

# BLACK DIAMOND OIL INCORPORATED

Scale 1:240 Imperial

Well Name: KS BRAND #2  
Surface Location: SE NW NE NW Sec. 22 - 5S - 21W  
Bottom Location:  
API: 15-137-20733  
License Number: 7076  
Spud Date: 6/8/2015 Time: 3:00 PM  
Region: NORTON COUNTY KANSAS  
Drilling Completed: 6/14/2015 Time: 12:20 AM  
Surface Coordinates: 525' FNL & 1890' FWL  
Bottom Hole Coordinates:  
Ground Elevation: 2149.00ft  
K.B. Elevation: 2154.00ft  
Logged Interval: 3000.00ft To: 3720.00ft  
Total Depth: 3720.00ft  
Formation: GORHAM SAND; REAGAN SAND  
Drilling Fluid Type: FRESH WATER / CHEMICAL GEL

## OPERATOR

Company: BLACK DIAMOND OIL, INC.  
Address: P.O. BOX 641  
HAYS, KS 67601

Contact Geologist: KENNETH VEHIGE  
Contact Phone Nbr: (785) 625-5891  
Well Name: KS BRAND #2  
Location: SE NW NE NW Sec. 22 - 5S - 21W  
API: 15-137-20733  
Pool:  
State: KANSAS

Field: RAY WEST  
Country: USA

## SURFACE CO-ORDINATES

Well Type: Vertical  
Longitude: -99.6777350  
Latitude: 39.609198  
N/S Co-ord: 525' FNL  
E/W Co-ord: 1890' FWL

## LOGGED BY



Company: BIG CREEK CONSULTING, INC.  
Address: 1909 MAPLE  
ELLIS, KS 67627

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

Name: JEFF LAWLER

**CONTRACTOR**

Contractor: WW DRILLING, LLC  
 Rig #: 6  
 Rig Type: MUD ROTARY  
 Spud Date: 6/8/2015  
 TD Date: 6/14/2015  
 Rig Release: 6/14/2015  
 Time: 3:00 PM  
 Time: 12:20 AM  
 Time: 10:45 PM

**ELEVATIONS**

K.B. Elevation: 2154.00ft  
 K.B. to Ground: 5.00ft  
 Ground Elevation: 2149.00ft

**NOTES**

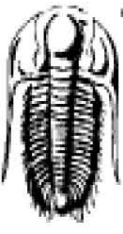
DUE TO A LACK OF ECONOMICAL RECOVERY ON DRILL STEM TEST #3 IT WAS DECIDED TO RUN 5 1/2" CASING WITH THE PRIMARY OBJECTIVE OF MAKING A DEEP DISPOSAL WELL.

RESPECTFULLY SUBMITTED,  
 JEFF LAWLER

**WELL COMPARISON SHEET**

FORMATION	KS BRAND #2				KS BRAND #1				CASTLE RESOURCES				HEMERICH & PAYNE, INC.				BLACK DIAMOND OIL, INC.			
	KB		GL		KB		2149		KB		2099		KB		2217		KB		2134	
	2154		2149		2149		2149		2099		2099		2217		2217		2134		2134	
	LOG TOPS	SAMPLE TOPS	LOG	LOG	SMPL.	LOG	LOG	SMPL.	COMP. CARD	LOG	SMPL.	COMP. CARD	LOG	SMPL.	COMP. CARD	LOG	SMPL.			
DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.	
ANHYDRITE TOP	1751	403	1749	405	1753	396	+ 7 + 9	1693	406	- 3 - 1	1817	400	+ 3 + 5	1731	403	+ 0 + 2				
BASE	1780	374	1777	377	1780	369	+ 5 + 8	1729	370	+ 4 + 7				1755	379	- 5 - 2				
TOPEKA	3108	-954	3112	-958	3105	-956	+ 2 - 2					3167	-950	- 4 - 8	3145	-1011	+ 57 + 53			
HEBNER SHALE	3307	-1153	3309	-1155	3305	-1156	+ 3 + 1	3256	-1157	+ 4 + 2	3368	-1151	- 2 - 4	3288	-1154	+ 1 - 1				
TORONTO	3334	-1180	3337	-1183	3333	-1184	+ 4 + 1	3282	-1183	+ 3 + 0	3394	-1177	- 3 - 6	3314	-1180	+ 0 - 3				
LKC	3349	-1195	3355	-1201	3350	-1201	+ 6 + 0	3298	-1199	+ 4 - 2				3330	-1196	+ 1 - 5				
BKC	3536	-1382	3541	-1387	3535	-1386	+ 4 - 1	3485	-1386	+ 4 - 1	3603	-1386	+ 4 - 1	3518	-1384	+ 2 - 3				
GORHAM SAND					3582	-1433					3662	-1445								
REAGAN SAND	3594	-1440	3600	-1446				3540	-1441	+ 1 - 5				3568	-1434	- 6 - 12				
GRAINTE WASH	3648	-1494	3646	-1492																
GRANITE											3705	-1488								
TOTAL DEPTH	3720	-1566	3720	-1566	3583	-1434	- 132 - 132	3601	-1502	- 64 - 64				3568	-1434	- 132 - 132				

**DST #1 SAND 3583' - 3594' (MISRUN)**

 <b>TRIOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>	
	Black Diamond Oil Po Box 641 Hays KS, 67601 ATTN: Jeff Lawler	<b>22-5s-21w Norton KS</b> <b>KS Brand #2</b> Job Ticket: 62714 <b>DST# 1</b> Test Start: 2015.06.12 @ 15:40:00

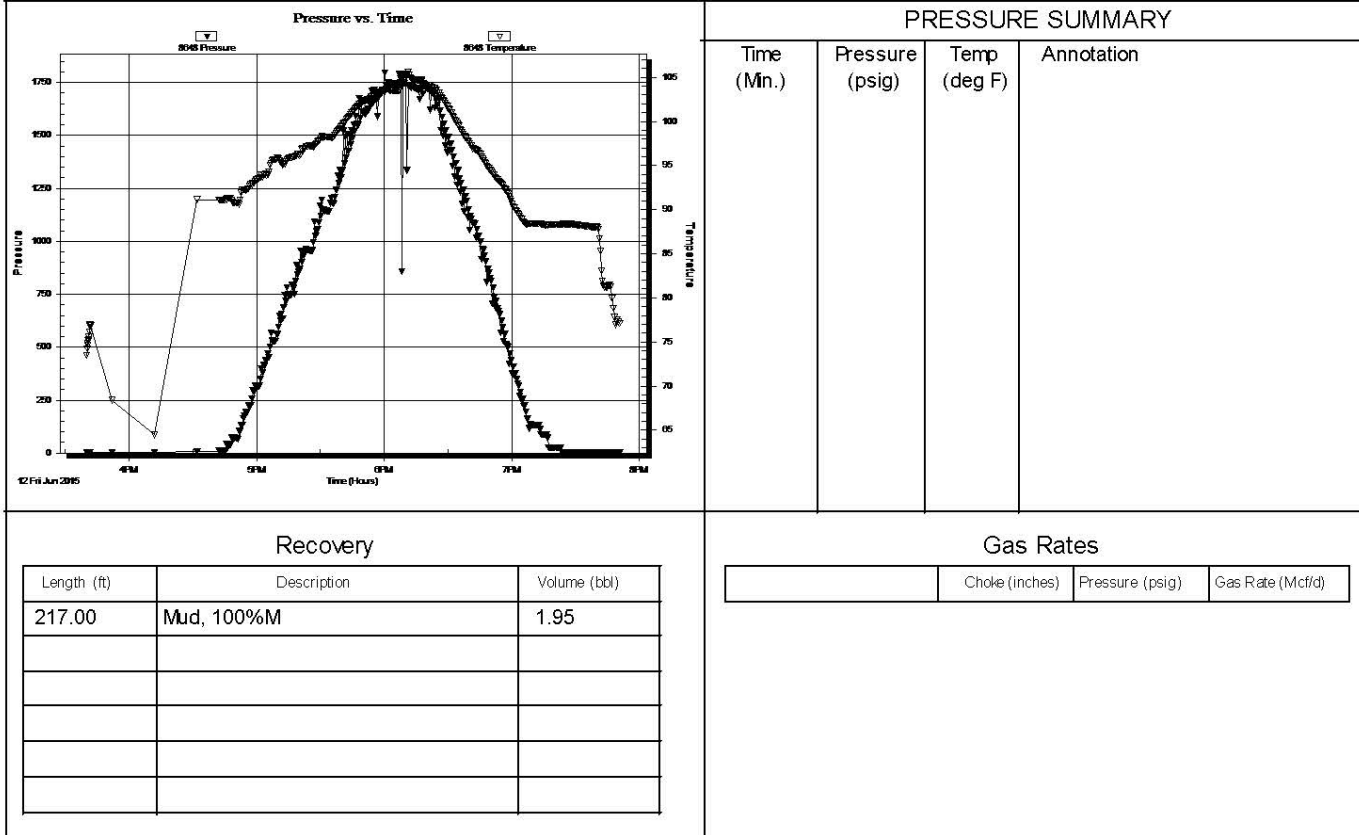
**GENERAL INFORMATION:**

Formation: **Sand**  
 Deviated: No      Whipstock:      ft (KB)  
 Time Tool Opened:  
 Time Test Ended: 19:50:45  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Cody Bloedorn  
 Unit No: 73  
 Interval: **3583.00 ft (KB) To 3594.00 ft (KB) (TVD)**  
 Reference Elevations: 2154.00 ft (KB)  
 Total Depth: 3594.00 ft (KB) (TVD)  
 2149.00 ft (CF)  
 Hole Diameter: 7.88 inches      Hole Condition: Fair      KB to GR/CF: 5.00 ft

**Serial #: 8648**      Inside

Press@RunDepth:      psig @      3591.00 ft (KB)      Capacity:      8000.00 psig  
 Start Date: 2015.06.12      End Date: 2015.06.12      Last Calib.: 2015.06.12  
 Start Time: 15:40:05      End Time: 19:50:45      Time On Btm:  
 Time Off Btm:

TEST COMMENT: Opened tool, packer failure. bled pressure. tried again. packer failure. Pulled tool.



Length (ft)	Description	Volume (bbl)
217.00	Mud, 100%M	1.95

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

Trilobite Testing, Inc

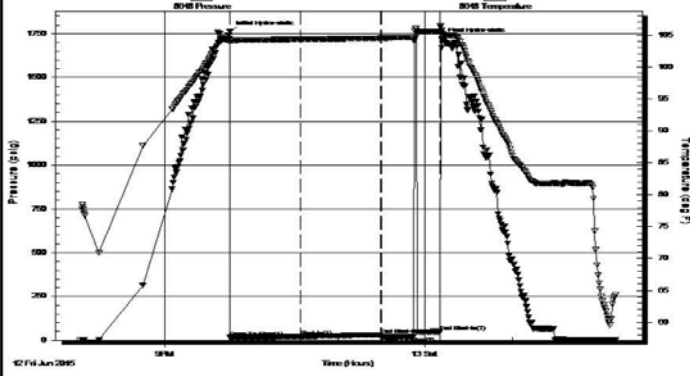
Ref. No: 62714

Printed: 2015.06.13 @ 11:45:34

**DST #2 SAND 3565' - 3594'**

<p><b>TRILOBITE TESTING, INC.</b></p>	<p><b>DRILL STEM TEST REPORT</b></p>	
	<p>Black Diamond Oil</p> <p>Po Box 641 Hays KS, 67601</p> <p>ATTN: Jeff Lawler</p>	<p><b>22-5s-21w Norton KS</b></p> <p><b>KS Brand #2</b></p> <p>Job Ticket: 62716      <b>DST#: 2</b></p> <p>Test Start: 2015.06.12 @ 20:03:00</p>
<p><b>GENERAL INFORMATION:</b></p> <p>Formation: <b>Sand</b></p> <p>Deviated: No Whipstock:      ft (KB)</p> <p>Time Tool Opened: 21:45:15</p> <p>Time Test Ended: 02:11:15</p> <p><b>Interval: 3565.00 ft (KB) To 3594.00 ft (KB) (TVD)</b></p> <p>Total Depth: 3594.00 ft (KB) (TVD)</p> <p>Hole Diameter: 7.88 inches-Hole Condition: Fair</p> <p>Test Type: Conventional Bottom Hole (Reset)</p> <p>Tester: Cody Bloedorn</p> <p>Unit No: 73</p> <p>Reference Elevations: 2154.00 ft (KB)</p> <p>2149.00 ft (CF)</p> <p>KB to GR/CF: 5.00 ft</p>		
<p><b>Serial #: 8648</b>      <b>Inside</b></p> <p>Press@RunDepth: 20.83 psig @ 3591.00 ft (KB)</p> <p>Start Date: 2015.06.12      End Date: 2015.06.13</p> <p>Start Time: 20:03:05      End Time: 02:11:14</p>	<p>Capacity: 8000.00 psig</p> <p>Last Calib.: 2015.06.13</p> <p>Time On Btm: 2015.06.12 @ 21:45:00</p> <p>Time Off Btm: 2015.06.13 @ 00:11:30</p>	<p><b>TEST COMMENT:</b> 45 - IF- 1" blow, died completely at 29 minutes</p> <p>60 - IS- No return</p> <p>40 - FF- No blow for 30 minutes, flushed tool, surged and died. w aited 10 minutes and pulled.</p>





Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1760.62	104.51	Initial Hydro-static
1	17.03	103.89	Open To Flow (1)
49	20.83	104.32	Shut-In(1)
105	31.64	104.51	End Shut-In(1)
105	20.68	104.51	Open To Flow (2)
146	49.11	105.53	End Shut-In(2)
147	1718.95	105.55	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
150.00	Mud, 100% M	1.01

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

\* Recovery from multiple tests  
 Trilobite Testing, Inc Ref. No: 62716 Printed: 2015.06.13 @ 06:47:20

### DST #3 REAGAN SAND 3565' - 3601'

	<b>TRILOBITE TESTING, INC.</b>		<b>DRILL STEM TEST REPORT</b>	
	Black Diamond Oil Po Box 641 Hays KS, 67601 ATTN: Jeff Lawler		<b>22-5s-21w Norton KS</b> <b>KS Brand #2</b> Job Ticket: 62717 <b>DST#: 3</b> Test Start: 2015.06.13 @ 09:43:00	

**GENERAL INFORMATION:**

Formation: **Sand**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 11:41:45  
 Time Test Ended: 16:02:30

Test Type: Conventional Bottom Hole (Reset)  
 Tester: Cody Bloedorn  
 Unit No: 73

Interval: **3565.00 ft (KB) To 3601.00 ft (KB) (TVD)**  
 Total Depth: 3601.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair

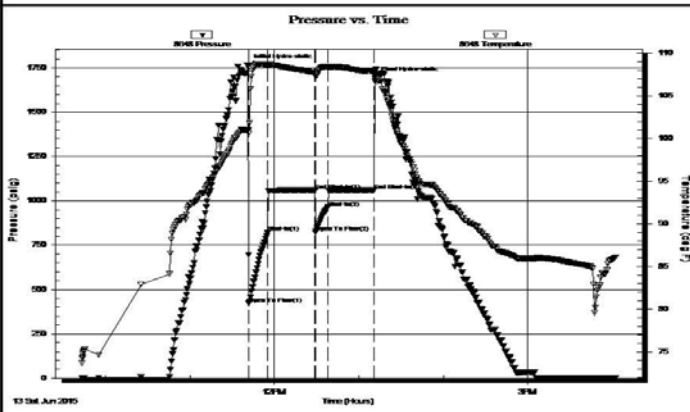
Reference Elevations: 2154.00 ft (KB)  
 2149.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8648 Inside**

Press@RunDepth: 963.89 psig @ 3598.00 ft (KB)  
 Start Date: 2015.06.13 End Date: 2015.06.13  
 Start Time: 09:43:05 End Time: 16:02:29

Capacity: 8000.00 psig  
 Last Calib.: 2015.06.13  
 Time On Btm: 2015.06.13 @ 11:41:15  
 Time Off Btm: 2015.06.13 @ 13:11:15

**TEST COMMENT:** 15 - IF- B.O.B. in 1 minute  
 30 - IS- No return  
 15 - FF- B.O.B. in 1 minute  
 30 - FSI- No return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1762.51	100.97	Initial Hydro-static
1	420.94	100.54	Open To Flow (1)
14	820.00	108.59	Shut-In(1)
48	1059.63	107.73	End Shut-In(1)
48	822.29	107.57	Open To Flow (2)
57	963.89	108.35	Shut-In(2)
90	1060.92	107.71	End Shut-In(2)
90	1692.88	107.93	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
1178.00	MW, 20%M, 80%W	15.43
434.00	WM, 30%W, 70%M	6.09
279.00	WM, 10%W, 90%M	3.91
0.00	Oil spots in tool	0.00

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








\* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 62717

Printed: 2015.06.13 @ 22:50:17

### ROCK TYPES

 Lmst fw7> shale, grn	 shale, gry	 shale, red	 Ss
 Carbon Sh	 Shcol	 Igne	

### ACCESSORIES

#### MINERAL










\* Sandy

#### STRINGER

-  Dolomite
-  Sandstone
-  Shale

### OTHER SYMBOLS

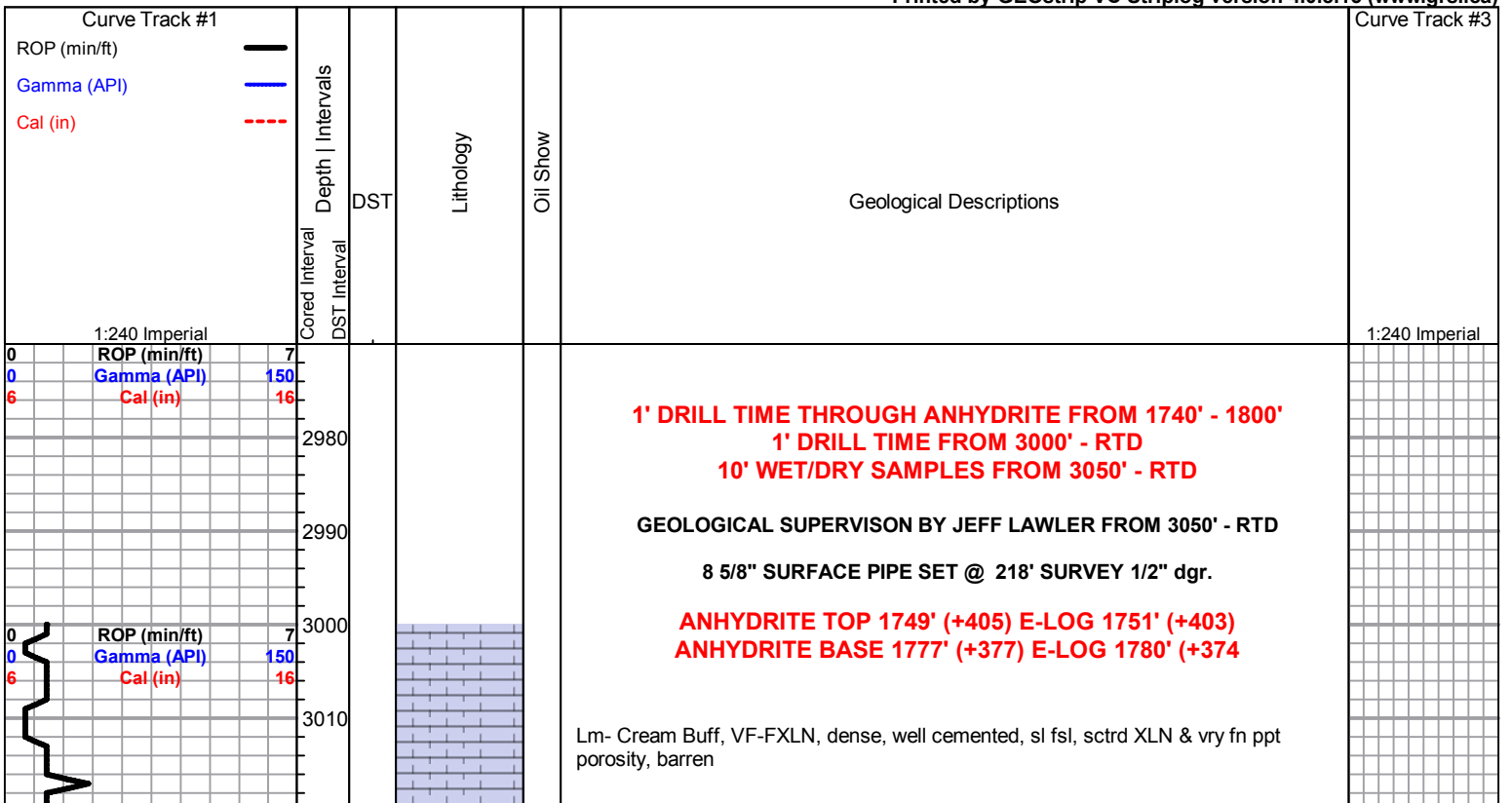
#### MISC

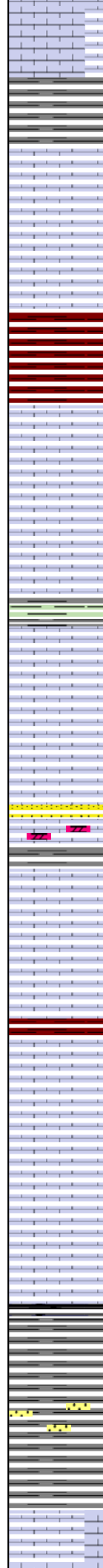
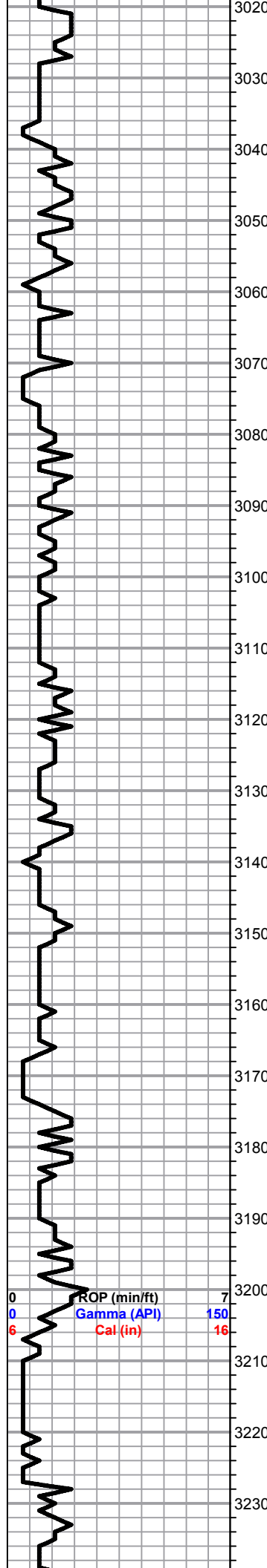
-  Daily Report
-  Digital Photo
-  Document
-  Folder
-  Link
-  Vertical Log File
-  Horizontal Log File
-  Core Log File
-  Drill Cuttings Rpt

#### DST

-  DST Int
-  DST alt

Printed by GEOstrip VC Striplog version 4.0.8.15 ([www.grsi.ca](http://www.grsi.ca))





Lm- Cream Mint Green, FXLN Fn Grn, mix of fsl w/ fusulinids, sctrd XLN porosity & loosely cemented & sl chalky arenaceous Ls/calcareous shale

Lm- Cream Gray, FXLN, dense, well cemented, sctrd XLN porosity, chalky loosely cemented fsl mud supported matrix w/ no vis. porosity

Sh- Maroon Gray Lm Green, gritty & earthy, silty & sandy, soft & calcareous, some green wash, few friable clusters of clear to frosted Md Grn, consolidated & well sorted, sub-rounded, spkld w/ glauconite, barren

Lm- Gray, VFXLN, dense, well cemented, tight, no vis. porosity, sl fsl

Lm- Cream Buff Gray, VF-FXLN, dense, high-energy mix, fsl, poorly dev. & sl trashy, interbedded gray calcareous shale & wash

Lm- Cream White Yellow, loosely cemented, chalky heavily arenaceous Ls, barren

Sh- Gray Lm Green, silty & calcareous, silty & soft

**TOPEKA 3112' (-958) E-LOG 3108' (-954)** Lm- Buff, VFXLN, mottled, well cemented, tight w/ no vis. porosity, several pcs of fissile black shale

Lm- Buff, VFXLN, mottled, sl unconsolidated, no vis. porosity, high-energy, several loose crinoids

Lm- Buff, unconsolidated, dense reXLN porosity, bioclastic, few loose bi-vaule casts & loosely cemented cream arenaceous Ls, barren

Lm- Cream Off White, FXLN, dense, well cemented sl dolomitic Ls, some w/ dense reXLN & micro XLN porosity, barren

Lm- Buff Gray, unconsolidated trashy high-energy mix, chalky & loosely cemented, poor vis. porosity

Lm- Cream Tan Off White, CryptoXLN, porcelain like cherty Ls w/o vis. porosity, sharp & angular

Lm- influx of A/A w/ loosely cemented & sl chalky fsl Ls, dense reXLN, clean & barren

Lm- Cream Off White, VF-FXLN, dense, well cemented, mostly tight, some sctrd micro XLN & XLN porosity, gritty sl dolomitic Ls, vry clean, barren

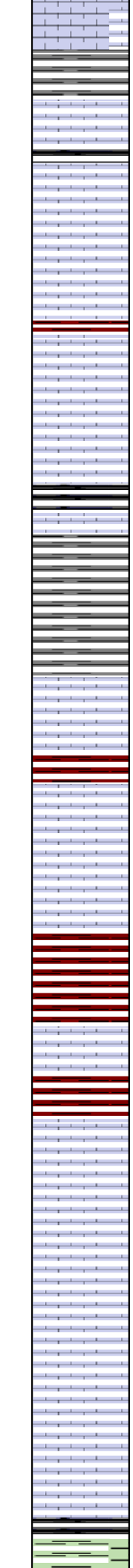
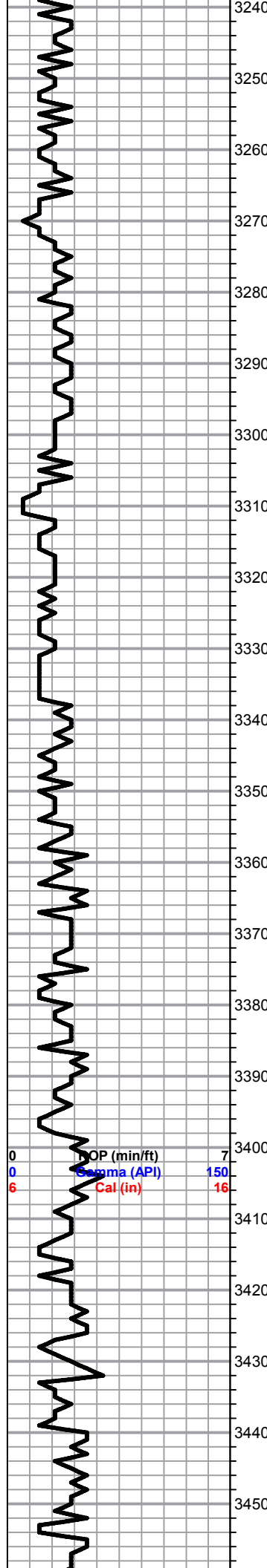
Lm- Cream Tan, VFXLN, sharp & angular cherty Ls w/o vis. porosity, soft white chalk

Lm- Cream Off White, sl fsl, poorly dev., well cemented, mostly tight w/ sctrd XLN porosity, barren

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

Sh/Ss- Maroon Gray Lm Green, gritty & earthy, silty calcareous Ss

Lm- Cream Tan, VF-FXLN, fsl, dense & well cemented, sctrd reXLN, sctrd XLN porosity, barren, much soft white chalk



Sh- Gray Maroon, silty & calcareous, gritty & earthy

Lm- Gray Cream, VFXLN, dense, well cemented, mostly tight w/ min. vis. porosity

Sh- Black, fissile & carbonaceous

Lm- Cream Off White, FXLN, oolitic, poorly dev., dense reXLN & clear replacement cementation, sctrd micro XLN porosity, vry clean & barren

● Lm- Cream Translucent, VF-FXLN, oolitic, mod. dev. w/ sctrd fn ppt inter oolite porosity, LT SCTRD STN, NSFO, several pcs of sub-sucrosic VFXLN, loosely cemented w/ consistent XLN porosity, SCTRD STN, DRK GLOBULES UPON CRUSH, ALL W/ NO ODR

Lm- Cream Tan, VFXLN, dense, well cemented, sctrd micro XLN porosity, barren

Lm- Cream Gray, VF-FXLN, sl fsl, poorly dev., dense to sctrd XLN porosity, barren

**HEEBNER 3309' (-1155) E-LOG 3307' (-1153)** Sh- Black, fissile & carbonaceous

Sh- Gray Maroon Lm Green, soft & semi-gummy, wash, silty & calcareous

● **TORONTO 3337' (-1183) E-LOG 3334' (-1180)** Lm/Chert- Mix of Cream fsl w/ fusulinids, sctrd fn ppt inter fsl porosity, LT SCTRD STN, NSFO, NO ODR, & cryptoXLN fresh bedded chert w/o vis. porosity

● **LKC 3355' (-1201) E-LOG 3349' (-1195)** Lm- Cream Off White, FXLN, well dev. & oolitic w/ consistent inter oolite ppt porosity, DRK STN, HVY SHEEN, FO & GSY BUBBLES UPON CRUSH, GD ODR

Lm- White Off White, VF-FXLN, dense, well cemented, poorly dev & mostly tight w/ sctrd micro XLN & XLN porosity, few pcs of cherty Ls w/ min. vis. porosity, all vry clean

Lm- Gray Buff, VFXLN, dense, well cemented, tight w/ min. vis. porosity

● Lm- Cream Off White, FXLN, oolite, mod. dev. w/ mostly consistent ppt inter oolite porosity, reXLN amongst porosity, LT SCTRD STN, NSFO, FR-GD ODR  
Chert- Translucent Opaque Tan, cryptoXLN, fresh bedded

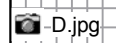
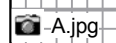
● Lm- Cream Off White, FXLN, mod. dev. & oolitic w/ sctrd to consistent ppt inter oolite porosity, SCTRD DRK STN, NSFO, GD ODR, much soft white chalk

● Lm- Cream Off White, VF-FXLN, oolitic mix, some poorly dev. & densely packed w/ min. vis. porosity & some mod. dev. w/ consistent ppt inter oolite porosity, SCTRD STN, NSFO, GD ODR, much soft white chalk

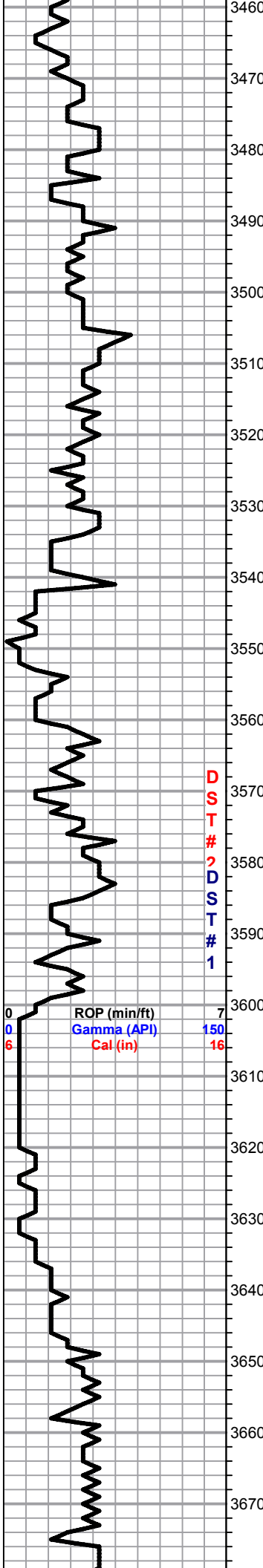
Lm- A/A w/ influx of less dev. oolitic Ls & fresh bedded chert

Lm- Cream Off White, VFXLN, dense, well cemented, mostly tight w/ min. vis. porosity, sl chalky in part, barren

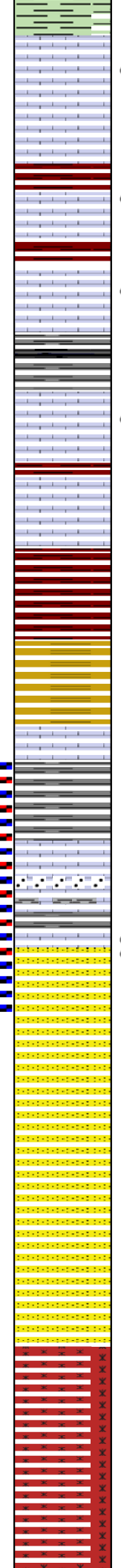
Sh- Black Maroon, fissile & carbonaceous, gritty & earthy



OP (min/ft) 7  
Gamma (API) 150  
Cal (in) 16



D  
S  
T  
#  
1



Sh- Lm Green Gray, semi-gummy wash, silty & calcareous

Lm- Cream Off White, fsl & oolitic, sctrd dev. w/ sctrd ppt inter oolite & XLN porosity, SCTRD LT STN, NSFO, FR ODR, FEW PCS W/ CONSISTENT VRY FN PPT POROSITY & SUB-SAT FLAKEY STN

Lm- Lm Green, tight mix of mud & grain supported, all mostly tight w/ poor vis. porosity, barren

Lm- Cream Tan, VF-FXLN, well dev. & oolitic, most w/ consistent ppt inter oolite porosity throughout, SUB-SAT STN, FLAKEY, NOSFO, MOD. ODR

Lm- Cream Tan, VF-FXLN, dense, well cemented, sctrd oolitic dev., XLN & sctrd ppt inter oolite porosity, SCTRD DRK STN, FLAKEY, NSFO, MOD. ODR

Sh- Black Green Maroon, soft & carbonaceous, gummy wash, gritty & earthy

Lm- White Off White, FXLN, oolitic, sctrd vry fn ppt inter oolite porosity, LT STN, NSFO, FLAKEY, WK ODR, some chalky carrying A/A stn

Lm- White Cream, VF-FXLN, dense, well cemented, sl fsl, mostly tight w/ sctrd XLN porosity, barren, & some unconsolidated w/ yllw & maroon fn grn inclusions, barren

**BKC 3541' (-1387) E-LOG 3536' (-1382)** Sh- Maroon Lm Green, gritty & earthy, some sandy marron shale, dense & semi-waxy

Sh- Brown Gray, gritty & earthy, dense & waxy

Lm- Cream Off White, VFXLN, dense, well cemented, sl fsl, sctrd XLN porosity, barren

**\*\*STARTING @ 3579' CFS EVERY 2 FEET\*\***

**3581'**- Sh- Brown Gray, gritty & earthy, dense & waxy, striated, Lm- Cream, FXLN, fsl, poorly dev. sctrd XLN porosity, barren

**3583'**- Lm- Cream Yellow, FXLN, loosely cemented, sl unconsolidated w/ round qtz. inclusions, inconspicuous glauconite spkng, sctrd XLN porosity, barren

**3585'**- Sh- Gray Green, dense & waxy, gummy argillaceous clumps

**3589'**- Sh- A/A w/ cream off white Ls, unconsolidated & pebbly, dense XLN porosity, barren

**3591'** - Lm- White Off White, FXLN, sl unconsolidated w/ sub-rounded fn-med grn qtz. inclusions & spkld w/ chlorite/glaucanite, barren, dense XLN porosity, 1 CLUSTER OF FN GRN, CONSOLIDATED & SORTED FROSTED SS, LT CEMENTATION, LT STN, NSFO, SL FRIABLE

**3593'** - Ss- Med Grn, sub-angular, sl friable w/ lt Ca. cementation, consolidated & mod. sorted, SCTRD TO SUB-SAT STN, FR ODR

**3594'** - **REAGAN SAND 3600' (-1446) E-LOG 3594' (-1440)** Ss- A/A, more friable, STN A/A, INCR. ODR

**3596'** - Ss- A/A w/ sl influx, also w/ gray fresh bedded chert

**3601'** - Ss- Med Grn, friable clusters, sub-angular, white cementation, vry similar to A/A, DRK SCTRD STN, TR FO UPON CRUSH, FNT ODR

**DRILL AHEAD AFTER DST #3 RETURN TO 10' SAMPLES**

**3615'** - Ss- A/A clear to frosted, consolidated & poorly sorted Fn-Med Grn, rounded to angular, lt cementation, soft white chalk, clean & barren

**3620'** - Ss- Crs Grn, sub-rounded to angular ind. grains, some vf grn vry friable clusters, consolidated & well sorted, all barren

**GRANITE WASH 3646' (-1492) E-LOG 3648' (-1494)** Pink Salmon Translucent, biotite spkld feldspar, dense XLN or fractured porosity

Granite Wash- A/A w/ influx of salmon colored, some porcelain like granite conglomerate w/ biotite inclusions, few pcs of dolomitic conglomerate w/ min. vis. porosity, also spkld w/ biotite

Granite Wash- A/A

H.jpg

I.jpg

J.jpg

K.jpg

SHORT TRIP STRAP +0.24' SURVEY 1 dgr.

DST #1 SAND 3583' - 3594' MISRUN

DST #2 SAND 3565' - 3594' 45-60-40-0 150' MUD

IFP: 17-20# FFP: 20-49# SIP: 31-N/A#

3591.jpg

3593.jpg

3594.jpg

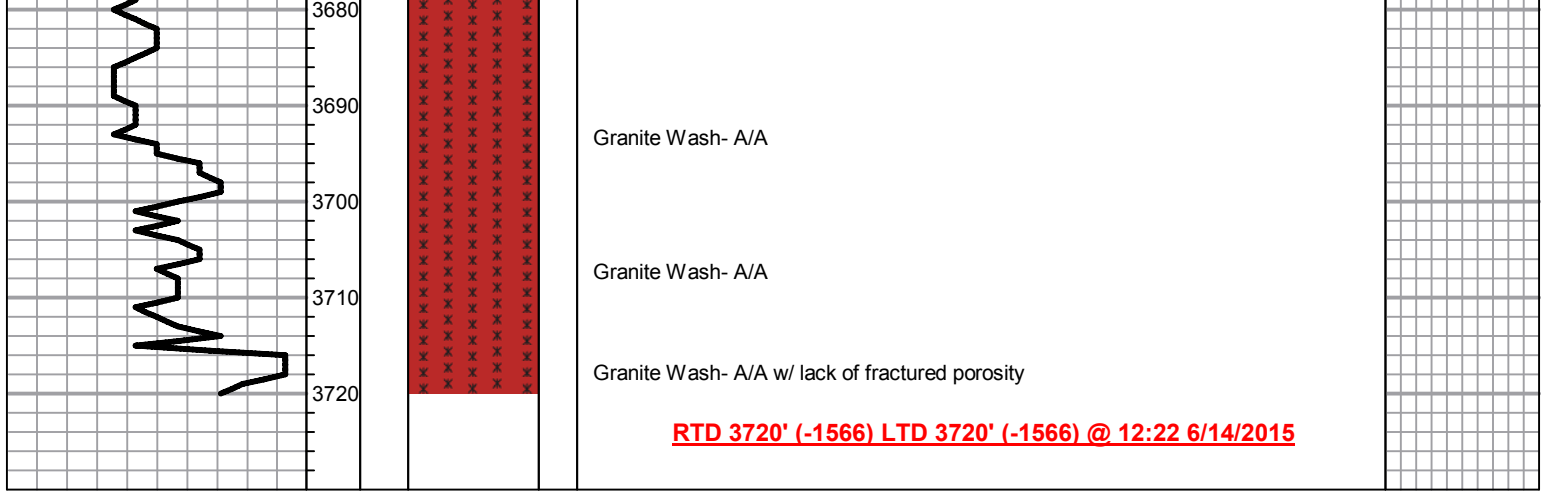
3601.jpg

DST #3 REAGAN SAND 3565' - 3601' 15-30-15-30

1891' TOTAL FLUID 1178' WM (80W/20M) 434' MW (30W/70M) 279' MW (10W/90M)

IFP: 420-820# FFP: 822-963# SIP: 1059-1060#





OREAD.jpg

A013 1280x1024 2015/06/11 15:17:45 Unit: mm Magnification: 116.2 x 1



OREAD X 30



0.2 mm





0.5 mm

IKC C X25



0.2 mm

I KC C X25



0.2 mm

I KC F X30



0.2 mm

I KC H x 30

I.jpg



J.jpg



K.jpg



3591.jpg





3593.jpg



3594.jpg



