

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MUNSCH # 9 TWIN
 Location: 80'E of NW NE SE SE, SEC 9-T15S-R18W
 API: 15-051-26,755-00-00
 Pool: IN FIELD
 State: KANSAS
 Field: SCHOENCHEN
 Country: USA



Scale 1:240 Imperial

Well Name: MUNSCH # 9 TWIN
 Surface Location: 80'E of NW NE SE SE, SEC 9-T15S-R18W
 Bottom Location:
 API: 15-051-26,755-00-00
 License Number: 4787
 Spud Date: 12/10/2014 Time: 2:15 PM
 Region: ELLIS COUNTY
 Drilling Completed: 12/16/2014 Time: 4:26 AM
 Surface Coordinates: 1305' FSL & 530' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 2028.00ft
 K.B. Elevation: 2038.00ft
 Logged Interval: 2900.00ft To: 3750.00ft
 Total Depth: 3750.00ft
 Formation: ARBUCKLE
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -99.320854
 Latitude: 38.7585269
 N/S Co-ord: 1305' FSL
 E/W Co-ord: 530' FEL

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: 12/10/2014 Time: 2:15 PM
 TD Date: 12/16/2014 Time: 4:26 AM

ELEVATIONS

K.B. Elevation: 2038.00ft
 K.B. to Ground: 10.00ft

Ground Elevation: 2028.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON LOG ANALYSIS, STRUCTURE AND POSITIVE RESULTS OF TWO DSTS

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

FORMATION TOPS COMPARISON

	MUNSCH #9 Twin 80' E NW NE SE SE SEC.9-15S-18W 2028'GL 2038'KB	MUNSCH #7 NW NE SE SE SEC.9-15-18W KB 2039'	MUNSCH #8 S2 NE SE SE SEC.9-15-18W KB 2041'
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1204 +831	+ 831	+ 835
B-Anhydrite	1241 +797	+ 795	+ 801
Topeka	2992 - 954	- 957	- 964
Heebner Sh.	3274-1236	-1236	-1242
Toronto	3293-1255	-1255	-1261
LKC	3320-1282	-1281	-1290
BKC	3544-1506	-1505	-1514
Arbuckle	3612-1574	-1566	-1618
RTD	3750-1712	-1711	-1709

SUMMARY OF DAILY ACTIVITY

12-10-14 RU, spud 2:15 PM, set 8 5/8" surface casing to 220' w/150 sxs
 Common 2%Gel 3%CC, plug down 8:15PM, slope ¾ degree

12-11-14 370', drill plug 4:15AM

12-12-14 2040, drilling'

12-13-14 2830', drilling, displaced 2677'-2701'


12-14-14 3360', drilling, CFS 3300', short trip, CFS 3420', DST # 1 3355' to
 3420' "D-G" LKC

12-15-14 3530', CFS 3530', DST # 2 3440' to 3530' "H-K" LKC, TIWB, drilling

12-16-14 3750', RTD 3750' @4:28AM, CCH, TOWB, logs, TIWB, LDDP, run
 production casing

12-17-14 3750' finish cementing production casing

DST # 2 TEST SUMMARY

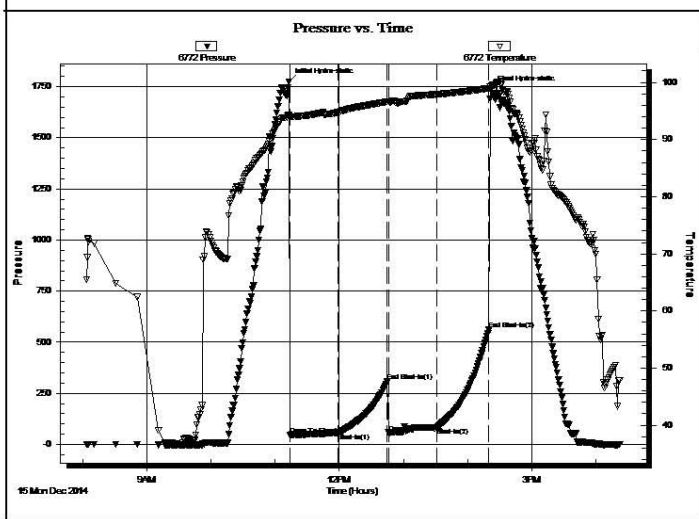
	DRILL STEM TEST REPORT	
	T.D.I. INC. 1310 Bison RD. Hays Ks. 67601 ATTN: Herb Deines	Sec. 9 - 15 s. - 18 w./ Ellis Ks. Munsch #9 Twin Job Ticket: 62502 DST#: 2 Test Start: 2014.12.15 @ 08:04:00

GENERAL INFORMATION:

Formation: L.K.C. "H - K"	Test Type: Conventional Bottom Hole (Reset)
Deviated: No Whipstock: ft (KB)	Tester: Bob Hamel
Time Tool Opened: 11:13:45	Unit No: 72
Time Test Ended: 16:22:15	Reference Elevations: 2040.00 ft (KB)
Interval: 3440.00 ft (KB) To 3530.00 ft (KB) (TVD)	2031.00 ft (CF)
Total Depth: 3530.00 ft (KB) (TVD)	KB to GR/CF: 9.00 ft
Hole Diameter: 7.88 inches Hole Condition: Fair	

Serial #: 6772 Inside	Capacity: 8000.00 psig
Press@RunDepth: 83.85 psig @ 3507.00 ft (KB)	Last Calib.: 2014.12.15
Start Date: 2014.12.15 End Date: 2014.12.15	Time On Btm: 2014.12.15 @ 11:12:45
Start Time: 08:04:05 End Time: 16:22:14	Time Off Btm: 2014.12.15 @ 14:21:45

TEST COMMENT: I.F. - 45 - 1/2" INT. BLOW BUILT TO B.O.B. IN 23 MIN.
 I.S.I. - 45 - NO B.B.
 F.F. - 45 - 8" INT. BLOW DIED TO 1/8" IN 15 MIN. FLUSHED TOOL GOT 1" BLOW DIED OFF FLUSHED AGAIN @ 18 MIN. DIED @ 26 MIN.














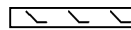
PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1774.54	94.25	Initial Hydro-static
1	46.65	94.03	Open To Flow (1)
47	55.35	94.78	Shut-In(1)
92	307.38	96.62	End Shut-In(1)
93	57.48	96.59	Open To Flow (2)
139	83.85	97.91	Shut-In(2)
187	560.23	98.97	End Shut-In(2)
189	1737.54	99.38	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
105.00	O,C,M, 10% O 90%M	1.47
0.00	282' G.I.P.	0.00
0.00	SHOW OF FREE OIL IN TEST TOOL	0.00

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

* Recovery from multiple tests

ROCK TYPES

 Clystgy	 Lmst fw<7	 shale, gry	 Shcol
 Congl	 Lmst fw7>	 Carbon Sh	 Lscongl
 Dolprim	 shale, grn	 shale, red	 Dol Lime

ACCESSORIES

MINERAL

- ▲ Chert, dark
- P Pyrite
- △ Chert White

TEXTURE

- C Chalky

OTHER SYMBOLS

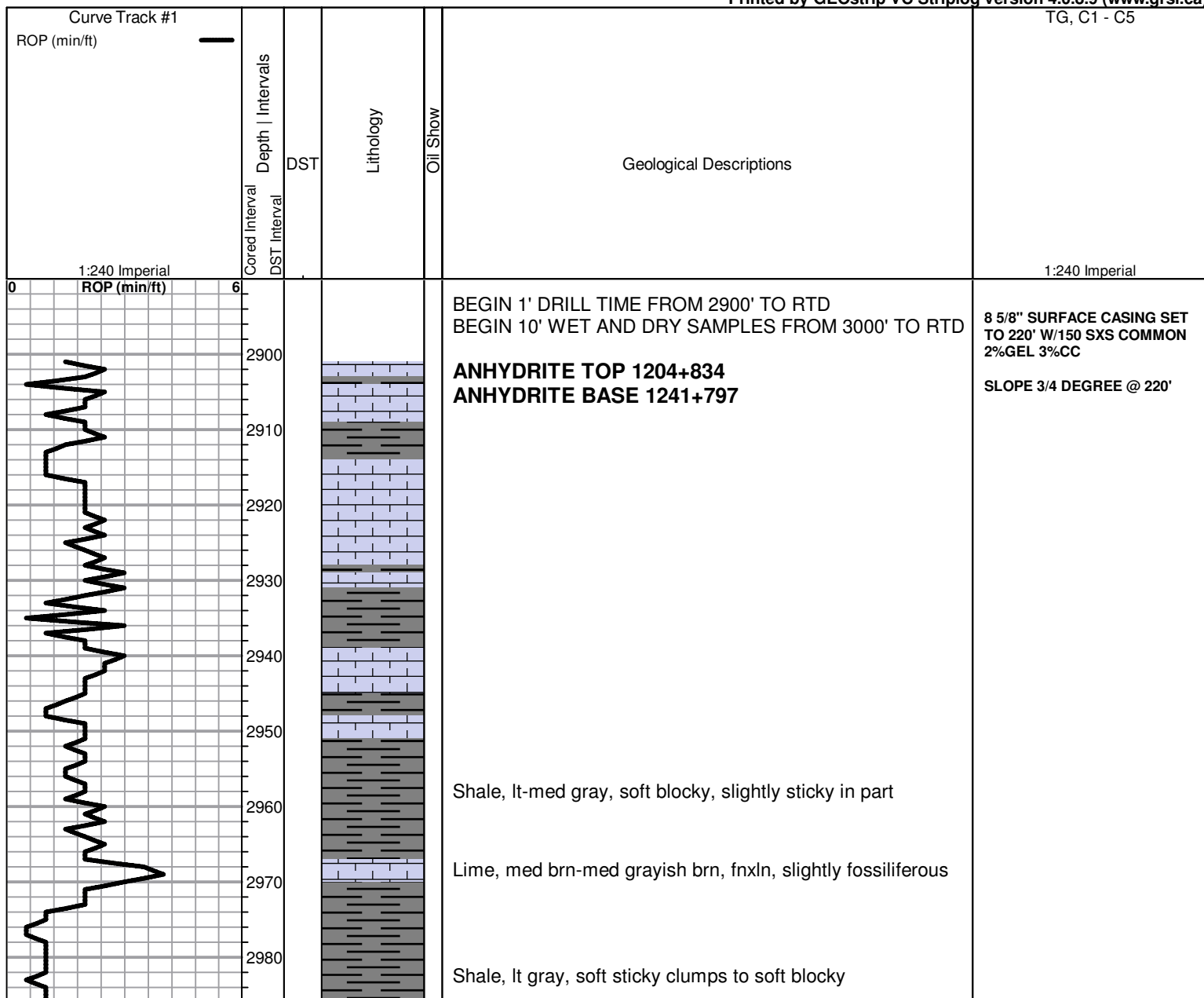
Oil Show

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

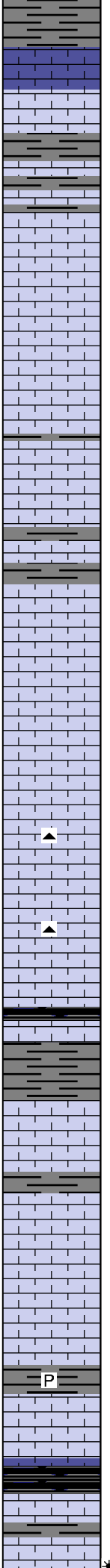
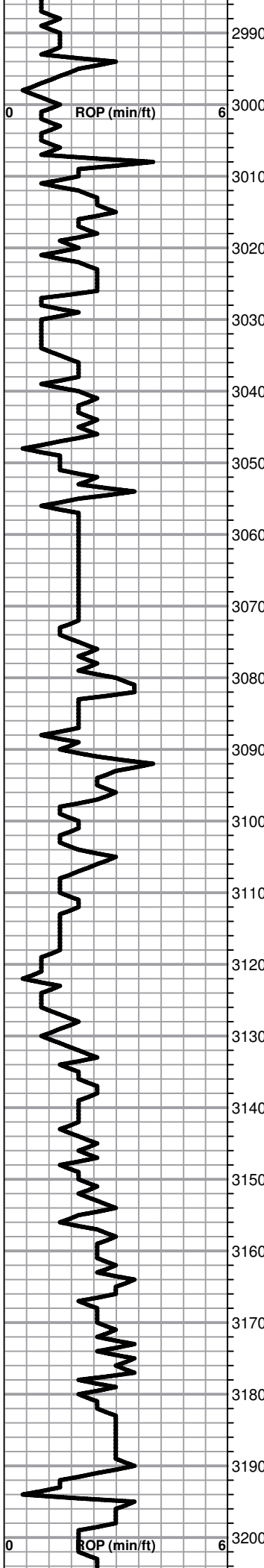
DST

- DST Int
- DST alt
- Core
- tail pipe

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



TOPEKA ELog 2992-954



Lime, lt-med brn, fnxln, fossiliferous-fusulinids

Shale, med gray, blocky, calcareous in part

Lime, lt-med brn, fnxln

Lime, med grayish brn, fnxln, soft chalk in part

Lime, lt-med brn, fnxln, slightly fossiliferous

Lime, lt brn, granular, NS

Lime, lt brn, fnxln

Lime, lt brn, fnxln, soft sticky chalk clumps in part

Lime, lt-med brn, fnxln with gray mottling in part

Lime, lt-med brn-med grayish brn, fn-vfxln, slightly fossiliferous

Lime, lt brn, fnxln, increasing sticky chalk clumps

Lime, lt brn-lt grayish brn

Lime, lt-med brn, fnxln-granular
Chert, gray-black, fossiliferous

Lime, soft granular with lt of bedded chalk, lt chalk wash

Lime, lt brn-lt gray, granular, sticky chalk clumping

Shale, black carbonaceous, blocky

Shale, lt-med gray, soft blocky, slightly sticky in part

Lime, lt brn, fn-micro xln

Lime, lt brn, fn-vfxln

Lime, lt brn, fn-vfxln, sublithographic

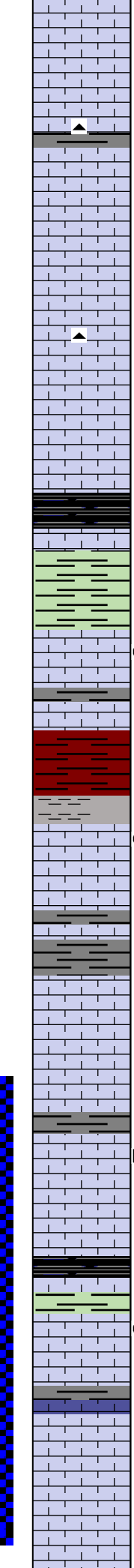
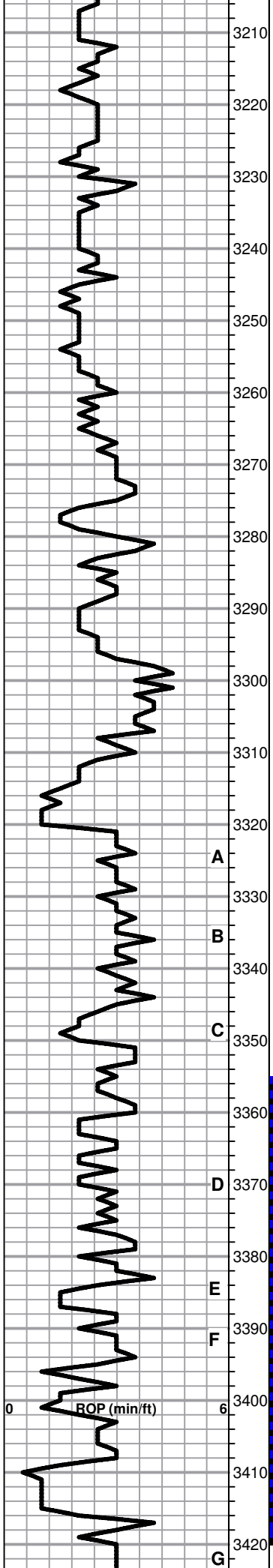
Shale, lt gray, soft-firm blocky

Lime, lt-med brn-med grayish brn, fn-vfxln

Shale, black carbonaceous, blocky

Lime, lt brn-lt grayish brn, fn-vfxln

Lime, lt brn-lt grayish brn, fn-vfxln. lt odor on crush. NSFO.



No visible staining. Doesn't appear well developed

Lime lt-med brn, fnxln-granular, slight bedded chalk

Lime, lt brn-lt gray, fnxln-granular, slightly fossiliferous

Lime, crm-lt brn, fnxln, firm bedded chalk, NS

Lime, crm-lt brn, fnxln, slightly fossiliferous

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

HEEBNER SHALE ELog 3274-1236
 Shale, black carbonaceous, fissile, blocky
 Lime, lt-med brn, fn-vfxln

Shale, dove gray-lt lime green, soft sticky clumps

TORONTO ELog 3293-1255
 Lime, crm-lt brn, mostly fnxln, thin zone of fossil fragments with scattered vugs, few spots of lt staining, NFO, No Odor

Lime, crm-lt brn, fn-vfxln

Shale, red with lt red wash, soft blocky

LKC ELog 3320-1282
 Lime, lt-med brn, fn-micro xln, 1 chip w fossil fragments, very lt odor, NFO, very lt to no detectable staining

Lime, lt-med brn, fn-micro xln
 Shale, lt gray, soft to firm with fossil fragments

Lime, crm-tan, fnxln w/fine interxln porosity with scattered vugs, 1 chip oomoldic, sticky chalk clumps, NS

Lime, crm-tan, fn-micro xln

Lime, crm-tan, fnxln, dead oil staining in oomoldic chips with lt staining and very lt odor, NFO

Shale, black carbonaceous, blocky

Lime, crm-tan, fnxln, fine interxln porosity with scattered vugs and oomoldic, lt oily sheen, lt odor, NFO

Lime, crm-lt brn, fnxln

Lime, crm-tan, fnxln with oomoldic chips, No Wet Cut, NS, lt chalky wash

Lime, lt brn, fnxln

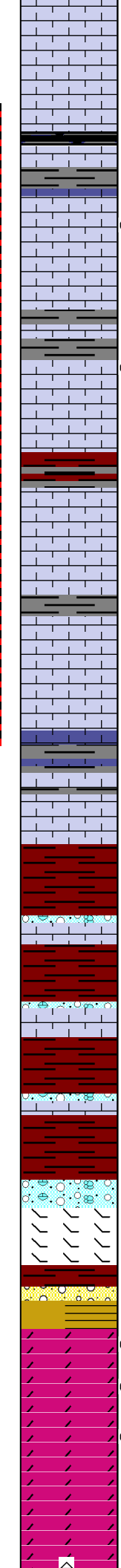
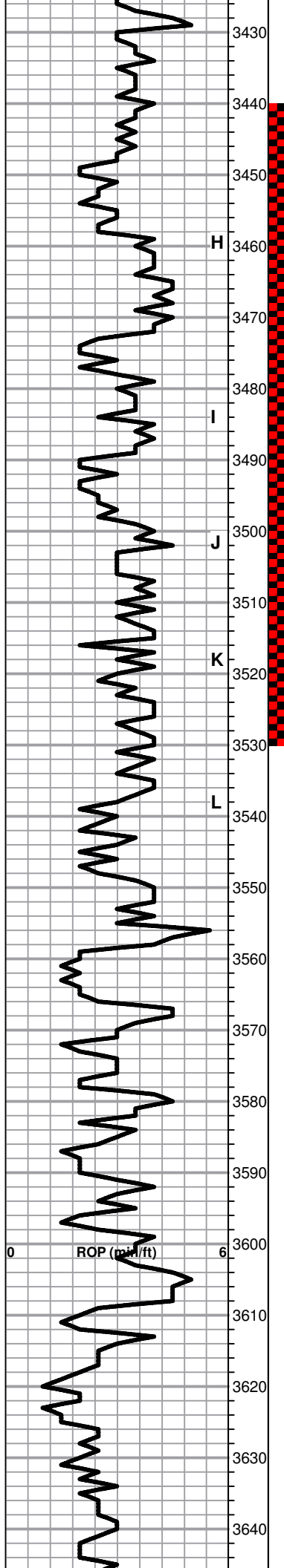
CFS 3300' AND SHORT TRIP

CFS 3360'

DST # 1 3355' TO 3420' SEE HEADER FOR TEST SUMMARY

ROP (min/ft)

A
B
C
D
E
F
G



Lime, crm, fn-micro xln

Lime, crm, fn-micro xln

Shale, black carbonaceous
Lime, offwhite, fn-micro xln

Lime, crm-lt brn, fossil fragments with intra particle porosity and lt spotty staining, very lt odor, NFO

Lime, crm-lt brn, fn-micro xln

Lime, crm, fnxln, fine interxln porosity with scattered vugs, very lt odor, NFO

Lime, crm-lt brn, fn-micro xln

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

Lime, crm-tan, fn-micro xln

Shale, med-dark gray, firm blocky

Lime, crm-tan, fn-vfxln, NS

Lime, lt brn, fn-micro xln, NS

Shale, med grayish green, firm blocky

Lime, crm-lt brn, fn-vfxln

BKC ELog 3544-1506

Shale, red-dark brn, soft mud to firm blocky

Lime, lt brn, fn-micro xln

Shale, soft red mud-med brn, soft blocky

Lime, crmlt brn, fnxln-slightly crumbly with bedded chalk

Shale, red-med brn, soft blocky

Lime, lt-med brn, fnxln

Shale, sticky red clumps

Lime, lt-med brn, fnxln, clastic mix with chert

Shale, dark brn, firm blocky, earthy

ARBUCKLE ELog 3612-1574

Dolomite, ivory-crm, fnxln-granular, fine-med grained with inter xln porosity, spotty-saturated staining, F-G odor

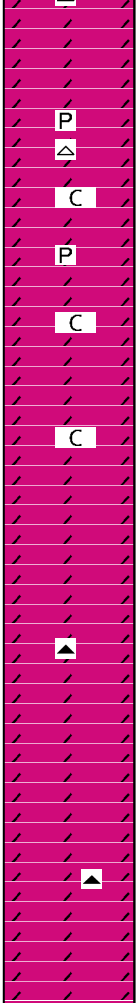
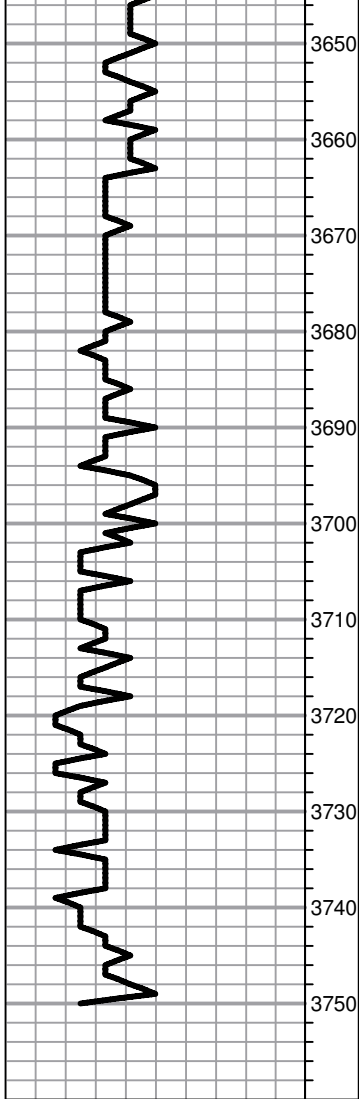
Dolomite, crm-lt brn, granular, fine to coarse grained with scattered rhombic xls, F-G odor, scattered to saturated stain, VMSFO on crush

Dolomite, crm-lt brn, fnxln-granular, lt decreasing odor intensity, scattered spotty staining

Dolomite, crm-tan-ivory, fnxln-granular, increasing grain size

DST # 2 3440' TO 3530' SEE HEADER FOR TEST SUMMARY

CFS 3530'



to coarse xln, white chert, fresh, sharp

Dolomite, crm-tan, fnxln-granular, scattered rhombic xls, lt sulfur odor

Dolomite, crm-tan, fnxln-granular, few chips oolitic chert, lt white chalky wash

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

Dolomite, ivory, fn-cxln granular, interxln porosity

Dolomite, ivory with tint of lt gray in part, fnxln-granular

Dolomite, ivory with tint of lt salmon, fn-cxln-granular, lt white chalk wash

Dolomite, ivory, fn-micro xln in part, very hard on crush, white chalk wash

Dolomite, ivory-crm, fn-micro xln-granular in part, few chips of smoky gray, oolitic chert

Dolomite, ivory, fnxln-granular

RTD 3750-1712 LTD 3750-1712

**5 1/2" PRODUCTION CASING
SET TO 3748' W/ 150 SXS EA2
TOP STAGE DV SET IN
ANHYDRITE / 150 SXS SMD
20 SXS MOUSEHOLE
30 SXS RATHOLE**

SLOPE 1 1/2 DEGREE @3750'