

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MUNSCH # 10
 Location: NW SW NE SE SEC.9-T15S-R18W
 API: 15-051-26,891-00-00
 Pool: IN FIELD
 State: KANSAS

Field: SCHOENCHEN
 Country: USA



Scale 1:240 Imperial

Well Name: MUNSCH # 10
 Surface Location: NW SW NE SE SEC.9-T15S-R18W
 Bottom Location:
 API: 15-051-26,891-00-00
 License Number: 4787
 Spud Date: 11/3/2017 Time: 6:45 PM
 Region: ELLIS COUNTY
 Drilling Completed: 11/8/2017 Time: 4:27 PM
 Surface Coordinates: 1785' FSL & 1110' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 2029.00ft
 K.B. Elevation: 2039.00ft
 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: -99.3228668
 Latitude: 38.7598603
 N/S Co-ord: 1785' FSL
 E/W Co-ord: 1110' FEL

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 #: 8
 Rig Type: MUD ROTARY
 Spud Date: 11/3/2017 Time: 6:45 PM
 TD Date: 11/8/2017 Time: 4:27 PM

ELEVATIONS

K.B. Elevation: 2039.00ft
K.B. to Ground: 10.00ft

Ground Elevation: 2029.00ft

NOTES

OPERATOR ELECTED TO RUN PRODUCTION CASING FOR FUTURE USE AS A SALT WATER DISPOSAL WELL. WELL RAN FAVORABLY THROUGH THE LKC BUT ENCOUNTERED AN APPARENT SINK HOLE IN THE ARBUCKLE FILLED WITH CLASTIC LIMESTONES, REWORKED ARBUCKLE DOLOMITE, CHERTS AND RED PENNSYLVANIAN SHALE. LIGHT ODOR CONSISTENT WITH ARBUCKLE HYDROCARBONS NOTED THROUGH MUCH OF THE CLASTIC LIMESTONE SECTION.

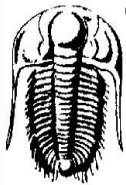
OPEN HOLE LOGGING BY PIONEER ENERGY SERVICES:DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRO RESISTIVITY LOG.

DRILL STEM TESTING BY TRILOBITE TESTING INC: ONE (1) STRADDLE TEST.

	MUNSCH # 10	MUNSCH # 7	MUNSCH # 3
	NW SW NE SE	NW NE SE SE	SW NE NE SE
	SEC.9-15S-18W	SEC.9-15-18W	SEC.9-15-18W
	2039'KB	KB 2039'	KB 2036'
Anhydrite top	1205 +834	+ 831	+ 836
Anhydrite base	1242 +797	+ 795	+ 798
Topeka	2995 - 956	- 957	- 962
Heebner Sh.	3275-1236	-1236	-1241
Toronto	3293-1254	-1255	-1258
LKC	3321-1282	-1281	-1287
BKC	3545-1506	-1505	-1512
Arbuckle	3658-1619	-1565	-1588
RTD	3750-1711	-1713	-1702

SUMMARY OF DAILY ACTIVITY

- 11-03-17** RU, spud 6:45 PM, set 8 5/8" surface casing to 214' w/ 150 sxs
60/40 pos 2%gel 3%CC, slope ¾ degree
- 11-04-17** 214', WOC, drill plug 8:30 AM
- 11-05-17** 1470', drilling
- 11-06-17** 2393', drilling, displaced 2750'-2769'
- 11-07-17** 3060', drilling
- 11-08-17** 3556', drilling, RTD 3750'@4:27PM, ST 25 stands, TOWB, logs
- 11-09-17** 3750' finish logging, DST # 1 straddle test 3462'-3520' "I" & "J",
TIWB, LDDP, run production casing



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

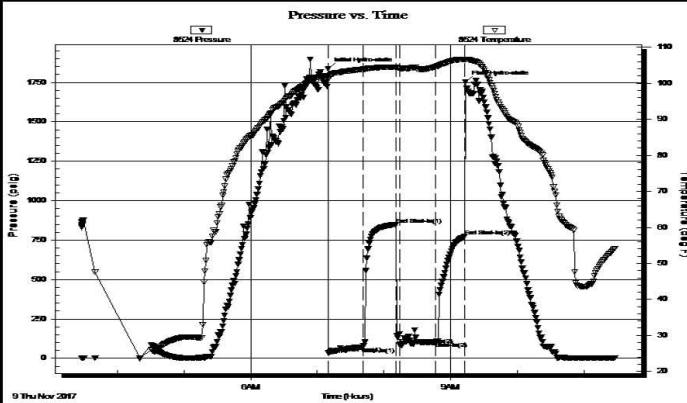
9-15S-18W Ellis, KS
Munsch #10
 Job Ticket: 63109 **DST#: 1**
 Test Start: 2017.11.09 @ 03:27:51

GENERAL INFORMATION:

Formation: **LKC "I - J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:10:12
 Time Test Ended: 11:27:57
 Test Type: Conventional Straddle (Initial)
 Tester: Brannan Lonsdale
 Unit No: 73
 Interval: **3462.00 ft (KB) To 3520.00 ft (KB) (TVD)**
 Total Depth: 3751.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Reference Elevations: 2039.00 ft (KB)
 2029.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 8524 Outside
 Press@RunDepth: 103.85 psig @ 3464.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.11.09 End Date: 2017.11.09 Last Calib.: 2017.11.09
 Start Time: 03:27:52 End Time: 11:27:57 Time On Btm: 2017.11.09 @ 07:09:57
 Time Off Btm: 2017.11.09 @ 09:13:42

TEST COMMENT: 30- IF- Slow ly built to 7 1/2"
 30- IS- No blow
 30- FF- BOB 20 mins
 30- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1836.43	102.07	Initial Hydro-static
1	33.52	101.31	Open To Flow (1)
32	71.63	103.89	Shut-In(1)
61	849.61	104.53	End Shut-In(1)
65	83.45	104.17	Open To Flow (2)
97	103.85	104.59	Shut-In(2)
123	772.73	106.58	End Shut-In(2)
124	1753.20	106.65	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
159.00	GSOCM, 15%G 5%O 80%M	2.25
0.00	32' GIP	0.00

Gas Rates

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

ROCK TYPES

	Cht vari		Lmst fw7>		shale, gry		Shcol
	Dolprim		Lscongl		Carbon Sh		
	Lmst fw<7		shale, grn		shale, red		

ACCESSORIES

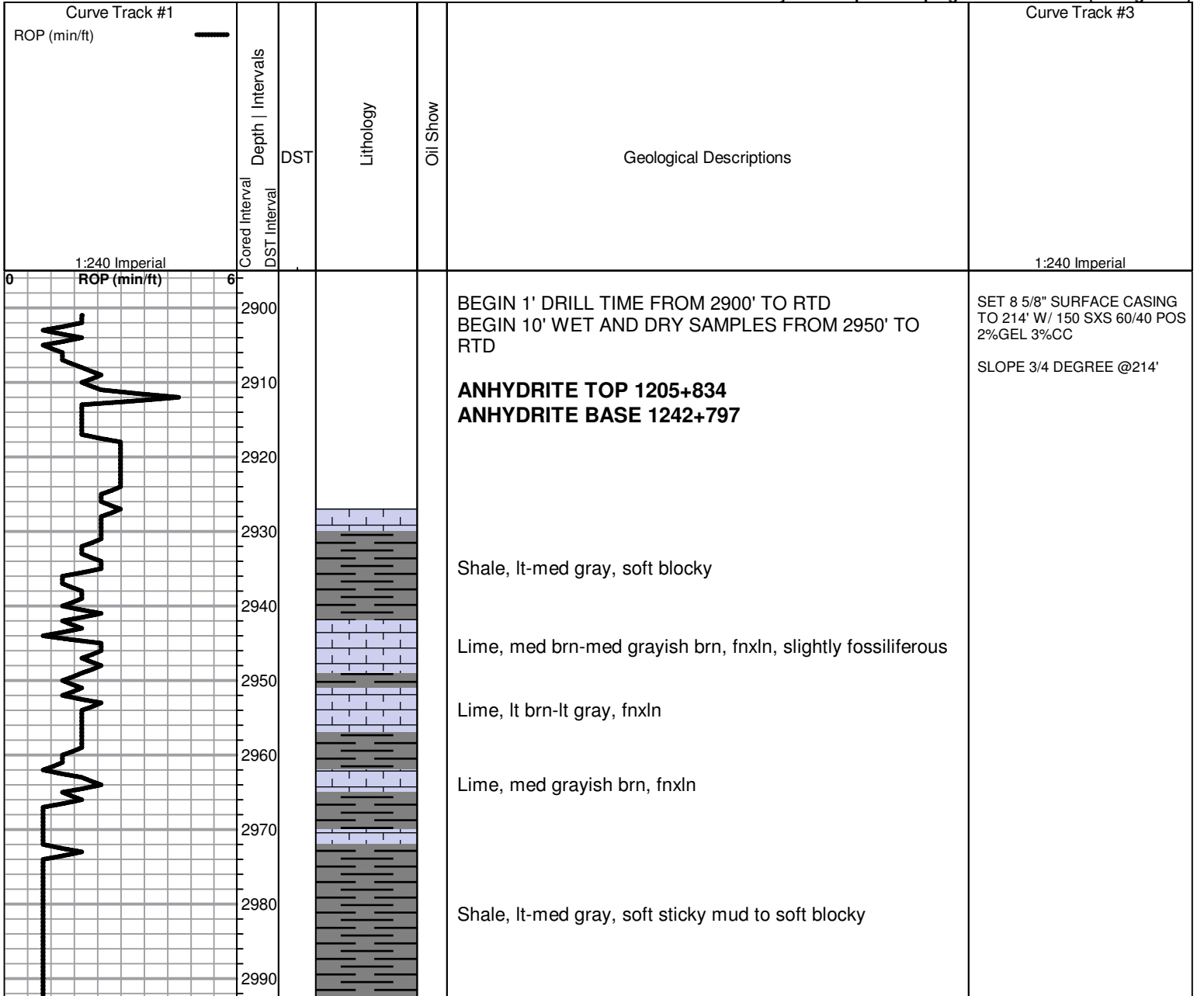
MINERAL

- ▲ Chert, dark
- △ Chert White

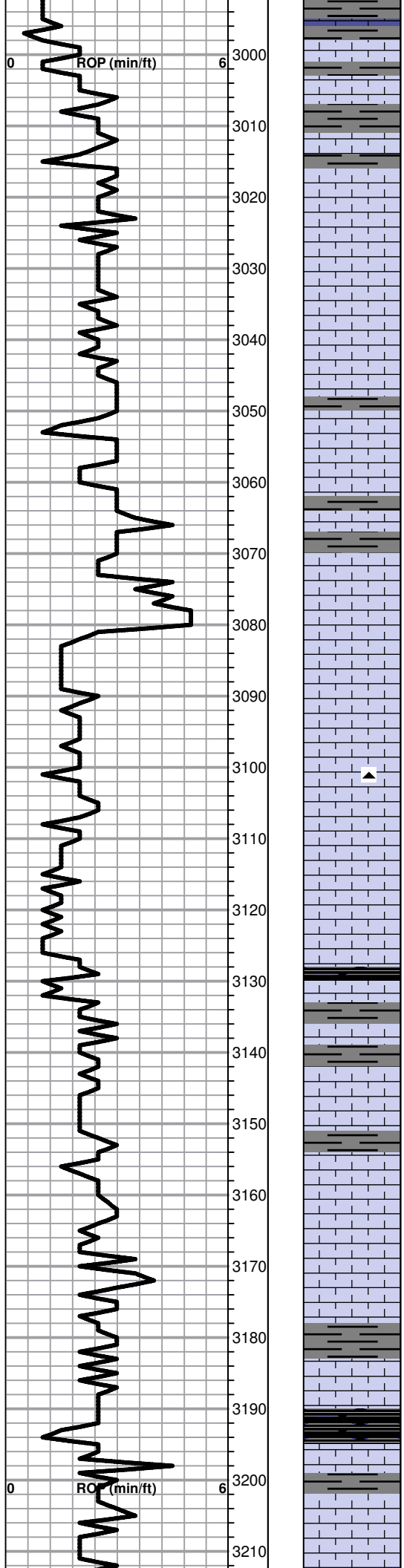
FOSSIL

- 🦠 Oomoldic

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TOPEKA 1995-956



Lime, dark brn, fnxln, slightly fossiliferous

Lime, crm-lt brn, fnxln

Lime, crm-lt brn, fnxln, slightly fossiliferous

Lime, lt brn, fnxln, fusulinids

Lime, offwhite-lt brn-lt grayish brn, fnxln

Lime, crm-lt brn, fnxln, crinoid segments

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

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

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

Lime, lt-med brn, fnxln

Lime, lt-med brn, fnxln, slightly granular, tan chert, fresh, sharp

Lime, lt brn, fnxln with slight granular content, NS

Lime, lt brn, granular wiht sticky chalk

Shale, black carbonaceous, blocky
Lime, lt grayish brn, micro xln

Shale, med gray, soft blocky

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

Lime, lt brn, fn-micro xln

Lime, lt brn, fn-micro xln

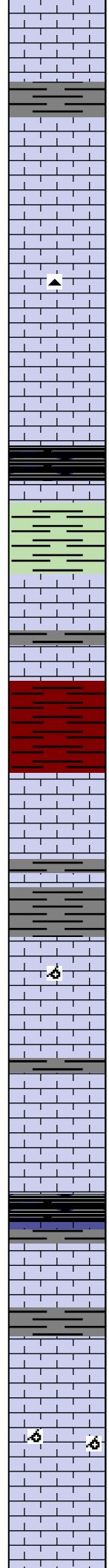
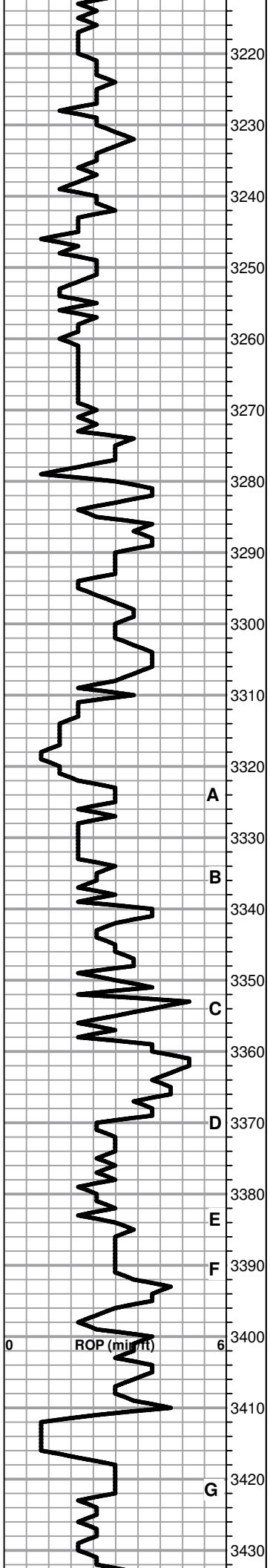
Lime, lt brn, fnxln-granular in part

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

Shale, black carbonaceous, blocky

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

Lime, lt-med brn, fn-micro xln, slightly fossiliferous



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

Lime, lt brn-med grayish brn, fnxln

Lime, lt brn, fnxln, slight chalk matrix

Lime, lt brn, fnxln, soft on crush, lt chalky matrix

Lime, crm-lt brn, fnxln, soft chalk matrix

Lime, lt brn, fnxln soft on crush

HEEBNER SHALE 3275-1236

Shale, black carbonaceous, fissile, blocky
Lime, lt brn, micro xln

Shale, dove gray-lime green, soft mud clumps

TORONTO 3293-1254

Lime, crm, fnxln, lt white chalk wash

Lime, crm-lt brn, fn-micro xln

Shale, red soft mud with red wash

LKC 3321-1282

Lime, crm-lt brn, fn-micro xln

○ Lime, lt brn, fn-vfxln with few chips with scattered micro vugs, lt stain, NFO, very lt odor

Shale, lt gray, soft sticky

○ Lime, lt brn, fnxln with few oomoldic chips with trace of lt stain, NFO, very light odor

Lime, lt brn, fn-vfxln

Lime, lt brn, fnxln, slightly fossiliferous-fusulinids

○ Lime, lt brn, fnxln, with scattered vugs in part, lt stain, fair odor, NFO

Shale, black carbonaceous
Lime, lt gray, vfxln

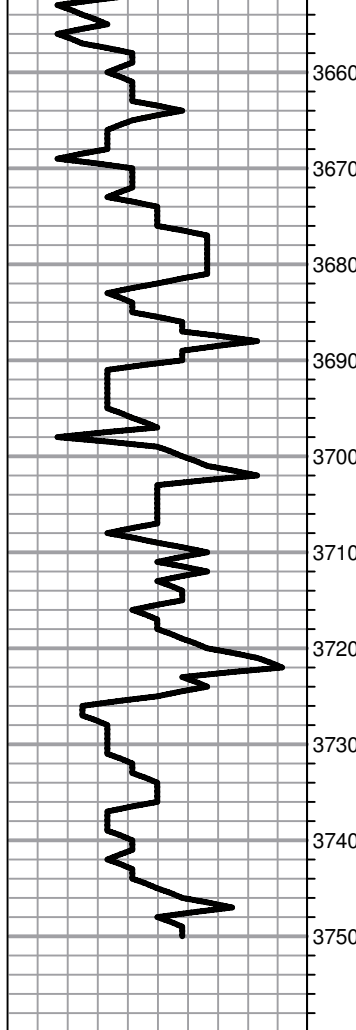
D Lime, white, fnxln, fossiliferous with fossil fragment, scattered dead oil flakes, NFO, no odor

Lime, crm-tan, fn-vfxln, bedded chalk, NS

Lime, crm-tan, fnxln with oomoldic, barren, NFO, no odor

Lime, crm-tan, fn-vfxln, firm bedded chalk

Lime, crm-tan, fn-micro xln, firm bedded chalk



ARBUCKLE 3658-1619

Dolomite, ivory, fnxn-granular, NS or odor

Dolomite, ivory, fnxn-granular, white chert

Dolomite, ivory, fnxn-granular with chips of oolitic chert

Dolomite, white-ivory, fnxn-granular

Dolomite, ivory-crm, fnxn-granular with clumps of white dolomitic chalk

Dolomite, crm-tan, fn-micro, very hard on crush

Dolomite, crm-rose, fnxn-granular

Dolomite, crm, fnxn-granular

Dolomite, crm-ivory, fn-vfxln

RTD 3750-1711 LTD 3752-1713

SET 5 1/2" PRODUCTION CASING TO 3742'