

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MUNSCH # 11
 Location: SE NW NW SE, SEC.9-T15S-R18W
 API: 15-051-26,892-00-00
 Pool: IN FIELD
 State: KANSAS

Field: SCHOENCHEN
 Country: USA



Scale 1:240 Imperial

Well Name: MUNSCH # 11
 Surface Location: SE NW NW SE, SEC.9-T15S-R18W
 Bottom Location:
 API: 15-051-26,892-00-00
 License Number: 4787
 Spud Date: 11/10/2017 Time: 2:30 PM
 Region: ELLIS COUNTY
 Drilling Completed: 11/15/2017 Time: 2:43 PM
 Surface Coordinates: 2295' FSL & 2140' 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: -99.3264544
 Latitude: 38.7612878
 N/S Co-ord: 2295' FSL
 E/W Co-ord: 2140' 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: 11/10/2017 Time: 2:30 PM
 TD Date: 11/15/2017 Time: 2:43 PM

ELEVATIONS

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

Ground Elevation: 2029.00ft

NOTES

DECISION TO RUN PRODUCTION CASING FOR DEEP SALT WATER DISPOSAL.

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

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

	MUNSCH # 11	MUNSCH # 7	MUNSCH # 3
	SE NW NW 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	1208 +827	+ 831	+ 836
Anhydrite base	1242 +797	+ 795	+ 798
Topeka	2999 - 960	- 957	- 962
Heebner Sh.	3279-1240	-1236	-1241
Toronto	3298-1259	-1255	-1258
LKC	3324-1285	-1281	-1287
BKC	3552-1513	-1505	-1512
Arbuckle	3662-1623	-1565	-1588
RTD	3750-1711	-1713	-1702

SUMMARY OF DAILY ACTIVITY

11-10-17 RU, spud 2:30 PM, set 8 5/8" surface casing to 217' w/ 150 sxs
 60/40 pos 2%gel 3%CC, slope 1/4 degree

11-11-17 295', drill plug 4:30 AM, fish junk in hole

11-12-17 1361', drilling, bit trip 1620'

11-13-17 2441', drilling, displaced 2760'-2792'

11-14-17 3275', drilling, bit trip @ 3364', slope survey 3/4 degree

11-15-17 3600', drilling, CFS 3635', RTD 3750' @2:43PM, CCH, mini trip,
 TOWB, logs, DST # 1 straddle test 3334'-3382', "C" and "D"

11-16-17 3750', finish DST # 1, TIWB, deepen well to 3915', CCH, LDDP

11-17-17 3915', run production casing and cement, RD



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

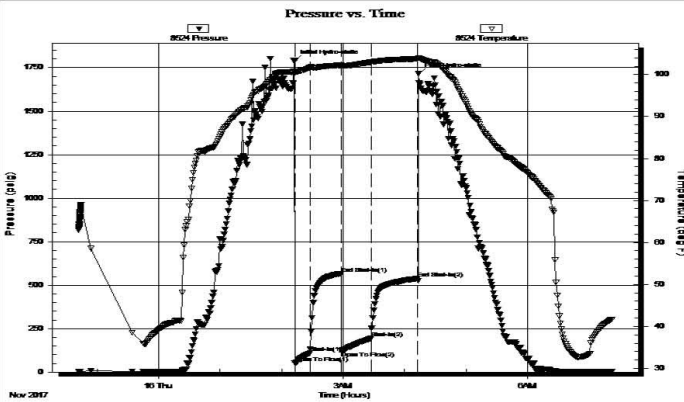
9-15S-18W Ellis, KS
Munsch #11
Job Ticket: 63116 **DST#: 1**
Test Start: 2017.11.15 @ 22:42:01

GENERAL INFORMATION:

Formation: **LKC "C&D"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:12:52
Time Test Ended: 07:22:21
Interval: **3334.00 ft (KB) To 3382.00 ft (KB) (TVD)**
Total Depth: 3748.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Straddle (Initial)
Tester: Brannan Lonsdale
Unit No: 73
Reference Elevations: 2039.00 ft (KB)
2029.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8524 Outside
Press@RunDepth: 194.38 psig @ 3335.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.11.15 End Date: 2017.11.16 Last Calib.: 2017.11.16
Start Time: 22:42:02 End Time: 07:22:21 Time On Btm: 2017.11.16 @ 02:12:22
Time Off Btm: 2017.11.16 @ 04:13:22

TEST COMMENT: 15- IF- BOB 5mins
30- ISL- Surface blow died in 12mins
30- FF- BOB 4mins
45- FSL- BOB 11mins



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1788.85	100.83	Initial Hydro-static
1	51.28	100.48	Open To Flow (1)
16	109.22	101.69	Shut-In(1)
46	566.33	102.22	End Shut-In(1)
46	121.15	102.14	Open To Flow (2)
75	194.38	102.97	Shut-In(2)
121	537.69	103.71	End Shut-In(2)
121	1713.86	103.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbt)
127.00	GOCMW, 10%G 5%O 20%M 65%W	1.80
191.00	GWMCO, 35%G 10%W 20%M 35%O	2.71
48.00	GOCM, 10%G 10%O 80%M	0.68

Gas Rates

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

ROCK TYPES

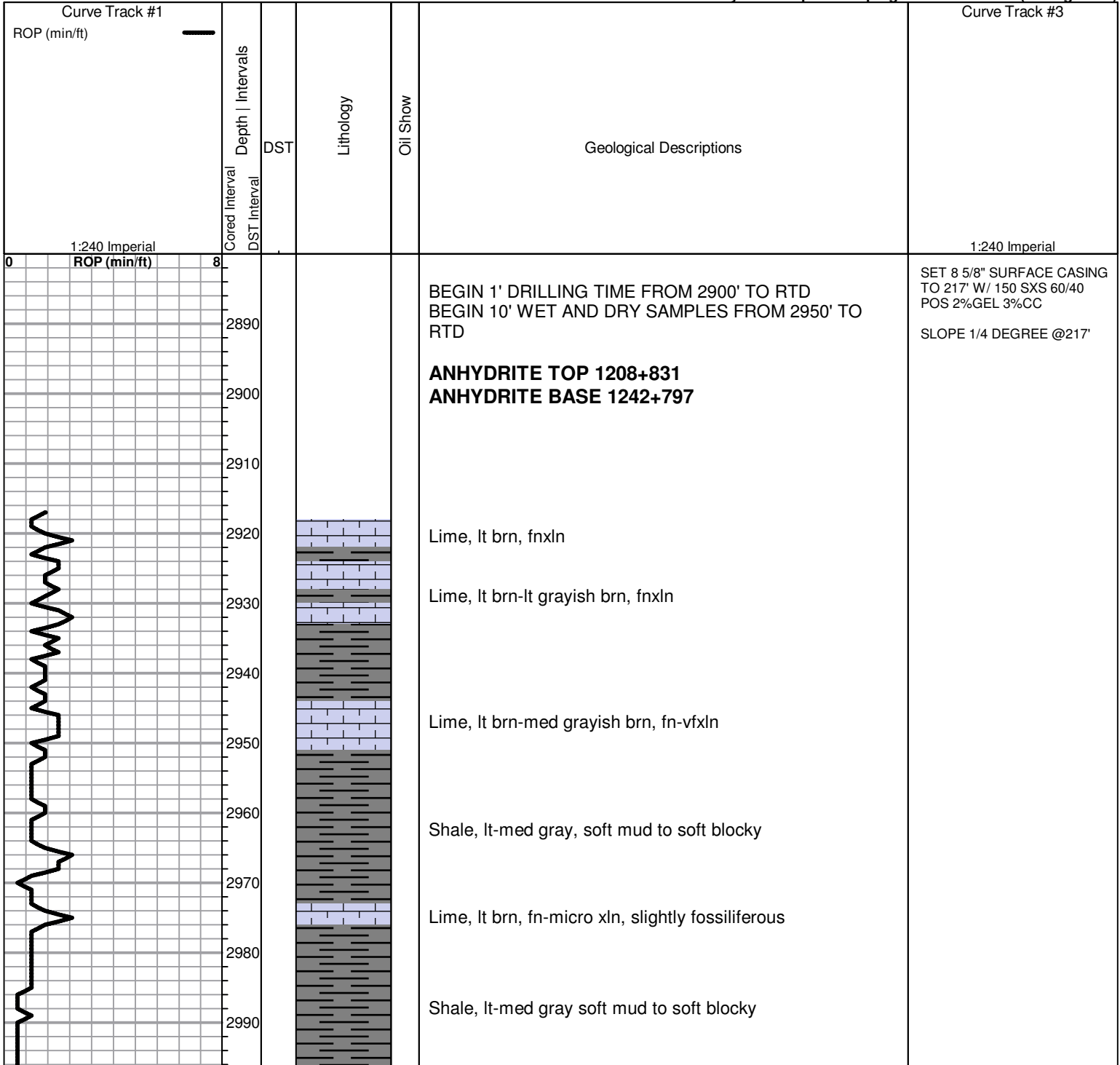
 Dolprim	 Lmst fw7>	 shale, grn	 Carbon Sh
 Lmst fw<7	 Lscong1	 shale, gry	 shale, red

ACCESSORIES

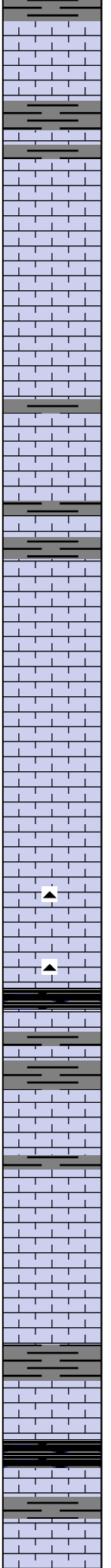
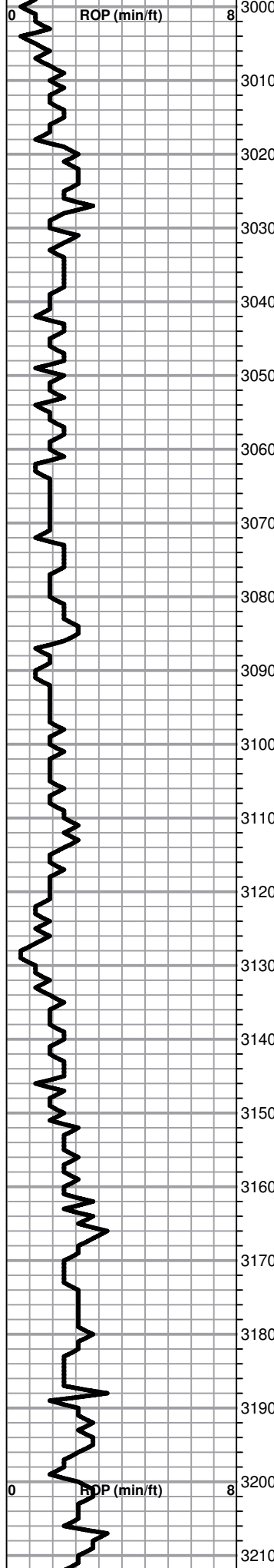
MINERAL
 ▲ Chert, dark
 P Pyrite

FOSSIL
 🦠 Oomoldic

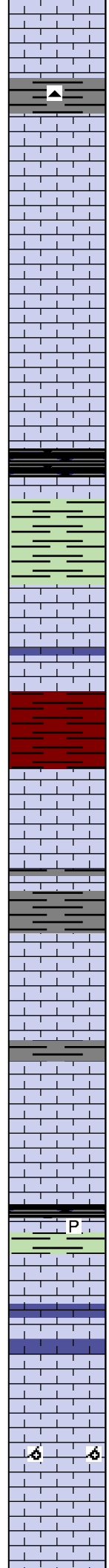
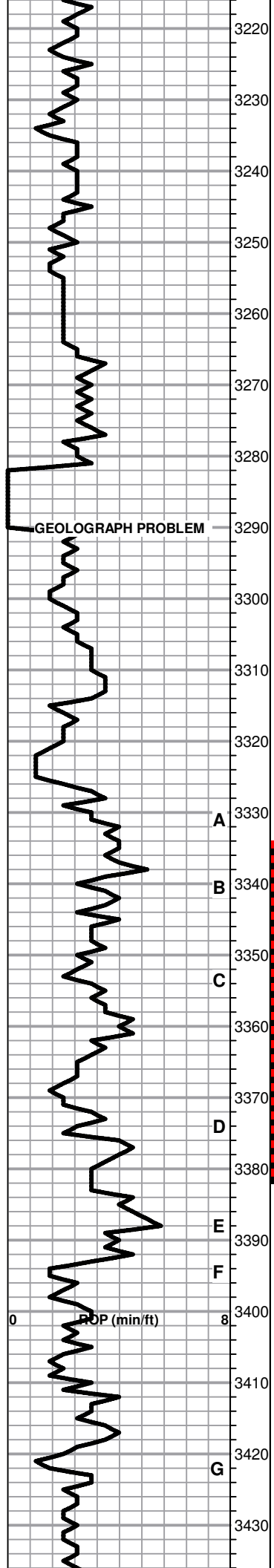
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TOPEKA 2999-960



- Lime, lt-dark brn, fn-vfxln
- Shale, lt-med gray, soft sticky
- Lime, lt-dark brn, fn-vfxln
- Lime, crm-med brn, fnxln
- Lime, cmr-lt brn-lt gray, fnxln, slight bedded chalk
- Lime, lt brn-lt grayish brn, fnxln with increasing chalk matrix
- Lime, crm-lt brn-lt grayish brn, fnxln to micro xln in part slightly fossiliferous
- Lime, lt brn-lt grayish brn, fnxln
- Lime, med brn-med grayish brn, fn-vfxln
- Lime, lt grayish brn, fn-vfxln
- Lime, lt brn-lt grayish brn, fn-vfxln
- Lime, lt-med brn, fn-micro xln
- Lime, lt brn, fn-vfxln grading into soft granular limestone
- Lime, lt brn, granular, bedded chalk with sticky clumps
- Shale, black carbonaceous, fissile, blocky
- Lime, lt-med brn, fn-vfxln
- Lime lt-med brn, fn-vfxln
- Lime, crm, fn-micro xln, lithographic
- Lime, crm-lt brn, fn-vfxln
- Lime, lt-med brn, fn-vfxln, slightly fossiliferous
- Lime, lt-med brn-lt gray, fn-micro xln
- Shale, black carbonaceous, fissile, blocky
- Lime, med grayish brn, fn-micro xln
- Lime, lt-med brn, fnxln with soft chalk matrix in part
- Lime, lt brn, fn-vfxln, slightly fossiliferous



Lime, lt brn, fn-vfxln, slightly fossiliferous, bedded chalk

Lime, crm-lt brn, fn-vfxln

Lime, lt-med brn, fn-micro xln

Lime, crm-lt brn, fnxln

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

HEEBNER SHALE 3279-1240
 Shale, black carbonaceous, fissile, blocky
 Lime, med brn, micro xln

Shale, dove gray to lime green, soft sticky mud

TORONTO 3298-1259
 Lime, white-crm, mostly fnxln with hard bedded chalk, few chips with fine pinpoint vuggy porosity with trace of spotty staining

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

Shale, reddish brn, soft mud to soft blocky

LKC 3324-1285
 Lime, lt brn, fn-micro xln, NS

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln with few chips with spotty vugs with trace of lt staining, NFO, no odor

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

Lime, crm-lt brn, fnxln, lot of contamination after bit trip

Lime, crm-tan, fn-micro xln, lt odor, with spotty staining and few specks of oil floating in tray

Shale, black carbonaceous, blocky
 Lime, lt gray, vfxln

Lime, crm-lt brn, fossiliferous, mostly well cemented with trace of lt staining in casts and voids

Lime, crm-lt brn, fnxln with white chalk wash

Lime, crm-tan, fn-vfxln bedded chalk with lt white wash

Lime, crm oolmoldic, barren, with lt white chalk wash

Lime, crm, fn-vfxln

BIT TRIP @3364'
 DST # 1 STRADDLE TEST
 3334' TO 3382' SEE HEADER
 FOR TEST SUMMARY

Shale, red-dark brn, soft-firm, sticky

ARBUCKLE 3662-1623

Dolomite very friable with no recovery in samples

Dolomite, white-ivory, fine to coarse granular, sucrosic, traces of gilsonite

Dolomite, white-ivory, granular with sucrosic in part

Dolomite, ivory-crm, granular, sucrosic

Dolomite, ivory-crm, granular, coarse xln- sucrosic

Dolomite, ivory-white-crm, fnxln

Dolomite, white-ivory, soft granular with chalk

Dolomite, white-ivory, fnxln-granular

**RTD 3750-1711 LTD 3746-1707
DDTD 3915-1876 AFTER LOGS AND DST # 1**

