



**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. #6-1 Mary Ann  
**Location:** 1470' FNL, 2190' FWL of Section 1-1S-36W  
**License Number:** API: 15-153-20964  
**Spud Date:** 11-20-2013  
**Surface Coordinates:** 1470' FNL, 2190' FWL of Section 1-1S-36W

**Region:** Rawlins County, KS

**Drilling Completed:** 11-24-2013

**Bottom Hole Vertical hole**  
**Coordinates:**  
**Ground Elevation (ft):** 3187' **K.B. Elevation (ft):** 3198'  
**Logged Interval (ft):** 3510' **To:** RTD **Total Depth (ft):** 4520'  
**Formation:** Marmaton at RTD  
**Type of Drilling Fluid:** Chemical - Displaced at 3278'-3300'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

#### **OPERATOR**

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

#### **GEOLOGIST**

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## COMMENTS

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

Surface Casing: 8 5/8" set at 265' w/245 sx  
 Production Casing: 5 1/2" set at 4507' w/500 sx

Mud by: Morgan Mud - Dave Lines was the engineer

DST's by: No DST's

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






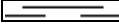



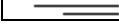










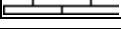






Deviation Surveys: 1 deg. @ 265'; 1/2 deg. @1101'; 3/4 deg. @1889; 1/2 deg. @ 2836'; 1/2 deg. @ 4520'

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC	rerun	265'	265'	2
2	7 7/8"	HTC	DP506F	4520'	4255'	53 3/4

## FORMATION TOPS AND STRUCTURAL COMPARISON

FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL MDC #3-1 Mary Ann 330'FNL, 2190' FWL Section 1-1S-36W 3133' KB
	Depth	Datum	Depth	Datum	
Anhydrite	3136'	+62	3129'	+69	+2
B/Anhydrite	3165'	+33	3161'	+37	+4
Neva	3613'	-415	3607'	-409	+7
Red Eagle	3674'	-476	3668'	-470	+9
Foraker	3720'	-522	3712'	-514	+10
Topeka	3937'	-739	3930'	-732	flat
Oread	not called		4042'	-844	+2
Lansing	not called		4145'	-947	+2
Stark Shale	not called		4362'	-1164	+1
BKC	not called		4412'	-1214	+3
RTD	4520'	-1322			
LTD			4510'	-1312	

## ROCK TYPES

 Anhy	 Salt	 Dol	 Shlyslts
 Cht	 Shale	 Dtd	 Sltys
 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
- Breclfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr



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

### STRINGER

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

## OTHER SYMBOLS

### INTERVALS

- Core
- Dst
- Dst

### EVENTS

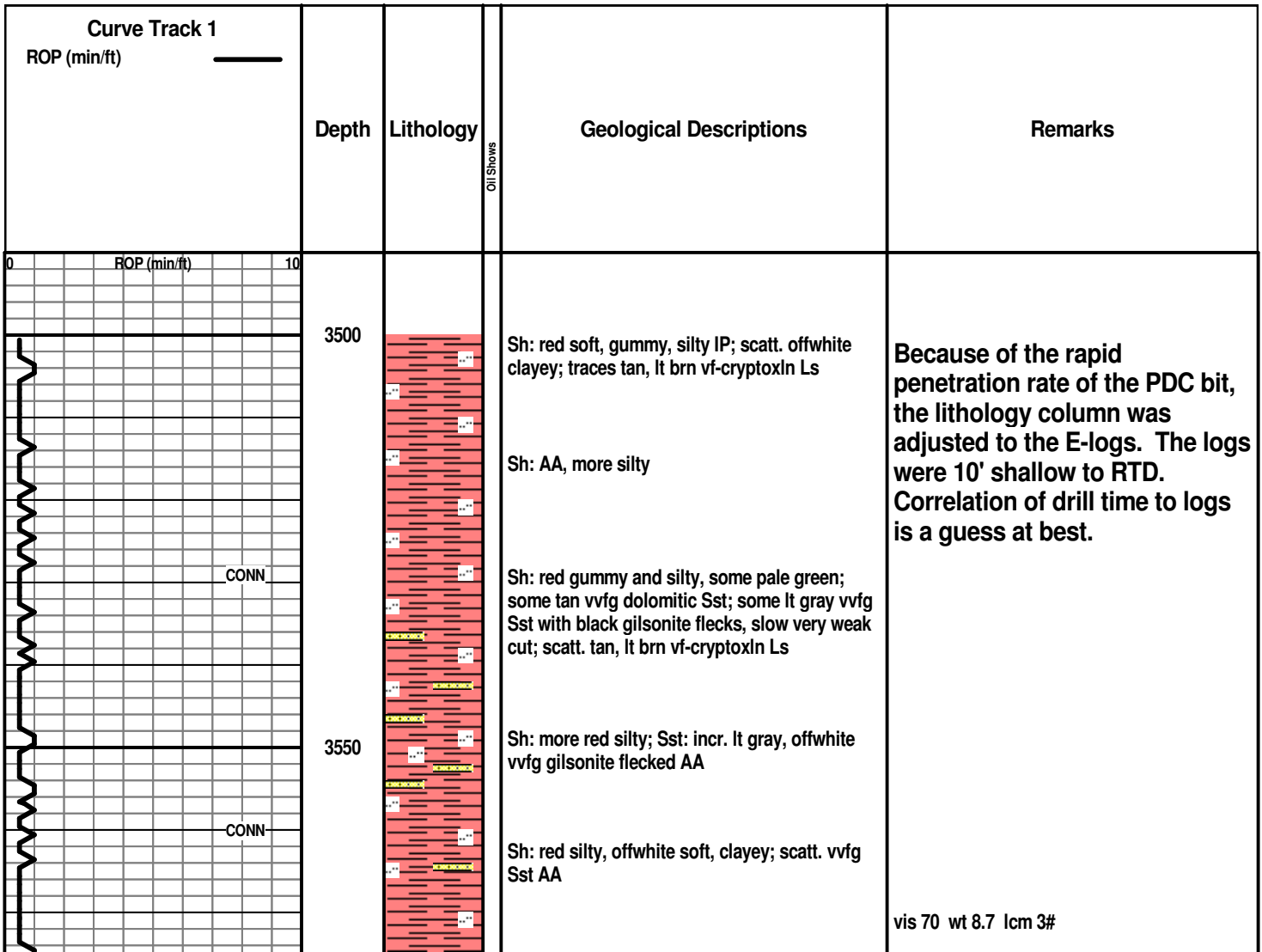
- Rft
- Dst top/base

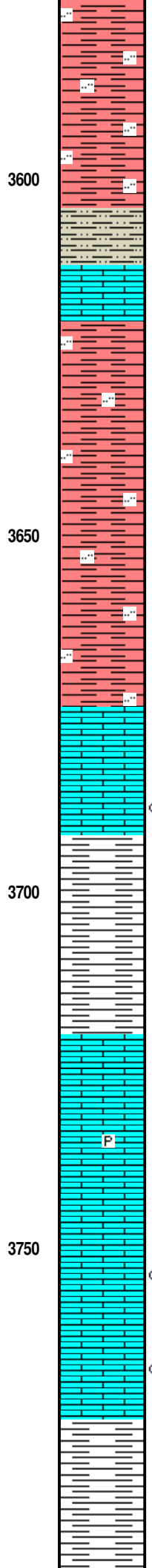
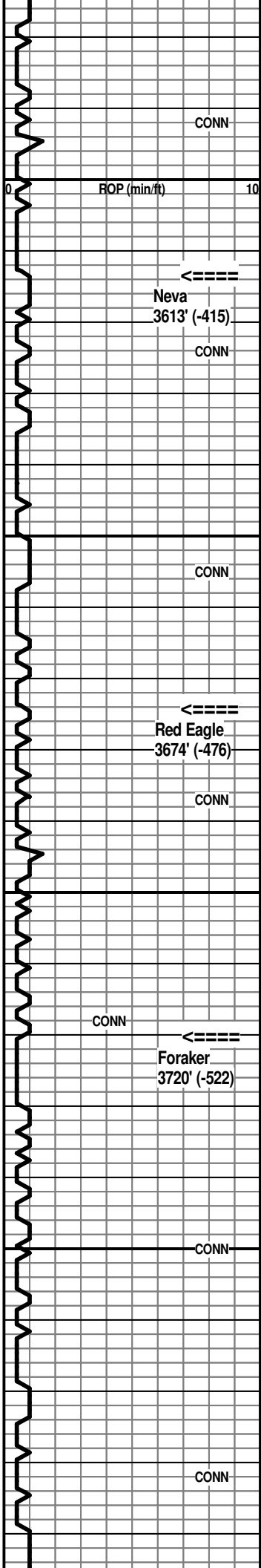
### OIL SHOWS

- Even
- Spotted
- Quest.



- Trace
- Dead
- Gas show





very predom. Sh: red, gummy and silty; scatt. Sst AA; trace tan cryptoxln Ls

Sh: red gummy and silty with influx lt gray and offwhite Siltst

Ls: influx offwhite mic-fnxln, subchalky to chalky, and lt gray dense N.S.

Sh: flood lt red gummy and silty

Sh: AA

Ls: offwhite mic-fnxln subchalky to chalky; lt gray, tan mic-vfxln, NVP, N.S.

40' spl - Ls: offwhite, lt gray granular with some interparticle and vug. por. with dark brn oily stain, globular oil, vvsl odor on break, sl sg; Sh: offwhite, lt gray soft, mushy, clayey

60' spl - Sh: AA with Ls: some shows AA with good influx lt gray, silty to sl dolomitic Ls with NVP, N.S.

80' spl - Ls: offwhite, lt gray mic-fnxln dense, subchalky to chalky; occ lt brn, med gray cryptoxln, sl pyritic IP, N.S.

3800' spl - Ls: offwhite, lt gray dense AA; lesser lt brn, lt gray fn granular with poor-NVP, N.S.; scatt. offwhite, tan granular to micln dense with patchy to sat. dark stain, no odor, nfo

20' spl - Ls: offwhite, lt gray dense AA; scatt. shows AA; some lt gray vf-cryptoxln; Sh: influx offwhite, lt gray soft, clayey

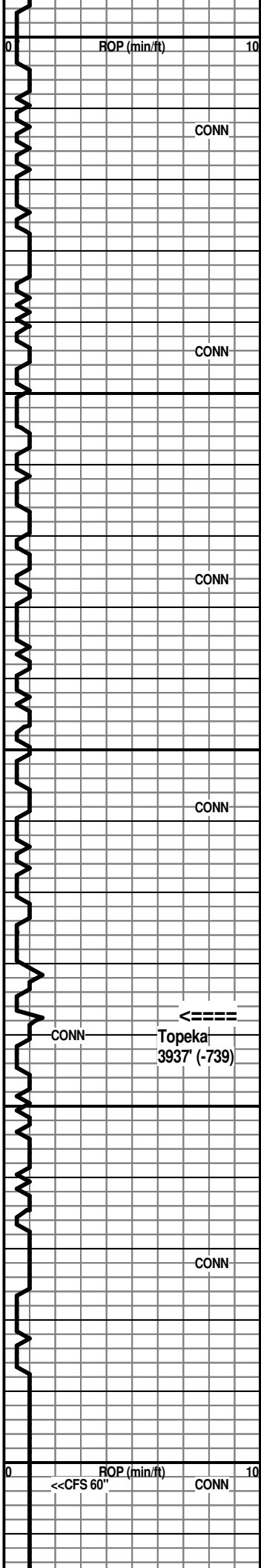
**Neva 3613' (-415)**

**Red Eagle 3674' (-476)**

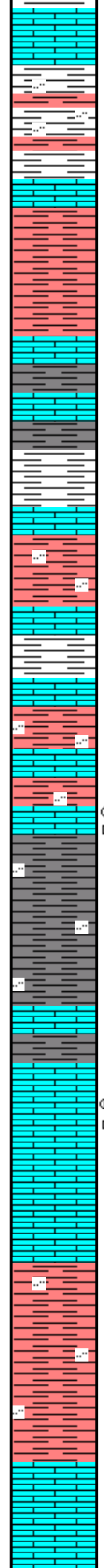
Note: If the 3740' sample was caught on time, then shows belong here. If caught late, then shows may be in Foraker

**Foraker 3720' (-522)**

See note above



3800  
3850  
3900  
3950  
4000



40' spl - Sh: AA, decr. %; Ls: mix lt gray, lt brn vf-cryptoxln and offwhite, lt gray mic-vfxln dense

Sh: red silty and vc gray

80' spl - Ls: decr. % offwhite, lt gray dense; Sh: strong influx soft red

3900' spl - predom. Sh: red AA with sl influx dark gray; Ls: predom. offwhite, lt gray vfxln dense

20' spl - Sh: red soft, silty; lesser Ls: lt gray, offwhite mic-vfxln dense and sl mottled lt brn, lt gray granular with micxln matrix

40' spl - Sh: med to dark red, soft to silty with Ls: offwhite, lt gray dense with occ lt gray cryptoxln

60' spl - Sh: AA; incr. % Ls: more tan, lt brn granular, NVP and lt brn, lt gray cryptoxln; occ lt gray, tan, offwhite granular with spotty gilsonite stain, no odor nfo

Sh: med to dark gray, silty IP

80' spl - Ls: mix lt gray, tan cryptoxln, some granular; offwhite, lt gray dense; Sh: med to dark gray, silty IP

4000' spl - Ls: influx offwhite mic-fnxln with dead black gilsonite stain and flecks; trace brn granular with sat. dark brn oily stain, sfo, sg; tan cryptoxln, NVP, N.S.

CFS 4003' 30" spl - predom. Sh: lt to med red, soft to silty; red-maroon

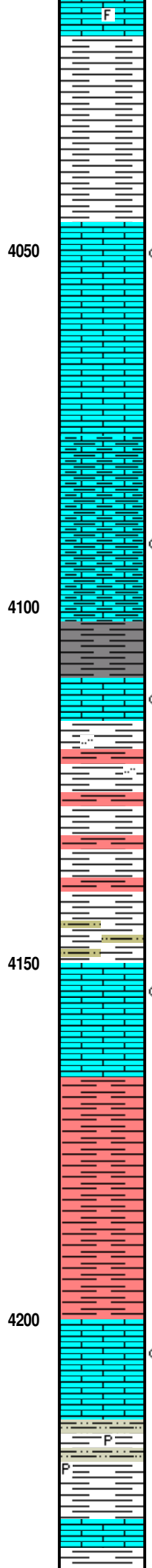
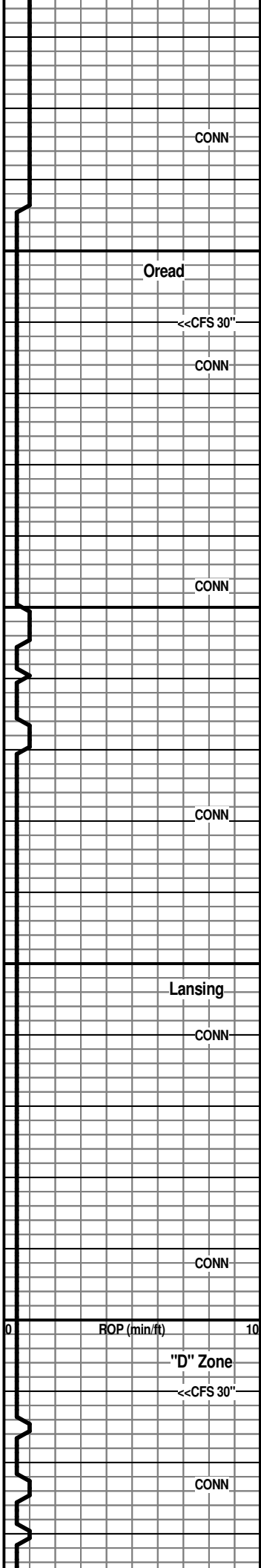
CFS 4003' 60" spl - Sh: various red and red-maroon; Ls: scatt. mottled yellow granular and pink, tan, lt gray cryptoxln

Ls: offwhite, lt gray mic-vfxln and tan, lt gray cryptoxln; spls very shaly

Topeka 3937' (-739)

wiper trip at 4003'  
Morgan Mud Check at 4003'  
8:15 AM on 11-23-2013  
wt vis wl pH chl

8.8 69 8.4 10.0 800  
 PV YP GelS lcm solids  
 20 25 14/39 4# 3.5%



60' spl - good influx Ls: offwhite, lt gray mic-fnxln, occ foss. with some pp por., subchalky IP; common shales AA with influx dark gray

CFS 4060' 30" spl - Ls: sl influx tan granular with inter-particle and some good vug. por. with brn stain, sl sfo, sl sg; offwhite micxn with poor-NVP with patchy stain; predom. offwhite micxn, subchalky to chalky and lt gray cryptoxln, N.S.

Ls: offwhite mic-vfxln dense and lt gray, tan cryptoxln; minor shale %

20' spl - Ls: flood med gray mic-vfxln dense, shaly with gray calcar. shale

40' spl - shaly Ls and calcar. shale AA; trace lt brn fn granular to cryptoxln Ls with some vug. por. with sl odor, sl sfo, sg, mottled with gray

60' spl - Ls: dense gray, shaly AA; sl influx offwhite vfxln dense and med brn cryptoxln

80' spl - Ls: mix lt to med brn, lt gray cryptoxln, NVP and offwhite mic-vfxln dense, NVP, 2-3 chips sl granular with pp por. with dark brn to black stain, sfo, sg on break; Sh: influx lt to med gray and silty red-brn

4200' spl - Sh: mix various red-brn, vc gray, some maroon; spls still contain mix Ls's AA with trace shows AA

10' spl - various shales AA with gray Siltst; Ls: sl influx tan, offwhite cryptoxln with vug. por. with stain, sg, sl sfo; other offwhite mic-fnxln with spotty stain

Sh: med to dark red-brn

CFS 4210' 30" spl -Sh: influx med to dark red-brn; Ls: common tan, offwhite cryptoxln with vug. por. with lt stain, sl sfo, faint to no odor

20' and 40' spls - very shaly mix AA with scatt. shows AA; influx Siltst: lt brn, lt gray; common pyrite

60' spl - Sh: various red, red-brn, maroon and vc gray; Ls: tan, gray vfxln

80' spl - Sh: mix AA with more med to dark gray

4250

CONN

4300' spl - Sh: med to dark red-brn, med to dark gray; Ls: mix tan, lt gray cryptoxln, NVP, N.S. and offwhite, tan mic-vfxln dense; scatt. tan, offwhite cryptoxln with some xln edge por. with stain, no odor, vsf sfo on break

CONN

20' spl - incr. % Sh: mix AA; Ls: mix AA with several chips tan, lt brn, med gray cryptoxln with very spotty vug. por. with brn to dark brn stain, no odor, nfo

4300

40' spl - abund. Sh: vc gray, red-brn; Ls: good influx tan, lt gray granular with poor inter-particle por. and offwhite mic-vfxln with poor pp por. with stain, vsf sfo on break, no odor

"H" Zone

CONN

60' spl - Ls: offwhite, tan with pp por. and shows AA, some granular with inter-particle por.; Sh: abund mix AA

4350

CONN

"J" Zone

<<CFS 30"

CFS 4360' 30" spl - decr. shale % AA; Ls: scatt. shows AA with possible sl influx tan, lt gray cryptoxln with vug. por. with stain, vsf sfo, no odor

80' spl - very shaly mix; Ls: various lt gray, tan cryptoxln NVP; more lt gray, offwhite mic-vfxln dense, N.S.

Stark Shale

CONN

4400' and 4420' spls - abund. Sh: vc gray and med to dark red-brn, silty IP; Ls: mix lt to med brn, tan, lt gray cryptoxln, NVP and offwhite, tan mic-vfxln dense; very scatt. chips with shows AA

4400

ROP (min/ft) 10

40' spl - flood Ls: offwhite mic-vfxln dense, subchalky to occ chalky, NVP, N.S.

CONN

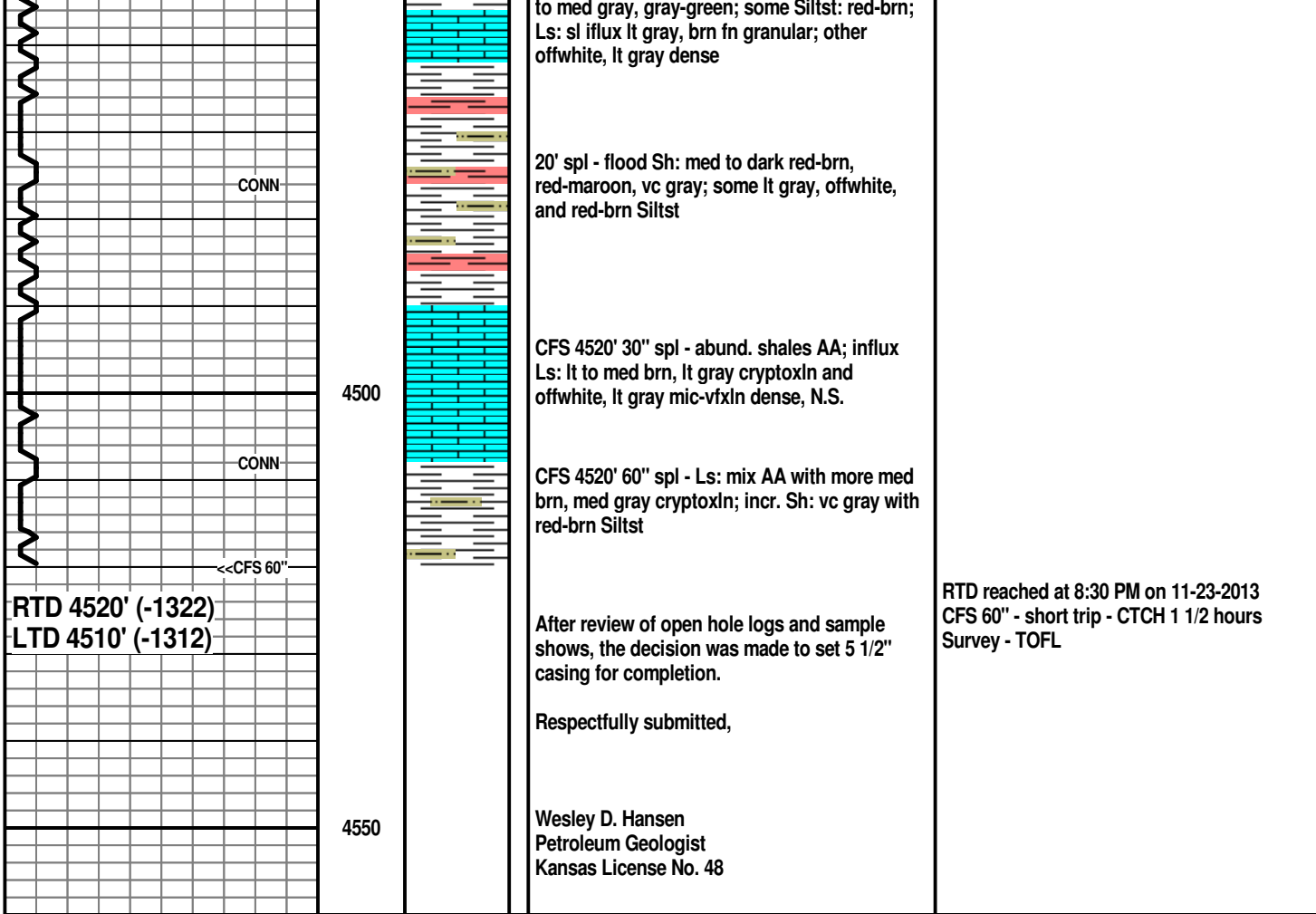
60' spl - Ls: very predom. AA; some lt gray cryptoxln; Sh: sl incr. vc gray

80' spl - Ls: mix AA with more lt gray, lt to med brn cryptoxln; Sh: incr. % med to dark gray, more red-brn

CONN

4450

4500' spl - predom. Sh: red-brn, red-maroon, lt



RTD 4520' (-1322)  
LTD 4510' (-1312)

CONN

4500

CONN

<<CFS 60"

4550