

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 R&B
Location: 1300' FNL, 1130' FEL of Section 27-17S-36W
License Number: API: 15-203-20302
Spud Date: 1-17-2015
Surface Coordinates: 1300' FNL, 1130' FEL of Section 27-17S-36W
Region: Wichita County, KS
Drilling Completed: 1-27-2015

**Bottom Hole Vertical hole
Coordinates:**
Ground Elevation (ft): 3258' **K.B. Elevation (ft):** 3269'
Logged Interval (ft): 3600' **To:** RTD **Total Depth (ft):** 4940'
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical - Displaced at 3380'

Printed by MUD.LOG 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 #4
Pusher: Kelly Wilson

Surface Casing: 8 5/8" set at 268' w/200sx
Production Casing: P&A

Mud by: MudCo - Tony Maestas and Reid Atkins were the engineers

DST's by: Trilobite - Justin Harris was the tester

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

Deviation Surveys: 1/2 deg. @ 270'; 1 3/4 @ 3464'; 1 1/2 deg. @ 4140'; 1 1/2 deg. @ 4600'

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC	GTC1	270'	270'	4
2	7 7/8"	HTC	DP506	3464'	3194'	48 3/4
3	7 7/8"	HTC	GX20C	4940'	1476'	87

FORMATION TOPS AND STRUCTURAL COMPARISON

FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL	
	Depth	Datum	Depth	Datum	MDCI Gerstberger #1-29	29-17S-36W 3298' KB
	3269'	KB	3269'	KB		
Base/Anhydrite	picked wrong		2452'	+817	+861	-59
Topeka	3711'	-442	3716'	-447	-388	-59
Heebner	3957'	-688	3959'	-690	-621	-69
Lansing	4008'	-739	4006'	-737	-672	-65
Stark Shale	4279'	-1010	4279'	-1010	-946	-64
Pawnee	4514'	-1245	4512'	-1243	-1196	-47
Fort Scott	4564'	-1295	4564'	-1295	-1242	-53
Cherokee Shale	4592'	-1323	4591'	-1322	-1268	-54
Johnson	4646'	-1377	4646'	-1377	-1324	-53
Atoka	4682'	-1413	4676'	-1407	-1357	-50
Morrow	4747'	-1478	4744'	-1475	-1426	-49
Mississippian	4842'	-1573	4840'	-1571	-1501	-70
RTD	4940'	-1671				
LTD			4940'	-1671		

DRILL STEM TESTS

DST No. 1 Lansing "E" and "F"
Interval: 4116'-4140'
Times: 30-60-60-90
Recovery: 282' MCW (20m, 80w); 678' MCW
(10m, 90w); chl. 20,000; total fluid 960'
FP: 48-253/269-486 SIP: 1136-1118
HP: 2164-1762 BHT: 114 deg. F

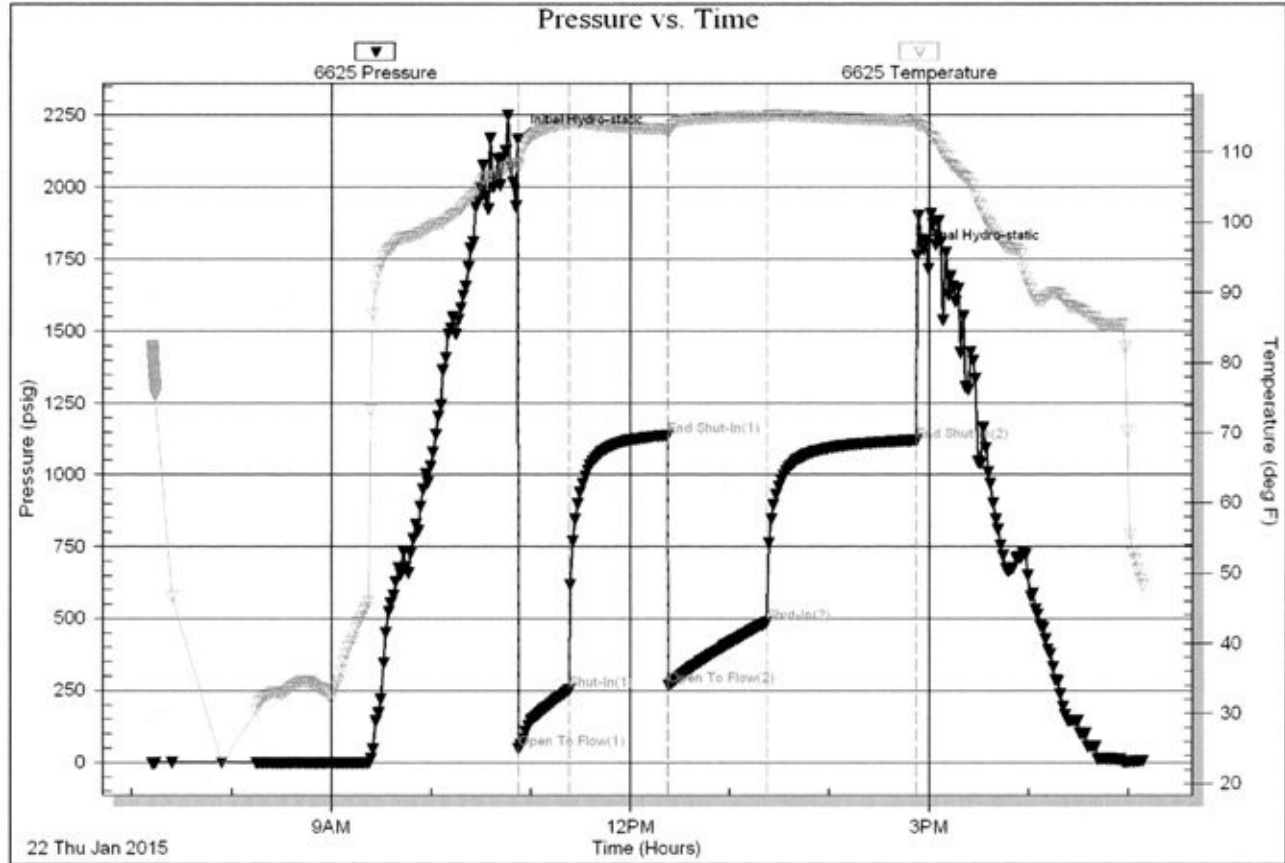
IFP: B.O.B. in 8 minutes
ISIP: no return blow
FFP: B.O.B. in 8 minutes
FSIP: no return blow

Serial #: 6625

Outside Murfin Drilling Co. Inc

R&B 1-27

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 61512

Printed: 2015.01.22 @ 17:23:41

DRILL STEM TESTS

DST No. 2 Lansing "I" Zone
Interval: 4220'-4250'
Times: 30-60-60-90
Recovery: 124' WCM (10w, 90m)
FP: 20-58/60-100 SIP: 1143-1096
HP: 2095-1860 BHT: 113 deg. F

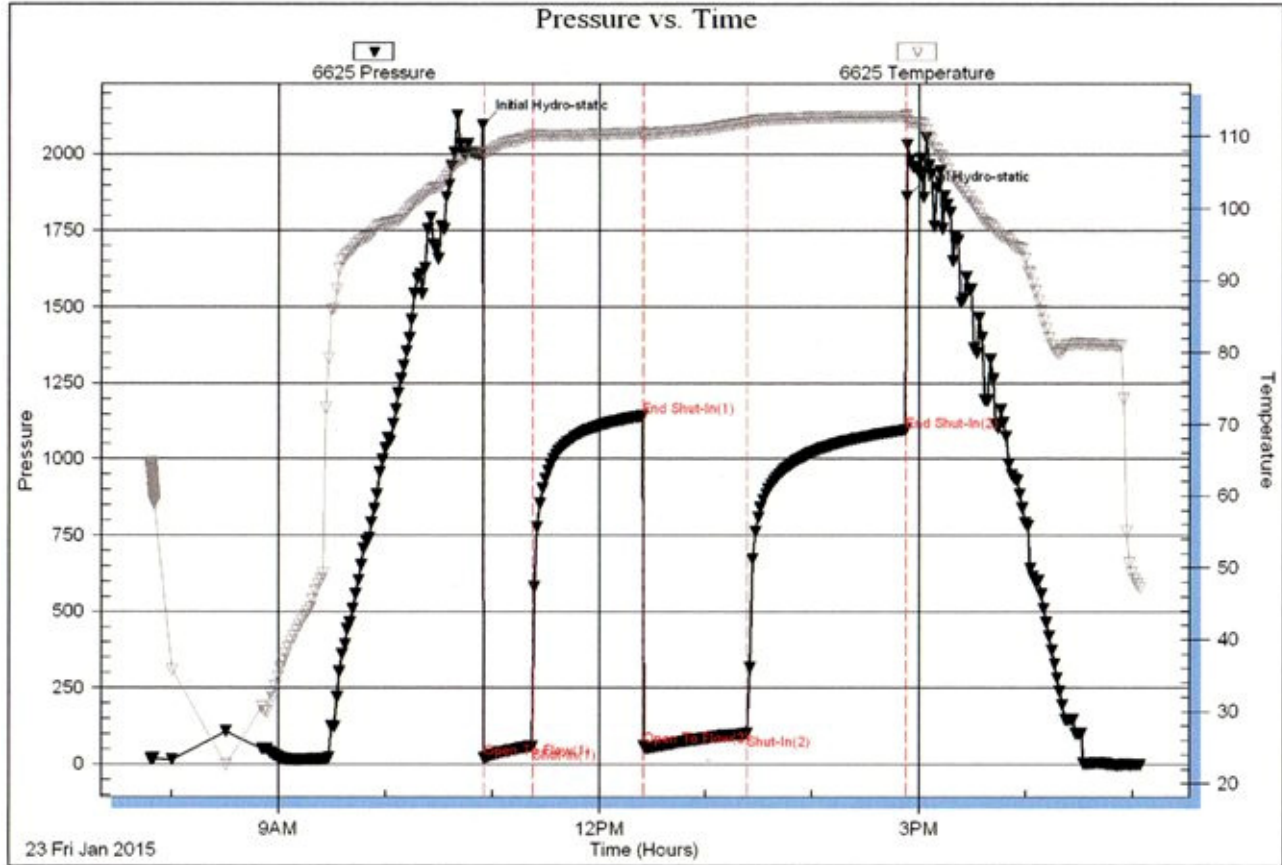
IFP: weak surface blow built to 2 inches
ISIP: no return blow
FFP: weak surface blow
FSIP: no return blow

Serial #: 6625

Outside Murfin Drilling Co. Inc

R&B 1-27

DST Test Number: 2



Tribble Testing, Inc

Ref. No: 61513

Printed: 2015.01.23 @ 17:19:01

DRILL STEM TESTS

DST No. 3 Marmaton
Interval: 4446'-4520'
Times: 30-60-60-90
Recovery: 100' mud
FP: 48-71/71-89 SIP: 1256-1206
HP: 2305-1936 BHT: 115 deg. F

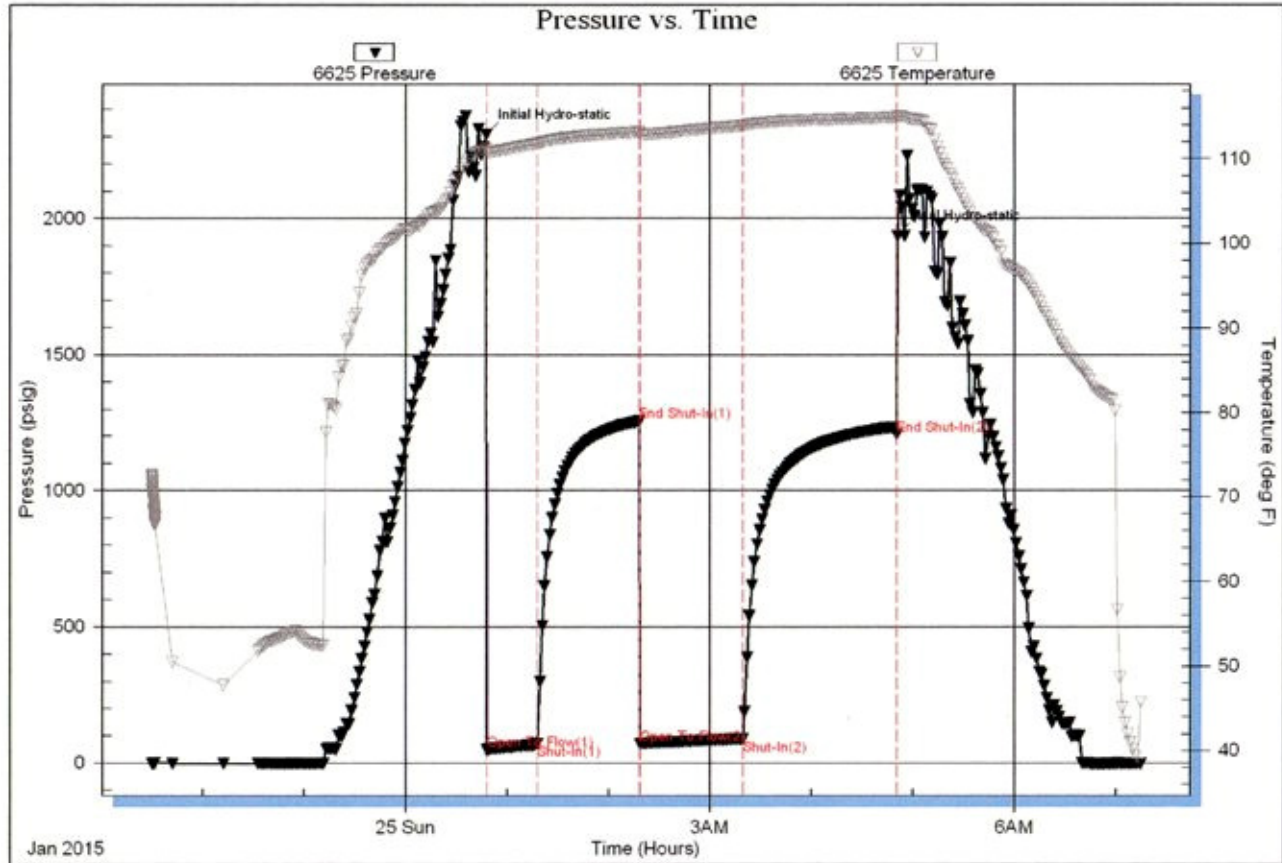
IFP: weak surface blow built to 1 1/2 inches
ISIP: no return blow
FFP: no blow
FSIP: no return blow

Serial #: 6625

Outside Murfin Drilling Co. Inc

R&B 1-27

DST Test Number: 3



Triobite Testing, Inc

Ref. No:

Printed: 2015.01.25 @ 07:28:42

DRILL STEM TESTS

DST No. 4 Pawnee/Fort Scott
 Interval: 4516'-4600'
 Times: 30-60-30-60
 Recovery: 5' mud
 FP: 18-21/20-21 SIP: 105-59
 HP: 2385-1968 BHT: 115 deg. F

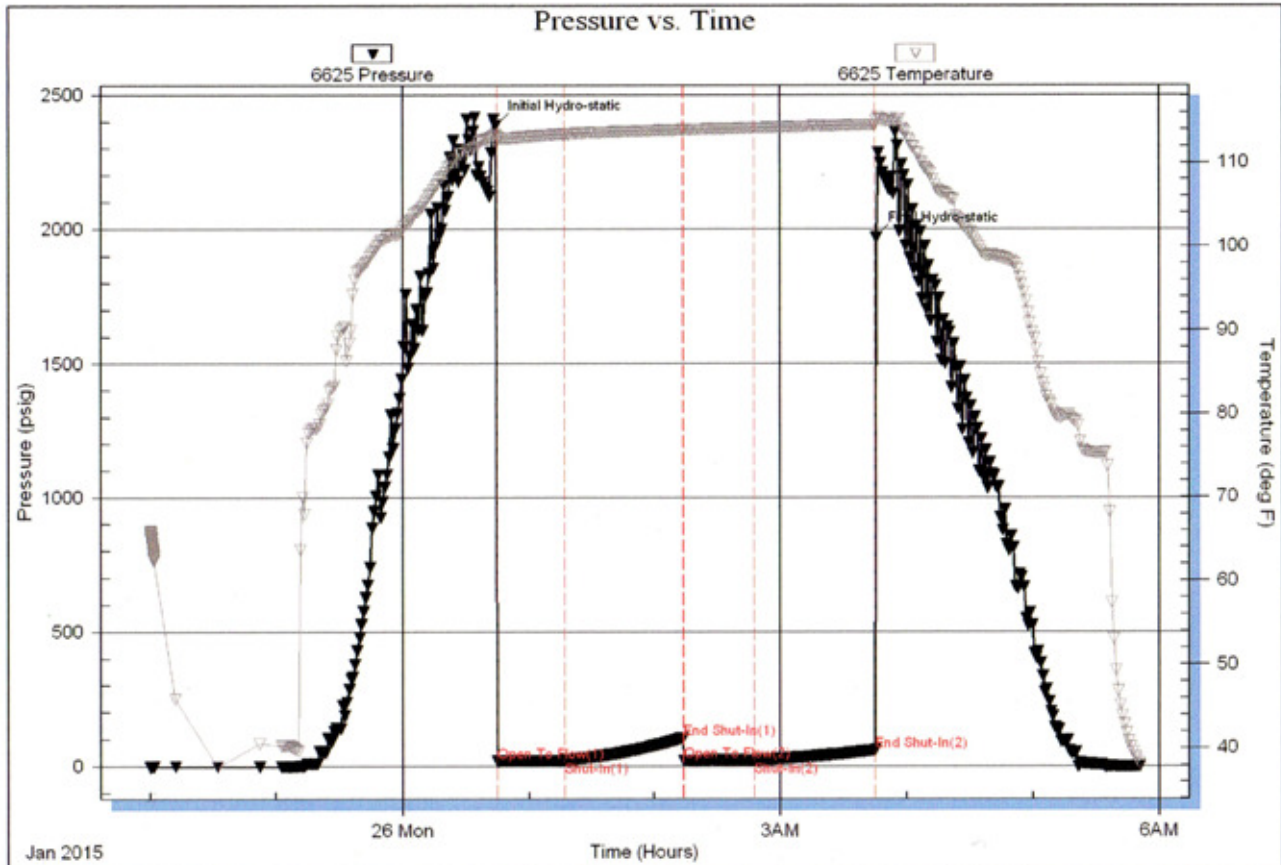
IFP: weak surface blow, died in 11 minutes
 ISIP: no return blow
 FFP: no blow
 FSIP: no return blow

Serial #: 6625

Outside Murfin Drilling Co. Inc

R&B 1-27

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 61515

Printed: 2015.01.26 @ 06:04:00

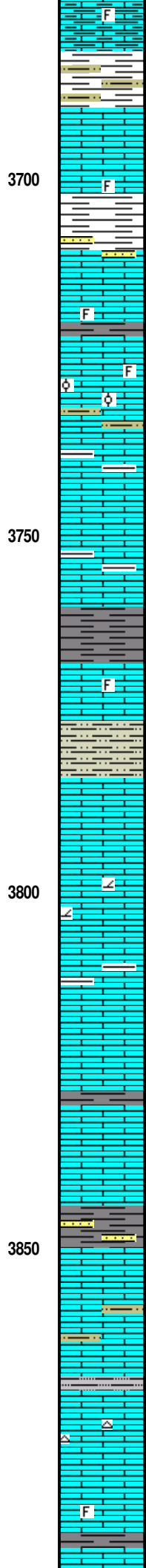
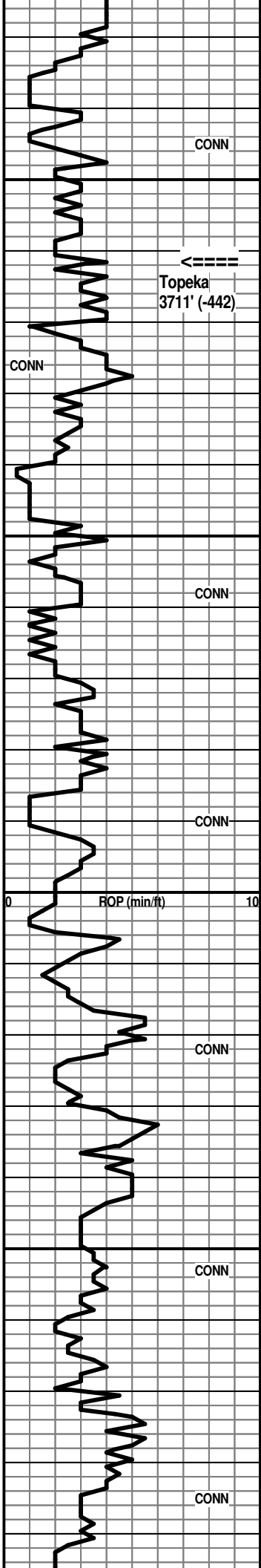
ROCK TYPES

- Anhy
- Cht
- Coal
- Congl
- Gyp
- Ls colorless
- Lmst

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

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

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



and brn, shaly and foss.

Ls: mix AA; Sh: incr. % vc gray, soft red-brn; Sst: scatt. gray, brn fg

Sh: med to dark gray; occ fg finely micac. Siltst; abund. Ls: mottled gray and mottled brn granular and lt to med brn vf-cryptoxln

Ls: predom. mottled med to dark gray granular, some shaly and foss.; occ red-brn fg Sst

Ls: influx tan, lt gray vfxln and mixed and mottled AA; Sst: incr. red-brn fg

Ls: predom. various lt gray, tan, lt brn vf-cryptoxln; gray shaly and foss.; Sh: dark gray to black carb.

Ls: predom. lt to med brn, tan granular to dense, foss. IP; occ tan finely oolitic with NVP

Ls: various tan, offwhite, brn, gray dense; Siltst: occ gray micac.; Sh: pyritic gray

Ls: predom. offwhite, lt gray vfxln dense; some med gray granular with some inter-particle por., N.S.; Sh: med to dark gray

Ls: predom. tan, lt gray vfxln dense; Sh: dark gray to black, carb., and micac. IP

Ls: mottled lt brn granular, foss. with inter-particle por.; mottled gray shaly; tan, lt brn mottled granular, NVP

Ls: mottled AA; influx med to dark gray vf-cryptoxln;; Siltst: some gray, brn micac.

Ls: lt gray, tan vf-cryptoxln mottled and granular IP; other gray dense, shaly

Ls: incr. med to dark gray mottled granular and shaly AA; some lt brn vfxln, dolomitic; Sh: med gray

Ls: mix AA; Sh: influx vc gray, red-brn, brick red

Ls: various gray and brn mottled granular; other tan, gray vfxln dense; Sh: med to dark gray, black

Ls: various tan, lt gray, lt brn dense, some fn granular with poor-NVP, N.S.; Sh: vc gray, red-brn, some black

Sh: med to dark gray, black, red-brn; scatt. tan, gray fg Sst; Ls: various tan, lt gray vfxln dense and med to dark gray mottled granular, NVP, N.S.

Ls: incr. % mix AA; sl influx lt to med brn, gray more cryptoxln to granular; Siltst: some gray micac.; scatt. Sst AA

Ls: various tan, brn sl mottled ganular to vf-cryptoxln, NVP, N.S.; Sh: various AA with some gray, brn micac. Siltst

flood Ls: mix tan, offwhite, lt gray mic-vfxln dense; tan, lt brn sl granular, NVP; some lt gray, offwhite opq chert

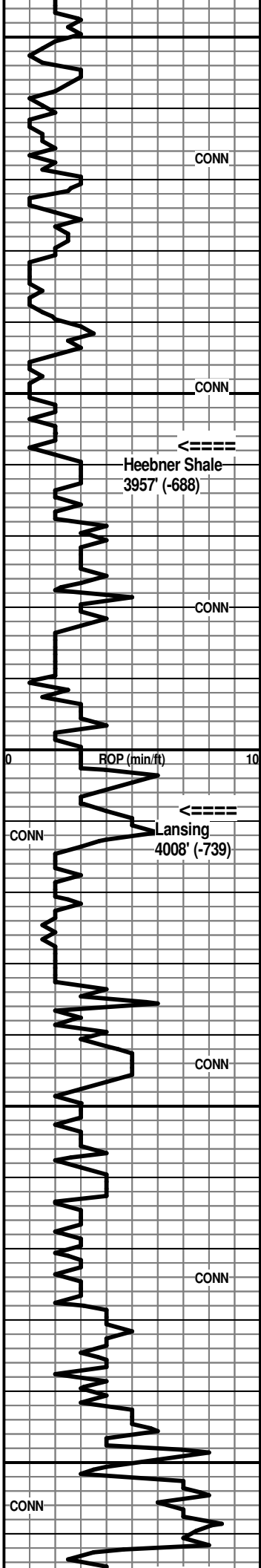
Ls: mix same, sl cherty

Ls: flood tan, lt gray fn-vfxln, foss. IP with some poor ppt and inter-particle por., N.S.; lesser offwhite mic-vfxln

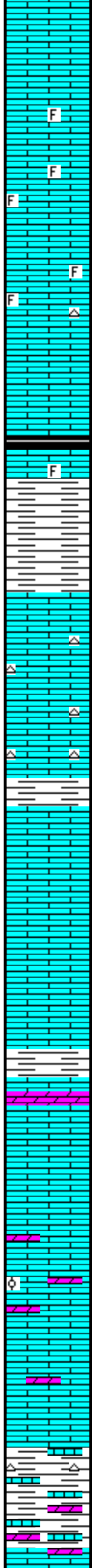
Topeka 3711' (-442)

MudCo Mud Check at 3731'
 4:15 AM on 1-21-2015
 wt vis wl pH chl
 8.8 53 7.2 10.0 5,000
 PV YP GeIS lcm solids
 16 18 14/38 6# 3.3%

7:00 AM at 3810' on 1-21-2015



3900
 3950
 4000
 4050
 4100



Ls: mix AA; incr. tan, offwhite mic-vfxln dense; minor gray silty shale

Ls: tan, lt brn vfxln dense; lesser tan fn granular, foss. with inter-particle por.; sl influx offwhite subchalky to chalky

Ls: mix AA with more tan, offwhite foss/granular; common subchalky to chalky; some mottled gray sl granular and foss.

Ls: offwhite, lt gray, tan fn granular. foss. with inter-particle por.; tan, offwhite, lt gray mic-vfxln dense; lesser white chalky; occ offwhite opq chert

Ls: various AA; some mottled gray granular, NP

80' spl - Sh: trace black carbon., some dark gray

Ls: abund. mottled tan/gray foss. granular, NVP and tan, offwhite mic-vfxln dense; Sh: abund. pale gray, mushy, med to dark gray, scatt. black, occ red-brn

Ls: tan, offwhite lt gray mic-vfxln dense; decr. mottled granular; scatt. offwhite opq chert

Ls: offwhite, tan, lt gray predom. vfxln dense; occ offwhite, lt gray opq chert

Ls: various dense AA, more cherty; Sh: med gray, gray-green

Sh: AA; Ls: tan, lt gray vf-cryptoxln; tan, offwhite mic-vfxln and white chalky

Ls: offwhite, lt gray mic-vfxln dense; Sh: influx soft red-brn

Ls: tan, lt gray vf-cryptoxln with small vug. por.; some med brn cryptoxln; common tan vf-cryptoxln, NVP, N.S.; Sh: lt to med gray, soft lt gray, gray-green, red-brn

Ls: lt gray, lt to med brn cryptoxln to sl mottled and granular, NVP; other tan, offwhite mic-vfxln dense, subchalky IP; Dolo: scatt. tan, offwhite fn-vfxln, N.S.

Ls: predom. lt to med brn, tan granular, poor-NVP; lesser gray, med brn cryptoxln and offwhite micxln, subchalky

Ls: incr. med brn, gray cryptoxln and offwhite, tan mic-vfxln dense; 2-3 chips offwhite, tan mic-vfxln with patchy stain, nfo, no odor; Dolo: scatt. tan vfxln

Ls: mix AA; several chips tan, lt gray fnxln with poor vis. por., with very spotty stain, nfo; 2 chips tan oolitic with some inter-oolitic por. with spotty stain, nfo, no odor; Dolo: sl incr. AA

Ls: mix med brn mottled granular and abund. tan, offwhite mic-fnxln, gen. poor vis. por., N.S.; scatt. chips with shows AA; scatt. Dolo. AA

Ls: predom. tan vf-cryptoxln; tan, lt brn fnxln with some inter-particle and ppt por., N.S.; Chert: sl influx offwhite opq; Sh: dark gray to black and pale gray mushy

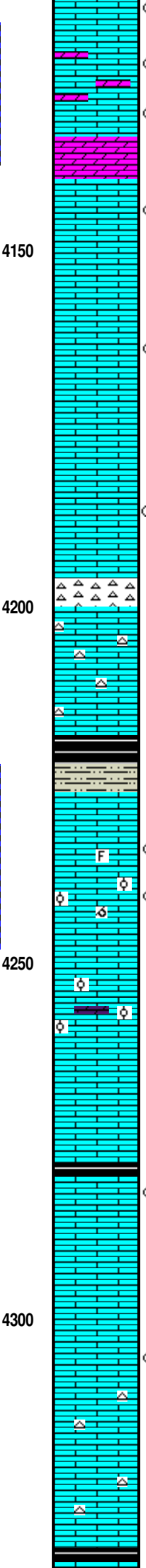
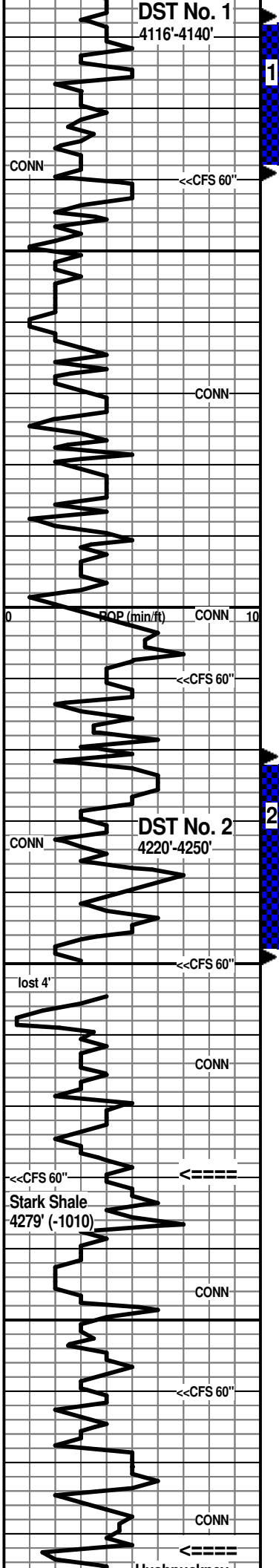
Sh: incr. % pale gray mushy, soft red, med gray, occ black;

Ls: various tan, offwhite mic-vfxln dense; 1-2 chips lt brn fnxln with ppt stain, no odor, nfo, gen. tight; Dolo: influx tan vfxln

Heebner Shale 3957' (-688)

Lansing 4008' (-739)

DST No. 1 Lansing "E" and "F"
 Interval: 4116'-4140'
 Times: 30-60-60-90
 IFP: B.O.B. in 8 minutes
 ISIP: no return blow
 FFP: B.O.B. in 8 minutes
 FSIP: no return blow
 Recovery: 282' MCW (20m, 80w); 678' MCW (10m, 90w);
 chl. 20,000; total fluid 960'
 FP: 48-253/269-486 SIP: 1136-1118
 HP: 2164-1762 BHT: 114 deg. F



Ls: predom. tan, lt brn, offwhite mic-vfxln dense; 3-4 chips tan, lt gray cryptoxln, very tight with spotty ppt stain, no odor, nfo

Ls: mix AA with more tan, offwhite granular IP with some inter-particle por., trace tan fn granular with sat. lt stain, sfo, no odor; Dolo: incr. % tan, lt brn fn-vfxln

Ls: mix various granular AA; gray, lt brn cryptoxln and tan, offwhite mic-vfxln dense; Dolo: good influx tan, offwhite vfxln, sucrosic IP, N.S.

Ls: predom. various tan, offwhite, lt brn vf-cryptoxln, NVP; scatt. offwhite, lt gray cryptoxln with scatt. vug. por. with dark stain, no odor, nfo

Ls: strong influx white chalky; tan, lt gray cryptoxln and tan, offwhite mic-vfxln dense

Ls: common tan, offwhite subchalky to white chalky; 1-2 chips lt brn sl mottled granular with poor ppt por., very hard with spotty stain, nfo, no odor

Ls: influx lt gray, lt to med brn cryptoxln to sl granular, NVP; scatt. dark gray to black shale

4200' spl - Ls: various AA with sl influx mottled gray granular; one chip offwhite cryptoxln with ppt brn stain, no odor, nfo; Sh: pale gray, mostly mushy

10' spl - Chert: good influx offwhite, lt gray, shrp, opq; Ls: tan, gray vf-cryptoxln, NVP

CFS 4210' 30" spl - Ls: tan, lt gray vf-cryptoxln AA; very cherty AA; Sh: some black; 60" spl - very cherty tile Ls's AA

20' spl - Ls: mix tan, lt gray vf-cryptoxln and lt brn, lt gray sl mottled granular; cherty AA

30' spl - Ls: various granular to cryptoxln; Sh: sl influx black carbon.

40' spl - Siltst: influx gray; Sh: med to dark gray, black; Ls: influx med to dark brn, gray-brn cryptoxln

50' spl - Ls: flood mottled tan, lt brn predom. granular, NVP, N.S.; several chips tan granular with spotty ppt stain, vsf sfo, no odor; 1-2 chips very coarse granular/foss. with vug and inter-particle por. with dark brn to black stain, nfo, no odor

CFS 4250' spls - >>>

Ls: fn granular, finely oolitic IP, common white chalky; trace stylolitic Dolomite with large vug. por., N.S.

Ls: flood lt gray, offwhite, tan vfxln dense, NVP; other offwhite subchalky to chalky

Ls: various dense AA; influx mottled med gray and brn, NVP, N.S.; still common offwhite subchalky to chalky

Sh: black carbon.

(4290' spl) - Ls: brn vf-cryptoxln with some vug. por. with dark brn to black spotty stain, ft odor, nfo

Ls: tan, offwhite mic-vfxln dense and lt gray vfxln silty

Ls: tan mic-vfxln dense with ppt and some vug. por.; flood white chalky, N.S.

Ls: tan, lt brn cryptoxln, NVP

Ls: various tan, offwhite mic-vfxln dense and tan, lt brn vf-cryptoxln, NVP; one chip as in 4290' spl with trace oil on break

Ls: tan, offwhite mic-vfxln subchalky to chalky; influx Chert: dove gray and mottled offwhite opq

Ls: tan, lt brn, lt gray vf-cryptoxln

Ls: predom. med brn, gray-brn cryptoxln; with dove gray and blue-gray chert;

Sh: black carbon.

MudCo Mud Check at 4140'
 4:15 AM on 1-22-2015
 wt vis wl pH chl
 9.4 60 8.0 10.0 6,500
 PV YP GelS lcm solids
 18 22 15/44 6# 7.4%

7:00 AM at 4140' on 1-22-2015

DST No. 2 Lansing "I" Zone
 Interval: 4220'-4250'
 Times: 30-60-60-90
 IFP: weak surface blow built to 2 inches
 ISIP: no return blow
 FFP: weak surface blow
 FSIP: no return blow
 Recovery: 124' WCM (10w, 90m)
 FP: 20-58/60-100 SIP: 1143-1096
 HP: 2095-1860 BHT: 113 deg. F

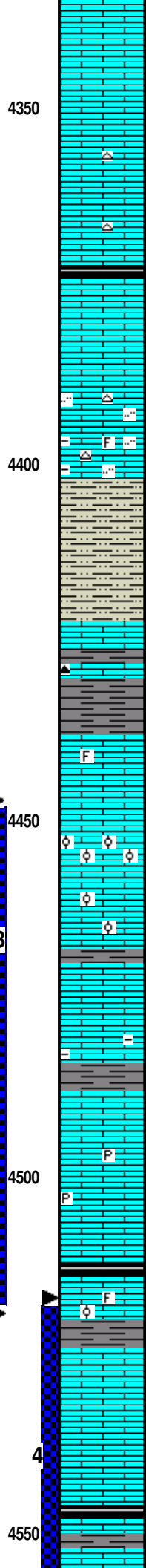
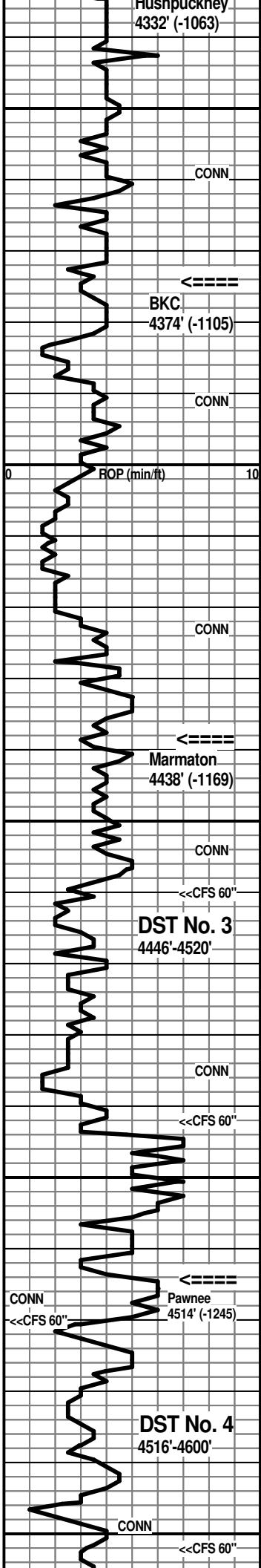
CFS 4250' 30" spl - Ls: flood tan, offwhite mic-fnxln with ppt por., becoming subchalky to chalky; some tan fn granular, finely oolitic with poor-NVP; lesser tan cryptoxln, N.S.; 60" spl - LS: flood tan, offwhite fn granular, finely oolitic with subchalky matrix, some poor-fair oomoldic and inter-particle por., N.S.

7:00 AM at 4250' on 1-23-2015

MudCo Mud Check at 4250'
 10:30 AM on 1-23-2015
 wt vis wl pH chl
 9.1 52 5.6 11.0 5,200
 PV YP GelS lcm solids
 17 19 12/32 7# 5.1%

Stark Shale 4279' (-1010)

Hushpuckney 4332' (-1063)



Ls: good influx various brn cryptoxln to mottled granular, NVP

Ls: flood lt gray, tan, offwhite mic-vfxln dense, NVP

Ls: tan, lt brn, lt gray vf-cryptoxln and tan, offwhite mic-vfxln dense, subchalky IP; trace lt gray opq chert

Ls: mix AA with sl incr. lt to med brn cryptoxln, sl mottled IP; sl incr. lt gray opq chert

Sh: vsi influx black carbon. in 90' spl

Ls: various tan, lt brn, lt gray vf-cryptoxln, sl mottled and granular IP

Ls: influx offwhite subchalky to chalky with ppt por., N.S.

Ls: flood lt to med gray, lt brn fn granular, silty, poor-NVP, N.S.; occ offwhite and mottled lt gray opq chert

Ls: various lt to med gray, some lt brn, tan fn granular, silty to sl shaly IP, occ foss.; occ lt gray opq chert

Siltst: flood lt gray, offwhite, finely micac.; Sh: lt to med gray, occ black

Ls: lt to med brn, tan granular, NVP and tan, offwhite mic-vfxln dense; other med brn cryptoxln; occ dark brn opq chert; Sh: med gray

Ls: lt gray, tan mic-vfxln dense, NVP, N.S.; trace fn granular with poor inter-particle por. with brn dead stain, no odor, nfo; Sh med to dark gray

Sh: influx lt to med gray; Ls: good influx lt to med brn granular, sl foss., NVP; sl influx mottled yellow-brn granular, N.S. trace tan fn gran. with inter-particle por. with spotty oily stain; one chip cream gran. with black spotty stain, trace dark brn oil

Ls: good influx tan oolitic w/spar matrix; other tan, lt brn granular/oolitic with micxln matrix; med brn, gray-brn cryptoxln in 60" spl; Sh: med to dark gray

Ls: various tan, lt brn oolitic/granular; 1-2 chips lt brn granular with stain, sfo no odor; influx white chalky and tan, offwhite mic-vfxln dense; Sh: med to dark gray, black

Ls: flood med to dark brn, gray-brn cryptoxln

Ls: mix AA with sl influx dark gray cryptoxln to mottled granular, N.S.; Sh: common dark gray to black and silty lt gray

Sh: med to dark gray; Ls: mix lt gray, lt to med brn cryptoxln and tan, offwhite mic-vfxln dense

Ls: flood lt gray, lt brn sl mottled granular, NVP; med gray, lt to med brn more cryptoxln, sl pyritic IP, NVP, N.S.

Ls: med to dark gray, med to dark brn mottled granular, sl pyritic IP, NVP, N.S.; Sh: influx dark gray

Sh: influx black carbon. in CFS 30" spl

Ls: tan, lt brn vfxln, dense and sl mottled granular/foss.; occ tan oolitic with spar matrix

Sh: dark gray to black carbon.

Ls: brn and gray cryptoxln to sl granular, NVP

Ls: various lt gray, lt brn, tan vf-cryptoxln and offwhite, tan mic-vfxln dense, subchalky IP

Ls: flood mottled lt to med brn and gray granular, NVP; other gray, gray-brn, med brn cryptoxln and med gray dense, shaly; Sh: black carbon.

Ls: lt to med brn, gray mottled granular; lesser tan, lt gray

BKC 4374' (-1105)

7:00 AM at 4380' on 1-24-2015

Marmaton 4438' (-1169)

MudCo Mud Check at 4467'
 1:20 PM on 1-24-2015
 wt vis wl pH chl
 9.1 59 5.6 11.5 5,000
 PV YP GeIS lcm solids
 20 21 13/37 6# 5.0%

DST No. 3 Marmaton
 Interval: 4446'-4520'
 Times: 30-60-60-90
 IFP: weak surface blow built to 1 1/2 inches
 ISIP: no return blow
 FFP: no blow
 FSIP: no return blow
 Recovery: 100' mud
 FP: 48-71/71-89 SIP: 1256-1206
 HP: 2305-1936 BHT: 115 deg. F

Pawnee 4514' (-1245)

7:00 AM on 1-25-2015

replaced valve seat

MudCo Mud Check at 4550'
 1:00 PM on 1-25-2015
 wt vis wl pH chl
 9.1 61 6.8 11.0 6,000
 PV YP GeIS lcm solids

Ls: lt to med brn, gray mottled granular, lesser tan, lt gray mic-vfxln dense, NVP, N.S.

19 22 13/34 6# 5.2%

Sh: black carbon.

Ls: various brn and gray mottled granular, NVP, N.S.

Fort Scott 4564' (-1295)

DST No. 4 Pawnee/Fort Scott
Interval: 4516'-4600'
Times: 30-60-30-60
IFP: weak surface blow, died in 11 minutes
ISIP: no return blow
FFP: no blow
FSIP: no return blow
Recovery: 5' mud
FP: 18-21/20-21 SIP: 105-59
HP: 2385-1968 BHT: 115 deg. F

Ls: med to dark gray, med brn cryptoxln to granular, foss. IP (crinoid), NVP; other tan, lt brn granular IP; trace black and mottled brn chert, N.S.

Ls: very predom. lt to med gray, lt brn cryptoxln with lesser lt gray, offwhite mic-vfxln dense; trace offwhite opq chert

Sh: black carbon.

Ls: influx mottled med brn, med gray granular, NVP, N.S.

Cherokee Shale 4592' (-1323)

7:00 AM at 4600' on 1-26-2015

Ls: various lt to med brn and gray mottled granular, sl oolitic IP; lesser lt to med gray, lt to med brn cryptoxln; Sh: dark gray to black carbon.

Ls: med brn, gray, gray-brn cryptoxln; interbedded Sh: dark gray to black carbon., some silty and micac. med gray

Ls: flood mottled lt brn/gray/tan with offwhite micxln matrix, granular, foss. IP, NVP, N.S.; Sh: black carbon., dark gray

MudCo Mud Check at 4626'

11:00 AM on 1-26-2015
wt vis wl pH chl
9.2 55 8.0 10.5 7,000
PV YP GeIS lcm solids
17 21 12/31 6# 5.7%

Ls: flood lt to med gray, brn, tan vf-cryptoxln, NVP, N.S.; other offwhite, lt gray mic-vfxln, silty IP; Shales AA

Ls: various lt to med gray, lt to med brn predom. cryptoxln, NVP; interbedded dark gray to black carbon. shales; trace offwhite and black chert

Johnson Zone 4646' (-1377)

Ls: mix med to dark gray, med to dark brn cryptoxln to mottled sl granular, NVP, N.S.; Shales AA

Ls: various gray, brn, tan cryptoxln to mottled granular, NVP, N.S.; Sh: dark gray to black and lt gray silty

Ls: various gray, brn, tan cryptoxln; lesser tan, offwhite mic-vfxln dense; scatt. brn opq chert

Atoka 4682' (-1413)

Sh: influx black carbon. and dark gray

Ls: very predom. dark gray, dark brn cryptoxln; scatt. dark gray, dark brn, black opq chert

Ls: various gray and brn cryptoxln to sl granular, NVP, N.S.; occ dark gray, dark brn opq chert; Sh: some black carbon.

Ls: flood lt gray, offwhite vf-cryptoxln, NVP, N.S.; common dark dense AA

Ls: various brn and gray cryptoxln to mottled granular, NVP, N.S.; scatt. dark brn opq chert and mottled orange/brn chert

Ls: influx dark gray to black mottled cryptoxln, argill., very hard; occ chocolate brn smooth cryptoxln; scatt. gray opq chert

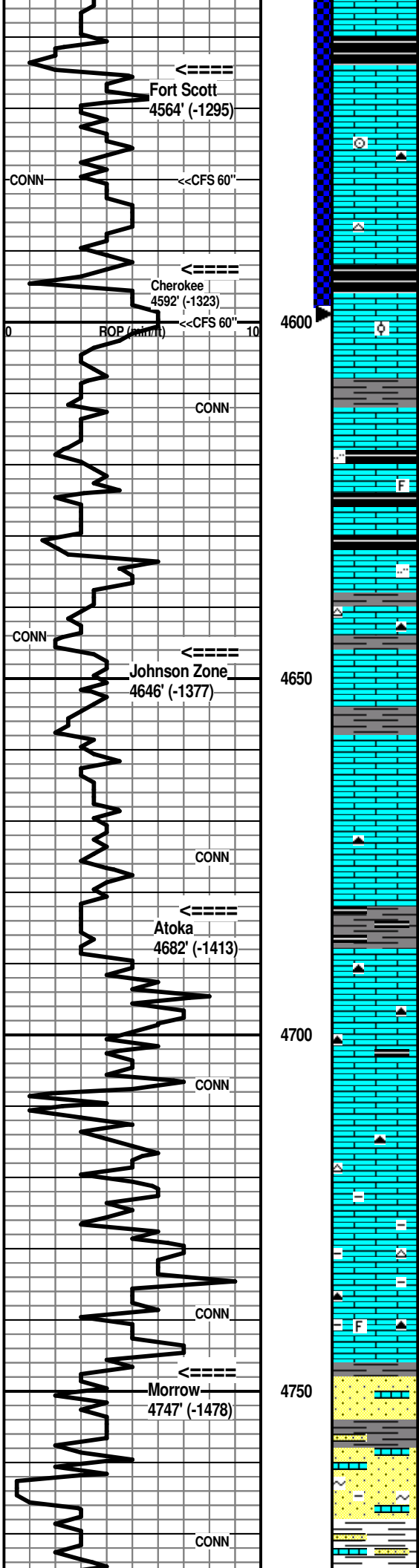
Ls: various dark gray to black and some dark brn granular to cryptoxln, some foss. and argill.; NVP, N.S.; scatt. black and dark gray opq chert

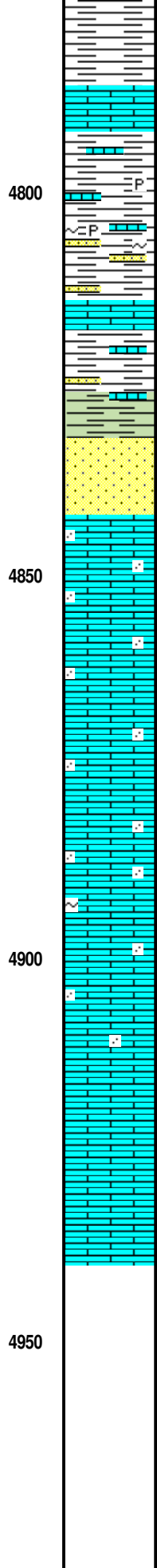
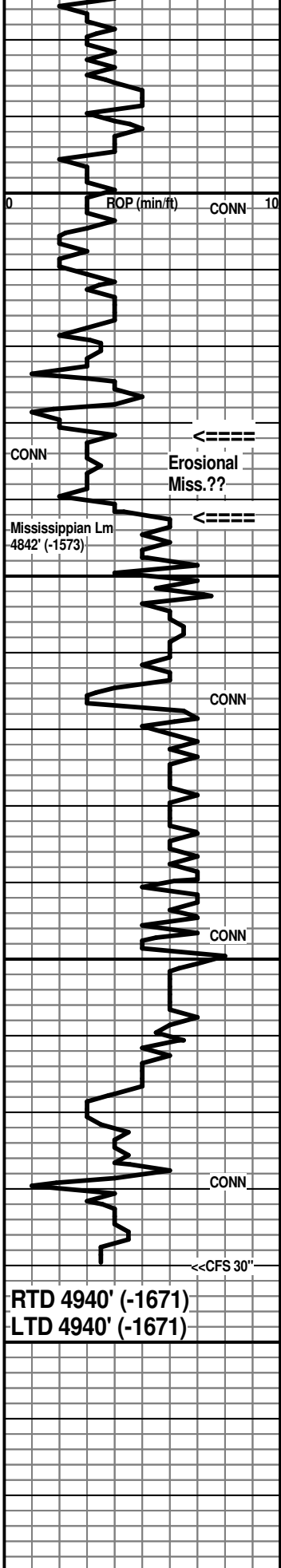
Morrow 4747' (-1478)

70' spl - Sst: good influx lt gray, offwhite vf-fg, well cmt'd with silica, quartzitic IP; Sh: dark gray to black; common dark tight Ls's AA

80' spl - Sh: good influx dark gray to black, subfissile and carbon. IP; Ls's and Sst's AA; some tan fg Sst with shale partings; some gray fg vsi glauc.

90' spl - Sh: dark gray to black with scatt. dark tight Ls's; Sst: incr. % lt gray, offwhite vf-fg shaly, sl glauc. IP; offwhite, tan fg gen. tight with silica to some calcite cement





4800' spl - much decr. Sst; Sh: strong influx lt to med gray, gray-green, black; very predom. Ls: various dark gray, brn granular to cryptoxln

10' spl - Sh: vc gray to black; scatt. dense Ls's AA

20' spl - Sh: vc gray to black, more lt gray, some pyritic gray and free pyrite; Ls: incr. % tan, cream mic-vfxln dense; Sst: scatt. vfg green, glauc., tight and lt gray vfg, shaly

30' spl - mix Ls: tan, brn vf-cryptoxln and granular; Sst: lt to med gray vf-fg shaly; Sh: predom. dark gray to black

40' spl - Sh: predom. dark gray to black; scatt. dense tight Ls's and scatt. Sst AA

50' spl - Sh: still very predom. Sh: dark gray to black with influx gray-green subwaxy; Sst: sl influx offwhite vfg, silica cement; some lt gray fg with inter-granular por. with calcite cement, N.S.

Mississippian Lm 4842' (-1573)

Ls: tan, lt brn fn granular, sandy IP, N.S.

Ls: mix AA

Ls: tan, cream fn granular and vf sandy

Ls: fn granular and finely sandy AA

Ls: influx offwhite micxln with imbedded med qtz grains

Ls: tan, cream mic-vfxln dense; lt brn med granular, glauc.; lt to med brn cryptoxln

Ls: tan, offwhite, lt gray fn granular and sandy

Ls: various tan, offwhite, lt gray fn granular and sandy with offwhite micxln matrix

Ls: mix AA with some lt brn granular with poor inter-particle por., N.S.

Ls: influx tan, lt to med brn fn to med granular, sl mottled; some more cryptoxln

Ls: flood med brn, gray, gray-brn granular to cryptoxln, NVP, N.S.

Because of the lack of any commercial shows of oil or gas, as evidenced from samples, DST's and open hole logs, the #1-27 R&B was declared a dry hole.

Respectfully submitted,

Wesley D. Hansen
Petroleum Geologist
Kansas License No. 418

Mississippian Lm 4842' (-1573)

Samples very shaly through the 4920' sample from sloughing Morrow

MudCo Mud Check at 4873'
4:30 AM on 1-27-2015
wt vis wl pH chl
9.4 61 8.0 10.0 7,200
PV YP GeIS lcm solids
18 22 16/47 6# 7.3%

7:00 AM at 4898' on 1-27-2015

RTD reached at 10:30 AM on 1-27-2015
CFS/Short trip/CTCH
TOFL