

OPERATOR

Company: HERTEL OIL COMPANY, LLC
 Address: 704 E 12TH STREET
 HAYS, KANSAS 67601-3440

Contact Geologist: DAVE HERTEL
 Contact Phone Nbr: 785-628-2445
 Well Name: WERTH-PFANNENSTIEL UNIT # 1
 Location: NE NE SW SE Sec 14-15s-19w API: 15-051-26,436-00-00
 Pool: WILDCAT Field: UNNAMED
 State: KANSAS Country: USA

Scale 1:240 Imperial

Well Name: WERTH-PFANNENSTIEL UNIT # 1
 Surface Location: NE NE SW SE Sec 14-15s-19w
 Bottom Location:
 API: 15-051-26,436-00-00
 License Number: 33625
 Spud Date: 12/8/2012 Time: 2:00 PM
 Region: ELLIS COUNTY
 Drilling Completed: 12/14/2012 Time: 1:46 PM
 Surface Coordinates: 1150' FSL & 1505' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 1995.00ft
 K.B. Elevation: 2003.00ft
 Logged Interval: 2900.00ft 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: Latitude:
 N/S Co-ord: 1150' FSL
 E/W Co-ord: 1505' FEL

LOGGED BY

Company: SOLUTIONS CONSULTING
 Address: 108 W 35TH
 HAYS, KS 67601

Phone Nbr: (785) 639-1337
 Logged By: Geologist Name: HERB DEINES

CONTRACTOR

Contractor: DISCOVERY DRILLING INC.
 Rig #: 4
 Rig Type: MUD ROTARY
 Spud Date: 12/8/2012 Time: 2:00 PM
 TD Date: 12/14/2012 Time: 1:46 PM
 Rig Release: 12/15/2012 Time: 6:00 AM

ELEVATIONS

K.B. Elevation: 2003.00ft Ground Elevation: 1995.00ft
 K.B. to Ground: 8.00ft

NOTES

RECOMMENDATION TO RUN 5 1/2 " PRODUCTION CASING TO FURTHER TEST AND DEVELOP

OPEN HOLE LOGGING BY NABORS COMPLETION AND PRODUCTION SERVICES CO: DUAL INDUCTION LOG, COMPENSATED DENSITY/NEUTRON LOG, MICRO LOG

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

FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY


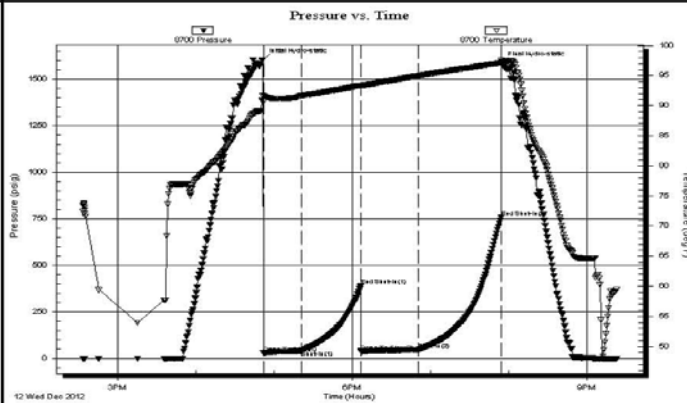
**WERTH-PFANNENSTIEL UNIT # 1
1150' FSL & 1505' FEL, SE/4
Sec.14-15s-19w
1995' GL 2003' KB**

<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1189+ 814	1194+ 809
B-Anhydrite	1228+ 775	1229+ 774
Topeka	2990- 987	2991- 988
Heebner Shale	3254-1251	3253-1250
Toronto	3275-1272	3272-1269
LKC	3298-1295	3297-1294
BKC	3545-1542	3545-1542
Marmaton		3596-1593
Conglomerate Sand		3610-1607
Arbuckle		3628-1625
RTD	3700-1697	
LTD		3701-1698

CHRONOLOGY OF DAILY ACTIVITY

- 12-08-12 RU, spud 3:00 PM
- 12-09-12 950', drilling surface hole, set 8 5/8" to 1189' w/ 450 sxs Common, 2%gel,3%CC, plug down 6:15 PM, WOC 12 hrs, slope ¾ degree
- 12-10-12 1210', drill plug
- 12-11-12 2490', drilling, displace 2752'-2809'
- 12-12-12 3285', drilling, DST # 1 3286' to 3340' "A-C" LKC, TIWB, CCH
- 12-13-12 3490', CFS, DST # 2 3420' to 3490' "H-J" LKC, TIWB, CCH
- 12-14-12 3628', DST # 3 3597'-3628' Conglomerate Sand, TIWB, CCH, RTD 3700' @1:46PM, CCH, TOWB, logs, TIWB, CCH, lay down drill pipe
- 12-15-12 3700', run production casing, cement bottom stage, RD

DST # 1 "A-C" LKC TEST SUMMARY

	DRILL STEM TEST REPORT																																						
Hertel Oil Co LLC 704 E. 12TH St. Hays KS. 67601 ATTN: Dave Hertel	14-15s-19w Ellis KS Werth-Pfannenstiel 1 Job Ticket: 51564 DST#: 1 Test Start: 2012.12.12 @ 14:33:00																																						
GENERAL INFORMATION:																																							
Formation: LKC "A-C" Deviated: No Whipstock: ft (KB) Time Tool Opened: 16:51:30 Time Test Ended: 21:23:00		Test Type: Conventional Bottom Hole (Initial) Tester: Cody Bloedorn Unit No: 42																																					
Interval: 3286.00 ft (KB) To 3340.00 ft (KB) (TVD) Total Depth: 3340.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair		Reference Elevations: 2000.00 ft (KB) 1994.00 ft (CF) KB to GR/CF: 6.00 ft																																					
Serial #: 8700 Outside Press@RunDepth: 46.59 psig @ 3325.00 ft (KB) Start Date: 2012.12.12 End Date: 2012.12.12 Start Time: 14:33:05 End Time: 21:22:59		Capacity: 8000.00 psig Last Calib.: 2012.12.12 Time On Btm: 2012.12.12 @ 16:51:15 Time Off Btm: 2012.12.12 @ 19:54:15																																					
TEST COMMENT: 30 - IF- 5 3/4" blow 45 - IS- Surface blow back 45 - FF- B.O.B. in 5 Minutes 60 - FSI- No blow back																																							
Pressure vs. Time		PRESSURE SUMMARY																																					
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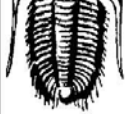
Trilobite Testing, Inc

Ref. No: 51564

Printed: 2012.12.13 @ 08:12:56

DST # 2 "H - J" LKC TEST SUMMARY

	DRILL STEM TEST REPORT		
Hertel Oil Co LLC	14-15s-19w Ellis KS		



TESTING, INC.

704 E. 12TH St.
Hays KS, 67601

ATTN: Dave Hertel

Werth-Pfannenstiel 1

Job Ticket: 51565

DST#: 2

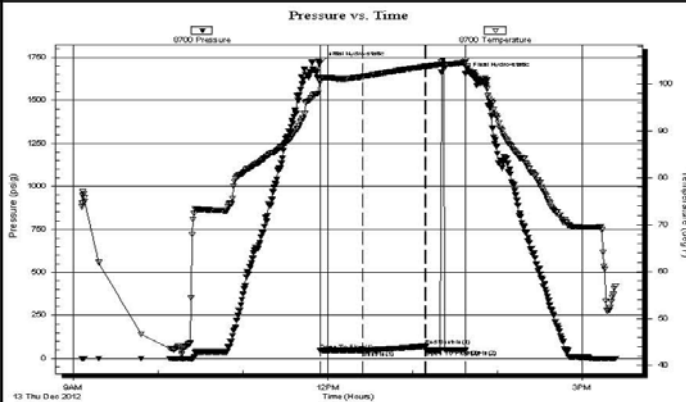
Test Start: 2012.12.13 @ 09:06:00

GENERAL INFORMATION:

Formation: **LKC "H,I,J"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 11:54:30
 Tester: Cody Bloedorn
 Time Test Ended: 15:23:45
 Unit No: 42
 Interval: **3420.00 ft (KB) To 3490.00 ft (KB) (TVD)**
 Total Depth: 3490.00 ft (KB) (TVD)
 Reference Elevations: 2000.00 ft (KB)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 KB to GR/CF: 6.00 ft
 1994.00 ft (CF)

Serial #: **8700** Outside
 Press@RunDepth: 46.79 psig @ 3487.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2012.12.13 End Date: 2012.12.13
 Start Time: 09:06:05 End Time: 15:23:44
 Last Calib.: 2012.12.13
 Time On Btm: 2012.12.13 @ 11:54:30
 Time Off Btm: 2012.12.13 @ 13:37:30

TEST COMMENT: 30 - IF- 1/4" blow , dying back
 45 - IS- No blow back
 20 - FF- No blow , waited 10 Min., flushed tool, weak surface blow in 10 Min. pulled tool.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1718.06	100.91	Initial Hydro-static
1	44.85	100.62	Open To Flow (1)
30	46.79	101.55	Shut-In(1)
75	70.70	103.74	End Shut-In(1)
75	47.01	103.76	Open To Flow (2)
103	47.04	104.64	Shut-In(2)
103	1656.20	105.20	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud with spots of oil, 100%M	0.05

Gas Rates

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

* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 51565

Printed: 2012.12.13 @ 15:44:17

DST # 3 CONGLOMERATE SAND TEST SUMMARY



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Hertel Oil Co LLC

14-15s-19w Ellis KS

704 E. 12TH St.
Hays KS, 67601

Werth-Pfannenstiel 1

ATTN: Dave Hertel

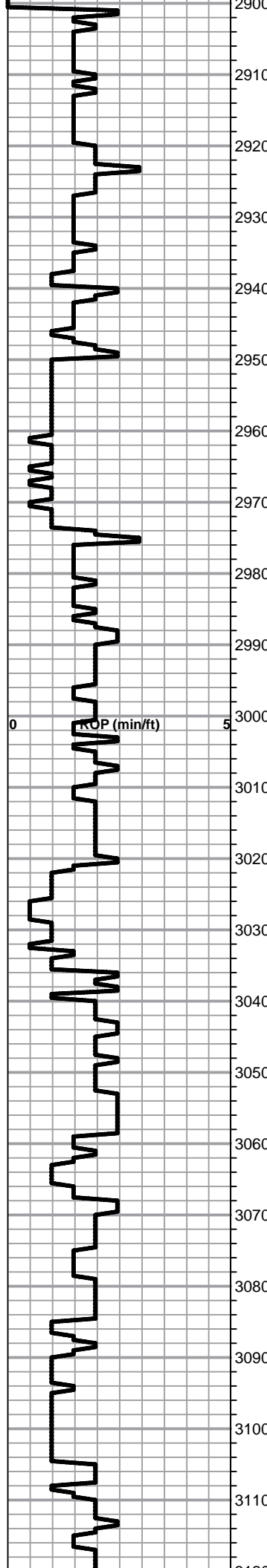
Job Ticket: 51566

DST#: 3

Test Start: 2012.12.14 @ 02:15:00

GENERAL INFORMATION:

Formation: **Cong.**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 04:18:30
 Tester: Cody Bloedorn
 Time Test Ended: 09:10:30
 Unit No: 42
 Interval: **3597.00 ft (KB) To 3628.00 ft (KB) (TVD)**
 Total Depth: 3628.00 ft (KB) (TVD)
 Reference Elevations: 2000.00 ft (KB)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 KB to GR/CF: 6.00 ft
 1994.00 ft (CF)



ROP (min/ft)

BEGIN 10' WET AND DRY SAMPLES FROM 2950' TO RTD

8 5/8" SURFACE CASING SET TO 1189' W/ 450 SXS COMMON, 2%GEL, 3%CC

ANHYDRITE TOP 1194+809
ANHYDRITE BASE 1229+774

Lime, med brn, fnxln, fusulinids

Lime, lt-dark brn, fnxln, fossiliferous
 Shale, med gray, soft

Shale, lt-med gray, soft blocky grading into soft mud clumps

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

TOPEKA 2991-988

Lime, lt-med brn, fnxln-granular, chalky matrix, scattered fossils

Lime, mix of lt-dark brn mix, fnxln, soft on crush, slight chalk

Lime, lt brn-lt grayish brn, fnxln-granular, chalky matrix with bedded chalk in part

○ Lime, lt brn-lt gray, fnxln-granular, sticky chalk clumps in part
 Lime, lt brn, granular with fine interxln porosity, specks of fresh oil on break with very lite odor. likely thin zone near top of porosity

Lime, lt-med brn-grayish brn, fnxln with thin fossil beds near formation boundaries

Lime, lt brn-lt grayish brn, fnxln, soft on crush, granular with lt chalky matrix.

Lime, lt-med brn-grayish brn, granular, slightly fossiliferous, chalky matrix in part

Lime, lt-med brn, fnxln-granular, slightly fossiliferous, chalky matrix in part with sticky clumps of chalk

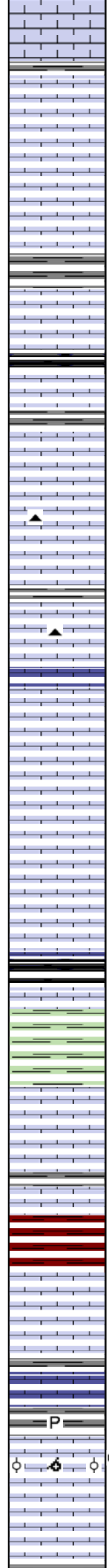
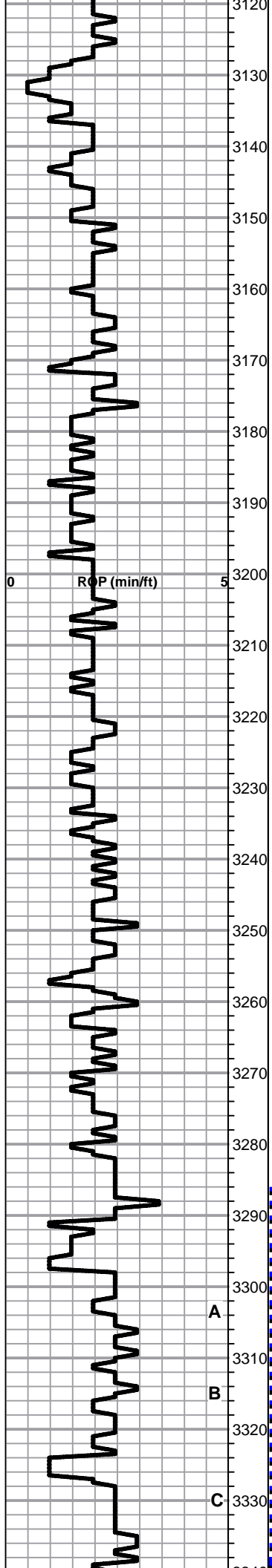
Lime, lt-med brn-grayish brn, granular with chalky matrix with sticky clumps of chalk, slightly fossiliferous

Lime, lt brn-tan, granular with chalky matrix, sticky clumps of chalk, slightly fossiliferous

Lime, lt-med brn, granular, chalky matrix, w sticky clumps of chalk

Shale, black carbonaceous

Lime, lt-med brn-gray, fnxln-granular, chalky matrix



Lime, lt-med brn, fnxln-granular, soft on crush, chalky matrix with soft sticky clumps of chalk

Lime, crm-lt brn, granular, chalky matrix

Lime, lt brn, granular with less chalk, soft on crush

Lime, lt-med brn, fnxln, bedded chalk in part

Lime, crm-lt brn, granular, bedded chalk in part

Shale, black carbonaceous

Lime, crm-lt brn, fnxln, chalk with sticky clumps in part

Shale, lt gray, soft

Lime, crm-lt brn, fnxln, soft on crush, chalky

Lime, lt brn-granish brn, fnxln-granular, slightly fossiliferous, chalk with sticky clumps in part

Lime, lt-med grayish brn-lt gray, fnxln, decreasing chalkiness

Lime, crm-lt brn, fnxln-granular, chalky matrix, soft on crush

Lime, crm-lt brn, mostly granular with bedded chalk

Lime, lt-med brn, fnxln, soft on crush, chalky matrix with bedded chalk

Lime, lt-med brn-gray, fnxln, soft on crush, chalk matrix

HEEBNER SHALE 3253-1250

Shale, black carbonaceous, fissile, blocky

Lime, lt-med brn, fnxln, hard on crush

Shale, lime green-grayish green soft forming soft clumps

TORONTO 3272-1269

Lime, crm, fnxln, bedded chalk, NS

Lime, crm-lt brn-brn, fnxln

Shale, red wash with soft mud

LKC 3297-1294

Lime, crm-lt brn, fnxln, hard on crush, bedded chalk, NS

Lime, lt-med brn with grayish brn near shale boundary, fnxln, slightly fossiliferous

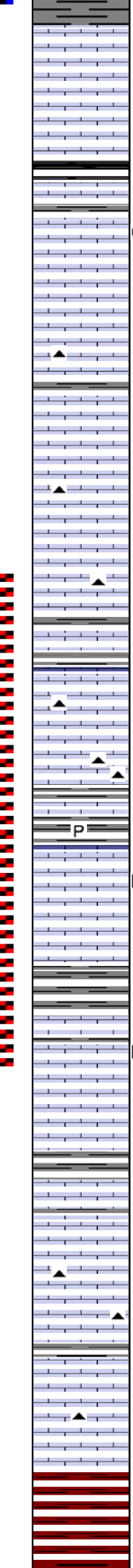
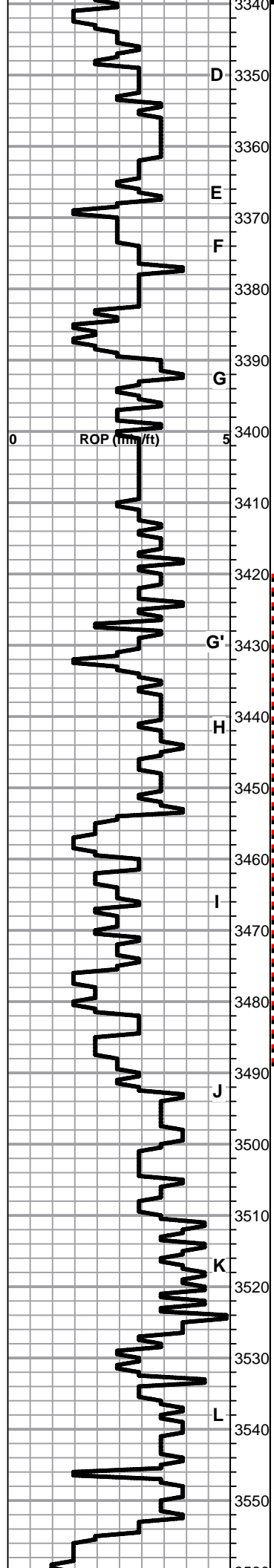
Shale, lt-med gray, soft forming mud clumps

Lime, lt brn, oolitic/oolmoldic with fossil fragments, lt scattered-sat stain, NFO, no odor

Lime, lt brn, fnxln, bedded chalk in part

DST # 1 3286'-3340' "A-C"
SEE HEADER FOR TEST SUMMARY

ZONE SHOULD BE PERFORATED IN LOG INTERVAL FROM 3322-26, TREATED AND TESTED PRIOR TO ABANDONMENT OF WELL. DST # 1 INDICATED ZONE MAY HAVE PERMEABILITY RESTRICTIONS WHICH MAY RESULT IN LIMITED



Lime, crm-lt brn-lt gray, fnxln, NS

D 3350

Lime, lt brn, fnxln

3360

Shale, black carbonaceous
Lime, pale green-lt gray, fnxln

E 3370

F 3380

Lime, tan, oolitic, cemented in part, chalky in part, trace of stain, No Odor, NFO

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

3390

G 3400

Lime, crm-tan-lt brn, chalky granular-vfxln, NS

Lime, crm-tan, fnxln, bedded chalk in part

3410

Lime, tan-lt brn, fn-vfxln, glasslike appearance, slight bed chalk

3420

Lime, tan-lt brn-lt grayish brn, fn-vfxln, glasslike appearance

G' 3430

Shale, med gray, soft, blocky
Lime, med-dark brn, fnxln

Lime, tan, fnxln with thin oolitic zone on top of bench, mostly cemented, NS

H 3440

Lime, tan, fnxln, lot of bedded chalk

3450

Lime, lt brn, crypto xln, glasslike, slight chalk
Shale, med gray, soft

P 3460

D 3470

Lime, tan-lt brn, fnxln, bedded chalk, trace of dead oil, NFO, No Odor, No Live Oil

Lime, tan-lt brn, fn-vfxln, slight chalk

3480

Shale, lt gray, soft

Lime, lt brn, fn-vfxln, slight bedded chalk, traces of gilsonite, NFO, No Odor

D 3490

J 3500

Lime, crm-tan vfxln, bedded chalk in part

Shale, med gray, slivers, slightly calcareous in part

3510

Lime, crm-tan-lt brn, fn-vfxln, bed chalk, NS

K 3520

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

Lime, crm-tan-lt brn, fnxln-vfxln, bedded chalk

3530

Lime, crm-lt brn, fn-vfxln

L 3540

Lime, crm, vfxln, slight bedded chalk

BKC 3545-1542

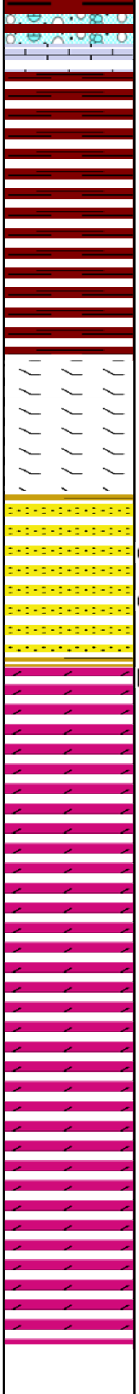
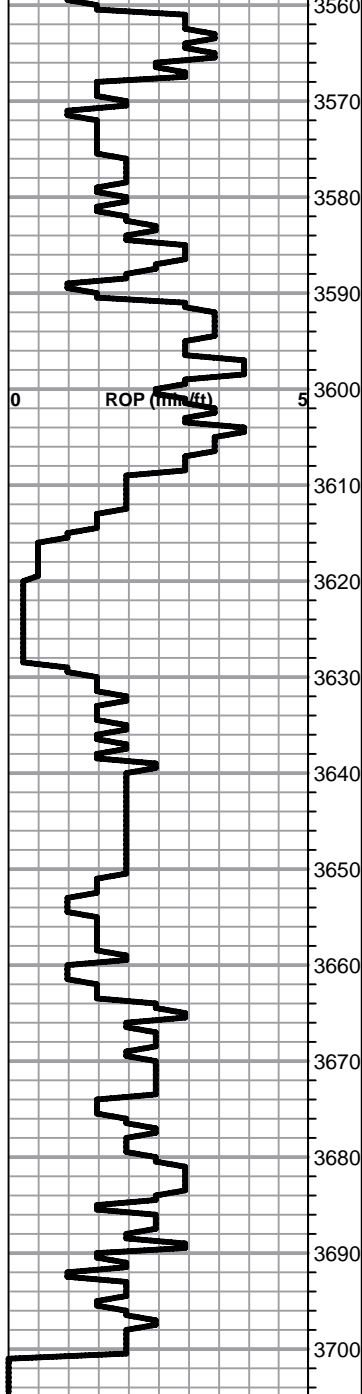
3550

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

ZONE SHOULD BE PERFORATED IN LOG INTERVAL FROM 3370-72, TREATED AND TESTED PRIOR TO ABANDONMENT OF WELL

DST # 2 3420' TO 3490' "H-J" SEE HEADER FOR TEST SUMMARY

H, I and J BENCHES CONDEMNED BY DST # 2



Lime, red shale clastic mix, lt red wash

Shale, lt gray-red, red wash, soft, sticky mud clumps

Shale, reds, brn, forming soft mud

MARMATON 3596-1593

Lime, crm-tan, fnxln, hard on crush, few coarse grained ss clusters near base of unit

CONGLOMERATE SAND 3610-1607

Sandstone, cemented cap grading into coarse grained mix of quartz sand and recrystallized rhombic dolomite. dark saturation, SFO on break, lt odor

ARBUCKLE 3628-1625

Dolomite, ivory-frm, granular, fn-coarse grained, gilsonitic in boundary with base of sand unit. Sand boundary grades into fine grained, sucrosic dolomite with NFO, No Stain, No Odor

Dolomite, crm-tan, fnxln-granular, fnxln, very clean in appearance

Dolomite, crm, fnxln-granular, hard on crush in part, lt chalky wash

Dolomite, crm-tan, fnxln-granular

Dolomite, mostly fnxln, hard on crush, specks of green glauconite, with few quartz grain inclusions

Dolomite, frm, fnxln-granular with increasing med-coarse grained sucrosic material

Dolomite, crm, fnxln-granular, fn-medxln, with scattered sucrosic

RTD 3700-1697 LTD 3701-1698

DST # 3 3597' TO 3628' SEE HEADER FOR TEST SUMMARY

RECOMMEND PERFORATING 1' OF ZONE WITH 2 HOLES IN LOG INTERVAL 3612' TO START. DST # 3 INDICATES ZONE HAS EXCELLENT PRESSURES, VERY GOOD PERMEABILITY AND CARRIES WATER.

PAY ZONE IS CONSIDERED TO CONGLOMERATE SAND BASED ON LOCATION AND LITE ODOR OF RECOVERED OIL

5 1/2" PRODUCTION CASING WAS RAN WITH BOTTOM STAGE CEMENTING ONLY SINCE SURFACE PIPE WAS SET INTO ANHYDRITE