

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: WERTH TRUST # 1
 Location: NE NE SW SW Sec-26-T15S-R19W
 API: 15-051-26,706-00-00
 Pool:
 State: KANSAS

Field: ZIMM
 Country: USA



Scale 1:240 Imperial

Well Name: WERTH TRUST # 1
 Surface Location: NE NE SW SW Sec-26-T15S-R19W
 Bottom Location:
 API: 15-051-26,706-00-00
 License Number: 4787
 Spud Date: 6/27/2014 Time: 3:00 PM
 Region: ELLIS COUNTY
 Drilling Completed: 7/3/2014 Time: 11:52 AM
 Surface Coordinates: 1225' FSL & 1190' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 1995.00ft
 K.B. Elevation: 2005.00ft
 Logged Interval: 2500.00ft To: 3700.00ft
 Total Depth: 3700.00ft
 Formation: LANSING-KANSAS CITY
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -99.4082129
 Latitude: 38.7146518
 N/S Co-ord: 1225' FSL
 E/W Co-ord: 1190' FWL

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: 6/27/2014 Time: 3:00 PM
 TD Date: 7/3/2014 Time: 11:52 AM

ELEVATIONS

K.B. Elevation: 2005.00ft
 K.B. to Ground: 10.00ft

Ground Elevation: 1995.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE DST RESULTS AND LOG ANALYSIS

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) CONVENTIONAL TEST

FORMATION TOPS COMPARISON

| | WERTH TRUST # 1 | WERTH B-1 | WERTH B-2 |
|------------------|-------------------------|-------------------------|-----------------------|
| | NE NE SW SW | SE SW SW | SW NW SW |
| | SEC.26-T15S-R19W | SEC.26-T15S-R19W | SEC.26-15S-19W |
| | 1995'GL 2005'KB | KB 2018' | KB 2000' |
| <u>FORMATION</u> | <u>LOG TOPS</u> | <u>LOG TOPS</u> | <u>LOG TOPS</u> |
| Anhydrite | 1194 +811 | + 805 | +819 |
| B-Anhydrite | 1230 +775 | + 772 | |
| Topeka | 2963 -958 | - 956 | |
| Heebner Sh. | 3237-1232 | -1235 | -1236 |
| Toronto | 3256-1251 | -1254 | -1254 |
| LKC | 3281-1276 | -1282 | -1287 |
| BKC | 3531-1526 | -1528 | -1529 |
| Marmaton | 3568-1563 | -1566 | |
| Conglomerate Sd | 3590-1585 | -1592 | -1591 |
| Arbuckle | 3607-1602 | -1600 | -1607 |
| Reagan Sand | 3650-1645 | -1661 | NR |
| RTD | 3700-1695 | -1709 | -1612 |

SUMMARY OF DAILY ACTIVITY

6-27-14 RU, Spud 4:30 PM,
 6-28-14 880', set 8 5/8" surface casing to 1203' w/ 375sxs SMD, slope 3/4 degree, plug down 10:15 PM, WOC 12 Hours
 6-29-14 1205', drill plug at 10:15 AM
 6-30-14 1930', drilling
 7-01-14 2745', displaced 2827'-2850'
 7-02-14 3300', CFS 3280', short trip, CFS 3327, DST # 1 3272' to 3327', A-C
 LKC TIWB, drilling

7-03-14
7-04-14

LKC, TIWB, drilling
3548', RTD 3700' @11:52AM, mini trip, TOWB, logs, TIWB, LDDP
3700', run production casing and cement, RD

DST # 1 TEST SUMMARY


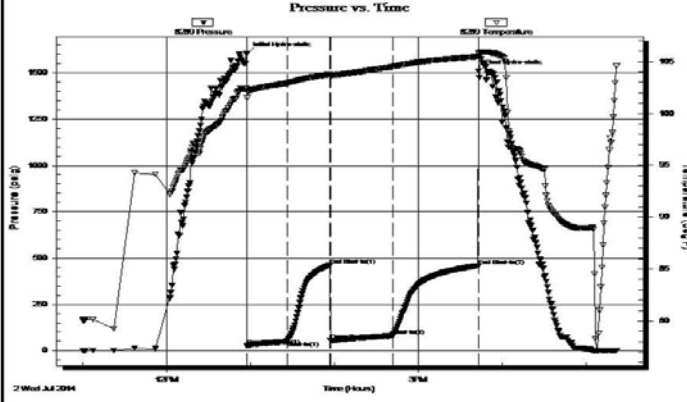
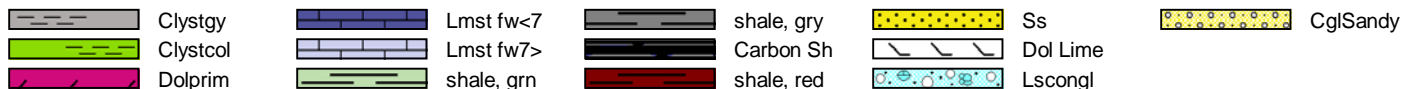
|  | <p>DRILL STEM TEST REPORT</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|-----------------------|--------------|-----------------|--------------------------|------------|-------|--------------------|--------|----------------------|----------|-------|--------|------------------|----|-------|--------|------------|--|--------|----------------|-----------------|------------------|-------|--------|------------------|-----|-------|--------|------------|-----|--------|--------|----------------|-----|---------|--------|--------------------|
| <p>TDI Inc 1310 Bison Rd Hays KS 67601 ATTN: Herb Deines</p> | <p>26 15s 19w Ellis Werth Trust # 1 Job Ticket: 59264 Test Start: 2014.07.02 @ 11:00:00</p> | | <p>DST#: 1</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>GENERAL INFORMATION:</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Formation: LKC " A - C " Deviated: No Whipstock: ft (KB) Time Tool Opened: 12:57:30 Time Test Ended: 17:22:00</p> | | <p>Test Type: Conventional Bottom Hole (Initial) Tester: Jim Svaty Unit No: 76</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Interval: 3272.00 ft (KB) To 3327.00 ft (KB) (TVD) Total Depth: 3327.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair</p> | | <p>Reference Elevations: 2005.00 ft (KB) 1995.00 ft (CF) KB to GR/CF: 10.00 ft</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Serial #: 8289 Outside</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Press@RunDepth: 80.77 psig @ 3289.00 ft (KB) Start Date: 2014.07.02 End Date: 2014.07.02 Start Time: 11:00:02 End Time: 17:22:00</p> | | <p>Capacity: 8000.00 psig Last Calib.: 2014.07.02 Time On Btm: 2014.07.02 @ 12:57:15 Time Off Btm: 2014.07.02 @ 15:43:15</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>TEST COMMENT: 30-IFP- BOB in 5min. 30-ISIP- No Blow 45-FFP- BOB in 1 1/2min 60-FSP- Surface Blow in 1min. Building to 1 1/2in. in 15min. Died Back in 32min.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Pressure vs. Time</p> | | <p>PRESSURE SUMMARY</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Time (Min.)</th> <th>Pressure (psig)</th> <th>Temp (deg F)</th> <th>Annotation</th> </tr> </thead> <tbody> <tr><td>0</td><td>1604.70</td><td>102.41</td><td>Initial Hydro-static</td></tr> <tr><td>1</td><td>25.48</td><td>101.49</td><td>Open To Flow (1)</td></tr> <tr><td>30</td><td>50.29</td><td>102.95</td><td>Shut-In(1)</td></tr> <tr><td>60</td><td>460.83</td><td>103.77</td><td>End Shut-In(1)</td></tr> <tr><td>60</td><td>55.00</td><td>103.66</td><td>Open To Flow (2)</td></tr> <tr><td>105</td><td>80.77</td><td>104.51</td><td>Shut-In(2)</td></tr> <tr><td>166</td><td>458.90</td><td>105.49</td><td>End Shut-In(2)</td></tr> <tr><td>166</td><td>1508.96</td><td>105.85</td><td>Final Hydro-static</td></tr> </tbody> </table> | | Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation | 0 | 1604.70 | 102.41 | Initial Hydro-static | 1 | 25.48 | 101.49 | Open To Flow (1) | 30 | 50.29 | 102.95 | Shut-In(1) | 60 | 460.83 | 103.77 | End Shut-In(1) | 60 | 55.00 | 103.66 | Open To Flow (2) | 105 | 80.77 | 104.51 | Shut-In(2) | 166 | 458.90 | 105.49 | End Shut-In(2) | 166 | 1508.96 | 105.85 | Final Hydro-static |
| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1604.70 | 102.41 | Initial Hydro-static | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 25.48 | 101.49 | Open To Flow (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 60 | 460.83 | 103.77 | End Shut-In(1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 55.00 | 103.66 | Open To Flow (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 105 | 80.77 | 104.51 | Shut-In(2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 166 | 458.90 | 105.49 | End Shut-In(2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 166 | 1508.96 | 105.85 | Final Hydro-static | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Recovery</p> | | <p>Gas Rates</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 90.00 | Gassy CO 50%g 50%o | 1.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.00 | GIP 1084 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Image Header 03

Image Header 04

Image Header 05

ROCK TYPES



ACCESSORIES

MINERAL

- ▲ Chert, dark
- ∩ Glauconite
- P Pyrite
- Sandy
- Varicolored chert

FOSSIL

- ⊙ Oolite
- ⊙ Oomoldic

OTHER SYMBOLS

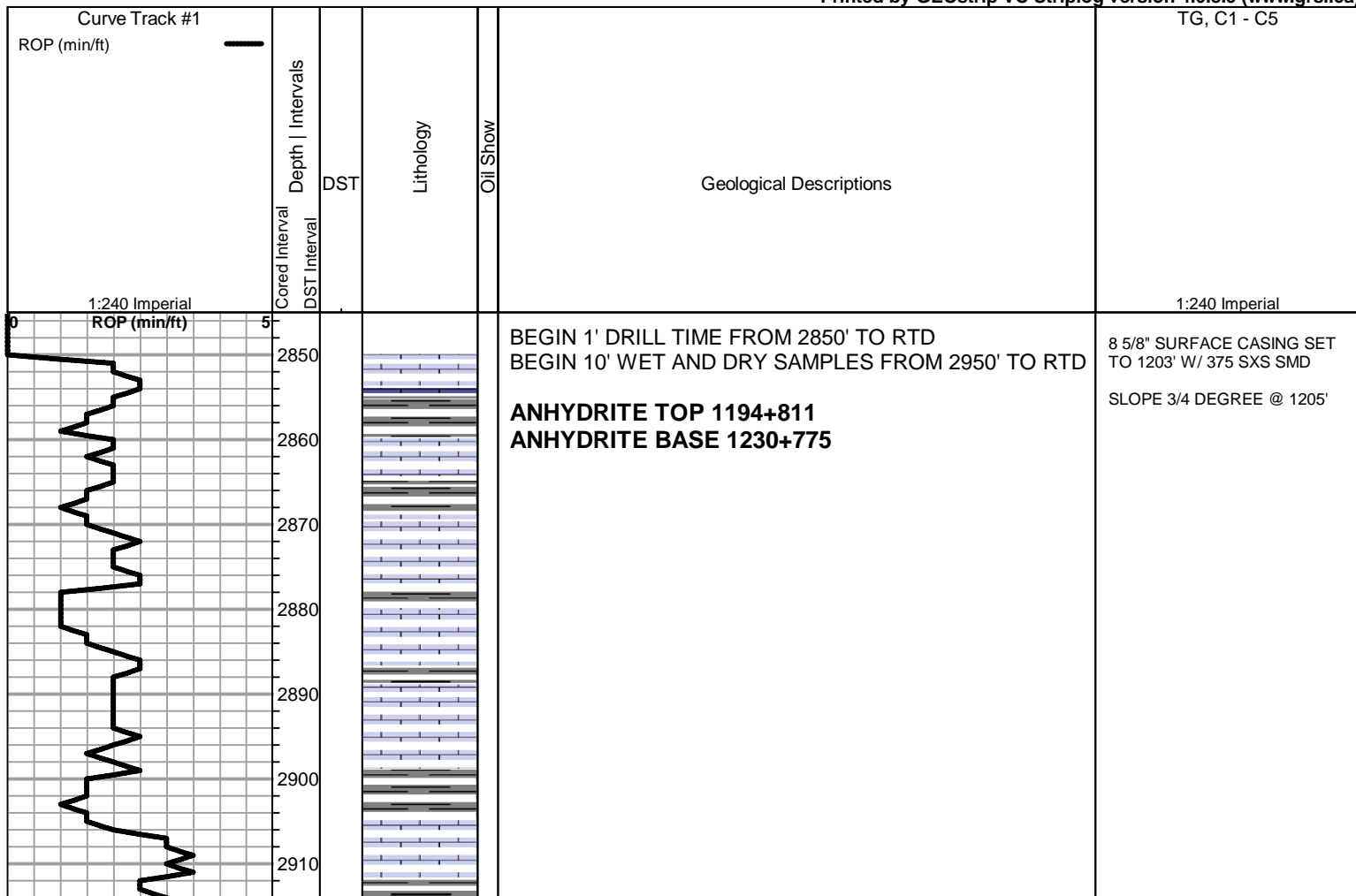
Oil Show

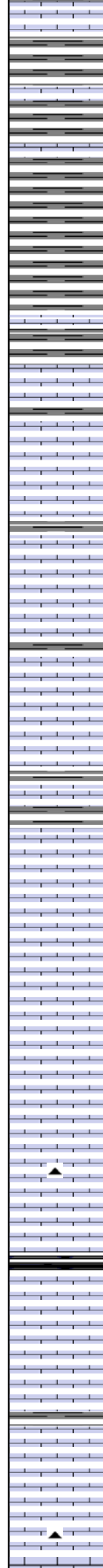
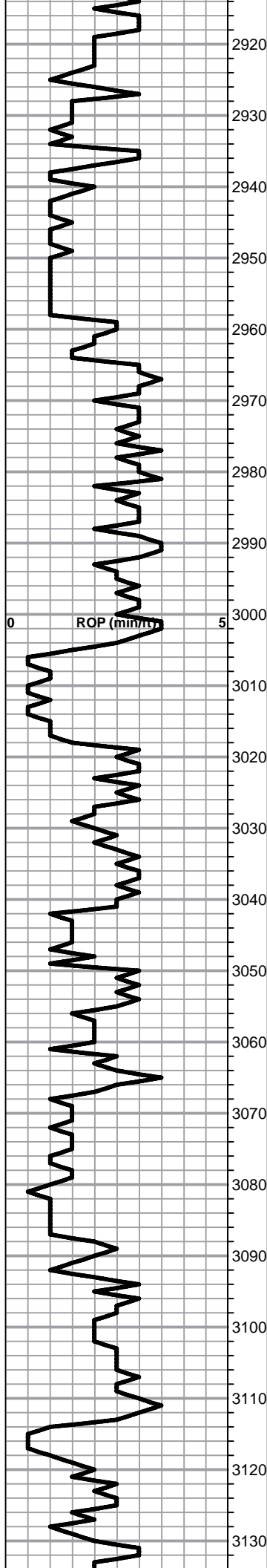
- Good Show
- Fair Show
- Poor Show
- Spotted or Trace
- Questionable Stn
- D Dead Oil Stn
- Fluorescence
- * Gas

DST

- DST Int
- DST alt
- Core
- tail pipe

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Shale, med gray, soft blocky

Lime, lt-med brn, fnxln, slightly fossiliferous

Shale, lt gray, soft mud to soft blocky

Lime, med-dark brn, fnxln

TOPEKA SPL 2964-959

Lime, crm-lt brn, fnxln

Lime, med brn-med grayish brn, fnxln, slightly fossiliferous

Lime, lt brn-lt gray, fnxln, sticky chalk clumps in part

Lime, lt-med brn, fnxln, slight chalk and scattered crinoid segments

Lime, lt brn, fnxln-granular, scattered to saturated dark stain in fn interxln porosity, NFO, No Odor

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

Shale, med gray, soft blocky
Lime, lt-med brn-med grayish brn, fnxln

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

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

Lime, lt-med brn, fnxln-granular, slight chalky matrix in part

Lime, lt-med brn, fnxln-granular, chalky matrix with bedded chalk

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

Shale, black carbonaceous ,blocky

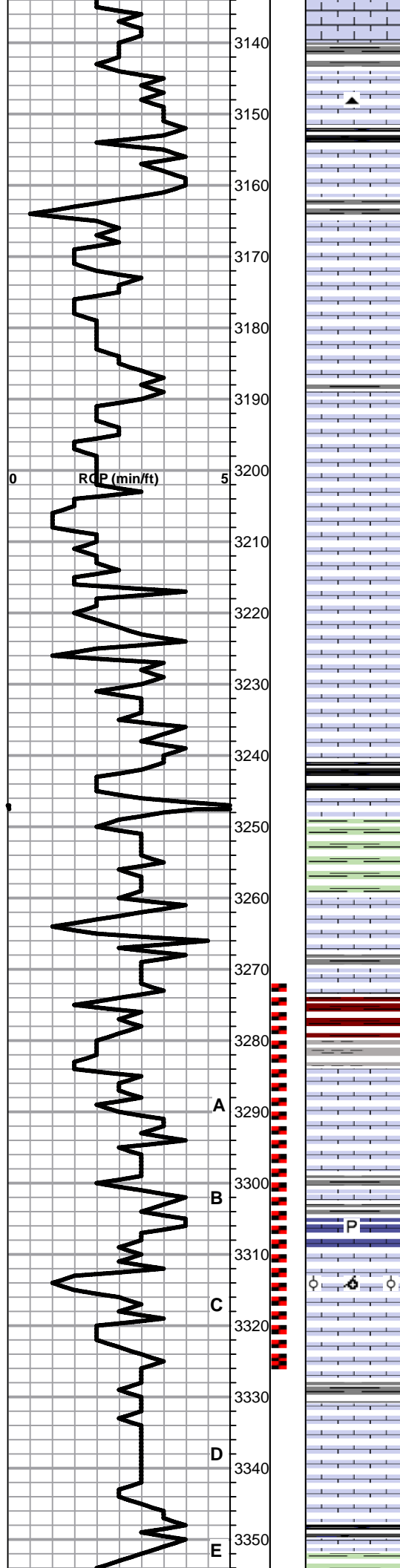
Lime, lt-reddish brn, fnxln

Lime, lt brn, fn-vfxln, slight bedded chalk, thin fossil beds

Lime, tan, micro oolitic/oomoldic, show of hvy spot specks, No Odor, scattered stain

Lime, tan-lt brn, fnxln

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



Shale, med gray, soft blocky
 Lime, lt brn, fnxln, slightly fossiliferous-fusulinids

Shale, black carbonaceous, fissile, blocky

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

Lime, crm-tan, granular, F-G odor, scattered lt staining, NFO, fair wet cut

Lime, tan-lt brn, fnxln-granular, increasing bedded chalk

Lime, tan-lt brn, fn-vfxln

Lime, tan-lt brn, fnxln-granular, increasing bedded chalk

Lime, lt brn, fnxln, slight bedded chalk

Lime, lt brn, fnxln, slight bedded chalk

Lime, lt brn,, fnxln, slight bedded chalk

Lime, lt brn, fnxln, increasing bedded chalk

HEEBNER SHALE SPL 3241-1236
 Shale, black carbonaceous, fissile, blocky
 Lime, med brn, fn-micro xln

Shale, lime, green, soft blocky to sticky in part

TORONTO SPL 3260-1255
 Lime, crm-tan-lt brn, fn-vfxln, bedded chalk, two chips with spotty staining, NFO, No Odor

Lime, crm-lt brn, fn-vfxln

Shale, reddish brn, soft, sticky with lt red wash

LKC SPL 3284-1279
 Lime, lt brn, fnxln with fossil fragments, zone of oolitic with fine inter xln fill, interxln porosity, scattered to saturated stain, lt odor, NFO

Lime, med brn, fnxln, NS

Lime, med brn, fnxln with specks of gray mottling, pyritic

Lime, oolitic/oomoldic, scattered-saturated fresh oil staining, good odor, NFO

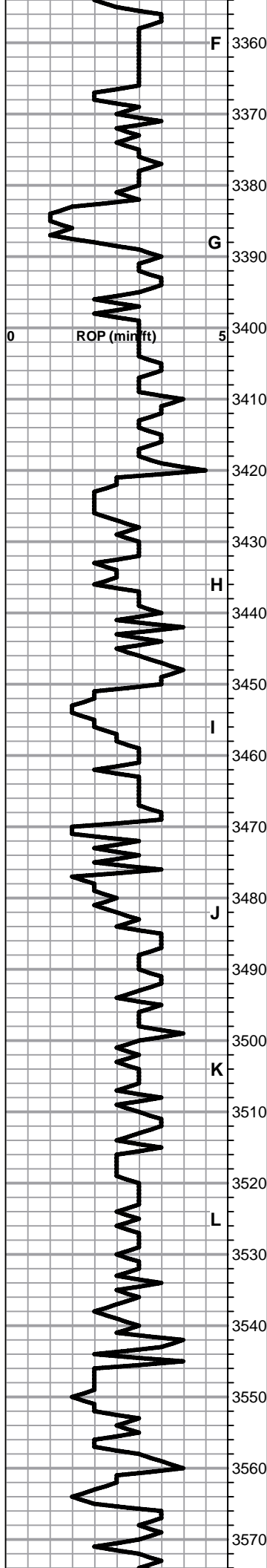
Lime, tan-lt brn, fnxln

Shale, med grayish green, soft-firm
 Lime, offwhite-crm, fn-vfxln

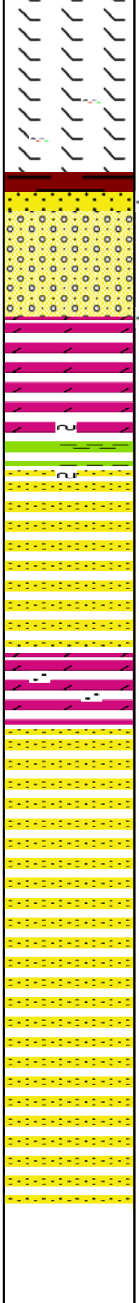
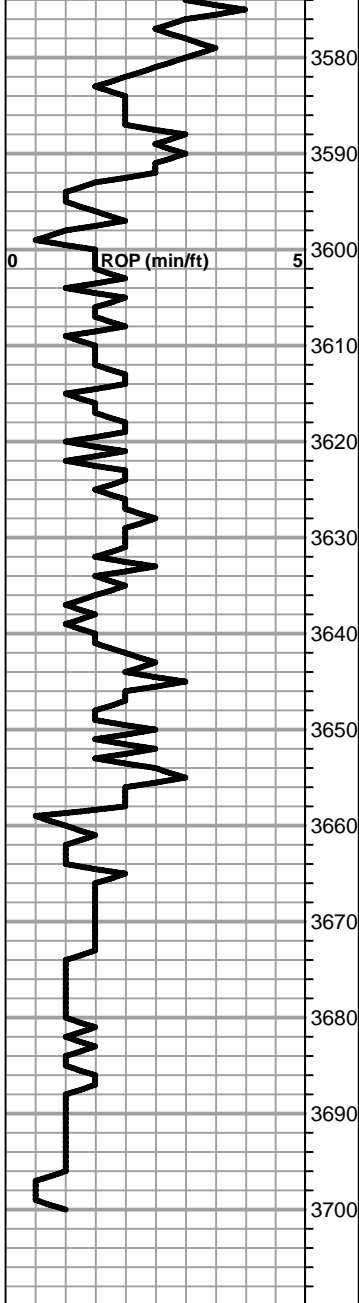
Lime, offwhite-lt brn, vfxln

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

DST # 1 3272' TO 3327' SEE
 HEADER FOR TEST SUMMARY



- 3360 Lime, tan, fnxln, scattered fossil casts with staining, NFO, No Odor, appears poorly developed
- 3370 Lime, crm, fn-vfxln, slight bedded chalk, NS
- 3380 Lime, crm-lt brn, fn-vfxln, slight bedded chalk
- 3390 Lime, crm-lt brn, fn-vfxln grading into oomoldic zone, barren, NS
- 3400 Lime, white-crm-lt brn, fn-vfxln to micro xln in part
- 3410 Lime, lt brn, fn-micro xln, thin zone of dark gray lime, hard on crush
- 3420 Lime, tan-lt med brn, fn-vfxln, slightly fossiliferous
- 3430 Lime, med-dark brn, fn-vfxln
- 3440 Shale, reddish brn-med gray, soft to firm blocky
- 3450 Lime, lt-med brn, fine inter xln porosity with ppt vugs, scattered spotty stain, NFO, No Odor, appears poorly developed.
- 3460 Lime, lt brn, fn-vfxln
- 3470 Lime, crm-lt brn, fn-vfxln
- 3480 Lime, crm-tan, fnxln-granular, few spots of lt staining, NFO, No Odor
- 3490 Lime, crm-lt brn, fn-vfxln
- 3500 Lime, crm, fn-micro xln, slight bedded chalk, NS
- 3510 Lime, crm-tan-lt brn, fn-vfxln, slight chalk
- 3520 Shale, dark gray-black carbonaceous, soft blocky
- 3530 Lime, crm-lt brn, fn-vfxln, NS
- 3540 Lime, crm-lt brn, fn-micro xln, slight bedded chalk
- 3550 Lime, lt brn, micro xln
- 3560 Lime, crm, micro xln
- BKC SPL 3534-1529**
- 3570 Shale, reddish brn, soft blocky
- Lime, offwhite-crm, fnxln
- Shale, soft with lt red wash
- Lime, crm-lt gray, fn-vfxln, some clastic lime in part
- Shale, dark brn, soft blocky
- MARMATON 3565-1560**
- Lime, crm, fn-vfxln, slightly dolomitic, orange chert fragments



Lime, crm-lt brn, fnxln-hard granular, fine interxln, dolomitic NS

Lime, tan, fn-vfxln-granular in part, dolomitic, tan chert, fresh, sharp

Shale, dark brn, firm blocky
Few quartz sandstone clusters, very lt odor, NFO

ARBUCKLE ELog 3607-1602

Dolomite, tan, granular, sucrosic, lt odor and very lt saturated staining, NFO

Dolomite, tan-lt brn, granular, glauconite specks in part

Shale, lt green, soft blocky, waxy
Dolomite, tan, granular, quartz grain inclusions with firm sandstone clusters amd fused quartz.

Dolomite and sandstone as above

Dolomite, crm-lt brn, granular, sandy quartz inclusions

REAGAN SAND ELog 3650-1645

Sandstone, quartz, very fine gained, lt green-lt pink to white staining grading into friable, quartz sandstone

Sandstone, fine-coarse grained, friable, no clusters

Sandstone, as above

Sandstone, as above

RTD 3700-1695 LTD 3699-1694

SLOPE 1 DEGREE @3700'