

OPERATOR

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

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: MADDEN SOUTH # 1
 Location: SW NE SW SE Sec.16-11s-18w
 API: 15-051-26,688-00-00
 Pool:
 State: KANSAS

Field: BEMIS-SHUTTS
 Country: USA



Scale 1:240 Imperial

Well Name: MADDEN SOUTH # 1
 Surface Location: SW NE SW SE Sec.16-11s-18w
 Bottom Location:
 API: 15-051-26,688-00-00
 License Number: 4787
 Spud Date: 5/23/2014 Time: 8:28 PM
 Region: ELLIS COUNTY Time: 11:05 PM
 Drilling Completed: 5/31/2014
 Surface Coordinates: 825' FSL & 1680' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 1893.00ft
 K.B. Elevation: 1903.00ft
 Logged Interval: 2700.00ft To: 3550.00ft
 Total Depth: 3550.00ft
 Formation: LANSING-KANSAS CITY
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude:
 Latitude:
 N/S Co-ord: 825' FSL
 E/W Co-ord: 1680' 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 #: 1
 Rig Type: MUD ROTARY
 Spud Date: 5/23/2014 Time: 8:28 PM
 TD Date: 5/31/2014 Time: 11:05 PM

ELEVATIONS

K.B. Elevation: 1903.00ft
 K.B. to Ground: 10.00ft

Ground Elevation: 1893.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE STRUCTURE AND POSITIVE RESULTS OF DSTS.

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: THREE (3) CONVENTIONAL TESTS

Image Header 01

MADDEN SOUTH # 1
SW NE SW SE
SEC.16-11S-18W
1893'GL 1903'KB

MADDEN # 1
SE SW SE
SEC.16-11-18W
KB 1908'

WASINGER B-6
NW NW NE
SEC.21-11-18W
KB 1917'


| <u>FORMATION</u> | <u>LOG TOPS</u> | <u>LOG TOPS</u> | <u>LOG TOPS</u> |
|------------------|-----------------|-----------------|-----------------|
| Anhydrite | 1184 +719 | + 714 | +717 |
| B-Anhydrite | 1217 +686 | + 685 | +681 |
| Topeka | 2870- 967 | - 969 | - 974 |
| Heebner Sh. | 3094-1191 | -1193 | -1199 |
| Toronto | 3112-1209 | | -1220 |
| LKC | 3134-1231 | -1234 | -1242 |
| BKC | 3368-1465 | -1462 | -1468 |
| Simpson Sh. | 3421-1518 | | -1526 |
| Simpson Dol. | 3428-1525 | -1522 | -1532 |
| Arbuckle | 3445-1542 | -1543 | -1550 |
| RTD | 3550-1647 | -1551 | -1583 |

SUMMARY OF DAILY ACTIVITY

5-23-14 RU, Spud 2:30 PM
 5-24-14 1192', set 8 5/8" surface casing to 1192' w/ 375 sxs SMD, slope 1 degree, plug down 1:00 PM
 5-25-14 1192', down for holiday
 5-26-14 1192', down for holiday
 5-27-14 1192', drill plug
 5-28-14 2310', drilling, displaced 2789'-2816'
 5-29-14 3010', CFS 3120', short trip, CFS 3210' DST # 1 3090'-3210'
 5-30-14 3210' finish DST # 1, TIWB, CFS 3320' DST # 2 3284'-3320'

5-30-14 3210', finish DST # 1, TIWB, CFS 3520 DST # 2 3284'-3520'
 5-31-14 3410', drilling, CFS 3450', DST # 3 3427'-3450', TIWB, RTD
 3550'@11:05 PM, slope 1 3/4 degree
 6-01-14 3650', TOWB, logs, TIWB, LDDP, run 5 1/2" casing & cement

Image Header 02

| | | |
|---|---|--|
|  | DRILL STEM TEST REPORT | |
| | T.D.I. INC. 1310 BISON RD. HAYS KS. 67601 ATTN: HERB DEINES | SEC. 16 - 11 s. - 18 w./ELLIS Madden South # 1 Job Ticket: 55282 DST#: 1 Test Start: 2014.05.29 @ 22:25:00 |

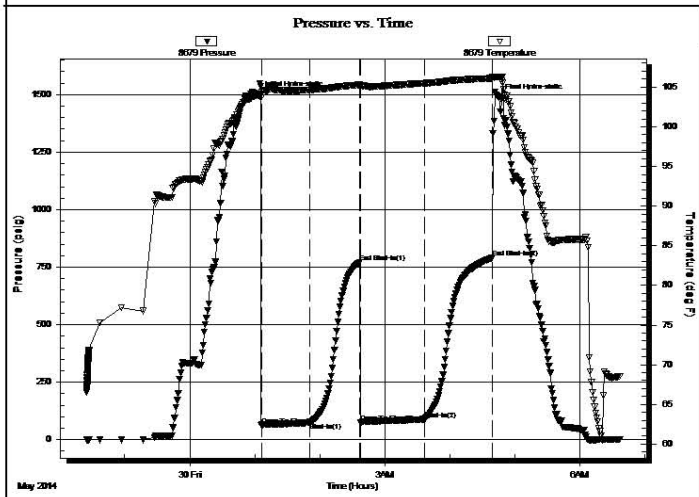
GENERAL INFORMATION:

| | |
|--|---|
| Formation: TORONTO - "D" | Test Type: Conventional Bottom Hole (Initial) |
| Deviated: No Whipstock: ft (KB) | Tester: Bob Hamel |
| Time Tool Opened: 01:06:00 | Unit No: 67 |
| Time Test Ended: 06:36:30 | Reference Elevations: 1903.00 ft (KB) |
| Interval: 3090.00 ft (KB) To 3210.00 ft (KB) (TVD) | 1893.00 ft (CF) |
| Total Depth: 3210.00 ft (KB) (TVD) | KB to GR/CF: 10.00 ft |
| Hole Diameter: 7.88 inches Hole Condition: Fair | |

Serial #: 8679 Inside

| | |
|--|-------------------------------------|
| Press@RunDepth: 88.26 psig @ 3188.00 ft (KB) | Capacity: 8000.00 psig |
| Start Date: 2014.05.29 End Date: 2014.05.30 | Last Calib.: 2014.05.30 |
| Start Time: 22:25:01 End Time: 06:36:30 | Time On Btm: 2014.05.30 @ 01:03:30 |
| | Time Off Btm: 2014.05.30 @ 04:45:00 |

TEST COMMENT: I.F. - 45 - 1/2" INT. BLOW BUILT TO (7 1/4" IN 45 MIN.)
 I.S.I. - 45 - NO B.B.
 F.F. - 60 - 3/4" INT. BLOW BUILT TO (B.O.B IN 45 MIN.)
 F.S.I. - 60 - NO B.B.


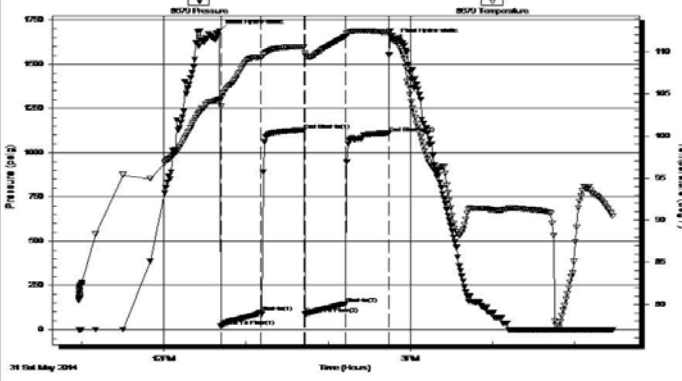


| PRESSURE SUMMARY | | | |
|------------------|-----------------|--------------|----------------------|
| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
| 0 | 1500.60 | 103.92 | Initial Hydro-static |
| 3 | 62.92 | 103.71 | Open To Flow (1) |
| 48 | 73.35 | 104.64 | Shut-In(1) |
| 93 | 770.76 | 105.27 | End Shut-In(1) |
| 94 | 73.03 | 105.13 | Open To Flow (2) |
| 153 | 88.26 | 105.48 | Shut-In(2) |
| 216 | 790.39 | 106.10 | End Shut-In(2) |
| 222 | 1488.56 | 106.28 | Final Hydro-static |

| Recovery | | |
|-------------|-------------|--------------|
| Length (ft) | Description | Volume (bbl) |
| | | |

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

Image Header 04

|  | <h2 style="margin: 0;">DRILL STEM TEST REPORT</h2> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|----------------------|--------------|-----------------|--------------------------|------------|--------|----------------|--------|----------------------|------------|-------|--------|------------------|----|-------|--------|------------|---|---------|----------------|-----------------|------------------|-------|--------|------------------|----|--------|--------|------------|-----|---------|--------|----------------|-----|---------|--------|--------------------|
| <p>T.D.I. INC. 1310 BISON RD. HAYS KS. 67601 ATTN: HERB DENES</p> | <p>SEC. 16 - 11 s. - 18 w./ELLIS</p> <p>Madden South # 1</p> <p>Job Ticket: 55284 DST#: 3</p> <p>Test Start: 2014.05.31 @ 10:58:00</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>GENERAL INFORMATION:</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Formation: ARBUCKLE</p> <p>Deviated: No Whipstock ft (KB)</p> <p>Time Tool Opened: 12:41:30</p> <p>Time Test Ended: 17:28:00</p> | | <p>Test Type: Conventional Bottom Hole (Reset)</p> <p>Tester: Bob Hamel</p> <p>Unit No: 67</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Interval: 3427.00 ft (KB) To 3450.00 ft (KB) (TVD)</p> <p>Total Depth: 3450.00 ft (KB) (TVD)</p> <p>Hole Diameter: 7.88 inches Hole Condition: Fair</p> | | <p>Reference Elevations: 1903.00 ft (KB)</p> <p>1893.00 ft (CF)</p> <p>KB to GR/CF: 10.00 ft</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Serial #: 8679 Inside</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Press@RunDepth: 147.79 psig @ 3428.00 ft (KB)</p> <p>Start Date: 2014.05.31 End Date: 2014.05.31</p> <p>Start Time: 10:58:01 End Time: 17:28:00</p> | | <p>Capacity: 8000.00 psig</p> <p>Last Calib.: 2014.05.31</p> <p>Time On Btm: 2014.05.31 @ 12:40:30</p> <p>Time Off Btm: 2014.05.31 @ 14:48:30</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>TEST COMMENT: I.F. - 30 - 1/2" INT. BLOW BUILT TO (B.O.B. IN 12 MIN.) I.S.I - 30 - NO B.B. F.F. - 30 - W.S.B. STARTED @ 1 MIN. BUILT TO (B.O.B. IN 16 MIN.) F.S.I. - 30 - NO B.B.</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>1688.87</td><td>104.33</td><td>Initial Hydro-static</td></tr> <tr><td>1</td><td>19.15</td><td>103.52</td><td>Open To Flow (1)</td></tr> <tr><td>30</td><td>98.94</td><td>109.38</td><td>Shut-In(1)</td></tr> <tr><td>62</td><td>1127.67</td><td>110.57</td><td>End Shut-In(1)</td></tr> <tr><td>63</td><td>90.36</td><td>109.78</td><td>Open To Flow (2)</td></tr> <tr><td>92</td><td>147.79</td><td>111.81</td><td>Shut-In(2)</td></tr> <tr><td>124</td><td>1110.29</td><td>112.25</td><td>End Shut-In(2)</td></tr> <tr><td>128</td><td>1640.72</td><td>111.25</td><td>Final Hydro-static</td></tr> </tbody> </table> | | Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation | 0 | 1688.87 | 104.33 | Initial Hydro-static | 1 | 19.15 | 103.52 | Open To Flow (1) | 30 | 98.94 | 109.38 | Shut-In(1) | 62 | 1127.67 | 110.57 | End Shut-In(1) | 63 | 90.36 | 109.78 | Open To Flow (2) | 92 | 147.79 | 111.81 | Shut-In(2) | 124 | 1110.29 | 112.25 | End Shut-In(2) | 128 | 1640.72 | 111.25 | Final Hydro-static |
| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1688.87 | 104.33 | Initial Hydro-static | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 19.15 | 103.52 | Open To Flow (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 98.94 | 109.38 | Shut-In(1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 62 | 1127.67 | 110.57 | End Shut-In(1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63 | 90.36 | 109.78 | Open To Flow (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 | 147.79 | 111.81 | Shut-In(2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 124 | 1110.29 | 112.25 | End Shut-In(2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 128 | 1640.72 | 111.25 | Final Hydro-static | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Recovery</p> | | <p>Gas Rates</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Length (ft) | Description | Volume (bbl) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63.00 | S.M.C.O.W, 5%M 40%O 55%W | 0.88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 335.00 | CLEAN OIL 100% | 4.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.00 | 63' G.I.P. | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p><small>* Recovery from multiple tests</small></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |






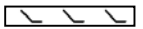







Trilobite Testing, Inc

Ref. No: 55284

Printed: 2014.05.31 @ 20:19:19

Image Header 05

ROCK TYPES

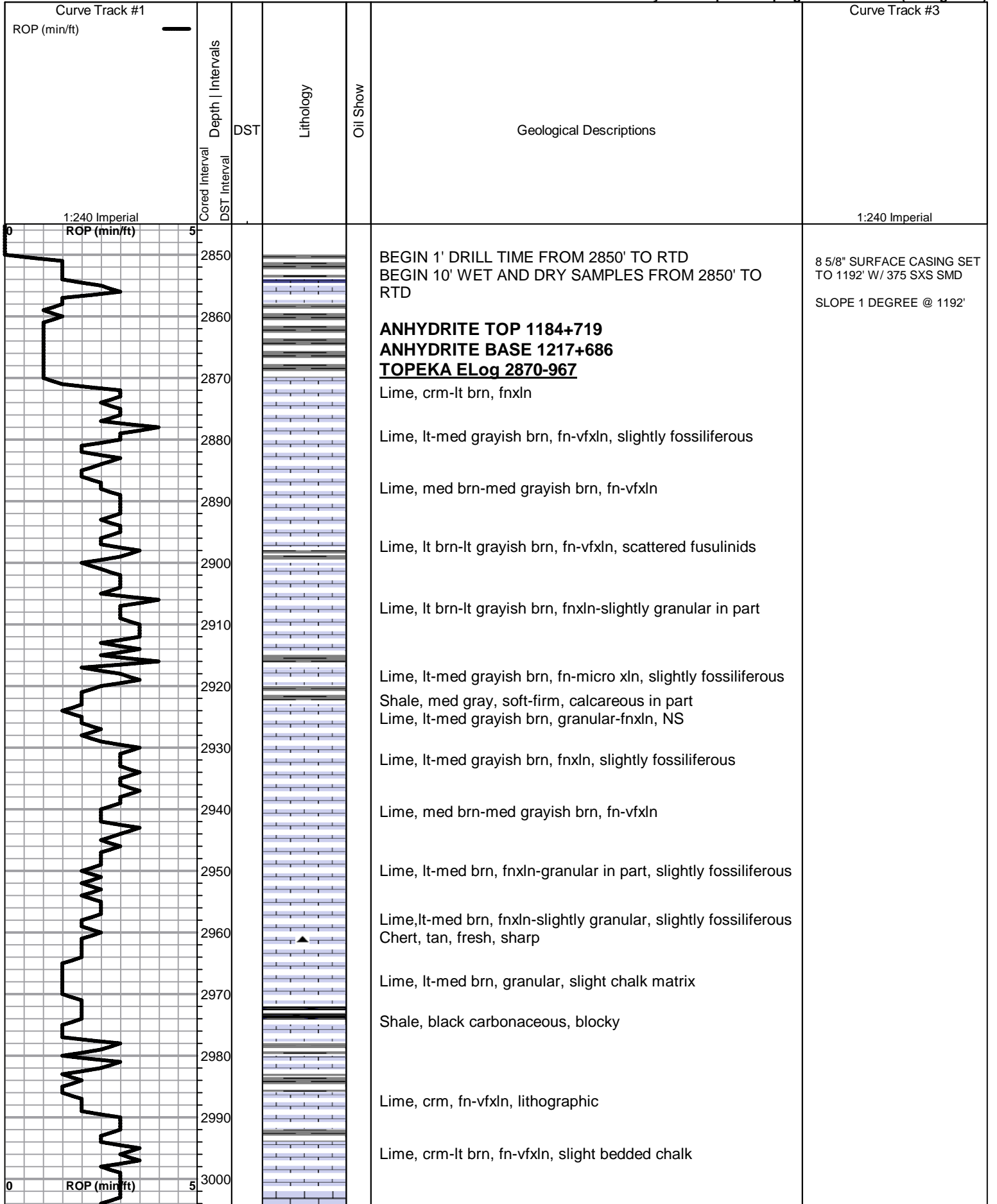
| | | | |
|---|--|---|---|
|  Clystgy |  Dolsec |  Lmst fw> |  shale, gry |
|  Clystool |  Dol Lime |  Lscongl |  Carbon Sh |
|  Dolprim |  Lmst fw< |  shale, grn |  Ss |
| | |  shale, red | |

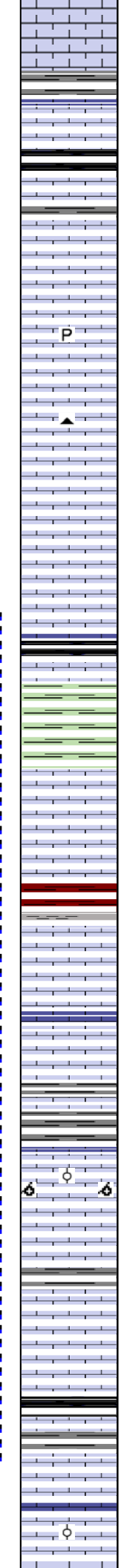
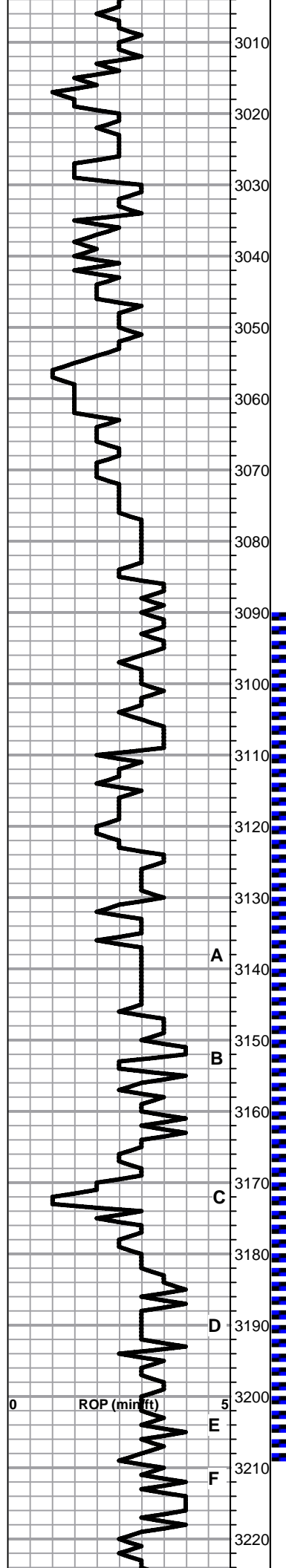
ACCESSORIES

MINERAL FOSSIL

- MINERAL**
 ▲ Chert, dark
 P Pyrite
 • Sandy
 △ Chert White

- FUSSIL**
 ○ Oolite
 ⊕ Oomoldic





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

Shale, lt gray, soft blocky, calcareous and fossiliferous in part

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

Shale, black carbonaceous, blocky

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

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

Lime, crm-tan, fnxln-granular, fnxln pyrite inclusions, slight bedded chalk

Lime, lt-med brn, fnxln-granular, increasing bedded chalk
Chert, lt gray, fresh, sharp

Lime, lt-med brn, fnxln

Lime, lt-med brn, fnxln, slightly fossiliferous

Lime, lt-med brn, fnxln-granular, slight chalk in chalk matrix

HEEBNER SHALE ELog 3094-1191
Shale, black carbonaceous, fissile, blocky
Lime, med brn, fn-vfxln

Shale, lime green, soft forming soft mud

TORONTO ELog 3112-1209
Lime, crm-lt brn, fnxln-granular, slight bedded chalk, NS

Lime, crm-lt brn, fn-vfxln, few chips with lt spotty stain, NFO, No Odor, appears poorly developed

Shale, reddish brn, soft blocky

LKC ELog 3134-1231
Lime, crm, fnxln, fn inter xln with slight vugs, gilsonitic, NFO, No Odor, appears poorly developed

Lime, lt-med brn, fn-vfxln

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

Shale, lt-med gray, soft blocky

Lime, crm-tan, fnxln-oolitic/oomoldic with fossil fragments, scattered lt stain, lt odor, NFO

Lime, tan-lt brn, fnxln

Lime, crm, fn-vfxln, slight bedded chalk, few chips oolitic with interoolitic porosity, lt spotty stain, NFO, No Odor

Lime, crm, fn-vfxln

Shale, black carbonaceous, blocky
Lime, crm-tan, fn-vfxln

Lime, crm-tan, fossiliferous, spotty staining, NFO, No Odor

Lime, tan, fnxln, thin oolitic zone w fossil fragments, scattered lt staining, NFO, No Odor

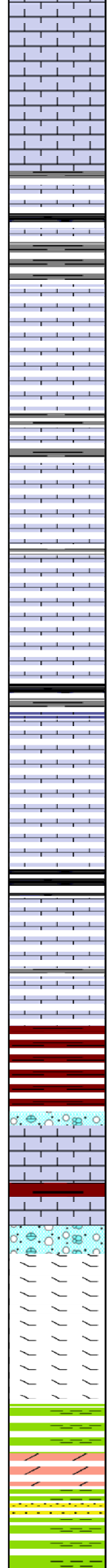
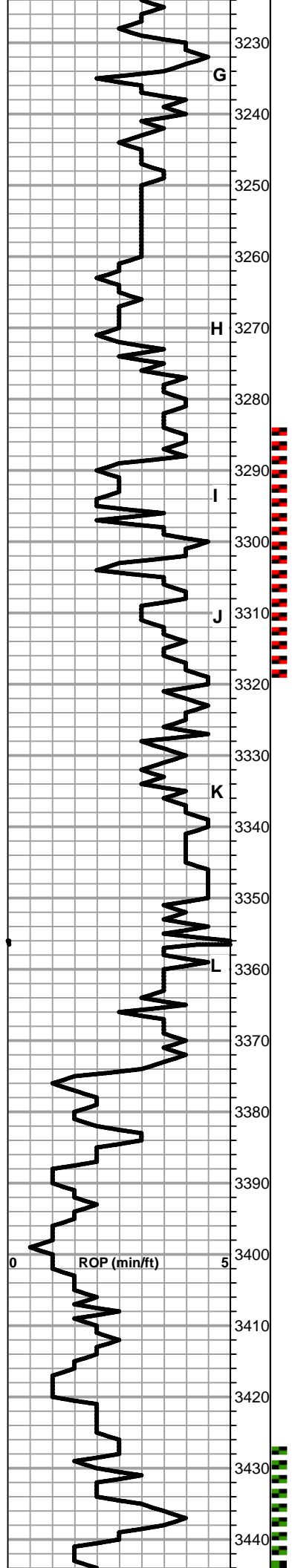
CFS 3120', SHORT TRIP

DST # 1 3090' TO 3210'
SEE HEADER FOR TEST SUMMARY

CFS 3210'

ROP (min/ft)

A
B
C
D
E
F



Lime, crm-tan, fnxln, bedded chalk

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

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

Shale, black carbonaceous, blocky

Shale, lt gray forming soft mud

Lime, crm-tan, fn-vfxln, slight bedded chalk, no visible porosity

Lime, tan-lt gray, fn-vfxln

Lime, crm-tan, fnxln, fine inter xln porosity with scattered vugs, spotty staining, very lt odor, NFO

Lime, tan-lt gray, fnxln with oolitic zone with fine granular fill with scattered to saturated staining, lt odor, NFO

Lime, tan-lt brn, fnxln, lt chalky wash

Shale, lt-med gray-black carbonaceous, soft blocky

Lime, tan-lt brn, fnxln, thin oolitic zone with inter oolitic porosity, lt scattered staining, very faint odor, NFO

Lime, tan-lt brn, fn-vfxln

Shale, gray-black carbonaceous, soft blocky

Lime, tan-lt brn, fn-vfxln

Lime, tan-lt brn, fn-vfxln

BKC ELog 3368-1465

Shale, reddish brn, soft blocky with chert nodules in part

Lime, brn-lt gray, fnxln, clastic lime mix in part, specks of glauconite

Shale, reddish brn, soft-firm with vari color cherts

Clastic mix of lime, chert and dolomite

Lime, crm-tan, fn-vfxln
Chert, orange, fresh, sharp

SIMPSON SHALE ELog 3421-1518
Shale, blue green, soft sticky -firm

SIMPSON DOLOMITE ELog 3428-1525
Dolomite, lt brn, fnxln, NS
Few sand clusters, quartz, well sorted, SFO on crush

Shale, blue green, firm, fnxln pyrite inclusions

ARBUCKLE ELog 3445-1542

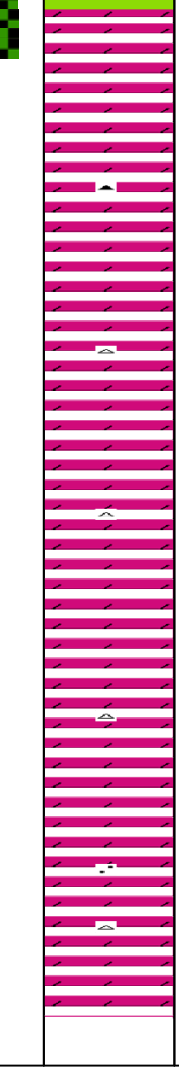
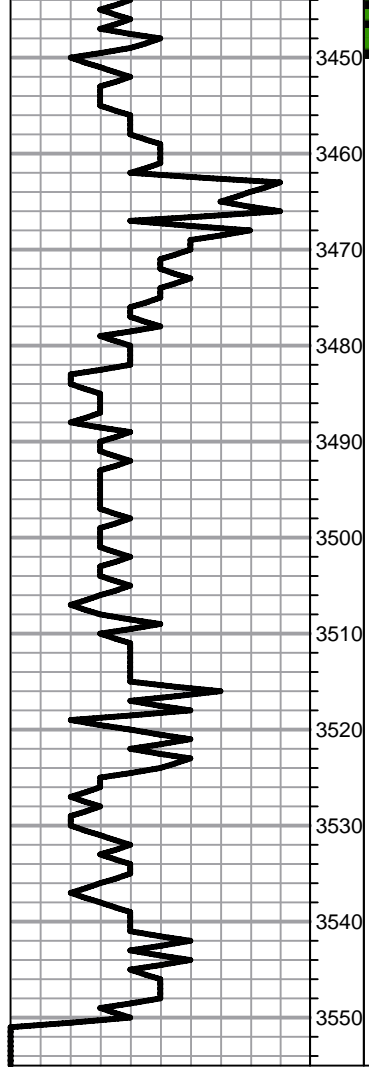
DST # 2 3284' TO 3320'
SEE HEADER FOR TEST SUMMARY

CFS 3320'

DST # 3 3427' TO 3450'
SEE HEADER FOR TEST SUMMARY

ARBUCKLE ELog 3445-1542

CFS 3450'



- Dolomite, tan-lt brn, fnxln-granular, SFO, strong odor, scattered to saturated staining
- Dolomite, tan-lt brn, fnxln-granular, interxln porosity with scattered vuggy development, f-g odor, saturated staining, SFO
- Dolomite, lt-med brn, fnxln, lt odor, scattered stain, oolitic chert, fresh, sharp
- Dolomite, tan-lt brn, fnxln-granular
Chert, white, fresh sharp
- Dolomite, tan-lt brn, fnxln with sucrosic in part
- Dolomite, tan-lt brn-scattered salmon, fn-cxln, inter xln porosity
- Dolomite, tan-lt brn, fnxln-granular
- Dolomite, crm-tan-salmon, fnxln
- Dolomite, tan-crm, fnxln-granular, scattered quartz grain inclusions

RTD 3550-1647 LTD 3548-1645

SET 5 1/2" 14# CASING TO 3548' W 175 SXS EA2, 20 SXS IN MOUSEHOLE, 30 SXS IN RATHOLE