111	-1155	3124	-1163	+8	+8	3113	-1160	+5	+5	3111	-1155	+0	+0	3122	-1156	+1	+1
TORONTO	3133	-1177	3132	-1176	3149	-1188	+11	+12	3136	-1183	+6	+7	3135	-1179	+2	+3	3145	-1179	+2	+3
LKC	3153	-1197	3151	-1195	3164	-1203	+6	+8	3153	-1200	+3	+5	3153	-1197	+0	+2	3164	-1198	+1	+3
BKC	3374	-1418	3374	-1418	3384	-1423	+5	+5	3373	-1420	+2	+2	3373	-1417	-1	-1	3383	-1417	-1	-1
CONGLOMERATE																				
ARBUCKLE	3469	-1513	3461	-1505	3458	-1497	-16	-8	3424	-1471	-42	-34	3458	-1502	-11	-3	3449	-1483	-30	-22
TOTAL DEPTH	3552	-1596	3550	-1594	3470	-1509	-87	-85	3471	-1518	-78	-76	3745	-1789	+193	+195	3495	-1529	-67	-65

**DST #1 LKC C\_D 3175' - 3215'**



**DRILL STEM TEST REPORT**

Jaspar Co. **14 - 7S - 19W**

PO Box 1120  
Hays, Ks 67601

ATTN: Jeff Lowler

**3DR Unit #1**

Job Ticket: 65387 **DST#: 1**

Test Start: 2019.01.05 @ 21:30:00

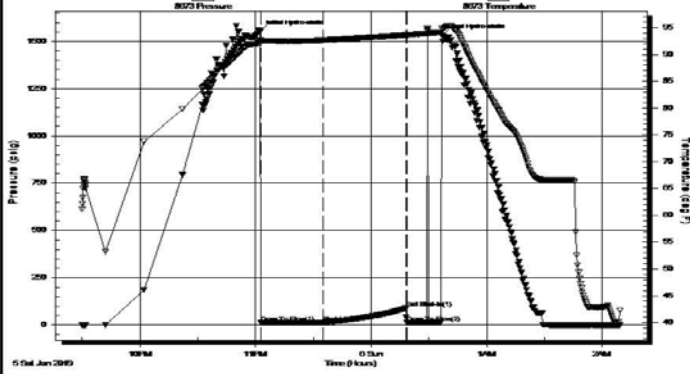
**GENERAL INFORMATION:**

Formation: **Lansing C, D**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 23:02:45  
 Time Test Ended: 02:09:30  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #77  
 Interval: **3175.00 ft (KB) To 3215.00 ft (KB) (TVD)**  
 Total Depth: 3215.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Reference Elevations: 1956.00 ft (KB)  
 1951.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8673**

Press@RunDepth: 13.41 psig @ ft (KB)  
 Start Date: 2019.01.05 End Date: 2019.01.06 Capacity: 8000.00 psig  
 Start Time: 21:30:05 End Time: 02:09:29 Last Calib.: 2019.01.06  
 Time On Btm: 2019.01.05 @ 23:02:30  
 Time Off Btm: 2019.01.06 @ 00:36:45

**TEST COMMENT:** 30 - IFF - No Surface Blow  
 45 - ISI - No Return  
 FFP - Opened tool for 10 min. No Surface blow, Flushed Tool bubbled, Pulled Tool



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1554.62	92.68	Initial Hydro-static
1	11.91	92.13	Open To Flow (1)
33	13.41	92.67	Shut-In(1)
76	89.25	93.64	End Shut-In(1)
76	12.92	93.64	Open To Flow (2)
95	1531.88	94.80	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	OSM - 100%m - Oil Spots	0.02

### Gas Rates

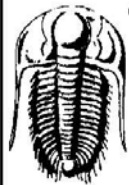
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Trilobite Testing, Inc

Ref. No: 65387

Printed: 2019.01.06 @ 07:19:38

## DST #2 LKC E - F 3214' - 3242'



**TRILOBITE TESTING, INC.**

### DRILL STEM TEST REPORT

Jaspar Co.  
 PO Box 1120  
 Hays, Ks 67601  
 ATTN: Jeff Lowler

**14 - 7S - 19W**  
**3DR Unit #1**  
 Job Ticket: 65388  
**DST#: 2**  
 Test Start: 2019.01.06 @ 08:19:00

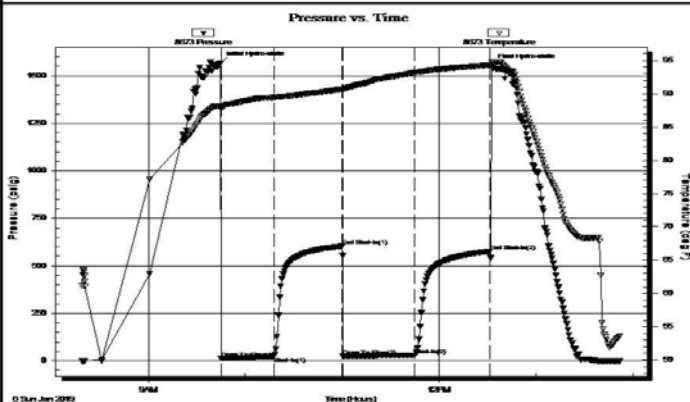
#### GENERAL INFORMATION:

Formation: **Lansing E&F**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 09:45:00  
 Time Test Ended: 13:52:30  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #77  
 Interval: **3214.00 ft (KB) To 3242.00 ft (KB) (TVD)**  
 Total Depth: 3242.00 ft (KB) (TVD)  
 Reference Elevations: 1956.00 ft (KB)  
 1951.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 KB to GR/CF: 5.00 ft

#### Serial #: 8673

Press@RunDepth: 30.51 psig @ ft (KB)  
 Capacity: 8000.00 psig  
 Start Date: 2019.01.06 End Date: 2019.01.06  
 Last Calib.: 2019.01.06  
 Start Time: 08:19:05 End Time: 13:52:29  
 Time On Btm: 2019.01.06 @ 09:44:45  
 Time Off Btm: 2019.01.06 @ 12:32:30

TEST COMMENT: 30 - IFP - Surface blow built up to 1 1/4"  
 45 - ISI - No Return  
 45 - FFP - Stayed at a weak surface blow throughout  
 45 - FSI - Got a faint return 35 mins. into shut in.



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1568.09	88.17	Initial Hydro-static
1	12.26	87.62	Open To Flow (1)
33	22.67	89.44	Shut-In(1)
76	602.87	90.70	End Shut-In(1)
76	23.94	90.57	Open To Flow (2)
121	30.51	93.18	Shut-In(2)
167	575.83	94.31	End Shut-In(2)
168	1554.19	94.70	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
45.00	OSWM - Oil Spots - 2%w - 98%v	0.22


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

Trilobite Testing, Inc

Ref. No: 65388

Printed: 2019.01.06 @ 21:33:17

**DST #3 LKC G 3240' - 3253'**

 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>	
	Jaspar Co. PO Box 1120 Hays, Ks 67601 ATTN: Jeff Lowler	<b>14 - 7S - 19W</b> <b>3DR Unit #1</b> Job Ticket: 65389 <b>DST#: 3</b> Test Start: 2019.01.06 @ 19:38:00

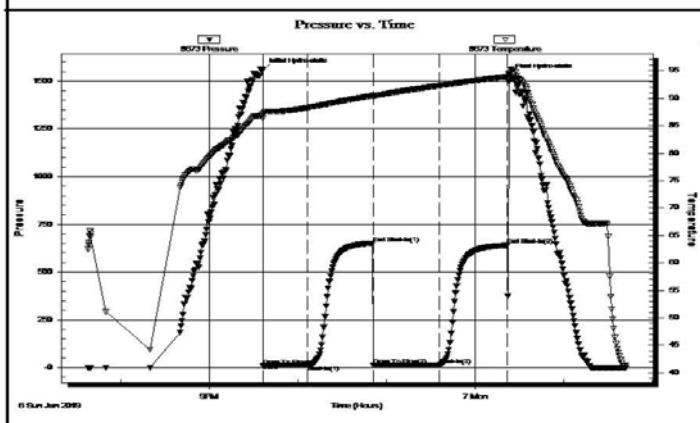
**GENERAL INFORMATION:**

Formation: <b>LKC - G</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock      ft (KB)	Tester: Royal Fisher
Time Tool Opened: 21:36:30	Unit No: #77
Time Test Ended: 01:42:30	Reference Elevations: 1956.00 ft (KB)
<b>Interval: 3240.00 ft (KB) To 3253.00 ft (KB) (TVD)</b>	1951.00 ft (CF)
Total Depth: 3253.00 ft (KB) (TVD)	KB to GR/CF: 5.00 ft
Hole Diameter: 7.88 inches Hole Condition: Fair	

**Serial #: 8673**

Press@RunDepth: 13.87 psig @      ft (KB)	Capacity: 8000.00 psig
Start Date: 2019.01.06      End Date: 2019.01.07	Last Calib.: 2019.01.07
Start Time: 19:38:05      End Time: 01:42:29	Time On Btm: 2019.01.06 @ 21:36:15
	Time Off Btm: 2019.01.07 @ 00:23:15

**TEST COMMENT:** 30 - IFP - Surface blow slowly built to almost 3/4"  
 45 - ISI - No Return  
 45 - FFP - A very faint surface blow started 28 mins into open then died back off  
 45 - FSI - No Return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1558.89	87.16	Initial Hydro-static
1	9.52	86.29	Open To Flow (1)
31	12.09	88.24	Shut-In(1)
75	652.07	90.47	End Shut-In(1)
76	11.79	90.21	Open To Flow (2)
120	13.87	92.25	Shut-In(2)
166	641.22	93.91	End Shut-In(2)
167	1531.19	94.49	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
5.00	Mud - 100%v	0.02

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

Trilobite Testing, Inc

Ref. No: 65388

Printed: 2019.01.07 @ 07:08:06

**DST #4 LKC H - L 3267' - 3371'**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

Jaspar Co.  
PO Box 1120  
Hays, Ks 67601  
ATTN: Jeff Lowler

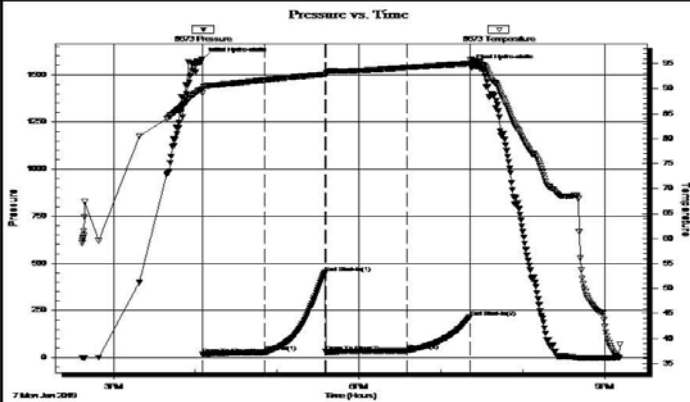
**14 - 7S - 19W**  
**3DR Unit #1**  
Job Ticket: 65390      **DST#: 4**  
Test Start: 2019.01.07 @ 14:37:00

**GENERAL INFORMATION:**

Formation: **LKC = H-L**  
 Deviated: No Whipstock:                      ft (KB)  
 Time Tool Opened: 16:05:15  
 Time Test Ended: 21:11:45  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: #77  
**Interval: 3267.00 ft (KB) To 3371.00 ft (KB) (TVD)**  
 Total Depth: 3371.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Reference Elevations: 1956.00 ft (KB)  
 1951.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8673**  
 Press@RunDepth: 36.20 psig @                      ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2019.01.07      End Date: 2019.01.07      Last Calib.: 2019.01.07  
 Start Time: 14:37:05      End Time: 21:11:44      Time On Btm: 2019.01.07 @ 16:05:00  
 Time Off Btm: 2019.01.07 @ 19:21:45

**TEST COMMENT:** 45 - IFF - Surface blow gradually built up to 1 1/2"  
 45 - ISI - No Return  
 60 - FFP - Weak surface blow started 3 mins. in and built up to 1 1/4"  
 45 - FSI - No Return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1585.46	89.96	Initial Hydro-static
1	16.81	89.04	Open To Flow (1)
46	28.21	91.74	Shut-In(1)
90	451.36	92.84	End Shut-In(1)
91	31.93	92.73	Open To Flow (2)
151	36.20	94.22	Shut-In(2)
197	215.27	95.01	End Shut-In(2)
197	1548.56	95.74	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
59.00	OCM - 35%oil - 65%mud	0.29

**Gas Rates**

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

Trilobite Testing, Inc

Ref. No: 65390

Printed: 2019.01.08 @ 07:11:52

**ROCK TYPES**










Dolprim	shale, grn	Carbon Sh	shale, red	Ss
Lmst fw7>	shale, gry	Shblk	Arg/Shale	

**ACCESSORIES**

<b>MINERAL</b> • Sandy	<b>FOSSIL</b> ◊ Oolite	<b>TEXTURE</b> c Chalky
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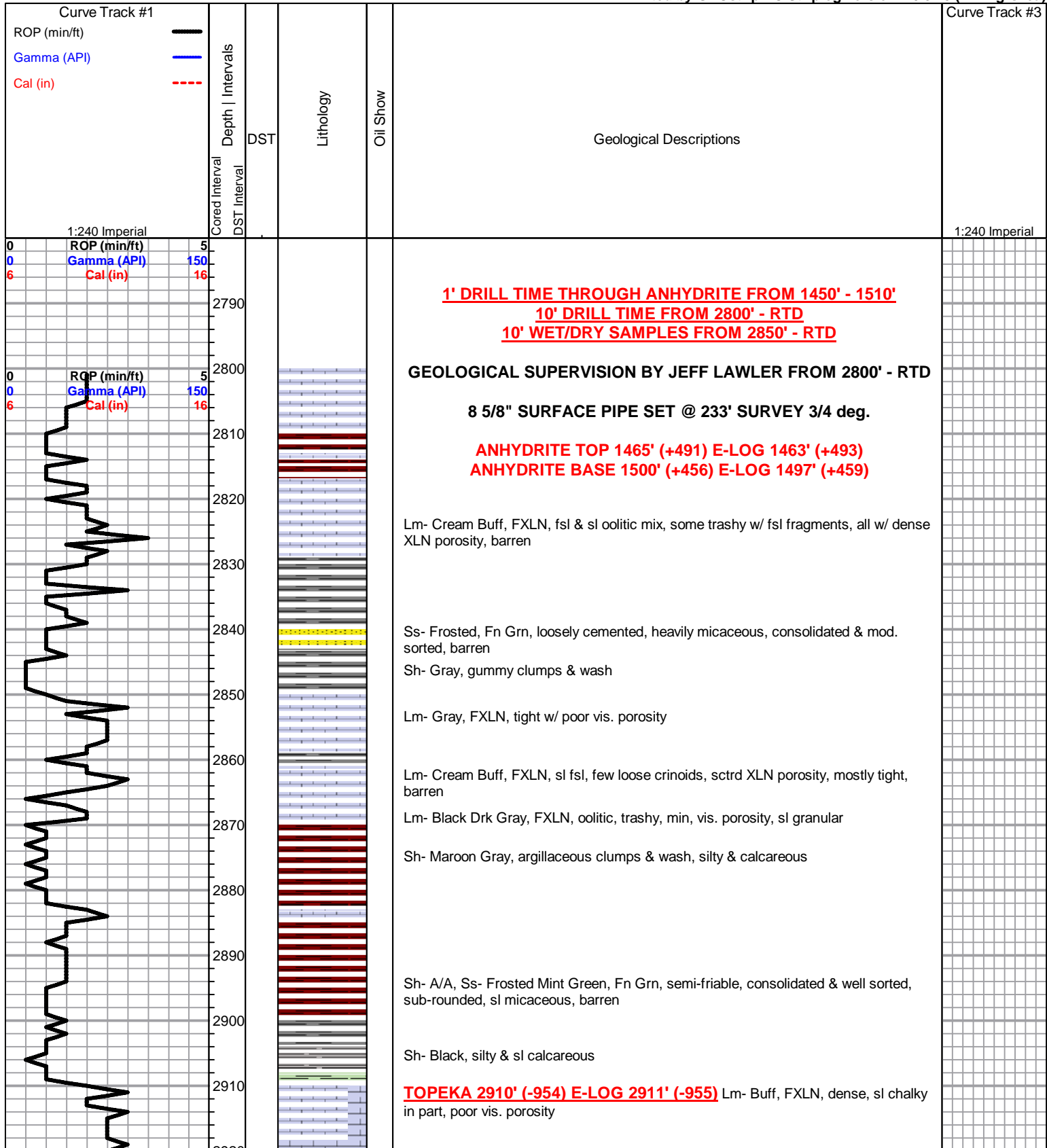
**OTHER SYMBOLS**

**MISC**

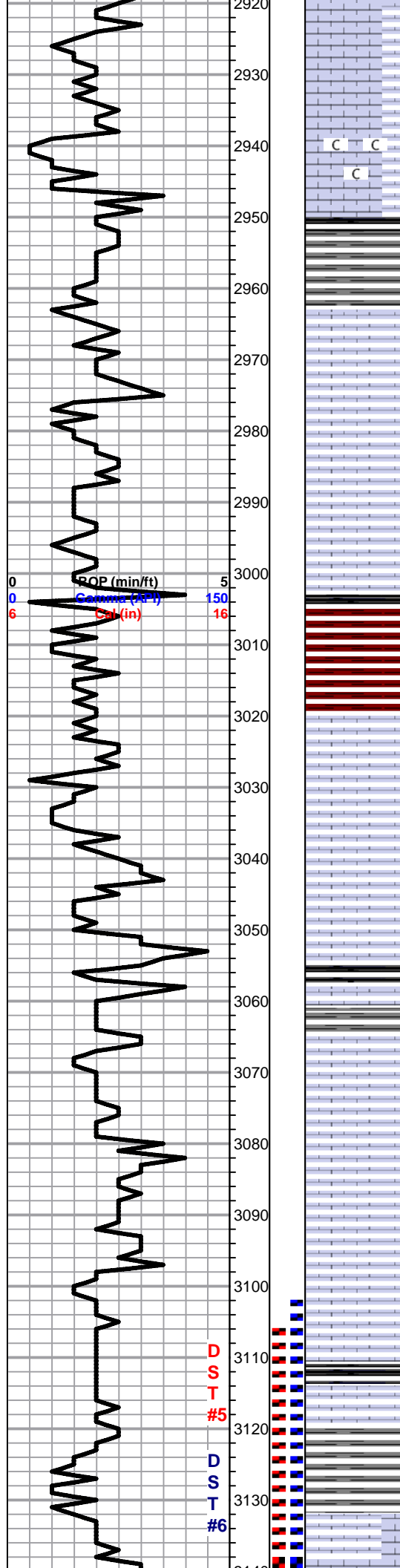
-  Daily Report
-  Digital Photo
-  Document
-  Folder
-  Link
-  Vertical Log File
-  Horizontal Log File
-  Core Log File
-  Drill Cuttings Rpt

**DST**

-  DST Int
-  DST alt







Lm- Tan, VFXLN, dense, well cemented sl cherty Ls w/o vis. porosity

Lm- Cream Buff, VF-FXLN, dense & tight, some chalky in part, poor vis, porosity, barren

Sh- Black Gray Maroon, fissile & carbonaceous, silty & calcareous

Lm- Tan Cream Buff, FXLN, fsl & oolitic, densely packed, dense secondary reXLN porosity & clear replacement cementation, much soft white chalk, barren

A/A, sl influx of soft white chalk

Lm- Cream Off White, FXLN, trashy & fsl, heavily mottled, abundant soft white chalk

Lm- Buff, A/A

Sh- Black Maroon, fissile & carbonaceous, gritty & earthy

Lm- Cream Buff Gray, fxln, dense, fsl, heavily mottled, sctrd to dense XLN, some w/ dense fractured XLN porosity, some soft white chalk, barren

Lm- Cream Off White, FXLN, fsl & sl oolitic, gritty & semi granular, mod well dev. vry dense XLN porosity & some sctrd fracturing, vry clean & barren, much soft white chalk

Sh- Black Gray Green, fissile & carbonaceous, silty & calcareous, gummy wash

Sh- Gray Maroon Green, silty & calcareous, gritty & earthy, gummy wash

Lm- Cream Semi Translucent- FXLN, sl dolomitic Ls w/ vry dense XLN porosity, clean & barren

Lm- Cream Tan Brown, mix of well dev. sl granular dolomitic Ls w/ consistent XLN porosity, & tight dark colored cherty Ls w/o vis. porosity

Lm- Cream Off White, fsl & oolitic, dense fn ppt inter fsl porosity, SCTRD DRK STN, TR FO, WK ODR

Lm- Cream Buff, FXLN, fsl, sctrd lt mottling, XLN porosity, some soft white chalk

Lm- Cream, FXLN, fsl, dense fractured & XLN porosity, some sctrd clear replacement cementation, barren, sctrd mottling, several pcs of sl cherty Ls w/ min. vis. porosity

Lm- Buff, FXLN, sl fsl, mostly tight w/ sctrd XLN & poor vis. porosity

**HEEBNER 3111' (-1155) E-LOG 3111' (-1155)** Sh- Black, fissile & carbonaceous

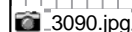
Sh- Gray Maroon, gummy clumps, gritty & earthy

**TORONTO 3132' (-1176) E-LOG 3133' (-1177)** Lm- Cream Off White, F-Med XLN, fsl w/ fusulinids & mod. well developed w/ ppt inter fsl & XLN porosity, LT DRK STN, SL TR FO, WK ODR

DST #6 TORONTO  
3103' - 3169'  
(STRADDLE)  
15-45-15-45

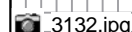
692' TOTAL FLUID  
258' FREE OIL  
Gr: 36  
248' MCO  
(70%O,30%M)  
124' MCO  
(75%O,25%M)  
62' GMCO  
(25%G, 50%O  
25%M)

IFP: 58-193#  
FFP: 172-248#  
SIP: 1016-981#  
BHT: 102 deg.

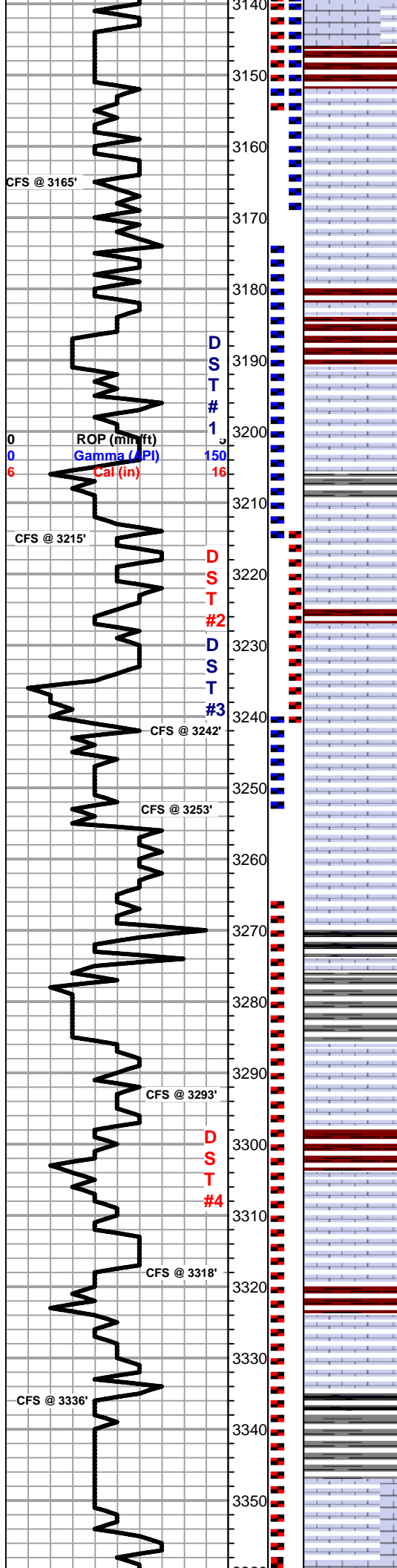


DST #5 TORONTO  
3103' - 3155'  
(STRADDLE)

MISRUN  
527' MUD



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Sh- Maroon Brown, gritty & earthy, sl waxy

**LKC 3151' (-1195) E-LOG 3153' (-1197)** Lm- Off White, FXLN, oolitic, loosely cemented, dense XLN & secondary (fractured??) porosity, vry clean & barren

Lm- Off White, VF-FXLN, dense, mostly tight w/ sctrd micro XLN porosity, all vry clean & barren

Lm- Off White Cream, VF-FXLN, dense, mostly well cemented & tight w/ sctrd XLN porosity, some soft white chalk

Sh- Maroon Gray, gritty & earthy, gummy clumps

① Lm- Cream Off White, F-Med XLN, fsl w/ fusulinids, mostly consistent XLN & ppt inter fsl porosity, SCTRD LT STN, NSFO, NO ODR

Sh- Gray Maroon, argillaceous clumps, gritty & earthy

Lm- Cream Buff, FXLN, sl fsl, poorly dev. w/ sctrd XLN porosity, clean & barren

① Lm- Off White, FXLN, sl fsl & oolitic, sctrd ppt inter oolite & XLN porosity, SCTRD LT STN, TR FO, WK ODR

① Lm- Cream Off White, FXLN, oolitic & fsl w/ fusulinids, few w/ glauconite inclusions, sctrd ppt inter oolite porosity, SCTRD DRK STN, SL TR FO, WK ODR, several pcs of FXLN dolomite & dolomitic Ls w/ consistent XLN porosity, massive, barren, few pcs of fresh bedded chert w/o vis. porosity

① Lm- Cream Off White, FXLN, oolitic & sctrd oomoldic, poor inter moldic connectivity, dense XLN & sctrd vuggy porosity, SCTRD TO CONSISTENT DRK STN, FR SFO WHEN HEATED, FR SL SULPHURIC ODR, few pcs sl chalky in part

Lm- Cream Tan, VF-FXLN, dense, well cemented, sctrd micro XLN porosity, clean & barren

Lm- Gray, FXLN, dense, well cemented & mostly tight w/ sctrd XLN porosity, some soft white chalk, barren

Sh- Black Gray, fissile & carbonaceous, gummy clumps

Lm- Gray, FXLN, trashy fsl mix, some w/ fsl fragments, XLN porosity

Sh- Gray Marron Brown, gummy clumps, semi-waxy

① Lm- Buff Cream Off White, Vf Grn FXLN, dense mostly tight mix of grain supported mudstone w/ sctrd fn ppt porosity, SCTRD DRK STN, SL TR FRO, NO ODR, & tight FXLN w/ sctrd XLN porosity, clean & barren  
 ① Chert- Milky Gray, fresh bedded w/ sctrd ppt & XLN porosity, LT STN, NSFO, TR ODR??

① Lm- Cream Off White, FXLN, well cemented, dense, vry fn ppt & XLN porosity, SCTRD DRK STN, SL TRFO, TR ODR??, several pcs of sl fsl FXLN w/ sctrd fn ppt & XLN inter XLN porosity, SCTRD DRK STN, NSFO, ODR A/A

Sh- Maroon Gray, gummy clumps

① Lm- Cream Off White, FXLN, oolitic, mod. well dev. w/ mostly consistent ppt inter oolite porosity, SCTRD TO SUB-SAT DRK STN, TR FO, FEW PCS W/ GSY OIL UPON CRUSH, TR ODR

Sh- Black Gray Maroon, fissile & carbonaceous & abundant argillaceous wash, gritty & earthy

Lm- Off White Buff, VF-FXLN, dense, well cemented, mostly tight, sl fsl, poor vis. to sctrd XLN porosity, some soft white chalk, all clean & barren

Lm- Tan. FXLN, semi-trashy, massive, oolitic, loosely cemented & semi-crumbly, poor

SHORT TRIP  
STRAP -1.42'  
SURVEY 1 deg

DST #1 LKC C&D  
3175' - 3215'  
30-45-10-0

5' OSM

IFP: 11-13#  
FFP: N/A  
SIP: 89-N/A#

3193.jpg

DST #2 LKC E-F  
3214' - 3242'  
30-45-30-45

45' OSWM  
(2%W, 98%M)

IFP: 12-23#  
FFP: 24-31#  
SIP: 603-576#  
BHT: 94 deg.

3228.jpg

3238.jpg

3244.jpg

DST #3 LKC G  
3240' - 3253'  
30-45-45-45

5' MUD

IFP: 10-12#  
FFP: 12-14#  
SIP: 652-641#

3286.jpg

3290.jpg

3310.jpg

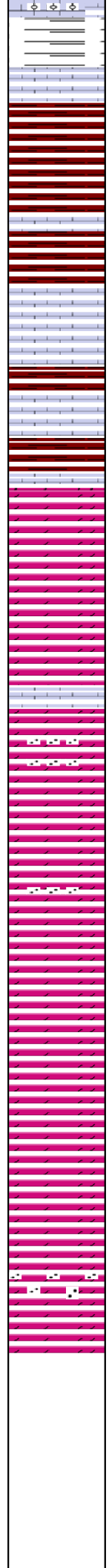
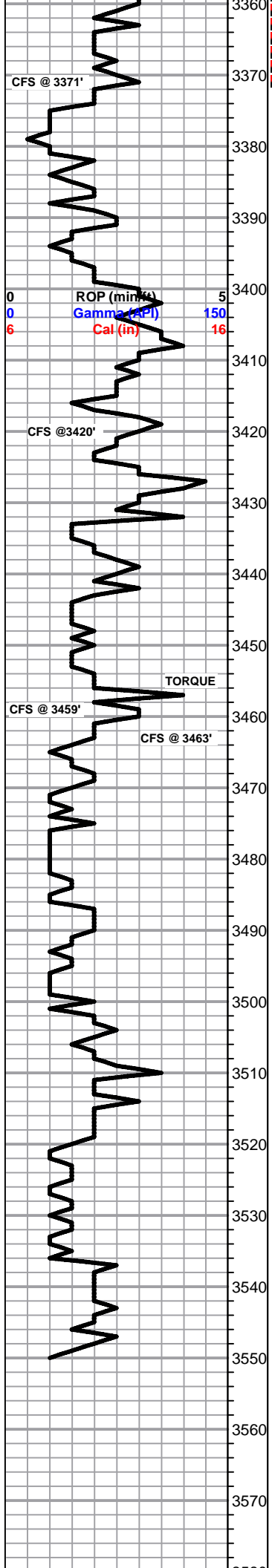
3326.jpg

DST #4 LKC H-L  
3267' - 3371'  
45-45-60-45

59' OCM  
(35%O, 65%M)

IFP: 16-28#  
FFP: 31-36#  
SIP: 451-245#  
BHT: 95 deg.





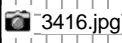
matrix development, sctrd XLN porosity, barren

Lm- Cream Buff, VF-FXLN, dense, well cemented, sl chalky in part, poor XLN porosity, barren

**BKC 3374' (-1418) E-LOG 3374' (-1418)** Sh- Maroon Gray Green, gritty & earthy, sandy, waxy

Lm- Cream Off White Purple hue, FXLN, fsl & sl oolitic, most well cemented, sctrd XLN porosity, few sl chalky in part, clean & barren

Lm- Cream Off White, FXLN, oolitic & oomoldic, sctrd fn ppt & vuggy porosity, well cemented, SAT DRK STN, FR SHW FR O, WK ODR, LOW GRAVITY OIL



Dolomite- Cream Tan Yellow Purple, FXLN, dense, well cemented, most semi tight w/ micro XLN & XLN porosity, barren

Dolo- Cream Tan, Med XLN, consistent developed XLN porosity, barren, semi-rhombic

Dol- A/A w/ Green Hue, several pcs of mint green waxy shale

Dolo- Cream Maroon, FXLN, well cemented, consistent micro XLN porosity, barren

**ARBUCKLE 3461' (-1505) E-LOG 3469' (-1513) 3465'**-Dolo- Cream Off White, F-Med XLN, mix of massive Med XLN w/ sctrd-consistent XLN porosity, w/ glauconite & Med sub-angular qtz. inclusions, few pcs of pink cherty dolomite, clean & barren

Dolo- Clear Frosted, Med Grn, sub-rounded sandy dolomite, glauconite inclusions A/A, light dolomitic cementation, semi-friable to friable, clean & barren

**3470'**- Dolo- Cream, F-Crs XLN, heavy glauconite inclusions, sub-rounded Fn-Med qtz. inclusions, euhedral rhombs, poor to dense inter XLN porosity, clean & barren

Dolo- Cream, FXLN, A/A w/ decreasing ratio of qtz & glauconite inclusions, less dev. w/ micro XLN porosity, barren

Dolo- Cream Maroon Hue, VF-FXLN, dense, well cemented, dense micro XLN porosity, some tight cherty Dolo, barren

Dolo- Maroon, FXLN, well to loosely cemented, mostly tight, micro XLN porosity

Dolo- Cream Maroon, Med XLN mix of heavy w/ glauconite & sub-rounded med gr qtz inclusions & A/A w/ med XLN euhedral rhombs, all barren

Dolo- Cream Clear, Med-Crs XLN, heavy w/ glauconite & sub-rounded med gr qtz inclusions, all well dev. w/ consistent ppt inter XLN porosity, barren

Dolo- Clear SI Frosted, Crs Grn, sandy friable angular - sub-angular clusters w/ Ca cementation, some heavy w/ glauconite inclusions, barren

Dolo- White, F-Med XLN, well cemented, sctrd glauconite inclusions, pristine & barren

**RTD 3550' (-1594) LTD 3552' (-1596) @ 10:08 1/8/2019**

- DST 5.jpg
- DST 5\_BTMPKR.jpg
- DST 6.jpg
- DST 6\_BTMPKR.jpg

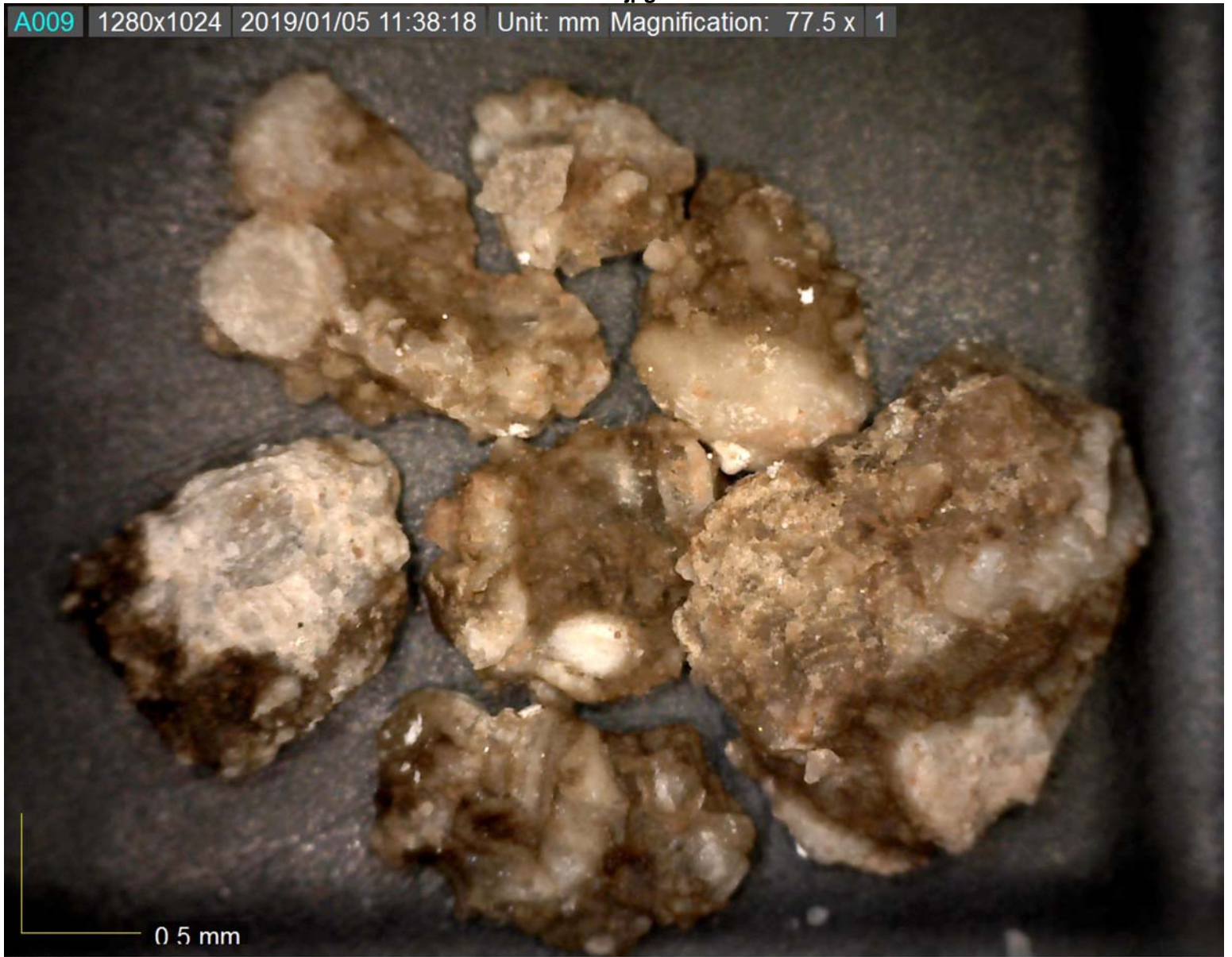
15 STAND SHORT TRIP CTCH SURVEY 1 deg. TOH FOR LOG LOGGED BY ELI

3090.jpg

A008 1280x1024 2019/01/05 08:44:27 Unit: mm Magnification: 77.5 x 1



3090'



3132'







3228'















3290'



3310'


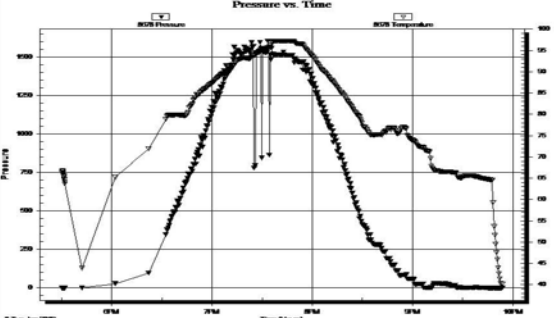






34116'



	<h2 style="margin: 0;">DRILL STEM TEST REPORT</h2>																																			
Jaspar Co. PO Box 1120 Hays, Ks 67601  ATTN: Jeff Lowler	<b>14 - 7S - 19W</b> <b>3DR Unit #1</b> Job Ticket: 65391 <b>DST#: 5</b> Test Start: 2019.01.09 @ 00:00:00																																			
<b>GENERAL INFORMATION:</b> Formation: <b>Toronto</b> Deviated: No      Whipstock:      ft (KB)      Test Type: Conventional Straddle (Initial) Time Tool Opened:      Tester: Royal Fisher Time Test Ended:      Unit No: #77  <b>Interval: 3106.00 ft (KB) To 3155.00 ft (KB) (TVD)</b> Total Depth: 3552.00 ft (KB) (TVD)      Reference Elevations: 1956.00 ft (KB)      1951.00 ft (CF) Hole Diameter: 7.88 inches      Hole Condition: Fair      KB to GR/CF: 5.00 ft																																				
<b>Serial #: 8678      Below (Straddle)</b> Press@RunDepth:      psig @ 3180.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2019.01.08      End Date: 2019.01.08      Last Calib.: 2019.01.09 Start Time: 17:30:05      End Time: 21:53:44      Time On Btm:      Time Off Btm:																																				
TEST COMMENT: IFP - Packer failure, tried resetting tool three times pulled out																																				
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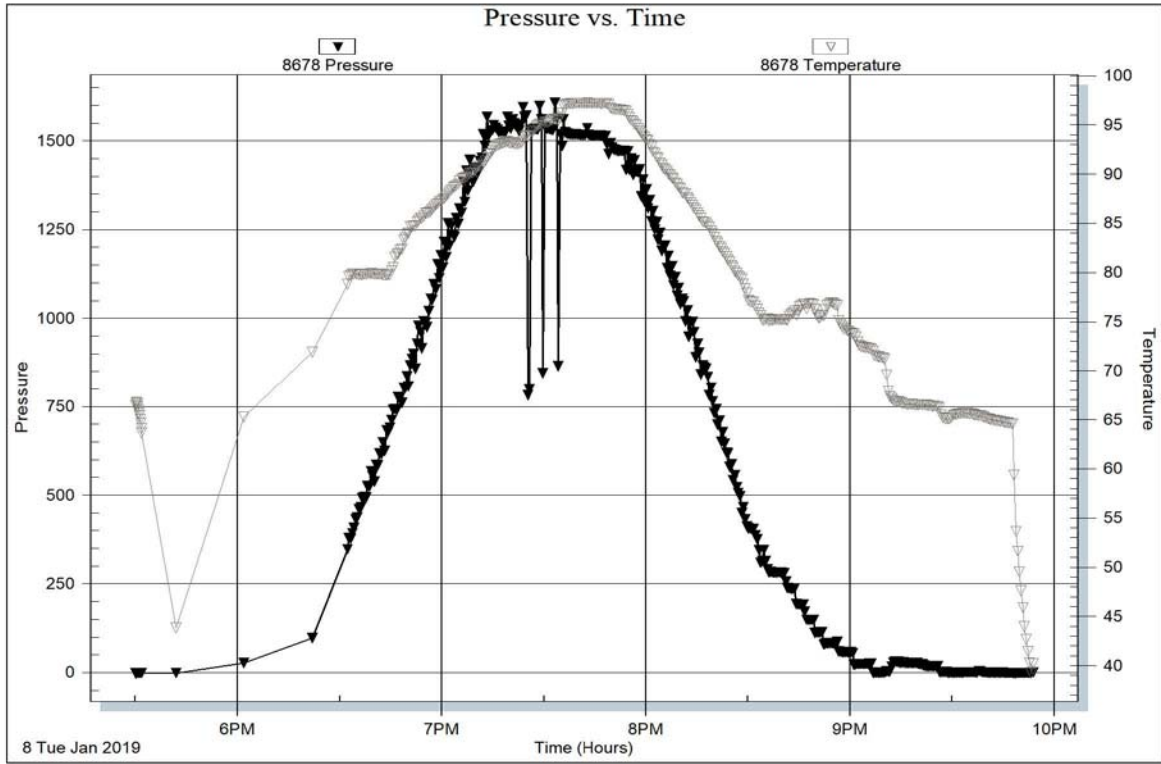
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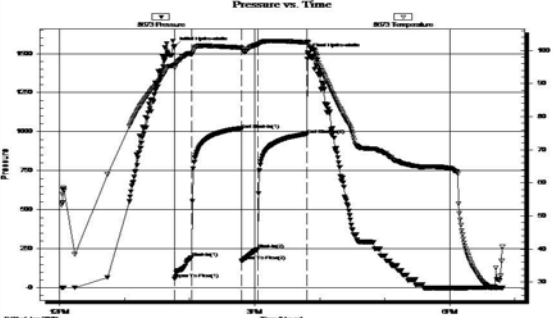
Serial #: 8678

Below (Straddler) Co.

3DR Unit #1

DST Test Number: 5



 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b> Jaspar Co. <span style="float: right;"><b>14 - 7S - 19W</b></span> PO Box 1120 <span style="float: right;"><b>3DR Unit #1</b></span> Hays, Ks 67601 <span style="float: right;">Job Ticket: 65392 <b>DST#: 6</b></span> ATTN: Jeff Lowler <span style="float: right;">Test Start: 2019.01.08 @ 12:02:00</span>																																												
<b>GENERAL INFORMATION:</b> Formation: <b>Toronto</b> Deviated: No Whipstock <span style="float: right;">ft (KB)</span> <span style="float: right;">Test Type: Conventional Straddle (Initial)</span> Time Tool Opened: 13:46:15 <span style="float: right;">Tester: Royal Fisher</span> Time Test Ended: 18:49:00 <span style="float: right;">Unit No: #77</span> <b>Interval: 3103.00 ft (KB) To 3169.00 ft (KB) (TVD)</b> Total Depth: 3552.00 ft (KB) (TVD) <span style="float: right;">Reference Elevations: 1956.00 ft (KB)</span> Hole Diameter: 7.88 inches Hole Condition: Fair <span style="float: right;">1951.00 ft (CF)</span> <span style="float: right;">KB to GR/CF: 5.00 ft</span>																																													
<b>Serial #: 8673 Inside</b> Press@RunDepth: 248.30 psig @ 3104.00 ft (KB) <span style="float: right;">Capacity: 8000.00 psig</span> Start Date: 2019.01.09 <span style="float: right;">End Date: 2019.01.09</span> <span style="float: right;">Last Calib.: 2019.01.09</span> Start Time: 12:02:05 <span style="float: right;">End Time: 18:48:59</span> <span style="float: right;">Time On Btm: 2019.01.09 @ 13:46:00</span> <span style="float: right;">Time Off Btm: 2019.01.09 @ 15:49:00</span>																																													
<b>TEST COMMENT:</b> 15 - IFI - Surface blow built to bottom of the bucket in 3 mins 45 - ISI - Return built to botom of the bucket in 14 mins 15 - FFP - Surface blow built to bottom of the bucket in 5 mins. 45 - FSI - Return built to bottom of the bucket in 20 min.																																													
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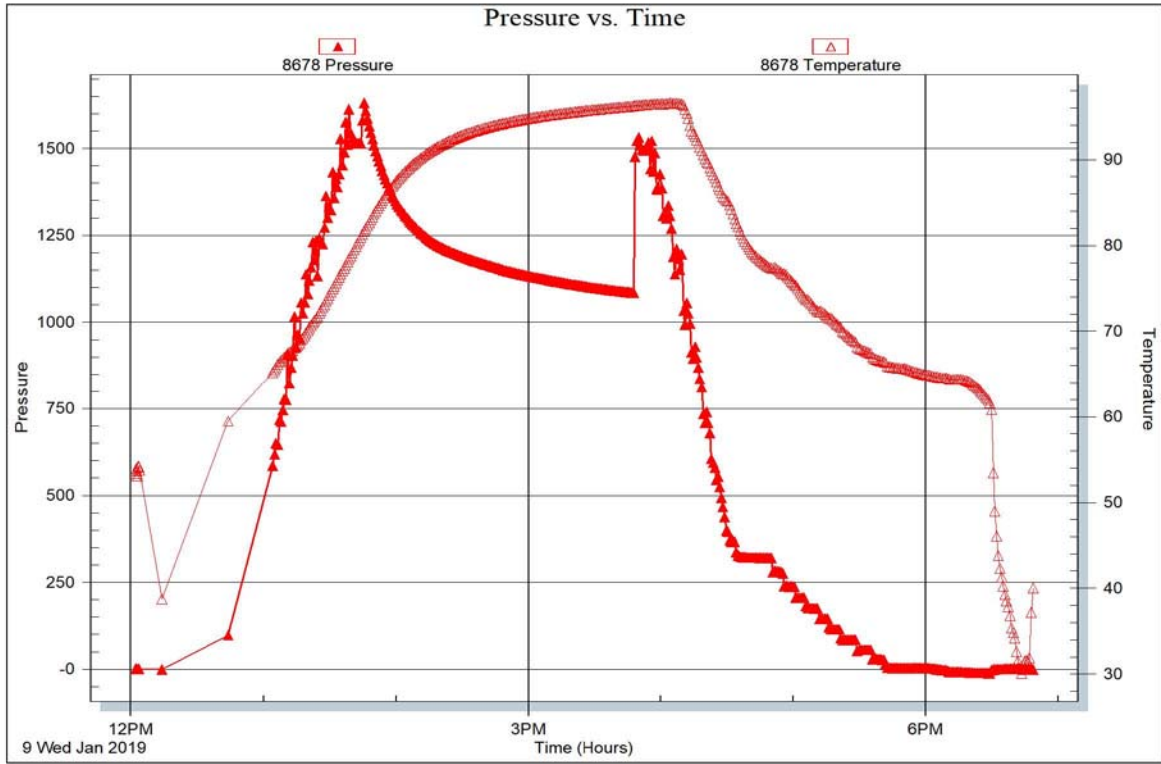
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Serial #: 8678

Below (Straddler) Co.

3DR Unit #1

DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 65392

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