



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. #8-1 Mary Ann
Location: 1470' FNL, 630' FWL of Section 1-1S-36W
License Number: API: 15-153-20975
Spud Date: 1-29-2014
Surface Coordinates: 1470' FNL, 630' FWL of Section 1-1S-36W
Region: Rawlins County, KS
Drilling Completed: 2-4-2014

Bottom Hole Vertical hole
Coordinates:
Ground Elevation (ft): 3130' **K.B. Elevation (ft):** 3141'
Logged Interval (ft): 3450' **To: RTD** **Total Depth (ft):** 5014'
Formation: Arbuckle at DDTD
Type of Drilling Fluid: Chemical - Displaced at 3125'

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
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COMMENTS

Contractor: Murfin Drilling Co., Inc. Rig #2
 Pusher: Arturo Cabezas

Surface Casing: 8 5/8" set at 265' w/225 sx
 Production Casing: 5 1/2" set at 4998' w/550 sx

Mud by: Morgan Mud - Cade Lines was the engineer

DST's by: No DST's

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

Deviation Surveys: 1/4 deg. @ 265'; 1/4 deg. @ 1012'; 1/2 deg. @ 1800'; 3/4 deg. @ 4482'





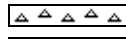
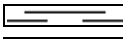



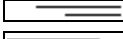




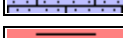


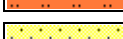


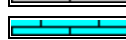






BIT RECORD

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC	FDS	225'	225'	2
2	7 7/8"	HTC	DP 506	5014'	4789'	49 3/4

FORMATION TOPS AND STRUCTURAL COMPARISON

FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL
	Depth	Datum	Depth	Datum	
	3141'	KB	3141'	KB	MDC #5-1 Mary Ann 900'FNL, 1075' FWL Section 1-1S-36W 3177' KB
Anhydrite	3075'	+66	3073'	+68	flat
B/Anhydrite	3110'	+31	3110'	+31	-2'
Neva			3557'	-416	-4
Red Eagle			3621'	-480	-5
Foraker			3668'	-527	-7
Topeka			3880'	-739	-3
Oread			3992'	-851	-5
Lansing			4099'	-958	-7
Stark Shale			4312'	-1171	-4
BKC			4372'	-1231	-6
RTD	4482'	-1341			
LTD			4485'	-1344	
DDTD	5014'	-1873			

ROCK TYPES

 Anhy	 Salt	 Dol	 Shlyslts
 Cht	 Shale	 Dtd	 SltysH
 Coal	 Shcol	 Gry sh	 Sdy dolo
 Congl	 Shgy	 Sandylms	 Silty dolo
 Gyp	 Sltst	 redshale	 Shy dolo
 Ls colorless	 Ss	 Shale	 Shaly ls
 Lmst	 Carb sh	 Sltstn	

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
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbstn
- Clystn
- Dol
- Grysh
- Grystl
- Lms
- Sandylms
- Sh
- Sltstn

OTHER SYMBOLS

INTERVALS

- Core
- Dst
- Dst

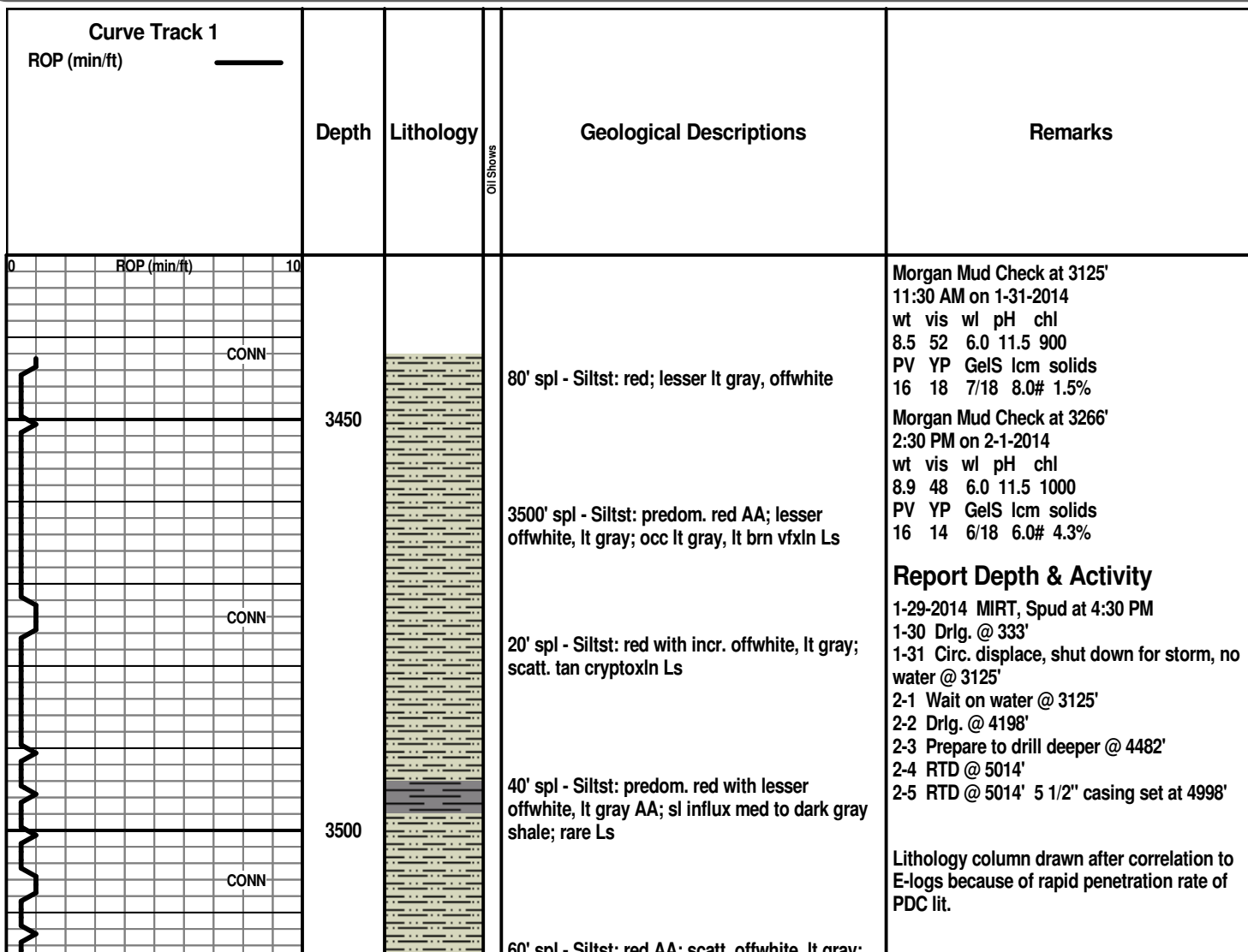
EVENTS

- Rft
- Dst top/base

OIL SHOWS

- Even
- Spotted
- Quest.

- Trace
- Dead
- Gas show



60' spl - Siltst. red AA, scatt. offwhite, lt gray, Sh: red silty and some lt red gummy

Sample quality is fair to good

CONN

80' spl - mix of red Siltst and red silty shale; occ offwhite, lt gray siltst

3550

mix AA with occ lt gray, lt brn vfg Sst, N.S.

Neva

CONN

3600' spl - Ls: good influx offwhite very soft, mushy, clayey; lesser tan fn granular

20' spl - Sh: flood red, soft, gummy

3600

ROP (min/ft)

CONN

40' spl - Sh: decr. red soft AA; good influx med to dark red, silty; sl influx lt gray vvfgr Sst, soft, N.S.; occ tan cryptoxln Ls

Red Eagle

CONN

60' spl - flood Ls: mix white chalky; offwhite, lt gray mic-vfxln dense, subchalky; much decr. shales AA with influx dark gray shale

3650

80' spl - Ls: decr. white chalky; predom. offwhite, lt gray mic-vfxln dense, subchalky IP; Sh: beds of med to dark gray and red-brn

Foraker

CONN

3700' spl - Sh: much incr. % of vc gray and red-brn; Ls: mix AA decr. %; occ lt to med gray and lt brn vf-cryptoxln

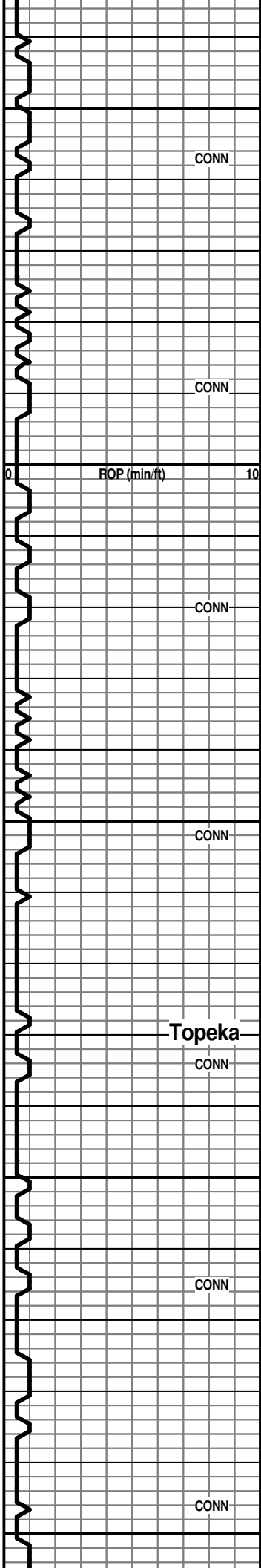
20' spl - Ls: lt to med gray mic-vfxln dense, shaly and silty IP; Sh: predom. lt to med gray, lesser red-brn, red

3700

40' spl - Ls: various lt to med gray AA with sl influx offwhite, tan mic-vfxln dense; Sh: lt to med gray, calcar. IP

CONN

60' spl - Ls: various gray, offwhite dense AA, shaly IP; Sh: incr. % lt to med gray and incr. red silty



80' spl - abund. shales AA; Ls: mix offwhite, tan, lt gray mic-vfxln dense; lesser lt gray, offwhite fn granular, poor-NVP, N.S.

3800' spl - Sh: lt to med gray, red, red-brn and red-maroon; interbedded with Ls: various tan, lt gray, offwhite mic-vfxln dense; some micxln to fn granular, poor-NVP, N.S.

20' spl - flood Sh: lt to med red, soft, gummy

40' spl - Sh: lt to med gray, red, red-brn silty IP; Ls: beds of offwhite, lt to med gray mic-vfxln dense

60' spl - Sh: abund. lt to med red, silty; lesser med gray; lesser Ls: offwhite, lt gray, some tan vf-cryptoxln; trace offwhite dense with spotty black, dead gilsonite stain

80' spl - predom. shales AA with lesser Ls mix AA

3900' spl - very predom. lt to med red shales, some soft and gummy; lesser med gray; Ls: scatt. lt gray, tan granular, N.S.; one chip tan med to coarse granular with pp black stain, nfo, no odor

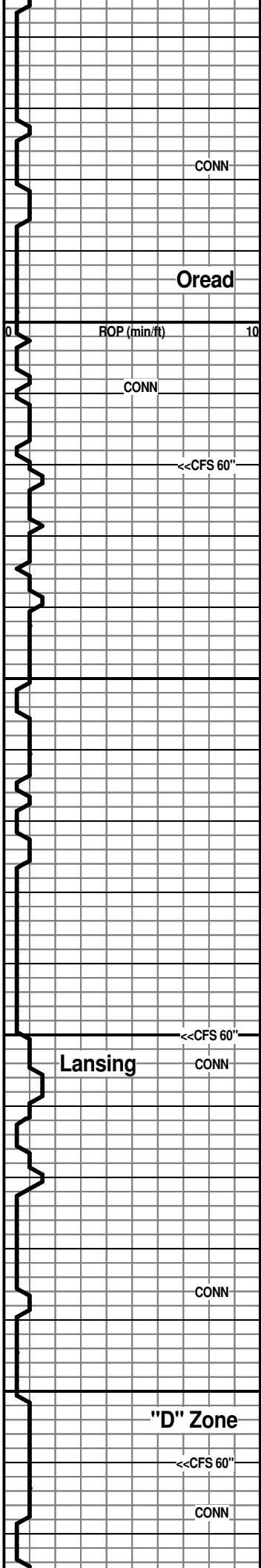
20' spl - decr. shale %; Ls: tan, lt gray cryptoxln to sl granular, NVP, N.S.

40' spl - predom. Ls: mix tan, lt gray, some lt brn cryptoxln with influx offwhite, tan mic-vfxln dense, subchalky IP

60' spl - Ls: mix AA with Sh: med to dark red, soft red, red-maroon; lesser gray

80' spl - strong influx Sh: various red, red-brn; Ls: various cryptoxln AA; some lt red cryptoxln and lt red/offwhite granular, N.S.

4000' spl - very predom. Sh: lt to med red, red-maroon; lesser med gray, gray-green



20' spl - very predom. Sh: various red, red-maroon

CFS 4020' 30" spl - shales AA with influx med gray; Ls: fair influx white chalky, some with spotty black stain, nfo, no odor

CFS 4020' 60" spl - flood Ls: very predom. lt gray, offwhite mic-vfxln dense, NVP; some white chalky, very scatt. pp black stain AA

40' spl - new rocks??; Sh: abund. med to dark gray; Ls: mix AA; very scatt. offwhite with spotty stain AA; trace offwhite granular with spotty black stain

60' spl - mix med gray shale and Ls: offwhite, lt gray mic-vfxln dense and lt gray vfxln, sl shaly

80' spl - flood lt to med gray calcar. shale and dense, mic-vfxln shaly Ls

CFS 4100' 30" spl - Sh: influx soft red and red-brn ; influx offwhite, lt gray Siltst; decr. Ls % AA

CFS 4100' 60" spl - Sh: predom. various red, red-brn, vc gray and offwhite; lt gray Siltst; Ls: predom. offwhite, lt gray mic-vfxln dense, N.S.; rare offwhite, cream micxln with spotty black stain, new??

20' spl - new rocks??; very predom. shales and siltst AA; occ lt gray med grd Sst, N.S.; scatt. lt gray vvfgr Sst with black pp stain, nfo, no odor

40' spl - Sh: predom. vc gray; lesser red, red-brn; Ls: good influx lt to med brn and gray-brn cryptoxln and offwhite mic-vfxln dense, NVP, no shows

60' spl - Sh: influx more red-brn, maroon red, some vc gray; Ls: much decr. mix AA; trace offwhite cryptoxln with scatt. vug. por. with lt stain

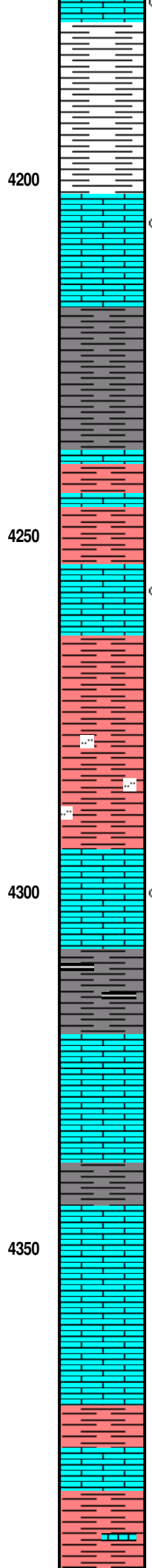
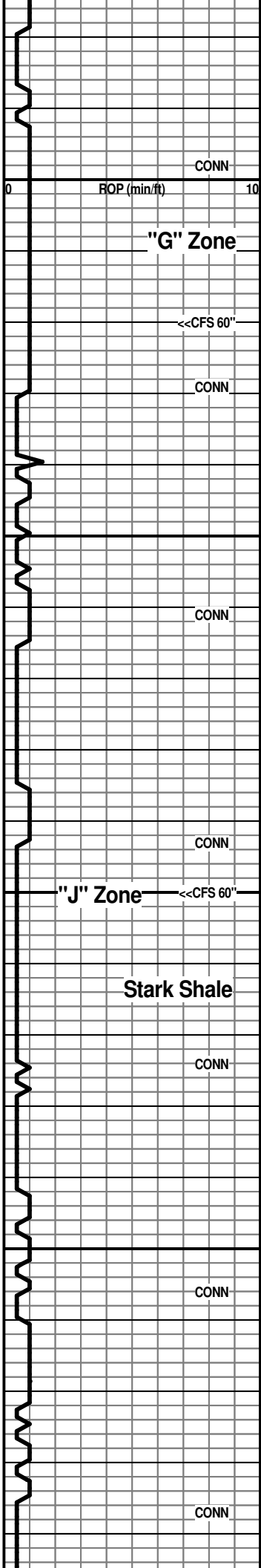
CFS 4160' 30" spl - very shaly and poor sample AA; Ls: some offwhite micxln to fn granular with spotty black to patchy brn stain, nfo; rare to occ offwhite cryptoxln with scatt. vug. por. with lt stain, nfo, no odor

CFS 4160' 60" spl - very shaly and poor spl; scatt. shows AA, some sl improvement in stain

80' spl - new rocks??; very predom. Sh: predom. med gray with lesser med to dark red-brn, brn, occ maroon; some shaly pyrite

4200' spl - Sh: varied AA; Ls: minor % some lt gray, tan granular; offwhite, lt gray mic-vfxln dense; tan, lt gray cryptoxln

Sample quality generally poor, much shale slough



20' spl - Ls: incr. % offwhite, lt gray mic-vfxln dense and offwhite, lt gray granular, NVP, N.S.; scatt. offwhite mic-vfxln with patchy pp brn to black stain, gen. poor vis. por., nfo, no odor

CFS 4220' 30" spl - flood Ls: offwhite, lt gray mic-vfxln dense and lt gray, tan vf-cryptoxln, NVP, N.S.; many chips offwhite mic-vfxln with spotty pp stain, trace residual oil, nfo, no odor

CFS 4220' 60" spl - Ls: mix AA; occ shows AA; Sh: incr. med gray

40' spl - no new rocks

60' spl - mix AA with incr. med gray shale

80' spl - predom. Sh: lt to med gray with red-brn, influx red-maroon; Ls: offwhite, lt gray mic-vfxln dense and lt gray, gray-brn vfxln dense

4300' spl - shale mix AA with incr. % of Ls: offwhite, lt gray vfxln to granular, NVP, N.S.; trace spotty stain in offwhite mic-vfxln dense (new??)

CFS 4300' 30" spl - Sh: good influx soft, mushy red, red-brn, red-maroon silty IP

CFS 4300' 60" spl - very predom. shales AA with med to dark gray; scatt. offwhite, lt gray dense to granular Ls

20' spl - influx Ls: predom. offwhite mic-vfxln, subchalky IP; scatt. lt gray, offwhite cryptoxln with edge stain, some vug. por. with stain, nfo, no odor; some offwhite mic-vfxln, fn granular IP with pp stain, trace oily residue, nfo, no odor

40' spl - Ls: predom. offwhite mic-vfxln dense; Sh: med to dark gray, some carbon. laminae; lesser red-brn, red-maroon

60' spl - Ls: offwhite mic-vfxln, subchalky to chalky IP; Sh: mix AA

80' spl - very predom. Ls: mix AA with sl influx lt gray cryptoxln, NVP

4400' spl - Ls: still predom. offwhite mic-vfxln dense; lesser lt gray, lt brn cryptoxln; Sh: fairly minor med to dark gray; occ red-brn

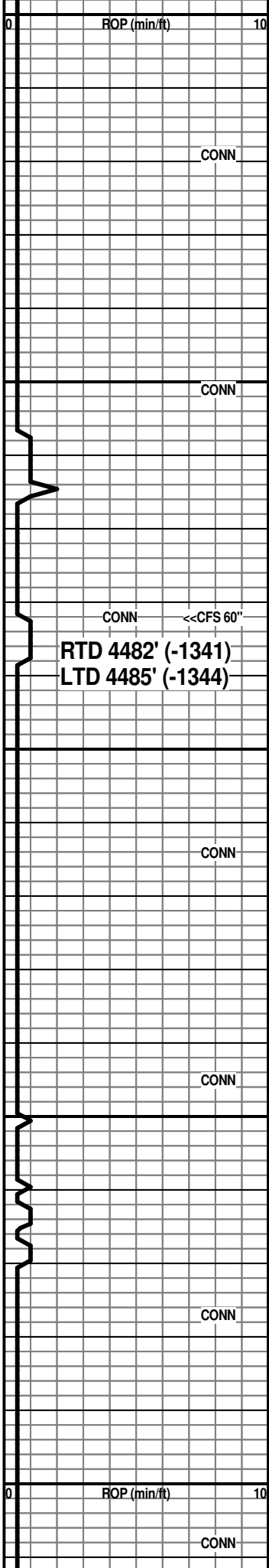
20' spl - Ls: mix AA with influx Sh: soft lt to med red, med to dark red-brn, med gray

40' spl - Sh: good influx med to dark red-brn, soft red; Ls: some tan, lt gray cryptoxln, NVP, N.S.

Samples very shaly and poor

Samples much improved

Morgan Mud Check at 4300'
 11:55 AM on 2-2-2014
 wt vis wl pH chl
 9.3 55 6.8 9.5 1000
 PV YP GelS lcm solids
 20 20 8/30 9.0# 7.1%



4400

4450

4500

4550

4600

60' spl - very shaly AA; scatt. ochre, gray-green, gray-maroon; minor Ls: tan, gray cryptoxln

80' spl - Sh: very predom. soft red; lesser med to dark gray, gray-green; scatt. tan, lt gray, offwhite vf-cryptoxln Ls

CFS 4482' 30" spl - Sh: predom. various red, red-brn, soft IP; more gray, gray-green; some red-brn siltst; Ls: various tan, offwhite, lt gray vf-cryptoxln; scatt. offwhite, tan granular, NVP, N.S.

CFS 4482' 60" spl - Sh: mix AA with red-maroon; Ls: fair influx lt gray, sl silty and lt gray, lt brn cryptoxln

4500' spl - trashy

20' spl - still trashy; mix Sh: red, red-brn, med to dark gray, some lt gray and gray-green, purplish-brn

40' spl - abund. multi-colored shales AA, decr. %; Ls: mix offwhite, lt gray mic-vfxln sl silty IP; scatt. lt to med brn, lt gray cryptoxln

60' spl - Sh: more med to dark gray, splintery with red-brn AA; Ls: more lt to med brn, gray cryptoxln

80' spl - predom. Sh: mostly med to dark gray, lesser red, red-maroon; decr. % Ls: offwhite, lt gray mic-vfxln; scatt. cryptoxln AA; scatt. offwhite, gray fg calcar. Sst, N.S.

4600' spl - Sh: lt to med gray, red-brn, red-maroon, trace mottled red-green; Sst: scatt. offwhite fg calcar., N.S.; Ls: some lt gray, lt brn vf-cryptoxln

20' spl - very predom. Sh: med to dark gray, lesser purplish-gray, purple, dark red-brn; minor Ls: lt to med brn cryptoxln and offwhite, lt gray granular, NVP, N.S.

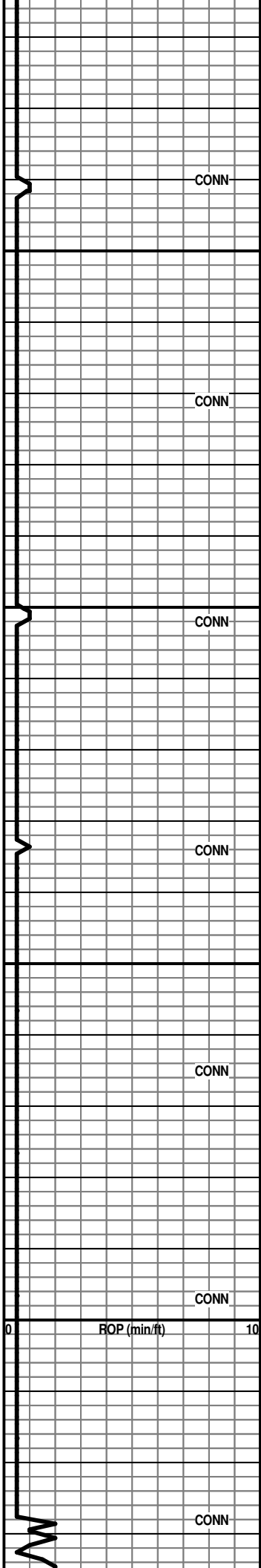
40' spl - Sh: predom. med to dark gray with more multi-colored AA; very minor Ls %

60' spl - shales AA; trace gray med grnd Sst; rare gray cryptoxln Ls, N.S.

80' spl - Sh: mix AA; occ offwhite calcar. to dolomitic shale and shale with imbedded pyrite

After logging the operator elected to go back to drilling for a DDRTD in the Granite wash for use as a SWD well.

No attempt was made to draw lithology column from 4482' to 5014' because of the lack of any E-logs below 4482'



4700' spl - Sh: multi-colored AA, predom. vc gray, gray-green; scatt. dense Ls

CONN

4650

20' spl - Sh: multi-colored AA, more red-brn; scatt. dense Ls; scatt. very coarse clear qtz grains

CONN

40' spl - Sh: multi-colored AA, more purple and red-purple; very scatt. lt gray fg Sst with shale partings; trace coarse single grains

4700

CONN

60' spl - mixed and mottled shales AA; Sst: sl influx offwhite vf-fg calcar., very finely micac.

80' spl - shales AA; scatt. tight calcar. Sst and very coarse loose qtz grains, some free pyrite

CONN

4750

4800' spl - Sh: multi-colored AA, predom. med to dark gray; scatt. Sst and loose grains AA

CONN

20' spl - Sh: very predom. med to dark gray; Sst: influx offwhite, lt gray, tan vvfq micac. and shaly, scatt. shale partings, vsl glauc. IP

CONN

4800

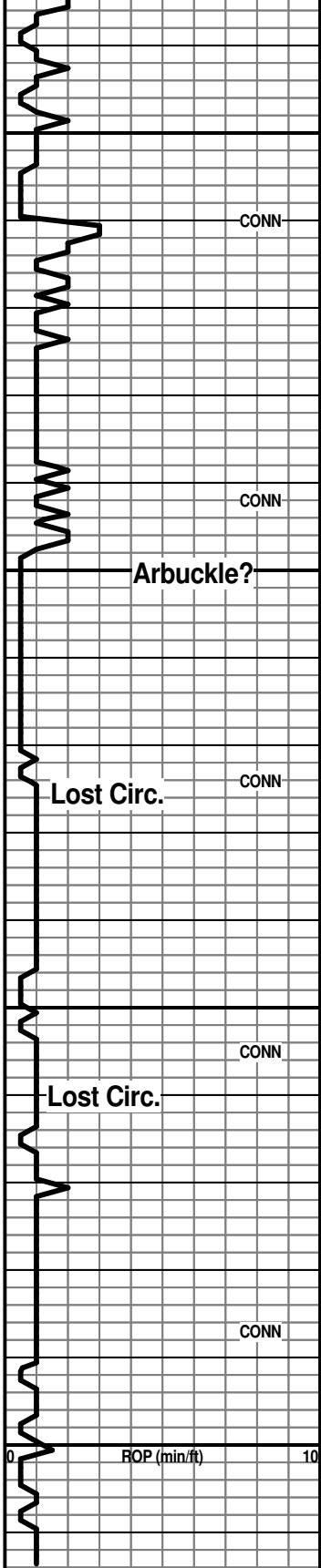
40' spl - decr. shale %; Dolo: good influx offwhite, tan vfxln, sucrosic with interxln and some vug. por., some glauc., N.S.; Chert: offwhite, mottled with gray, tan opq; scatt. white chalky Ls

CONN

60' spl - Dolo: AA with incr. various cherts

Morgan Mud Check at 4730'
12:35 PM on 2-3-2014
wt vis wl pH chl
9.3 53 7.6 10.0 1100
PV YP GelS lcm solids
20 16 8/27 8.0# 7.1%

common shales in samples



4850
 4900
 4950
 5000

80' spl - much decr. cherty Dolo AA; good influx Ls: offwhite, tan mic-vfxln dense, subchalky IP; lesser lt brn, lt gray vfxln dense

4900' spl - Ls: offwhite, tan mic-vfxln dense, subchalky IP

20' spl - Ls: mix AA, becoming sl granular IP with chalky matrix; samples are shaly

40' spl - very shaly and poor; Sst: sl influx tan fn-med grd with dolomitic cement; Dolo: lt brn sandy and glauc.; some dirty gray fxln

60' spl - very shaly and poor samples; Dolo: various sandy and glauc. AA with some dolomitic Sst, N.S.

80' spl - very shaly and poor samples; Dolo: tan, lt gray fn-vfxln

5000' spl - very shaly and poor samples; Dolo: tan, lt gray fn-vfxln; some sandy and glauc.

no cfs samples

DDRTD 5014' (-1873)

Operator set casing at 4998'. Well will likely be drilled deeper for SWD in the Reagan Sand with completion tools. Any oil potential from the Lansing will be determined at operator's discretion.

Respectfully submitted,

Wesley D. Hansen
 Petroleum Geologist
 Kansas License No. 418

Lost returns at 4925' Approx. 100 bbl
 Raised LCM to 14#, no returns; raised to 20# drilled ahead

Lost returns at 4960'
 Raised LCM to 25# drilling ahead

Losing returns with 25# lcm
 Called RTD at 5014'
 Estimated total fluid loss of 1300 bbl

