Woolsey Operating Company, LLC

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

Well Name:	LOGAN 10-X
Location:	Aprox NE SE SW
License Number:	API: 15-007-23742-00-00
Spud Date:	August 1, 2011
Surface Coordinates:	990' FSL & 2385' FWL Section 18-Twp 34 South - Rge 11 West
	Rhodes South Field
Bottom Hole Coordinates:	Vertical Hole

Region: Barber County, Kansas
Drilling Completed: August 9, 2011

Ground Elevation (ft): 1416   **K.B. Elevation (ft):** 1425
Logged Interval (ft): 4000   **To:** RTD   **Total Depth (ft):** 5220
Formation: McLish Shale
Type of Drilling Fluid: Chemical Mud, Displace at 3400'

OPERATOR

Company: Woolsey Operating Company,LLC
Address: 125 N. Market, Suite 1000
Wichita, KS 67202

GEOLOGIST

Name: W. Scott Alberg
Company: Alberg Petroleum, LLC
Address: 609 Meadowlark Lane
Pratt, Kansas 67124

FORMATION TOPS

	SAMPLE TOPS	LOG TOPS
STARK SHALE	4395(-2970)	4394(-2969)
HUSHPUCKNEY SHALE	4426(-3001)	4426(-3001)
B/KC	4482(-3057)	4480(-3055)
PAWNEE	4566(-3141)	4566(-3141)
CHEROKEE GROUP	4616(-3191)	4616(-3191)
CHEROKEE SAND	4634(-3209)	4631(-3206)
MISSISSIPPIAN	4645(-3220)	4542(-3217)
KINDERHOOK SHALE	4874(-3449)	4879(-3454)
WOODFORD SHALE	4958(-3533)	4959(-3534)
MAQUOKETA	4992(-3575)	4992(-3575)
VIOLA	5012(-3587)	5007(-3582)
SIMPSON SHALE	5113(-3688)	5114(-3689)
SIMPSON SAND	5134(-3709)	5132(-3707)
MCLISH SHALE	5172(-3747)	5169(-3744)
RTD	5220(-3795)	
LTD		5222(-3797)

COMMENTS

Surface Casing: Set 5 joints 10 3/4" at 223' with 240 sxs Class A, 2% gel, 3% cc, plug down at 9:45 pm on August 1, 2011. Cement did Circulate.
Production Casing: Ran 5 1/2" Casing.
Deviation Surveys:1- 225', 3/4 - 1229', 1 - 1700, 3/4 - 2201', 3/4 - 2700', 1/2 - 3202', 1 - 3673', 3/4 - 3929',1 - 4014', 1 - 4114', 1/2 - 4808', 3/4 5096'.

Contractor Bit Record:
1- 14 3/4" out at 225'.
2- 7 7/8" out at 5096'.
3- 7 7/8" out at 5220'.

Gas Detector: Woolsey Operating Company, Trailer #1
Mud System: Mud Co, Brad Bortz, Engineer
DSTs: No DST's Taken
Logged by Superior Well Services.
LTD - 5222'

DSTs

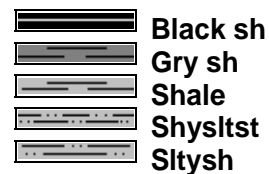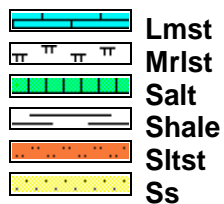**No DST's Taken on this test well.**
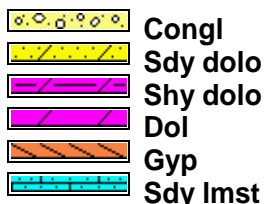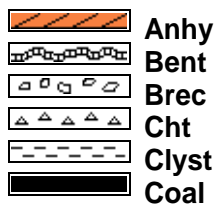
CREWS

H2 Drilling Rig #3
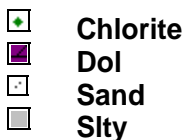**Tool Pusher - Randy Smith**
Drillers - Gary Axtell
Luis Marquez
Cesor Regaldo

ROCK TYPES

Pattern	Name	Pattern	Name	Pattern	Name	Pattern	Name
	Anhy		Congl		Lmst		Black sh
	Bent		Sdy dolo		Mrlst		Gry sh
	Brec		Shy dolo		Salt		Shale
	Cht		Dol		Shale		Shysltst
	Clyst		Gyp		Sltst		Sltysh
	Coal		Sdy lmst		Ss		

ACCESSORIES

MINERAL
- Anhy
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Ferrpel
- Ferr
- Glau
- Gyp
- Marl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt

- Chlorite
- Dol
- Sand
- Slty

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

- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- Fuss
- Oomoldic

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol

- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

TEXTURE
- BS Boundst
- C Chalky
- CX Cryxln
- B Earthy
- FX Finexln
- GS Grainst
- L Lithogr
- MX Microxln
- MS Mudst
- PS Packst
- WS Wackest

Curve Track 1	Depth	Lithology	Oil Shows	Geological Descriptions	TG, C1-C5
ROP (min/ft)					TG (units)
Gamma (API)					C1 (units)
					C2 (units)
					C3 (units)
					C4 (units)
					C5 (units)

Curve Track 1 scales:
- 0 — ROP (min/ft) — 10
- 0 — Gamma (API) — 150

TG scale: 0 — TG — 100

Depth: 40 ... 4050

Geological Descriptions:

Drilling Progress
August 1, 2011 MIRT
August 2, 2011 300' @ 7:00 am
August 3, 2011 1810' @ 7:00 am
August 4, 2011 2795' @ 7:00 am
August 5, 2011 3625' @ 7:00 am
August 6, 2011 4185' @ 7:00 am
August 7, 2011 4690' @ 7:00 am
August 8, 2011 5058' @ 7:00 am
August 9, 2011 5220' @ 7:00 am

TG column notes:
- Survey @ 4014' 1 degree
- Vis 48 Wt 9.0
- Vis 46 Wt 9.1

Track 1 (left log):

-c-
-c-
-c-
-c-
-c-
-c-

Depth scale: 4100, 4150, 4200, 4250

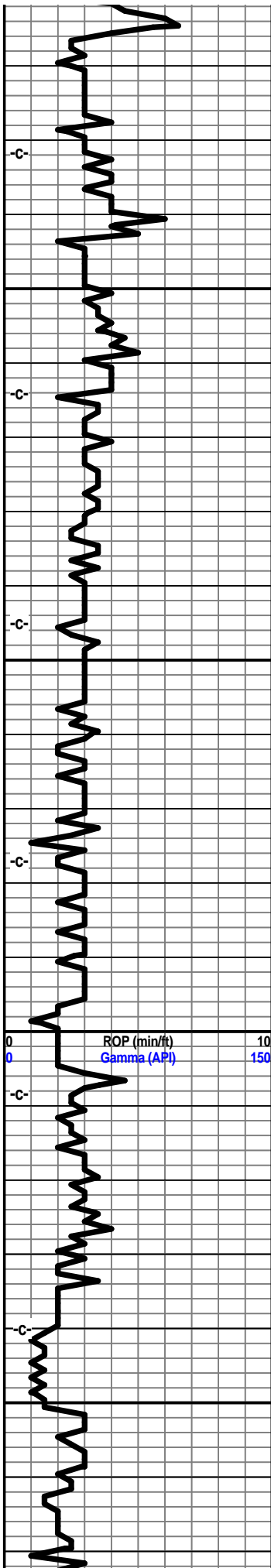| 0 | ROP (min/ft) | 10 |
| 0 | Gamma (API) | 150 |

Right track:

Vis 46
Wt 9.2
LCM 3#

Vis 48
Wt 9.2
LCM 3#
Survey @ 4114'
1 degree

Vis 48
Wt 9.2
LCM 3#

Vis 50
Wt 9/0
LCM 2#

August 6, 2011
4185' @ 7:00 am

Vis 49
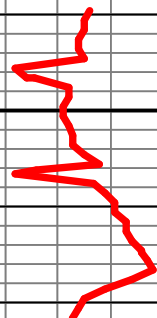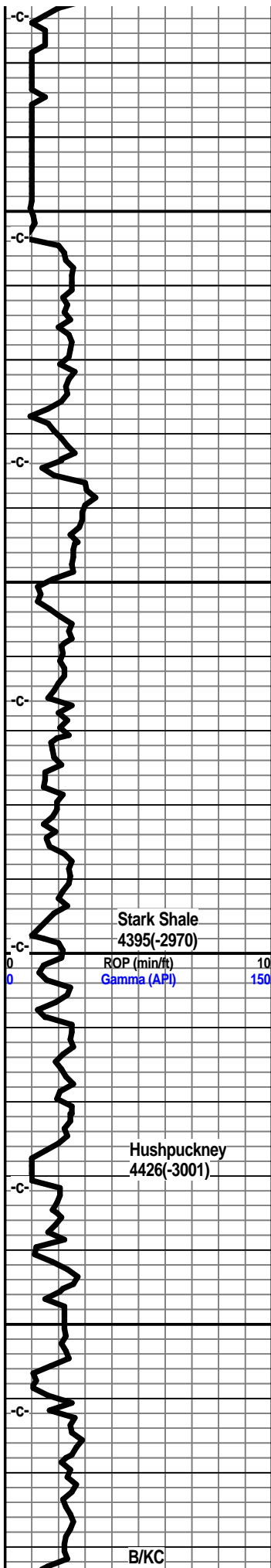Wt 9.2
LCM 2#

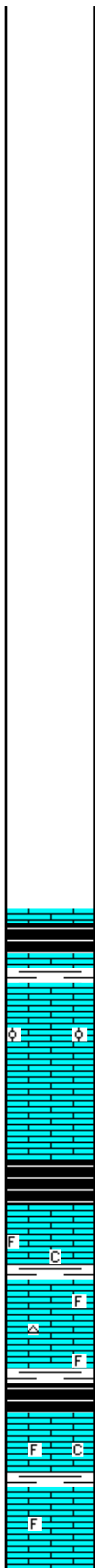| 0 | TG | 100 |

KB 1425'

Geologist on Location
4230' @ 8:30 am
August 6, 2011

Survey at 4240'
1/2 degree

Start Gas Detector

Track 1 (Left)

-c- (repeated markers along curve)

Stark Shale
4395(-2970)

| 0 | ROP (min/ft) | 10 |
| 0 | Gamma (API) | 150 |

Hushpuckney
4426(-3001)

B/KC

Depth Track (center)

4300
4350
4400
4450

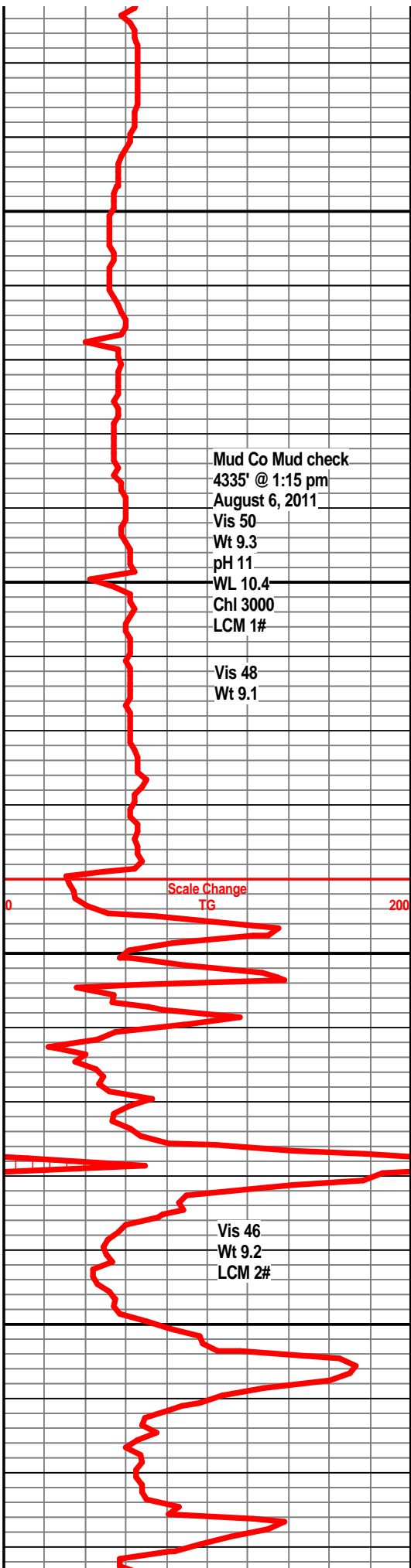## Lithology / Descriptions

Shale, grey-black, carb

Limestone, tan-white, xln, oolitic, some fossil frags, cast porosity, slight show of oil & gas, scattered fluor, slight odor, trace of bleeding gas.
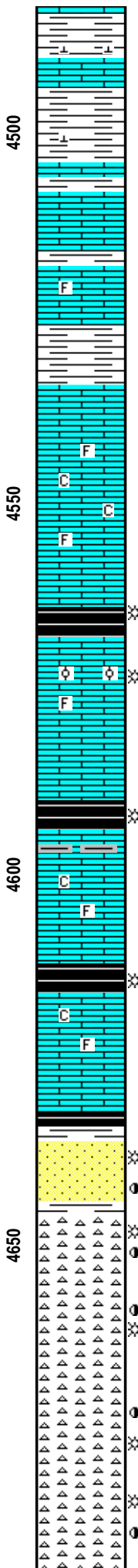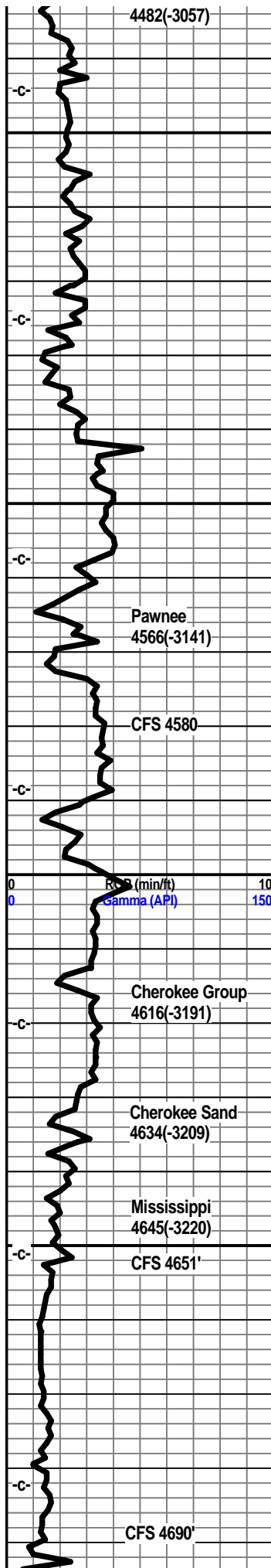
Shale, grey-black, carb.

Limestone, grey-white, buff, xln, foss, subchalky in part,, some grey shales, no visible shows.

Limestone, a/a, trace of grey chert.

Shale, grey-black, carb.

Limestone, buff, grey, xln, dense, chalky, slightly foss.

Shale, grey.

Limestone, grey-white, xln, slightly motteld, chalky in part, trace foss., trace xln porosity, ??? odor, possible slight light brown staining, no visible shows, gas kick??

Track 3 (Right - Gas)

Mud Co Mud check
4335' @ 1:15 pm
August 6, 2011
Vis 50
Wt 9.3
pH 11
WL 10.4
Chl 3000
LCM 1#

Vis 48
Wt 9.1

| 0 | Scale Change TG | 200 |

Vis 46
Wt 9.2
LCM 2#

no visible shows, gas kick??

Shale, grey-green, slightly calcitic.

Limestone, grey-green, shaley.

Shale, grey, green.

Limestone, tan-brown, xln, trace xln porosity, ?? odor, no vis shows, scattered min fluor.

Limestone, tan, buff-white, xln, sub-chalky, slightly foss.

Shale, grey-green.

Limestone, buff-white, tan, xln, dense, slightly foss, traces chalky.

Shale, grey-black, carb.

Limestone, tan-white, fxln, sub-chlaky, fine oolites, fossils, some small cast porosity, rare show gas bubble, slight golden stain, fair even fluor.

Shale, grey-black, carb.

Limestone, grey, tan-white, xln, dense, slightly chalky in part, trace of foss, no visible shows.

Shale, grey-black, carb.

Limestone, grey-white, tan, xln, dense, sub-chalky, no visible shows.

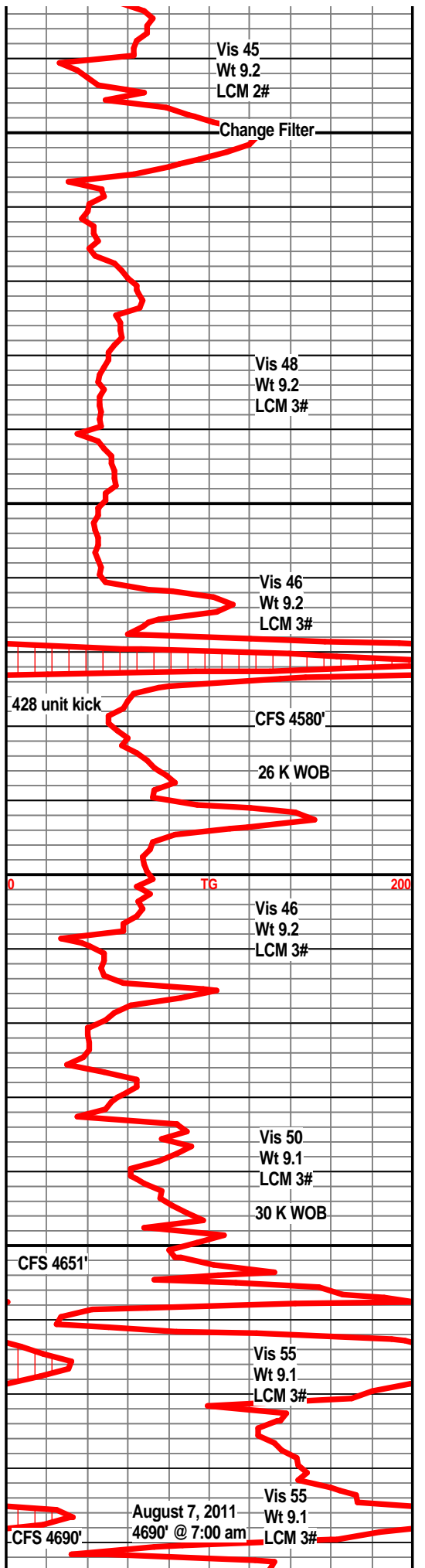Shale, grey-black, trace grey-green.

Sandstone, tan, tan-lt brown, dark brown-black, v fn grained, well sorted, friable, some well cemented, fair odor, even golden brown staining, slight show light oil, trace of bleeding gas, spotty dull fluor.
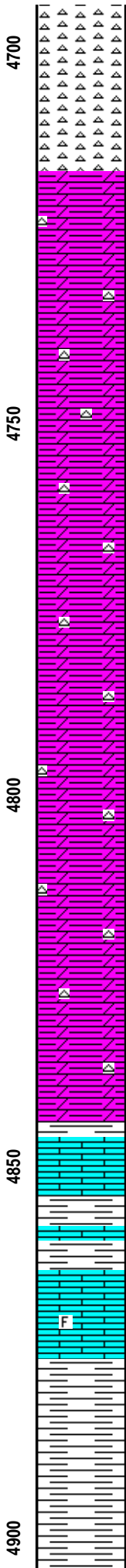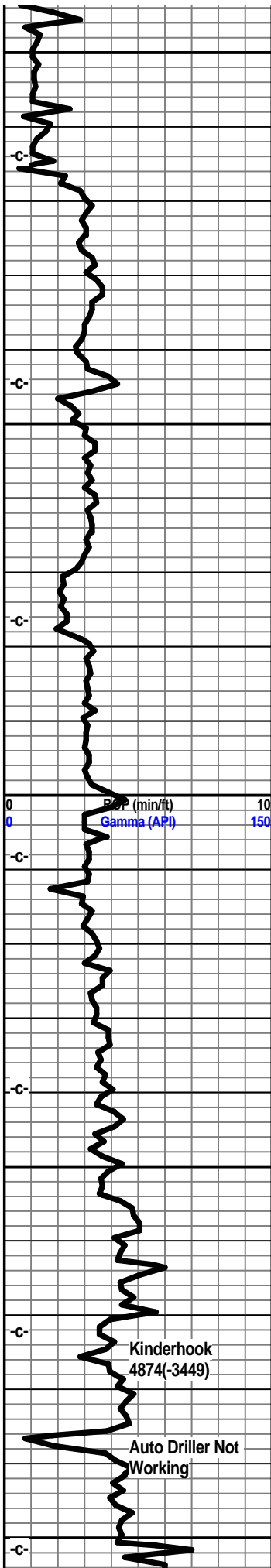
Chert, (in 60" sample), off-white to tan-white, sharp, fresh, some weathered with spotty stain, fair odor(from sand?), trace show of oil, dull fluor.

Chert, white, off-white, tan, sharp to weathered, pp porosity, small scattered vugs, spotty brown staining, good odor, show of free oil & gas, spotty fluor, some grey shales.

Chert, off-white, tan, weathered, pp porosity, small vugs, good odor, good show free oil and bleeding gas, some grey green shales, spotty fluor.

Chert, off-white to tan, weathered, pp pporosity, fair brown staining, good odor, increasing amounts of grey-green shales, trace grey dolo.

Depth track (left):

4482(-3057)

-c-
-c-
-c-

Pawnee
4566(-3141)

CFS 4580

-c-

4500
4550
4600
4650

ROP (min/ft)   0 ... 10
Gamma (API)   0 ... 150

Cherokee Group
4616(-3191)

-c-

Cherokee Sand
4634(-3209)

Mississippi
4645(-3220)

-c-   CFS 4651'

-c-

CFS 4690'

Right track:

Vis 45
Wt 9.2
LCM 2#

Change Filter

Vis 48
Wt 9.2
LCM 3#

Vis 46
Wt 9.2
LCM 3#

428 unit kick

CFS 4580'

26 K WOB

Vis 46
Wt 9.2
LCM 3#

Vis 50
Wt 9.1
LCM 3#

30 K WOB

CFS 4651'

Vis 55
Wt 9.1
LCM 3#

August 7, 2011
4690' @ 7:00 am

CFS 4690'

Vis 55
Wt 9.1
LCM 3#

0   TG   200

Left track scale:
- 0   ROP (min/ft)   10
- 0   Gamma (API)   150

Depth markers: 4700, 4750, 4800, 4850, 4900

Kinderhook
4874(-3449)

Auto Driller Not Working

Lithology descriptions:

Chert, off-white, tan, trans, some sharp, mostly weathered, spotty brown staining, fair odor, fair show of oil & gas, dull fluor, some grey-green shales.

Dolo, greywhite, xln, dense, weathered cherts with light staining, slight spotty show oil, p-f odor, abundeant grey-grey dolo shales.

Dolo, light grey, xln, some fresh cherts, grey-green shales, few fossil frags.

Dolo, grey-white, tan, xln, slightly limey, glauc., weathered cherts, spotty staining, faint show of oil, faint odor, abundant grey-green sahles.

Dolo, grey-white, xln, dense, some weathered cherts, spotty staining, fresh, sharp, grey-green shales.
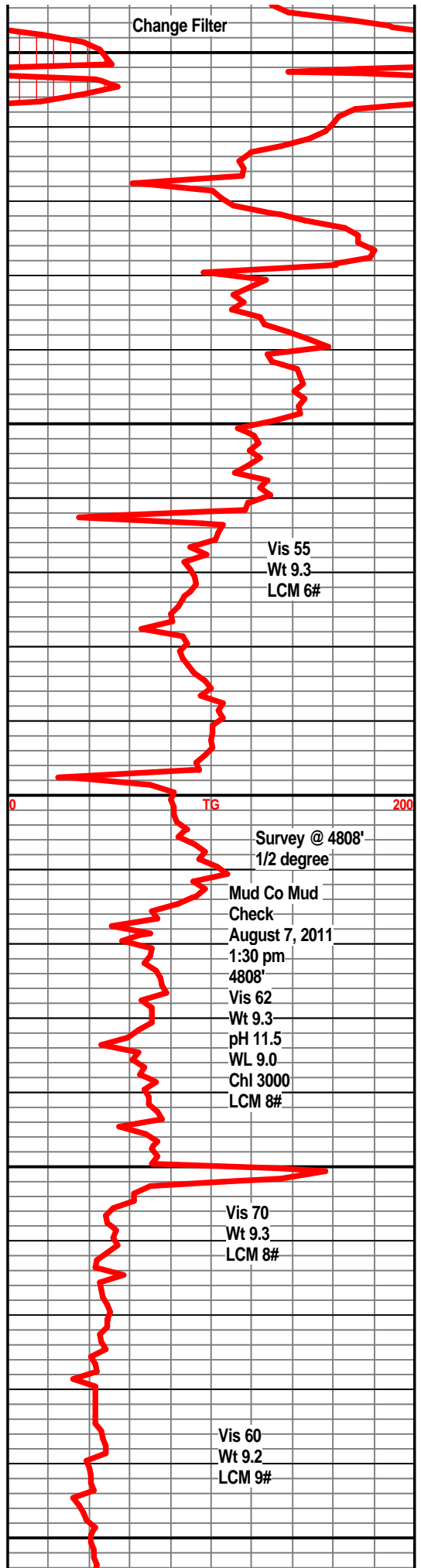
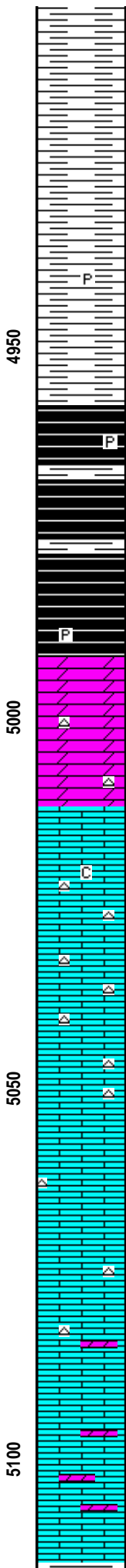Dolo, grey-white, xln, dense, glauc., cherty, still carrying slight shows in cherts, grey-green shales.

Dolo, grey-white, tan, xln, dense, decreasing cherts, grey-green shales.

Limestone, cream-white, tan, xln, slightly foss, trace of chert, possible gas indication, no visible shows found.
Shale, light green, calcitic, some grey-black carb shale.

Limestone, cream-white, tan, fxln, dense, slightly chalky, trace of foss.

Shale, grey, dark green, splintery.

Shale, dark grey, green, firm, splintery.

Right track:

Change Filter

0   TG   200

Vis 55
Wt 9.3
LCM 6#

Survey @ 4808'
1/2 degree

Mud Co Mud Check
August 7, 2011
1:30 pm
4808'
Vis 62
Wt 9.3
pH 11.5
WL 9.0
Chl 3000
LCM 8#

Vis 70
Wt 9.3
LCM 8#

Vis 60
Wt 9.2
LCM 9#

Left track annotations:
- -c-
- Auto Driller working Clock set at 5 foot marking
- -c-
- Woodford 4958(-3533)
- Maquoketa 4992(-3575)
- -c-
- 0   ROP (min/ft)   10
- 0   Gamma (API)   150
- Viola 5012(-3587)
- -c-
- -c-
- -c-
- Bit Trip
- Simpson Shale 5113(-3688)

Depth scale: 4950, 5000, 5050, 5100

Lithology descriptions (center):
- Shale, dark grey, green, firm, splintery.
- Shale, dark grey, dark green, firm.
- P
- Shale, dark grey, traces of pyrite.
- P
- Shale, grey-black, some coffee brown, carb.
- Shale, grey-balck, coffee brown, carb., traces of brown sand imbedded in shale towards base.
- P
- Dolo, light grey-white, fxln, soft, traces of white to off-white dolo, traces of white chert.
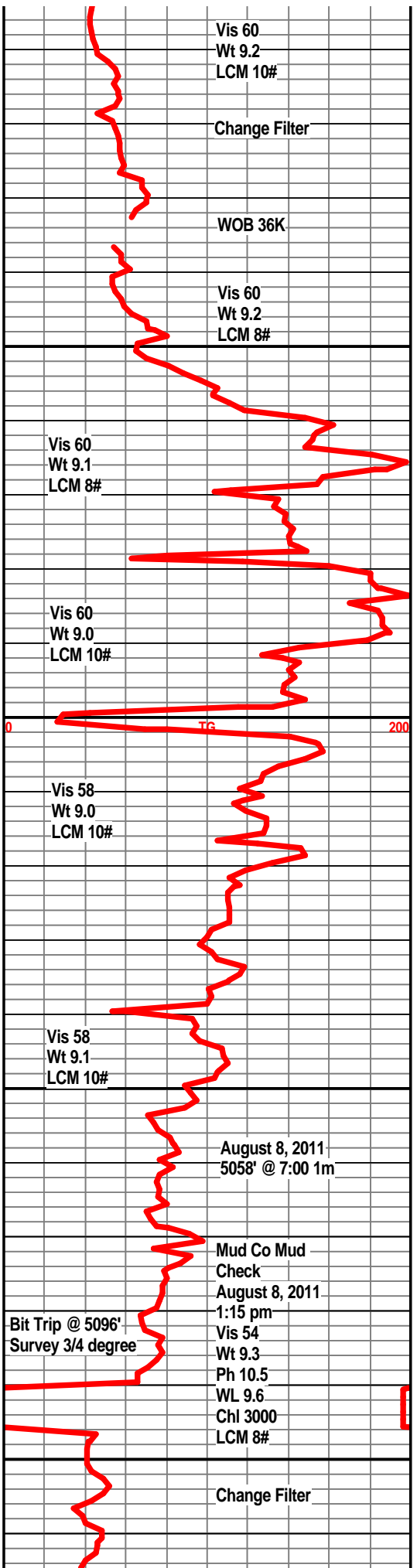- Limestone, cream to off-white, xln, trace of xln porosity, pp porosity, slight show of oil under uv light, subchalky in part, traces of white chert, no odor, possible increase in gas background.
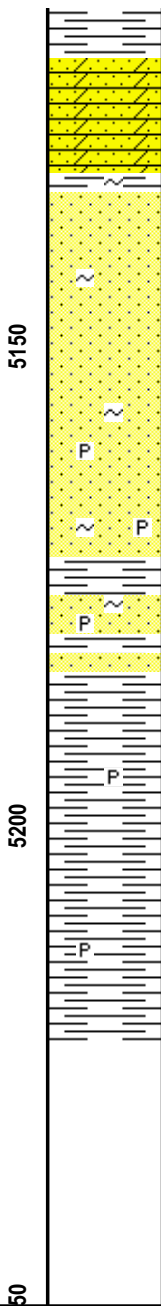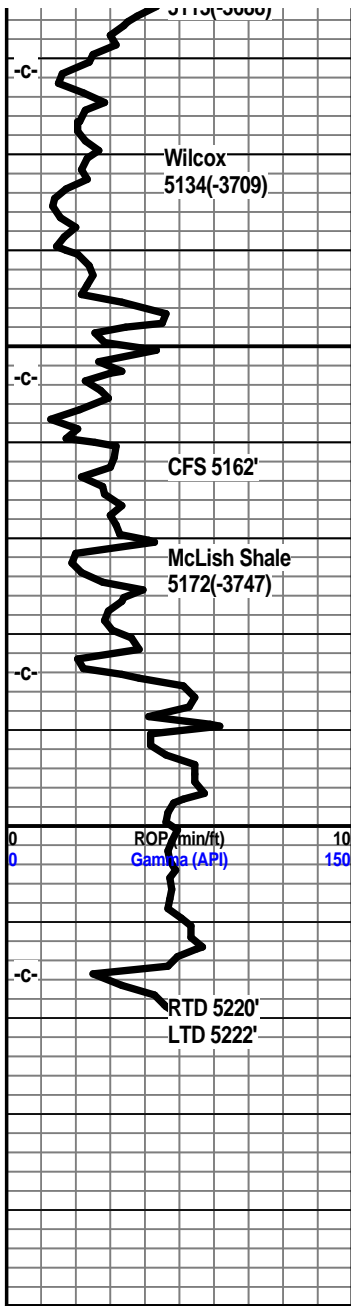- Limestone, tan-white, off-white, xln, some xln porosity, traces of tan-white specked cherts, trace chalky ls, dull scatered fluor, no odor.
- Limestone, tan-white, xln, dense, tan cherts, succ. texture, sub chalky in part.
- Limestone, tan-white, xln succ, granular, tan sharp cherts, slightly dolo in part.
- Limestone, tan, granular, xln, slightly dolo, sandy in part, tan sharp cherts. (poor samples, abundant uphole cavings)

Right track (mud properties / gas):
- Vis 60
- Wt 9.2
- LCM 10#
- Change Filter
- WOB 36K
- Vis 60
- Wt 9.2
- LCM 8#
- Vis 60
- Wt 9.1
- LCM 8#
- Vis 60
- Wt 9.0
- LCM 10#
- 0   TG   200
- Vis 58
- Wt 9.0
- LCM 10#
- Vis 58
- Wt 9.1
- LCM 10#
- August 8, 2011 5058' @ 7:00 1m
- Mud Co Mud Check August 8, 2011 1:15 pm Vis 54 Wt 9.3 Ph 10.5 WL 9.6 Chl 3000 LCM 8#
- Bit Trip @ 5096' Survey 3/4 degree
- Change Filter

Left Track

5113(-3688)

-C-

Wilcox
5134(-3709)

-C-

CFS 5162'

McLish Shale
5172(-3747)

-C-

0   ROP (min/ft)   10
0   Gamma (API)   150

-C-

RTD 5220'
LTD 5222'

5150

5200

50

Center Track (Lithology Descriptions)

Shale, teal green, firm, slightly sandy in part.

Sandstone, grey-white, SA, well cemented, some friable, p-f sorting, races of pyrite imbedded, trace glauc. no visible shows.

Sandstone, grey-white, frosted white, SA to SR, fair sorting friable in part, slight show of light oil, ??? odor, gluac, slightly dolo in part., slight scattered fluor.

Sandstone, grey-white, white, some tan, slight show light oil, some light brown staining, friable to well cemented, glauc.

Sandstone, grey-white to clear-white, SA to SR, fair sorting, friable in part, some well cemented, slight show oil, dull scattered fluor, ??? odor, some teal green shales.

Sandstone, a/a, decreasing shows in samples, no odor, dull spotty fluor in few samples.

Sandstone, clear to frosted white, SA to SR, fair sorting, friable in part, some well cemented, few shale inclusions, traces of pyrite, glauc.

Shale, teal green, firm, traces of pyrite, some scattered sand clusters.

Shale, teal green, firm.

Right Track (Gas)

Vis 50
Wt 9.1
LCM 8#

CFS 5162'

Vis 48
Wt 9.1
LCM 8#

38 K WOB

0   TG   200

RTD 5220'
LTD 5222'

Vis 59
Wt 9.2
LCM 10#

August 9, 2011
5220' at 7:00 am