



WESLEY D. HANSEN Consulting Petroleum Geologist

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**KGS
AAPG
Kansas License #418**



**Scale 1:240 (5"=100') Imperial
Measured Depth Log**

Well Name: Murfin Drilling Co., Inc. #1-27 Culwell "A"
Location: 1850' FNL, 2000' FEL of Section 27-1S-37W
License Number: API: 15-023-21368
Spud Date: 6-18-2013
Surface Coordinates: 1850' FNL, 2000' FEL of Section 27-1S-37W
Region: Cheyenne County, KS
Drilling Completed: 6-27-2013

Bottom Hole Vertical hole
Coordinates:
Ground Elevation (ft): 3294' **K.B. Elevation (ft):** 3304'
Logged Interval (ft): 3600' **To:** RTD **Total Depth (ft):** 4840'
Formation: Cherokee at RTD
Type of Drilling Fluid: Chemical - Displaced at 3400'

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Murfin Drilling Co., Inc.
Address: 250 N. Water
Suite 300
Wichita, KS 67202

GEOLOGIST

Name: Wesley D. Hansen
Company: Wesley D. Hansen - Consulting Petroleum Geologist
Address: 212 N. Market, Suite 257
Wichita, KS 67202
Office: 316-263-7313 **Cellular:** 316-772-6188

COMMENTS

Contractor: Murfin Drilling Co., Inc. Rig #14
 Pusher: Greg Unruh

Surface Casing: 8 5/8" set at 223' w/190 sx
 Production Casing: P&A

Mud by: Morgan Mud - Mike Morgan and Dave Lines were the engineers

DST's by: Trilobite - Kevin Mack was the tester

Logs by: Pioneer Wireline (DIL, CN-CD, MEL, BHCS)

Deviation Surveys: 1/2 deg. @ 226'; 3/4 deg. @ 1207'; 1 deg. @ 3618'; 1 1/2 deg. @ 4189'; 1 3/4 deg. @ 4840'

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"		retip	226'	226'	3 1/4
2	7 7/8"	HTC	Q605FX	3618'	3392'	40 3/4
3	7 7/8"	HTC	GX20C	4840'	1448'	59 1/2

FORMATION TOPS AND STRUCTURAL COMPARISON

FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELLS MDCI Johnson "D" 1-25 25-1S-37W 3317' KB
	Depth	Datum	Depth	Datum	
Anhydrite	3239'	+65	3239'	+65	-10
B/Anhydrite	3274'	+30	3273'	+31	-10
Neva	3702'	-398	3702'	-398	+12
Red Eagle	3772'	-468	3770'	-466	+2
Foraker	3825'	-521	3814'	-510	+5
Stotler	3968'	-664	3968'	-664	+3
Topeka	4045'	-741	4041'	-737	+1
Oread	4171'	-867	4174'	-870	-3
Lansing	4252'	-948	4254'	-950	+4
Stark Shale	4467'	-1163	4472'	-1168	+2
BKC	4524'	-1220	4525'	-1221	+4
Pawnee	4638'	-1334	4650'	-1346	-3
Cherokee Shale	4727'	-1423	4731'	-1427	+2
RTD	4840'	-1536			
LTD			4842'	-1538	

DRILL STEM TESTS

DST No. 1 Oread
Interval: 4132'-4189'
Times: 30-60-30-60
Recovery: 90' oil spotted mud
FP: 16-37/42-62 SIP: 1236-1216
HP: 2012-1934 BHT: 129 deg. F

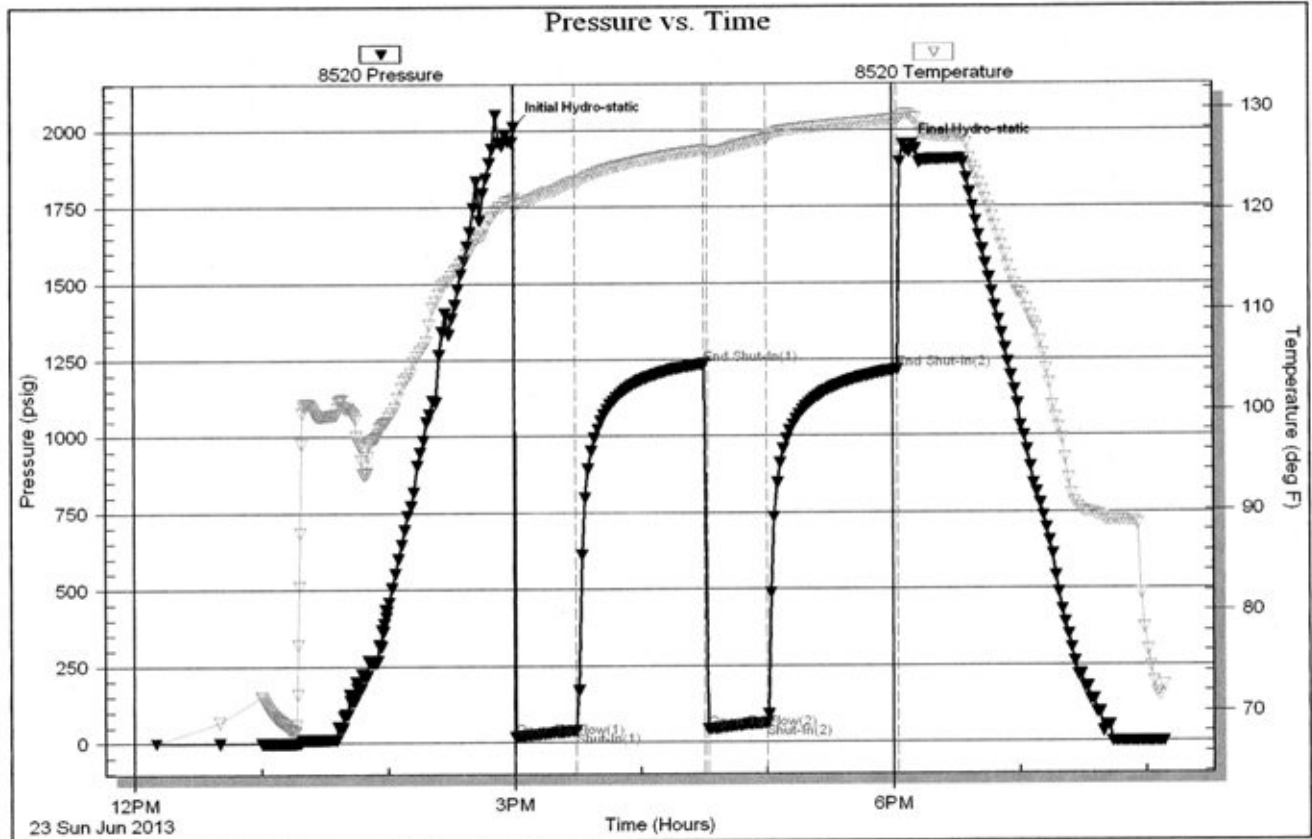
IFP: 1/4" blow bldg. to 2"
ISIP: no return blow
FFP: surface blow bldg. to 1"
FSIP: no return blow

Serial #: 8520

Outside Murfin Drilling, CO.

Culwell 'A' #1-27

DST Test Number: 1



DRILL STEM TESTS

DST No. 2 Lansing
Interval: 4264'-4330'
Times: 30-60-60-90
Recovery: 100' oil spotted mud; 180' oil
spotted MCW (50m, 50w)
FP: 19-72/81-171 SIP: 1284-1281
HP: 2105-2009 BHT: 136 deg. F

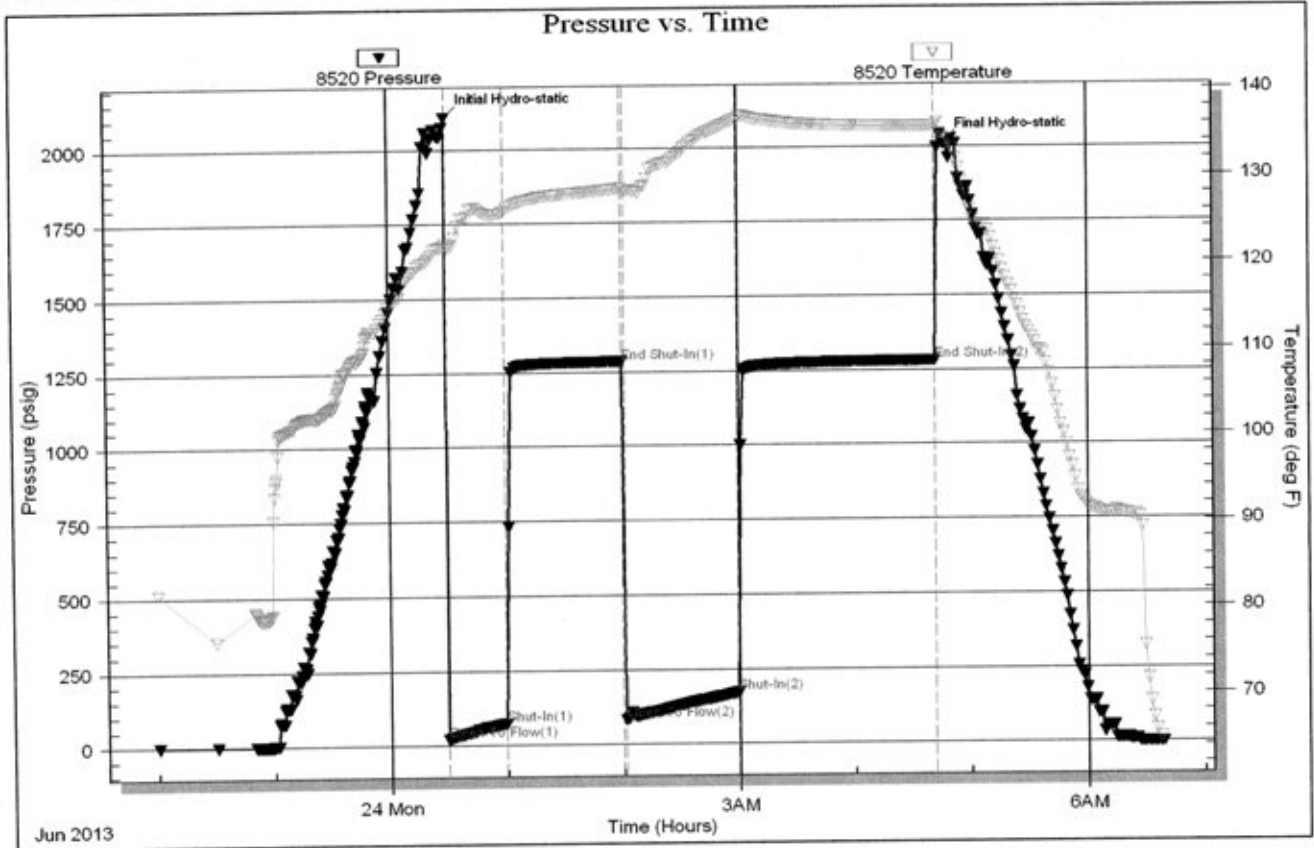
IFP: weak blow bldg. to 4"
ISIP: surface return at 20 minutes, bldg. to 3/4"
FFP: weak blow bldg. to 5"
FSIP: no return blow

Serial #: 8520

Outside Murfin Drilling, CO.

Outwell 'A' #1-27

DST Test Number: 2



DRILL STEM TESTS

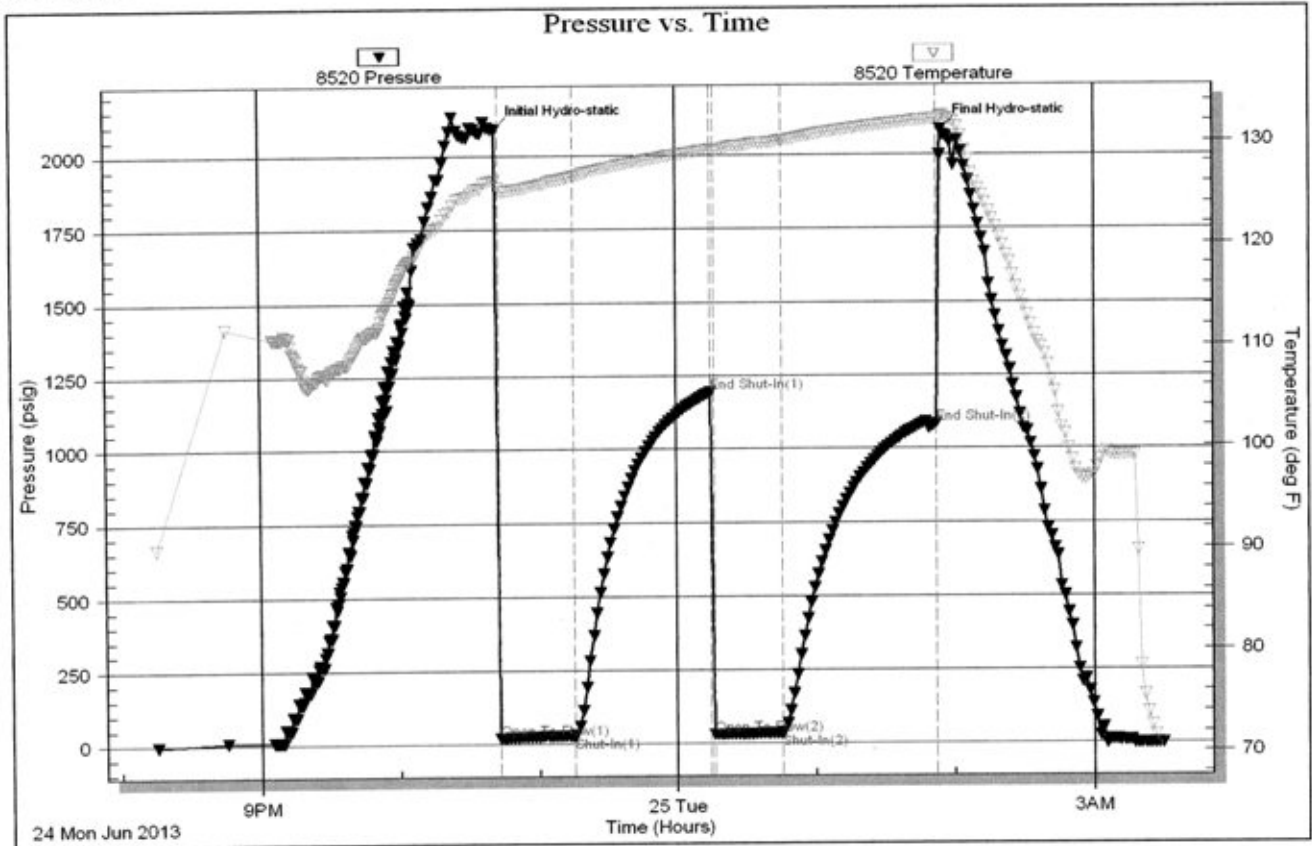
DST No. 3 Lansing
Interval: 4330'-4430'
Times: 30-60-30-60
Recovery: 10' mud
FP: 20-27/30-35 SIP: 1194-1085
HP: 2088-2083 BHT: 132 deg. F

IFP: 1/4" blow bldg. to 3/4"
ISIP: no return blow
FFP: no blow
FSIP: no return blow

Serial #: 8520 Outside Murfin Drilling, CO.

Outwell 'A' #1-27

DST Test Number: 3

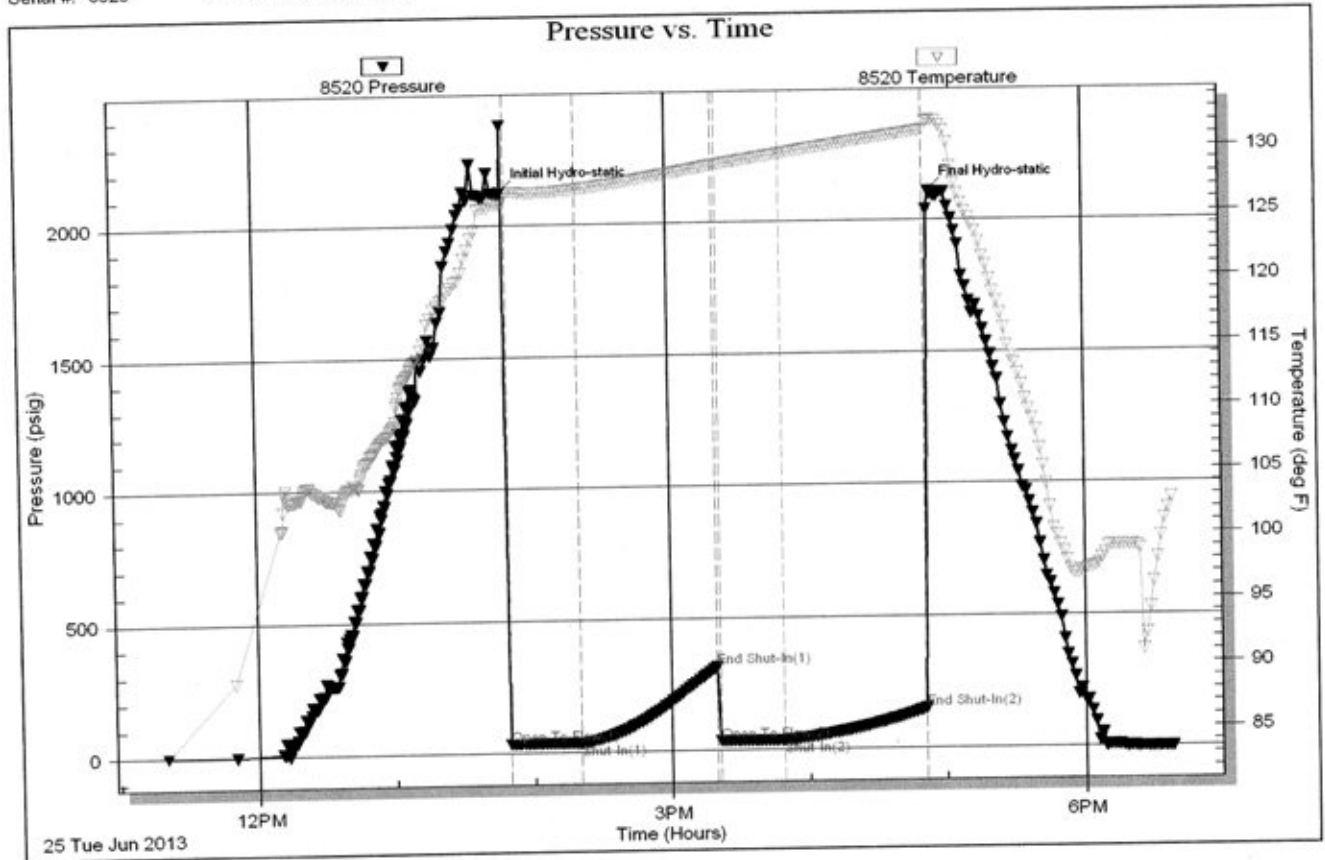


DRILL STEM TESTS

DST No. 4 Lansing "J"
Interval: 4424'-4474'
Times: 30-60-30-60
Recovery: 20' mud
FP: 34-35/35-36 SIP: 316-149
HP: 2122-2105 BHT: 131 deg. F

IFP: 1/4" blow, died in 25 minutes
ISIP: no return blow
FFP: no blow
FSIP: no return blow

Serial #: 8520 Outside Murfin Drilling, CO. Cwtwell 'A' #1-27 DST Test Number: 4



DRILL STEM TESTS

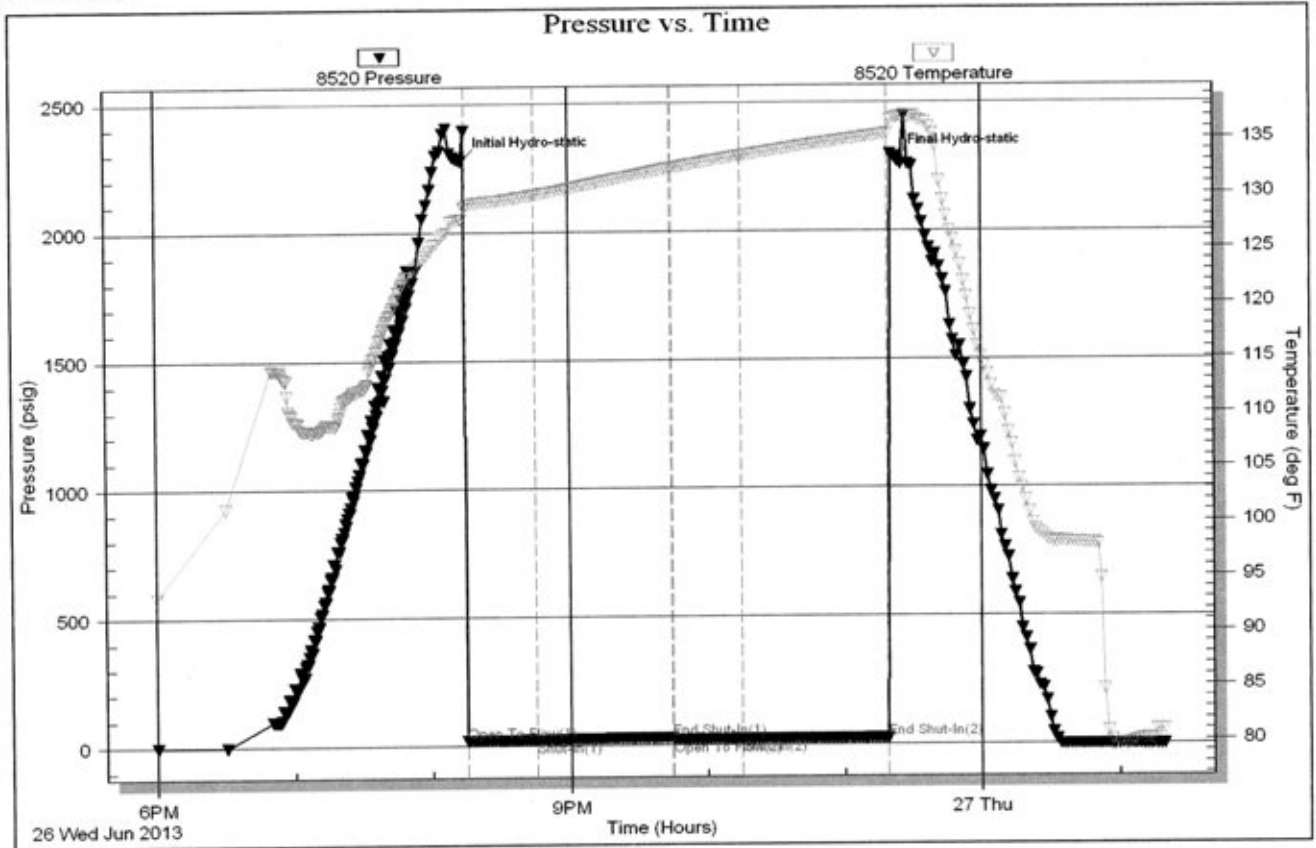
DST No. 5 Pawnee
 Interval: 4625'-4670'
 Times: 30-60-30-60
 Recovery: 5' mud
 FP: 20-21/21-22 SIP: 29-24
 HP: 2274-2273 BHT: 135 deg. F

IFP: 1/4" blow, died back to 1/8"
 ISIP: no return blow
 FFP: no blow
 FSIP: no return blow

Serial #: 8520 Outside Murfin Drilling, CO.

Culwell 'A' #1-27

DST Test Number: 5



Tribble Testing, Inc

Ref. No: 52131

Printed: 2013.06.27 @ 01:28:03

ROCK TYPES

- Anhy
- Cht
- Coal
- Congl
- Dol
- Gyp
- Lmst

- Salt
- Shale
- Shcol
- Shgy
- Slstst
- Ss
- Carb sh

- Dol
- Dtd
- Gry sh
- Sandylms
- redshale
- Shale
- Slststn

- Shlyslts
- SltysH
- Sdy dolo
- Silty dolo
- Shy dolo
- Shaly ls

ACCESSORIES

FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite

- Plant
- Strom
- Fuss
- Oomold

MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr

- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

STRINGER

- Anhy
- Arg
- Bent
- Coal
- Dol
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

OTHER SYMBOLS

INTERVALS

- Core
- Dst
- Dst

EVENTS

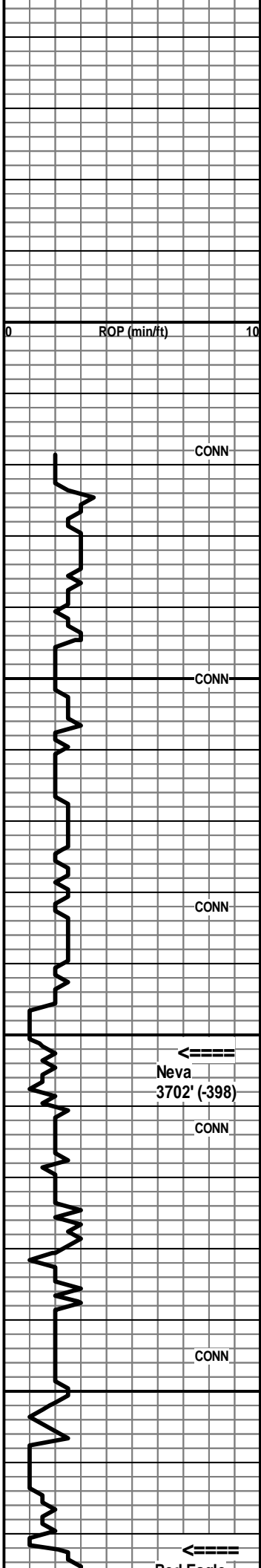
- Rft
- Dst top/base

OIL SHOWS

- Even
- Spotted
- Quest.

- Trace
- Dead
- Gas show

Curve Track 1 ROP (min/ft)	Depth	Lithology	Geological Descriptions	Remarks
	<p>3250</p> <p>3300</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Oil Shows</p>	<p style="text-align: center;">Anhydrite 3239' (+65)</p> <p style="text-align: center;">Base/Anhydrite 3274' (+30)</p>	<p style="text-align: center;">Anhydrite 3239' (+65)</p> <p style="text-align: center;">Base/Anhydrite 3274' (+30)</p>



3600

CONN

3650

CONN

CONN

3700

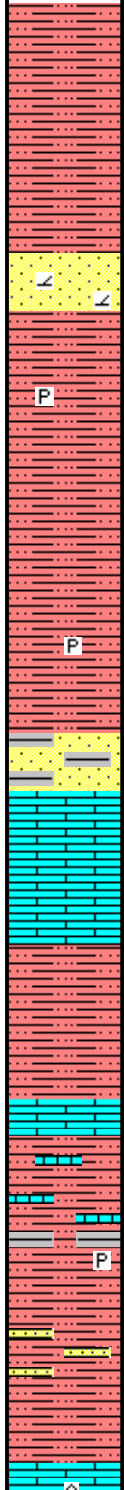
←==
Neva
3702' (-398)

CONN

CONN

3750

←==
Red Eagle
3772' (-468)



Sh: red-brn silty; lesser lt green, med gray; some lt gray sandy; occ Sst: lt gray vfg

Sh: mix AA, finely sandy IP; trace offwhite micxln dolomite and trace offwhite micxln Ls

Sh: red, red-brn silty and finely sandy; lesser gray and green shale; some offwhite vsl dolomitic vfg Sst

Sh: red, red-brn silty and sandy AA; definite influx med to dark gray shale, some lt green; decr. Sst AA

Sh: mix red, red-brn silty and sandy AA; med to dark gray; occ pyrite

Sh: silty and sandy mix AA

Sh: very predom. red-brn silty and finely micac.; much lesser lt gray, gray-green; trace sandy pyrite

Sst: some red-brn vfg silty and shaly with incr. med to dark gray shale

20' spl - Ls: good influx offwhite, tan fn granular, some gen. poor inter-particle por.; scatt. offwhite mixxln subchalky, N.S.

30' spl - flood Ls: AA with lt gray med granular and lt brn cryptoxln, poor to NVP; incr. offwhite subchalky to chalky, N.S.

40' spl - decr. Ls %AA; influx Sst: lt to med red-brn vfg, shaly with lt to med red-brn sandy shale

predom. shaly Sst and sandy shale with inter-bedded Ls: tan, lt brn fn granular, NVP and offwhite mic-vfxln dense

60' spl - trashy from lost returns; predom. red, red-brn, some lt brn silty and finely sandy shale; lesser tan, offwhite fn granular Ls

70' spl - Sh: various red, red-brn AA with sl influx med to dark gray shale; some tan, offwhite Ls AA with vsl influx pyrite and sany pyrite

80' spl - Sh: red, red-brn silty and sandy AA with some very lt gray vvfsg sl dolomitic Sst, N.S.

90' spl - Ls: good influx lt gray, offwhite vfxln dense;

Report Depth & Activity

6-18-2013 Spud at 6:30 PM
 6-19 WOC @ 226'
 6-20 Drlg. @ 2081'
 6-21 Bit trip @ 3618'
 6-22 Drlg. @ 4005'
 6-23 TOH w/DST No. 1 @ 4189'
 6-24 TIHWB post DST No. 2 @ 4330'
 6-25 Drlg. @ 4450' post DST No. 3
 6-26 Drlg. @ 4611' post DST No. 4
 6-27 Drlg. @ 4705' post DST No. 5
 6-28 RTD at 4840', logs complete, P&A

Bit trip at 3618'

Geologist on location at 10:50 AM on 6-21-2013 at depth of 3624'

Pipe strap at 3618' was 1.75' short to the board - deviation was 1 deg.

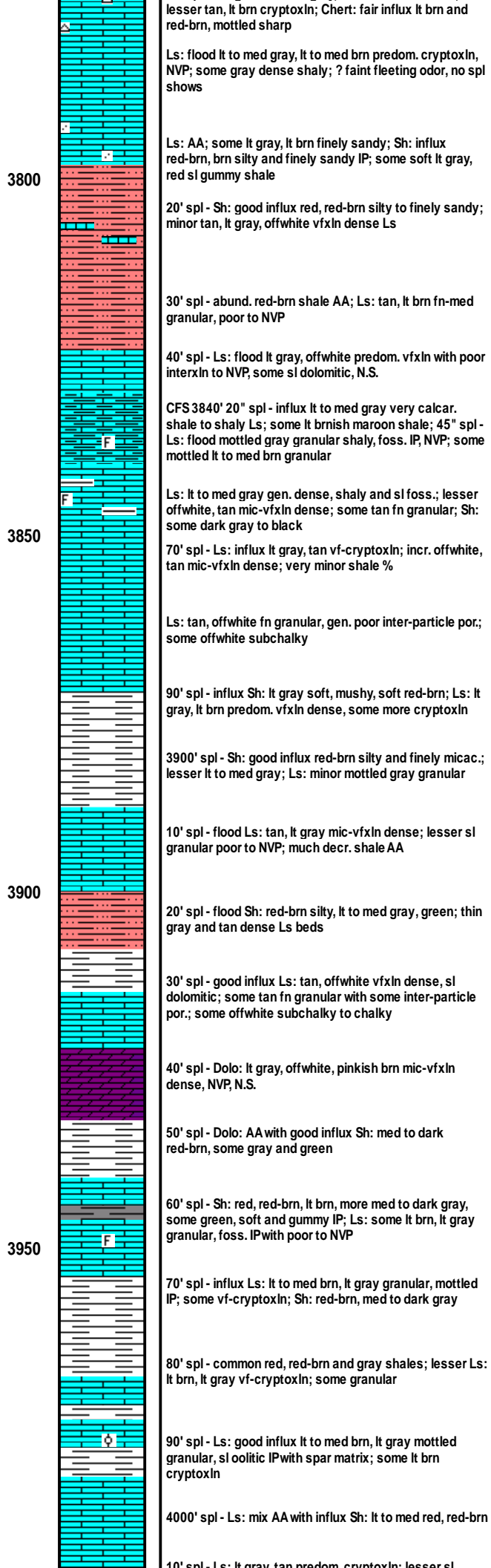
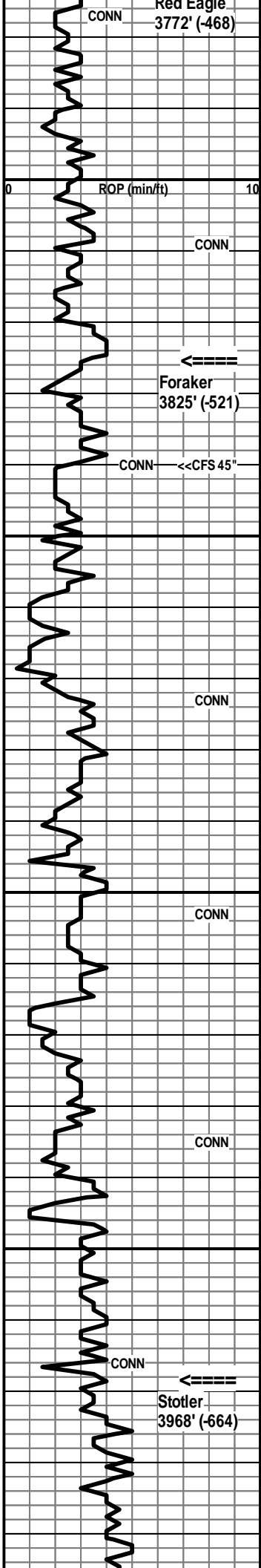
Morgan Mud Check at 3618'

7:15 AM on 6-21-2013
 wt vis wl pH chl
 8.7 40 6.0 11.0 500
 PV YP GeIS lcm solids
 15 20 5/15 6# 2.9%

Neva 3702' (-398)

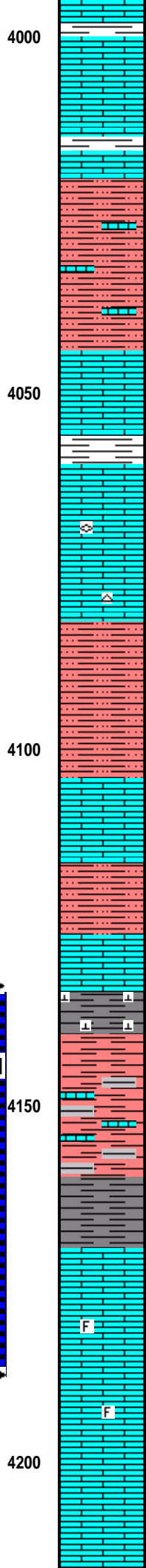
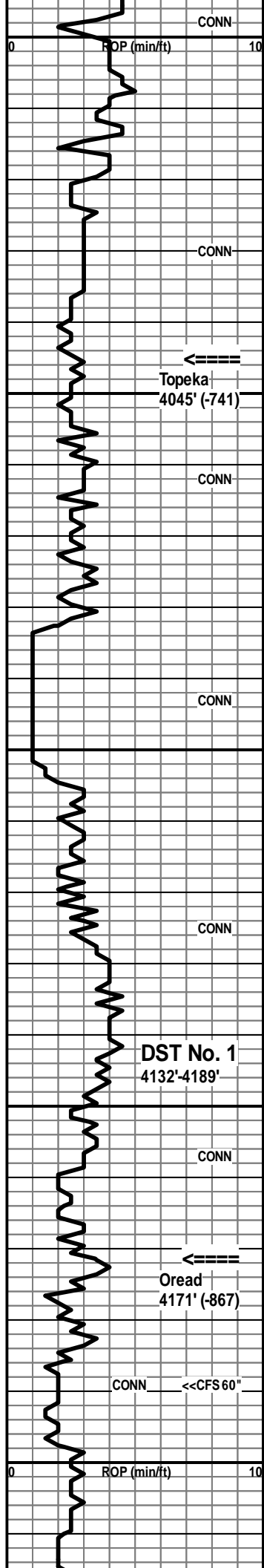
Lost returns @ 3753'

Red Eagle 3772' (-468)



Foraker 3825' (-521)

Stotler 3968' (-664)



10' spl - Ls: lt gray, tan predom. cryptoxln, lesser sil mottled tan, lt gray granular, NVP; Sh: lt to dark red, red-brn

20' spl - Ls: mix AA with fair influx offwhite fn granular with gen. poor inter-particle and vug. por. with spotty to subsat. dead black stain, no odor, nfo; influx offwhite, tan mic-vfxln dense, N.S.; some shales AA

30' spl - Ls: common chips with stain AA; other offwhite, lt gray, tan gen. dense; Sh: incr. red, red-brn

40' spl - Sh: abund. red, red-brn silty; Ls: some shows AA and other tan, lt gray, offwhite granular, poor to NVP

50' spl - very shaly AA, some lt gray; lesser Ls: lt brn, lt gray granular, NVP; offwhite mic-vfxln dense

60' spl - decr. shale % AA; Ls: various tan, offwhite, lt gray predom. granular, poor to NVP; lesser lt to med brn cryptoxln and offwhite dense, subchalky

70' spl - Ls: influx lt brn and pinkish brn vf-cryptoxln, mottled IP; some lt red-brn cryptoxln; fairly minor shale %

80' spl - Ls: good influx tan smooth cryptoxln and offwhite, tan sl granular, poor to NVP, trace fusulinids; minor shale

90' spl - flood Ls: tan, lt gray cryptoxln and lesser offwhite, tan mic-vfxln dense, subchalky; scatt. tan opq chert

10' spl - influx Sh: red, red-brn silty and finely sandy, N.S.

20' spl - shales AA with rare offwhite vfg calcar. Sst, N.S.; Ls: good influx tan, lt gray vf-cryptoxln, offwhite micxln to fn granular and offwhite subchalky to chalky, N.S.

30' spl - Ls: mix AA with good influx Sh: red, red-brn silty IP and some dark red non-silty

40' spl - flood Ls: lt to med brn, lt gray cryptoxln; much lesser offwhite mic-vfxln dense

50' spl - decr. % Ls AA; influx Sh: lt to med gray calcar. and lt to dark red-brn

60' spl - flood red-brn shale, some med gray

70' spl - Sh: red-brn AA with influx med gray; some Ls: med brn, med gray and tan cryptoxln

80' spl - Sh: strong influx med to dark gray, some black

4189' spl - Sh: very predom. grays AA; trace offwhite fn-vfxln Ls with spotty dark brn to black stain

CFS 4189' 30" spl - Ls: influx offwhite, tan mic-vfxln, dense, foss. with intra-particle por., lt gray fnxln with good interxln por., some tan, offwhite vf-cryptoxln, all with spotty dark stain, some subsat. stain, asphaltic IP, no odor, vsl sfo IP; 60" spl - Ls: various with shows AA; tan vfxln with fair-good pp por. and tan, lt brn granular, poor to NVP, N.S.; 4210' spl >>>>

20' spl - Ls: good influx lt to med gray, lt to med brn predom. cryptoxln; lesser med gray dense, shaly; some dark gray cryptoxln; occ pale green shale, sandy IP

30' spl - Ls: predom. various gray and brn cryptoxln AA; lesser gray dense, shaly

7:00 AM at 4005' on 6-22-2013

Morgan Mud Check at 4033' 8:25 AM on 6-22-2013

wt	vis	wl	pH	chl
8.8	65	6.0	9.0	500
PV	YP	GeIS	lcm	solids
22	28	7/26	16#	3.6%

Topeka 4045' (-741)

DST No. 1 Oread
Interval: 4132'-4189'
Times: 30-60-30-60
IFP: 1/4" blow bldg. to 2"
ISIP: no return blow
FFP: surface blow bldg. to 1"
FSIP: no return blow
Recovery: 90' oil spotted mud
FP: 16-37/42-62 SIP: 1236-1216
HP: 2012-1934 BHT: 129 deg. F

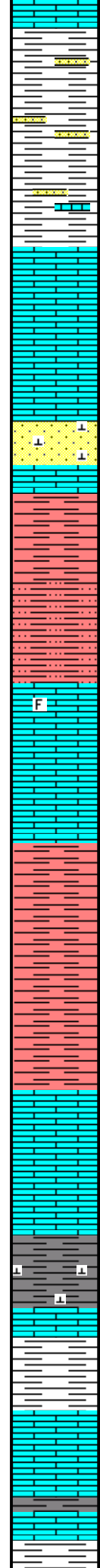
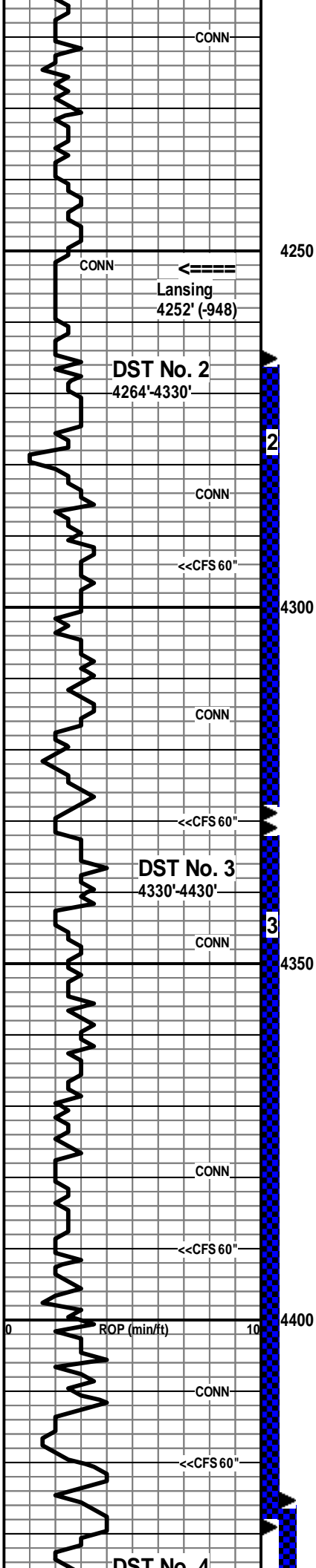
Oread 4171' (-867)

7:00 AM at 4189' on 6-23-2013

4210' spl - Ls: mix lt gray, tan granular and foss. with intra-particle por.; incr. tan cryptoxln; common offwhite mic-vfxln dense, subchalky to chalky, N.S.

Morgan Mud Check at 4189' 9:00 AM on 6-23-2013

wt	vis	wl	pH	chl
8.9	59	6.8	9.5	600
PV	YP	GeIS	lcm	solids



40' spl - Ls: lt to med brn and lt to med gray cryptoxln; sl incr. med gray and red-brn shales; sl influx Sst: offwhite, lt gray vvfng calcar. with dead spotty gilsonite flecks

50' spl - Sh: predom. red-brn silty IP with some offwhite, lt gray vvfng soft Sst with gilsonite flecks AA, no odor, nfo, weak cut; Ls: various dense AA, decr. %

60' spl - Sh: lt to med red, red-brn non-silty, some med gray; scatt. Sst: soft offwhite vfg with clay filled interstices; scatt. cryptoxln Ls's AA

70' spl - flood Ls: tan, offwhite, lt gray cryptoxln, NVP, N.S.; scatt. offwhite vf-cryptoxln with patchy brn stain, NVP, no odor, nfo; trace tan vf-cryptoxln with scatt. vug. por. with thick dark oily stain

80' spl - Ls: flood very predom. tan, lt brn smooth cryptoxln, NVP, N.S.; lesser offwhite mic-vfxln dense, N.S.

90' spl - Ls: mix AA with incr. offwhite mic-vfxln dense; trace tan vfg Sst with pp dark brn stain

CFS 4294' 20" spl - Sst: good influx lt gray vvfng soft, very calcar. with pp stain, no odor, sl sfo, some with N.S.; Sh: sl influx med to dark red-brn; 40" spl - decr. Sst AA; Ls: influx lt brn, tan, lt gray cryptoxln; 60" spl - all lcm

10' spl - good influx Sh: red-brn; various cryptoxln Ls's AA; very scatt. Sst AA

20' spl - Sh: various red-brn, silty, finely micac. and vf sandy IP; much lesser tan, lt gray cryptoxln Ls

30' spl - Ls: good influx offwhite cryptoxln with vug. and fossil moldic por., ? faint odor, fair sfo, dark brn oily stain in vugs, some subsat. to sat. stain in dry spls; common offwhite fn-med granular with pp and some inter-particle por., pp dark brn to black stain; some offwhite mic-vfxln dense, N.S.

CFS 4330' 30"/60" spls - Ls: common chips with shows AA; incr. offwhite mic-vfxln dense, N.S.; new lt gray, tan cryptoxln, NVP, N.S.; Sh: incr. med to dark gray, red-brn

50' spl - very shaly from trip; Ls: influx tan, lt gray, lt brn cryptoxln and offwhite, tan mic-vfxln, NVP, N.S.

60' spl - much decr. Ls %; Sh: good influx med to dark red-brn, some purplish brn and med to dark gray

70' spl - flood Sh: predom. med to dark red-brn, lesser lt to med gray, some orange

80' spl - very shaly AA; sl influx offwhite vf sandy clay?, no HCL react., very soft; fairly minor tan fn granular and cryptoxln Ls

90' spl - strong influx Ls: tan, offwhite mic-vfxln dense, subchalky IP; some tan, offwhite fn-med granular with some fair inter-particle and vug. por. with dark brn to black spotty stain, no odor, good shows dark brn listless oily residue, vsI sfo on break, several chips with black asphaltic stain

CFS 4390' 30" spl - Ls: several chips with shows AA; predom. tan, offwhite mic-vfxln dense, subchalky IP; lesser tan, lt brn cryptoxln; 60" spl - Ls: mix AA with incr. tan, lt gray cryptoxln and some lt gray dense, shaly; Sh: incr. lt to med gray

10' spl - Ls: lt to med gray vfxln dense, shaly with abund. lt to med gray calcar. shale; some mottled lt brn granular Ls

20' spl - Sh: med to dark gray with influx med to dark red-brn; some Ls: lt gray, lt brn cryptoxln and offwhite, tan mic-vfxln dense

CFS 4420' 30" spl - Ls: strong influx tan, lt gray vf-cryptoxln and offwhite, tan mic-vfxln dense; decr. shale %; 60" spl - >>>>

30' spl - ? new rocks; Ls: predom. lt brn, lt gray sl mottled granular, N.S.; very scatt. chips tan, lt brn vfxln dense with spotty dark brn to black gilsonite flecks, no odor, nfo; Sh: med to dark gray; CFS 4430' spls - >>>>

50' spl - still trashy from trip; very predom. Sh: med to dark red-brn, med to dark gray; Ls: mix AA with lt gray,

Lansing 4252' (-948)

DST No. 2 Lansing
Interval: 4264'-4330'
Times: 30-60-60-90
IFP: weak blow bldg. to 4"
ISIP: surface return at 20 minutes, bldg. to 3/4"
FFP: weak blow bldg. to 5"
FSIP: no return blow
Recovery: 100' oil spotted mud; 180' oil spotted MCV (50m, 50w)
FP: 19-72/81-171 SIP: 1284-1281
HP: 2105-2009 BHT: 136 deg. F

7:00 AM at 4330' on 6-24-2013

Morgan Mud Check at 4330'
8:20 AM on 6-24-2013
wt vis wl pH chl
9.1 69 6.8 9.5 600
PV YP GelS lcm solids
20 24 10/32 12# 5.7%

DST No. 3 Lansing
Interval: 4330'-4430'
Times: 30-60-30-60
IFP: 1/4" blow bldg. to 3/4"
ISIP: no return blow
FFP: no blow
FSIP: no return blow
Recovery: 10' mud
FP: 20-27/30-35 SIP: 1194-1085
HP: 2088-2083 BHT: 132 deg. F

DST No. 4 Lansing "J"
Interval: 4424'-4474'
Times: 30-60-30-60
IFP: 1/4" blow, died in 25 minutes
ISIP: no return blow
FFP: no blow
FSIP: no return blow
Recovery: 20' mud
FP: 34-35/35-36 SIP: 316-149
HP: 2122-2105 BHT: 131 deg. F

CFS 4420' 60" spl - Ls: mix AA; common tan, lt brn sl mottled granular, NVP, N.S.; some white chalky; one chip offwhite micxln with spotty stain, cave??

CFS 4430' 30" spl - Ls: various granular AA; sl influx lt gray, lt brn cryptoxln; incr. med gray shale; 60" spl - Ls: various gray, lt brn granular to cryptoxln, NVP, N.S.; Sh: med to dark gray

DST No. 4
4424'-4474'

CONN

4

4450

Stark Shale
4467' (-1163)

CONN <<CFS 60"

4500

BKC
4524' (-1220)

CONN

4550

CONN

4600

ROP (min/ft) CONN 10

DST No. 5
4625'-4670'

CONN

5

Pawnee
4638' (-1334)

<<CFS 60"

4650

med brn cryptoxln
60' spl - Sh: med to dark red-brn, med to dark gray; scatt. dense Ls's
70' spl - predom. shales AA; Ls: incr. lt gray, tan cryptoxln and offwhite mic-vfxln dense; one chip offwhite vf-cryptoxln with poor interxln por. with patchy stain
74' spl - Ls: good influx tan, lt gray vf-cryptoxln and offwhite mic-vfxln dense, NVP, N.S.; sl influx offwhite, tan mic-vfxln with patchy lt brn stain, vsI show listless oil and minute oil droplets on break, no odor

CFS 4474' 30" spl - flood Ls: various tan, lt gray vf-cryptoxln, NVP, N.S. incr. offwhite mic-vfxln subchalky IP; very scatt. chips with shows AA; 60" spl - Ls: mix AA with influx dark gray to black and red-brn shale

90' and 4500' spls - predom. Sh: red-brn, silty and finely sandy; lt to med gray; some Sst: lt gray vvfsg silty N.S.

10' spl - flood Ls: mix tan, lt gray cryptoxln; tan, lt brn sl mottled granular, NVP; and offwhite micxln subchalky

20' spl - Ls: predom. various cryptoxln and sl mottled granular AA; some red-brn and med gray shale

30' spl - Ls: influx med to dark brn granular; some offwhite chalky; sl incr. med to dark gray shale

40' spl - Ls: influx tan, lt brn cryptoxln and offwhite subchalky to chalky; some tan micxln, foss. NVP; Sh: streaks lt to med gray, red-brn

50' spl - Ls: lt to med brn, some red-brn cryptoxln to sl mottled granular; influx lt to med gray dense, shaly; Sh: incr. red-brn

60' spl - Ls: predom. lt to med gray, lt brn vf-cryptoxln, NVP, N.S.; some lt gray dense, shaly; minor Sh: dark red-brn, med gray, trace mottled yellow/gray

70' spl - Ls: mix AA with influx sl mottled lt to med brn and gray granular, some sl oolitic with spar matrix; some med to dark gray cryptoxln; one chip tan foss. with micxln matrix with spotty gilsonite stain; Sh: sl influx brick red, trace maroon

80' spl - Ls: decr. sl mottled AA; influx lt to med brn, lt gray cryptoxln and lt gray dense, shaly; fairly minor dark red-brn shale

90' spl - influx Sh: red-brn, maroon, lt to med gray, occ mottled yellow/gray; Ls: mix AA decr. %

4600' spl - predom. Sh: various red-brn, maroon, lt to med gray; minor mottled yellow/red granular and lt gray, tan cryptoxln Ls's

10' spl - predom. Sh: red-brn silty and finely sandy, maroon, lt to med gray; Ls: various lt gray, tan, lt brn vf-cryptoxln, sl mottled and granular IP

20' spl - still predom. shales AA; incr. % Ls: tan, lt gray vf-cryptoxln and offwhite dense, subchalky; one chip offwhite dense with spotty dead black gilsonite stain; scatt. tan fenestral bryozoan fragments with por., N.S.

30' spl - flood Ls: lt to med gray mic-vfxln dense, shaly, NVP, N.S.; much decr. shale %

40' spl - very predom. shaly dense Ls AA

50' spl - Ls: mix AA with occ med gray, gray-brn cryptoxln; Sh: influx lt to med gray and red-brn, occ maroon

CFS 4650' 30" spl - common lt gray shale; Ls: lt to med gray vf-cryptoxln, shaly IP, NVP, N.S.; one chip tan vf-cryptoxln with small vug. por. with live brn stain, nfo; 60" spl - Ls: influx mottled brn and mottled gray granular with NVP, N.S.; 2-3 chips offwhite granular with poor inter-particle por. with black pp tarry stain, trace bleeding gas, trace brn oil on break, tight, hard

70' spl - flood Ls: lt to med brn, lt gray cryptoxln; some

7:00 AM at 4450' on 6-25-2013

Stark Shale 4467' (-1163)

Morgan Mud Check at 4474'

8:45 AM on 6-25-2013

wt vis wl pH chl
9.1 65 6.0 10.0 1,000
PV YP GeIS lcm solids
20 22 12/35 9# 5.7%

BKC 4524' (-1220)

7:00 AM at 4611' on 6-26-2013

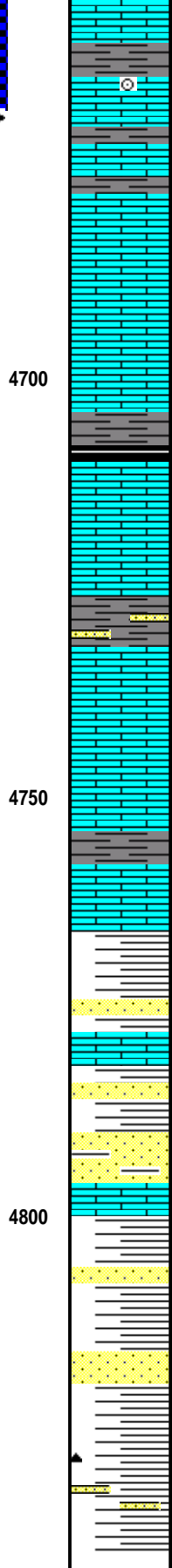
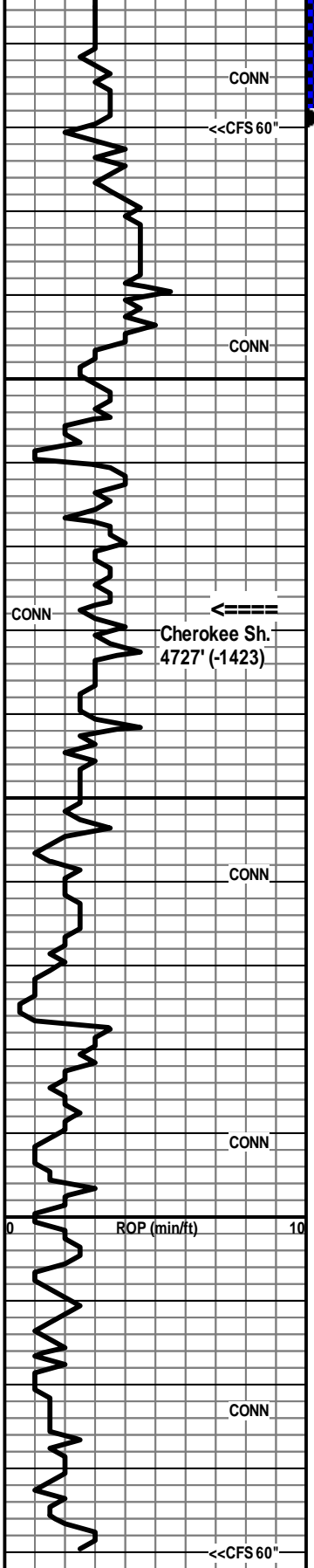
Morgan Mud Check at 4615'

7:10 AM on 6-26-2013

wt vis wl pH chl
9.1 69 6.8 9.0 1,000
PV YP GeIS lcm solids
19 22 14/39 8# 5.7%

Pawnee 4638' (-1334)

DST No. 5 Pawnee
Interval: 4625'-4670'
Times: 30-60-30-60
IFP: 1/4" blow, died back to 1/8"
ISIP: no return blow
FFP: no blow



80' spl - med Ls; lt to med brn, lt gray cryptoxln, some mottled granular AA; some gray dense shaly and med gray shale; one chip with stain AA
 CFS 4670' 30" spl - Ls: strong influx med to dark gray dense, shaly IP; trace crinoid fragments; Sh: influx med to dark gray, occ foss.; 60" spl - Ls: dense shaly AA with lt to med gray, lt brn cryptoxln; one chip tan cryptoxln with vug. por. on edge with brn live stain, no odor, nfo

80' spl - trashy from trip; 90' spl - Sh: lt to med gray calcar.; Ls: lt to med brn granular with offwhite micxln matrix; sl influx lt gray, lt brn cryptoxln, N.S.

4700' spl - very predom. Ls: lt to med gray, lt brn predom. cryptoxln; lesser lt gray mic-vfxln dense, NVP; one cluster lt gray fg very glauc. Sst, N.S.

10' spl - Ls: various lt to med gray, tan cryptoxln and lt gray mic-vfxln dense, some shaly; Sh: incr. med gray

20' spl - Sh: good influx dark gray to black carbon., some carbon. laminae; Ls: various cryptoxln AA

30' spl - Sh: AA; Ls: lt to med brn granular, poor to NVP, N.S.; other tan, lt brn cryptoxln and offwhite, tan mic-vfxln dense

40' spl - incr. Ls: various tan, lt to med brn cryptoxln and granular; influx offwhite micxln subchalky; streaks med to dark gray shale

50' spl - Ls: various brn, tan granular, some cryptoxln; lesser tan, offwhite mic-vfxln dense; Sh: streaks AA; Sst: sl influx lt gray, tan fg quartzitic, NVP, N.S.

60' spl - predom. Ls's AA with lesser quartzitic Sst; trace coarse single grains; Sh: med to dark gray, red-brn, brick red

70' spl - Ls: more med brn cryptoxln and offwhite mic-vfxln dense, subchalky; Sh: occ pale green and sandy green shale; no Sst

80' spl - Ls: various brn granular and cryptoxln; no Sst; Sh: trace yellow and purple

90' spl - very predom. Ls: lt to med brn, lt gray cryptoxln; lesser Sh: lt to med gray, lt green, red-brn

4800' spl - very predom. Ls's AA; Sh: scatt. maroon, lt to med gray, trace yellow

10' spl - Sst: good influx predom. offwhite vf-fg, some fn-med grnd, subang-subrnd; lesser lt green and red-brn tinted; influx Sh: red-brn, med gray, occ maroon; Ls's still common

20' spl - Sh: influx dark maroon, some lt gray; Sst's and Ls's AA; trace very coarse single quartz grains

30' spl - Sh: influx sandy dark red-brn and maroon; some mottled red/offwhite sandy Ls; Sst: lt gray vvfng tight and tan fn-med grnd, scatt. clear, gray, yellow and orange very coarse single quartz grains; other multi-colored shales AA

40' spl - multi-colored shales, scatt. Sst and single grains, very minor Ls

CFS 4840' 30" spl - Sh: red-brn, maroon, purple, lt to med gray, gray-green, trace yellow; lesser gray, lt brn cryptoxln Ls; scatt. Sst and very coarse single grains; trace dark red chert

60" spl - multi-colored shales AA; lesser various gray and tan cryptoxln and offwhite dense Ls's; scatt. coarse to very coarse qtz grains and scatt. fn-med grnd Sst clusters, N.S.

FSIP: no return blow
 Recovery: 5' mud
 FP: 20-21/21-22 SIP: 29-24
 HP: 2274-2273 BHT: 135 deg. F

7:00 AM at 4705' on 6-27-2013

Cherokee Sh. 4727' (-1423)

Morgan Mud Check at 4750'
 9:10 AM on 6-27-2013
 wt vis wl pH chl
 9.2 72 7.6 8.0 1,000
 PV YP GeIs lcm solids
 19 31 18/47 8# 6.4%

RTD 4840' (-1536)
 LTD 4842' (-1538)

Because of the lack of any commercial shows of oil, as confirmed by DST's and E-logs, the Culwell "A" #1-27 was plugged as a dry hole.

RTD of 4840' reached at 12:10 PM on 6-27-2013 - CFS 60" - short trip - CTCH 1 hour - survey - TOFL

Respectfully submitted,

Wesley D. Hansen
 Petroleum Geologist
 Kansas License No. 418

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