



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

Well Name: Krug "A" #1-8
Location: 1060' FSL, 1900' FWL, Sec 08-T01S-R38W, Cheyenne County, Kansas
License Number: API: 15-023-21415 Region: Wildcat
Spud Date: 11/23/2014 Drilling Completed: 12/04/2014
Surface Coordinates: Lat: 39.9768285
Long: -101.6099046
Bottom Hole Vertical hole.
Coordinates:
Ground Elevation (ft): 3192' K.B. Elevation (ft): 3203'
Logged Interval (ft): 3490' To: RTD Total Depth (ft): 4750'
Formation: Cherokee at RTD.
Type of Drilling Fluid: Chemical.

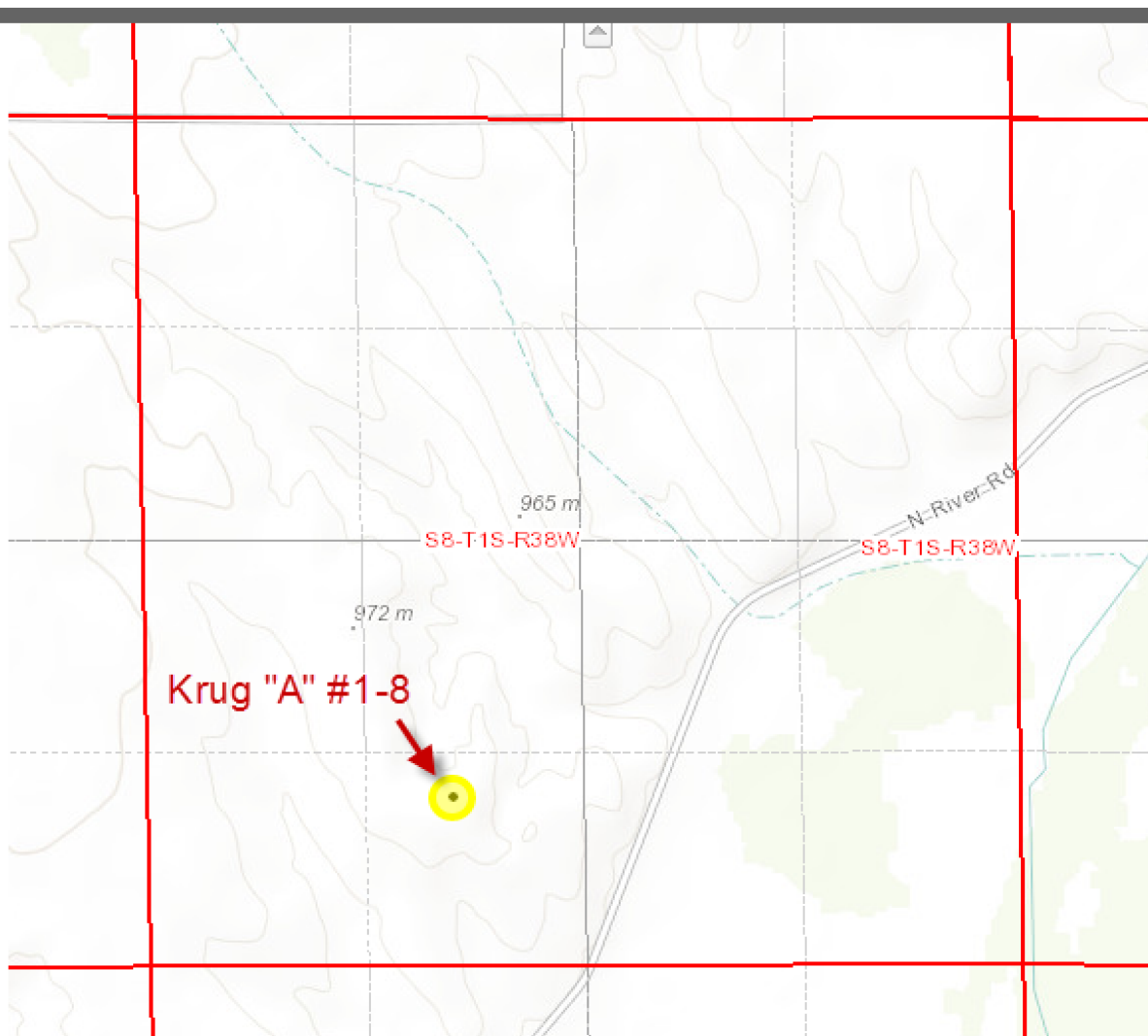
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Murfin Drilling Company, Inc.
Address: 250 N. Water, Suite 300
Wichita, KS 67202
316-267-3241

GEOLOGIST

Name: Kent R. Matson
Company: Matson Geological Services, LLC
Address: 33300 W. 15th Street S.
Garden Plain, Kansas 67050
316-644-1975



COMMENTS

Murfin Company Geologist: Scott Robinson, 316-267-3241.

Drilling Contractor: Murfin Drilling Company, Inc. Rig #20.

Tool Pusher: Greg Condren, 785-443-3048.

Surface Casing: 8 5/8" set at 225' (KB) w/225sx cement.

Production Casing: based on field observations of drill cuttings, DST results and electric log review, production casing was not installed and the hole was plugged and abandoned.

Mud by: Morgan Mud, Inc. - Dave Korte, 308-340-6092.

DST's by: Trilobite Testing - Brandon Quintana, 785-639-0586.

Logs by: Pioneer Energy Services (DI w/GR, CND, Sonic, Micro) - D. Fischer, 785-625-3858.






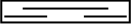



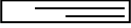




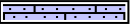











RTD= 4750', -1547'.

LTD= 4752', -1549'.

FORMATION TOPS




















| FORMATION | SAMPLE TOPS | | LOG TOPS | |
|--------------------------|-------------|-------|----------|-------|
| | Depth | Datum | Depth | Datum |
| Stone Corral (Anhydrite) | 3175' | +28 | 3180' | +23 |
| Neva | 3611' | -408 | 3611' | -408 |
| Red Eagle | 3679' | -476 | 3677' | -474 |
| Foraker | 3733' | -530 | 3733' | -530 |
| Topeka | 3952' | -749 | 3952' | -749 |
| Oread | 4091' | -888 | 4092' | -889 |
| Lansing | 4167' | -964 | 4169' | -966 |
| Stark | 4387' | -1184 | 4390' | -1187 |
| Base/KC | 4442' | -1239 | 4444' | -1241 |
| Pawnee | 4573' | -1370 | 4572' | -1369 |
| Cherokee | 4658' | -1455 | 4659' | -1456 |
| RTD | 4750' | -1547 | | |
| LTD | | | 4752' | -1549 |

ROCK TYPES

| | | | | | | | |
|--|-------|---|---------|---|----------|---|------------|
|  | Anhy |  | Salt |  | Dol |  | Siltysh |
|  | Cht |  | Shale |  | Dtd |  | Sdy dolo |
|  | Coal |  | Shcol |  | Gry sh |  | Silty dolo |
|  | Congl |  | Shgy |  | Sandylms |  | Shy dolo |
|  | Dol |  | Sltst |  | Shale |  | Shaly ls |
|  | Gyp |  | Ss |  | Sltstn | | |
|  | Lmst |  | Carb sh |  | Shlyslts | | |

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
-  Brecfrag
-  Calc
-  Carb
-  Chtdk
-  Chtlt
-  Dol
-  Feldspar
-  Ferrpel
-  Ferr

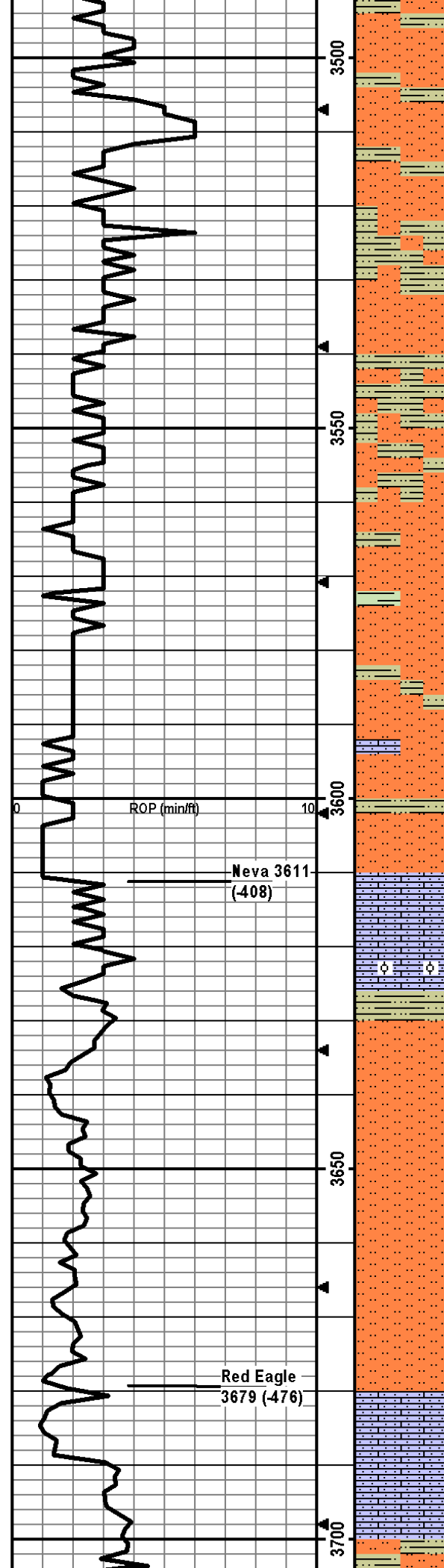


- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Silty

STRINGER

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

| ROP (min/ft) | rop | Depth | Lithology | CFS Point | Oil Shows | Geological Descriptions | Remarks |
|--------------|--------------|-------|-----------|-----------|-----------|---|---|
| 0 | ROP (min/ft) | 10 | | | | | |
| | | 3400 | | | | <p>Morning Report Depth/Activity</p> <p>11/23/2014, Spud. 11/24, drill @ 500'. 11/25, drill @ 1850'. 11/26, drill @ 3050'. 11/27, drill @ 3550'. 11/28, drill @ 3925'. 11/29, DST #1 @ 4108'. 11/30, DST #2 @ 4190'. 12/01, DST #3 @ 4245'. 12/02, drill @ 4328'. 12/03, DST #5 @ 4580'. 12/04, drill @ 4740'; TD @ 4750'.</p> <p>Anhydrite: Top @ 3175', Bottom @ 3213' (Based on drill time).</p> <p>Formation tops and lithology have been adjusted to correlate to the electric log.</p> <p>ROP data begins @ 3490'.</p> <p>Drill cutting samples at 10' intervals start at 3490'.</p> <p>Sltstn: dk red brn/tan, some vry arg, slt carb, pred qtz, hard, friable, some med-dk gry silty SH, no odor, ns.</p> | <p>Morgan Mud Check #0 @ Surface 11/23/14; drilling recommendations.</p> <p>Morgan Mud Check #1 @ 578' 11/24/14; cont. drilling recommendations.</p> <p>Morgan Mud Check #2 @ 1954' 11/25/14; cont. drilling recommendations.</p> <p>Morgan Mud Check #3 @ 3180' 11/26/14; cont drilling recommendations.</p> <p>Bit trip @ 3415', switched from PDC to tri-cone.</p> |
| | | 3450 | | | | | |



Sltstn: dk red brn/brn, vry arg, slt carb, hard, friable; some SH: dk red brn, silty, firm, fissile, no odor, ns.

Sltstn: med-dk red brn/brn, vry arg, slt carb, hard, friable, some med-dk gry SH, no odor, ns.

Sltstn/SH as above, no odor, ns.

SH: dk red brn, vry silty, slt carb, firm, fissile, some Sltstn: red brn/lt gry, 1 pce Sltstn w/blk tar oil, yel cut, no odor, ssfo.

Sltstn: med-dk red brn/brn/lt gry, vry arg, slt carb, firm, friable, no odor, ns.

SH: dk red brn/med gry, vry silty/sndy, firm, slt carb, some fissile, some Sltstn as above, no odor, ns.

SH/Sltstn: as above, no odor, ns.

Sltstn: lt gry/lt brn/red brn, vry arg, slty carb, med-hard, friable, some dk red SH, no odor ns.

Sltstn as above, some red brn SH, no odor, ns.

Sltstn: lt gry/tan/red brn/brn, vry arg, slty carb, soft-firm, friable, some SH: red brn/med-dk gry, no odor, ns.

Sltstn: red brn/brn, carb, vry arg, firm, friable, min red brn LS, micro-xtal, silty, no odor, ns.

Sltstn: red brn/tan/lt gry, vry arg, slt carb, firm-hard, friable, some med-dk gry SH, no odor, ns.

LS: crm/lt gry, micro-fn xtal, foss frags/grainy, vry silty/sndy, some chalky, min ppt in-xtal/frac por, no odor, ns.

LS: crm/lt gry, micro-med xtal, foss frags/ool, vry silty/sndy, some chalky, min ppt in-xtal/frac por, no odor, ns.

Sltstn: brn/red brn/lt gry, vry arg, slt carb, firm, friable, some gry/orange brn SH, no odor, ns.

Sltstn: as above, no odor, ns.

Sltstn: med-dk red brn/brn/lt gry, vry arg, slt carb, firm, friable, no odor, ns.

Sltstn as above, no odor, ns.

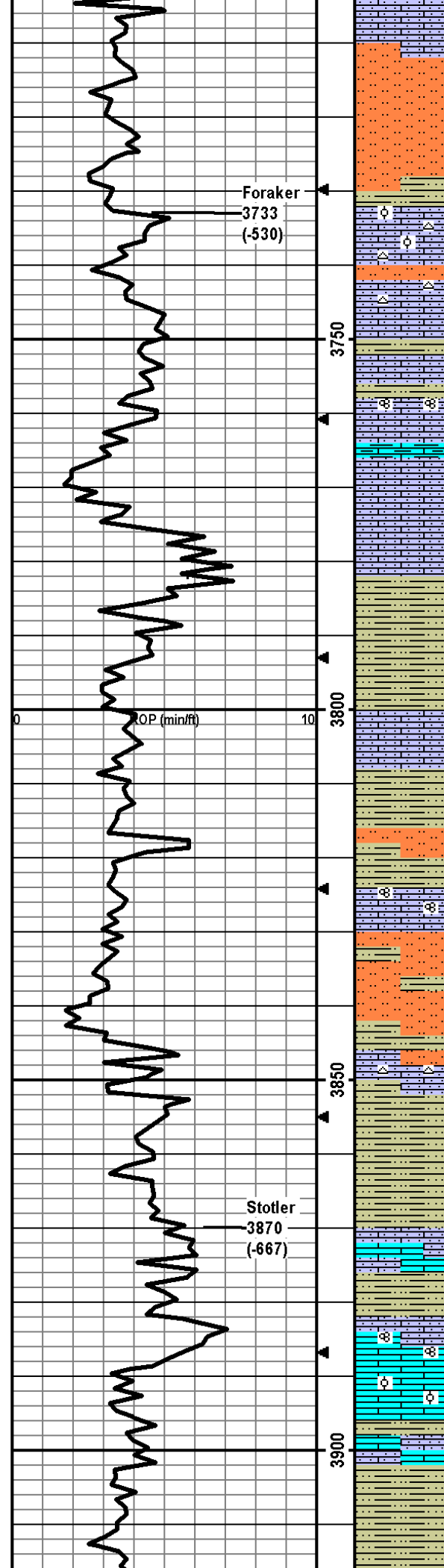
Sltstn: crm/lt gry/min red brn, slt arg, slt carb, pred qtz, hard, friable, no odor, ns.

LS: wht/crm/lt gry, micro-fn xtal, vry silty/sndy, some chalky/arg, some ppt-med in-xtal /frac por, no odor, ns.

LS: as above w/increase in ppt-med in-xtal por, no odor, ns.

LS: crm/lt gry, micro-med xtal, vry silty/sndy, chalky, some ppt-fn

Morgan Mud Check #4 @
 3662' 11/27/14 11:40am
 wt vis pH chl
 8.9 59 9.5 600
 Filt LCM
 8.0 5



In-xtal por, some Sltstn: crm/lt gry/maroon, pred qtz, silt arg, silt carb, hard, friable. no odor, ns.

Sltstn: red brn/maroon/lt gry, vry arg, silt carb, soft-firm, friable, no odor, ns.

Sltstn: red brn/brn/lt gry/tan, vry arg, silt carb, 1 pce w/blk tar oil, yel cut, no odor, ssfo.

LS: crm/lt brn/lt gry-brn, micro-med xtal, vry silty/sndy, some chalky, foss frags/ool, some wht/lt brn chert, min ppt in-xtal/frac por, no odor, ns.

LS: crm/lt gry/lt maroon, micro-fn xtal, min foss frags, vry silty/sndy, orange/wht/gry chert, min ppt in-xtal/frac por; some Sltstn: crm/lt gry/maroon, carb, arg, firm, friable; no odor, ns.

SH: med-dk gry/dk maroon, vry silty/sndy, carb, firm, fissile, no odor, ns.

LS: crm/lt-med brn/gry, micro-med xtal, foss frags/fusln, vry silty/sndy, vry arg, min frac por, no odor, ns.

LS: crm/lt-med brn/lt gry, micro-med xtal, vry silty/sndy, some vry arg, some ppt-fn in-xtal/frac por, no odor, ns.

LS: crm/tan/lt gry-brn, micro-med xtal, foss frags, silty/sndy, some vry chalky, some ppt in-xtal/frac por, no odor, ns.

SH: med-dk gry, vry silty, carb, firm, fissile some friable, no odor, ns.

SH: med-dk red brn/med-dk gry, vry silty/sndy, carb, soft-firm, no odor, ns.

LS: crm/tan, micro-fn xtal, min foss frags, vry silty/sndy, some chalky, min ppt in-xtal/frac por, no odor, ns. Some SH as above.

SH: dk red brn/med-dk gry, vry silty/sndy, silt carb, firm-hard, fissile, no odor, ns.

Sltstn: lt brn/gry, vry arg, vry carb, firm-hard, no odor, ns.

LS: crm/tan/lt brn, micro-med xtal, foss frags/fusln, vry silty/sndy, some vry arg, min ppt in-xtal por, no odor, ns.

Sltstn: med-dk red brn/crm/gry, vry arg, carb, firm, some silty SH, no odor, ns.

Sltstn/SH as above, no odor, ns.

LS: crm/lt brn/lt gry brn, micro-med xtal, foss frags, vry silty/sndy, min wht/crm chert, min frac por, no odor, ns.

SH: lt-med gry/brn, vry silty, some carb, firm, fissile, no odor, ns.

SH: med-dk gry/red brn/maroon, some vry silty, silt carb, firm-hard, fissile, no odor, ns.

LS: crm/gry, micro-fn xtal, min foss frags, some silty, vry chalky, 26 pcs w/ppt in-xtal por w/s of blk tar oil, no odor, no flordul yel crush cut, ssfo.

SH: lt-med gry/dk red brn/dk maroon brn, vry silty, carb, firm, fissile, no odor, ns.

LS: crm/lt gry, micro-fn xtal, some vry silty/sndy, min foss frags/fusln, 65+ w/sfo, blk tarry, dul yel flordcrush cut, ppt-fn in-xtal por, no odor, sfo.

LS: crm/tan, micro-med xtal, foss frags/ool, some silty/sndy, 10-15 % of smple w/ppt-fn in-xtal/in-oo por w/sfo, dul yel flordcrushcut, no odor, sfo.

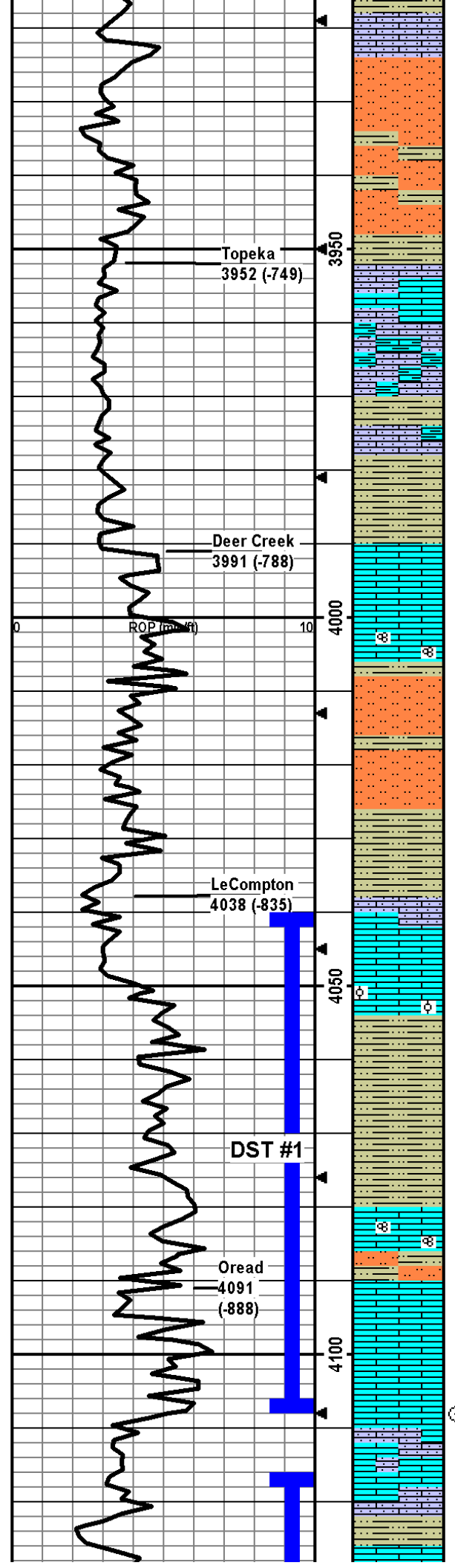
SH: red brn/gry, vry silty/sndy, carb, firm, fissile.

LS: crm/tan/lt-med brn, micro-med xtal, some vry sndy, foss frags, some frac por, no odor, ns.

SH: red brn/orange brn/gry, vry silty, carb, firm, fissile.

CFS @ 3745'
30"60"

CFS @ 3895'
30"60"



LS: crm/lt gry/tan, micro-med xtal, foss frags/ool, some vry silty/sndy, some vry chalky, ppt-fn in-xtal/in-ool por, 25 pcs w/blk tar oil, dul yel flor/cut, no odor, sfo.

SltStn: red brn/brn, vry arg, carb, firm-hard, friable.

SltStn as above w/some red brn silty SH.

Sltstn: lt gry/lt-dk red brn, vry arg, some carb, firm-hard, friable; some SH as above, no odor, ns.

SH: lt-dk red brn, vry silty/sndy, carb, firm, fissile, no odor, ns.

LS: crm/tan/lt gry, micro-fn xtal, slt silty, some chalky, some frac por, no odor, ns.

LS: crm/lt brn/lt gry w/red brn SH mottling, micro-med xtal, foss frags, some silty/sndy, some chalky, some ppt-fn in-xtal por, no odor, ns.

SH: lt-dk gry/dk red brn/brn, vry silty, some carb, soft-firm, fissile, no odor, ns.

LS: crm/lt gry, micro-fn xtal, min frac por, no odor, ns.

LS: wht/crm/lt gry, micro-fn xtal, min foss/fusln, some frac por, no odor ns.

Sltstn: lt brn/red brn/lt gry, vry arg, carb, firm-hard, friable, no odor, ns.

SH: med-dk gry, vry silty, carb, firm, fissile, no odor, ns.

LS: crm/lt-med brn, micro-fn xtal, min foss frags, some vry silty/sndy, min frac por, no odor, ns.

LS: crm/tan, micro-med xtal, min foss frags/ool, 7 ool pcs w/ppt-fn in-xtal/in-ool por w/sfo, blk tar oil, dul yel flor/cut, no odor, sfo.

SH: red brn/gry, some vry silty, carb, firm, fissile, no odor, ns.

SH: red brn/maroon/lt gry, vry silty, slt carb, firm, fissile.

SH: lt-dk gry/red brn/maroon, vry silty, slt carb, firm, no odor.

LS: crm/lt gry, micro-med xtal, min foss frags/fusln, 13 pcs w/ppt-fn in-xtal por w/blk tar oil, dul yel flor w/slt yel cut, no odor, sfo.

Sltstn: red brn/gry, vry arg, carb, friable, no odor, ns. SH: red brn/gry, some silty, slt carb, firm, no odor, ns.

LS: crm/tan/lt brn, micro-fn xtal, slt chalky, aprx 10-15% of tray w/ppt-fn in-xtal por w/mostly blk tar oil some dk brn fluid oil, dul yel flor/cut, no odor, sfo.

LS: crm/tan/lt gry, micro-fn xtal, some chalky, few pcs w/sfo assum from above, no vis por, no odor.

LS: crm/tan, micro-fn xtal, some silty, no vis por, no odor, ns.

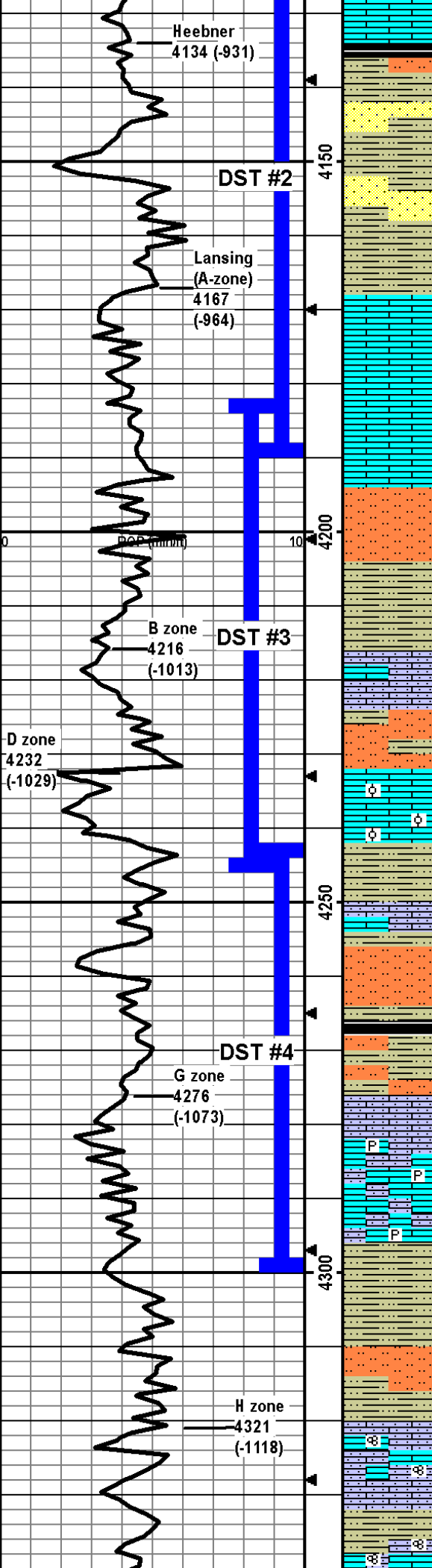
SH: med-dk gry/blk/red brn, carb, slt pyritic, soft-firm, fissile.

Morgan Mud Check #5 @ 3996' 11/28/14 11:20am
wt vis pH chl
9.0 49 10.5 600
Filt LCM
7.2 4

DST1: 4040-4108
LeCompton & Oread
30/60/30/60
1st) surface blow built to 1/4" then died, no BB.
2nd) no blow, no BB.
IFP 36-30#
ISIP 102#
FFP 32-31#
FSIP 79#
HP 2060-1953#
Recvd: 5' Mud.

Morgan Mud Check #6 @ 4108' 11/29/14 09:15am
wt vis pH chl
9.3 50 8.5 700
Filt LCM
9.2 4

CFS @ 4108'
30"60"



LS: lt gry/lt gry-brn, micro-fn xtal, some chunky, 0 chunky pcs w/ppt-fn in-xtal por w/blk tar oil, dul yel flor/cut, no odor, sfo.

SH: med-dk gry/red brn/brn, some vry silty/sndy, carb, firm, fissile. Some Sltstn/SS: lt gry/lt brn, vf-f, sr-wr, arg, slt carb, friable, no odor, ns.

SH: lt-dk gry/red brn/orange brn, some vry silty, soft-firm; some SS: crm, vf-f, sr-wr, carb, no odor, ns.

SH/SS mix as above, 7 pcs of SS w/blk oil, dul yel flor/cut, no odor, sfo.

LS: crm/tan/lt gry, micro-fn xtal, some chalky, 8 pcs w/ppt-fn in-xtal por w/blk tar oil, dul yel cut, no odor, sfo. 19 pcs in 30 min smpl w/ppt-med in-xtal por w/mostly blk tar oil/min dk brn fluid oil, no odor, sfo.

15 pcs w/ppt-med in-xtal por w/mostly blk tar oil/min brn fluid oil.

LS: lt brn, micro xtal, no vis por, no odor.

Sltstn: lt-dk gry/med-dk brn/crm, arg, carb, hard, slt friable, approx 25% of smpl w/dk brn fluid oil w/some blk tar, dul yel flor/cut, ppt in-clas por, no odor, gsfo.

SH lt-dk gry/med-dk red bry, carb, silty, soft-firm, some Sltstn as above w/sfo.

LS: crm/lt gry-brn, micro-fn xtal, min foss frags/fusln, some silty/sndy, no vis por, no odor, ns.

Sltstn: lt-dk gry/red brn, some vry arg, carb, pred qtz w/some mafic mineral, soft-hard, some friable: some SH: dk red brn/dk gry, silty, carb, firm, fissile.

LS: crm/lt gry-brn, micro-med xtal, min foss frags w/some ool pcs, some chalky, 31 pcs w/ppt-fn in-xtal/in-ool por w/mostly blk tar oil min dk brn fluid oil, yel flor/cut, no odor, sfo.

LS: as above, increase in chalky, 22 pcs w/sfo.

SH: lt-dk gry/red brn, vry silty, slt carb, soft-firm, fissile.

LS: crm/tan/lt gry-brn, micro-fn xtal, min foss frags/fusln, some vry silty/sndy, vry chalky, some frac por, no odor, ns.

SH: as above w/Sltstn: lt gry, pred qtz, arg, slt carb, hard, friable, ns.

Sltstn: lt gry/red brn, vry arg, carb, hard, friable, some SH: lt-dk gry/red brn/orange brn, some vry silty, firm, ns.

SH: lt-dk gry/red brn/orange brn, some vry silty, carb, soft-firm; Sltstn: lt-med gry/lt brn, vry arg, carb, friable, firm, no odor, ns.

LS: crm/lt-med gry-brn, micro-med xtal, min foss frags, some sndy, some chalky, slt pyritic, approx 15-20% of tray w/ppt-med w/some crs in-xtal por w/sfo, dul yel flor, slt odor, gsfo.

LS: crm/lt gry-brn, micro-med xtal, min foss frags, some vry chalky, some silty/sndy, 53 pcs w/mostly ppt-fn w/some med in-xtal por w/sfo, dul yel flor, slt odor, gsfo.

SH: lt-med gry, silty, carb, soft.

SH: lt-dk gry/red brn/min maroon/min lt aqua-green, some vry silty, carb, firm, fissile, no odor, ns.

SH as above w/Sltstn: lt gry, arg, carb, hard, friable, ns.

LS: crm/lt gry/lt brn, foss frags/fusln, some vry silty/sndy, 3 pcs w/ppt-fn in-xtal por w/sfo, dk brn fluid oil, dul yel flor/cut, no odor, sfo.

SH: lt-dk gry/red brn/maroon, some vry silty, slt carb, firm, fissile, no odor, ns.

LS: crm/lt brn/lt gry, micro-fn xtal, min foss frags/fusln, some silty, some chalky, min frac por, no odor, ns.

DST2: 4160-4190
Lansing A Zone
 30/60/30/60
 1st) surface blow did'nt build, no BB.
 2nd) no blow, no BB.
 IFP 21-23#
 ISIP 1236#
 FFP 26-28#
 FSIP 1215#
 HP 2051-2038#
 Recvd: 5' Mud.

CFS @ 4170'
 30"60"

Morgan Mud Check #7 @
 4190' 11/30/14 08:30am
 wt vis pH chl
 9.2 53 11 500
 Filt LCM
 7.6 4

CFS @ 4190'
 30"60"

DST3: 4182-4245
Lansing D Zone
 30/60/60/90
 1st) surface blow built to BOB in 6 min, no BB.
 2nd) blow built to BOB in 8 min, no BB.
 IFP 115-274#
 ISIP 1319#
 FFP 284-527#
 FSIP 1288#
 HP 2129-2115#
 Recvd: 1143' MW.

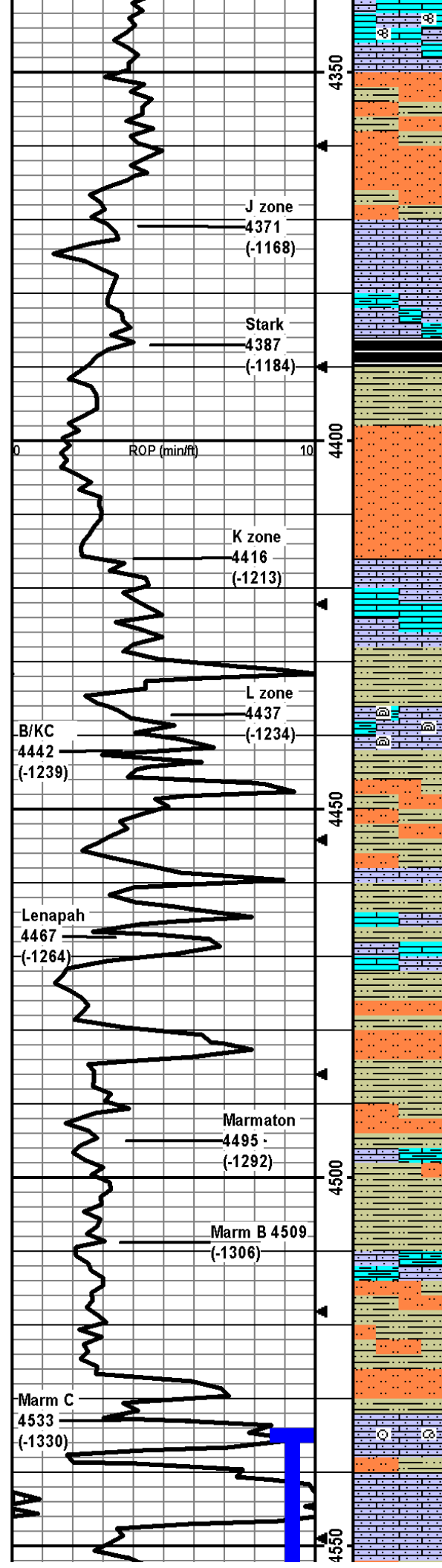
CFS @ 4245'
 30"60"

Morgan Mud Check #8 @
 4265' 12/01/14 09:45am
 wt vis pH chl
 9.5 70 10.5 900
 Filt LCM
 7.6 2

DST4: 4242-4300
Lansing G Zone
 15/60/30/90
 1st) surface blow built to BOB in 35 sec, no BB.
 2nd) blow built to BOB in 35 sec, no BB.
 IFP 778-919#
 ISIP 1431#
 FFP 836-1270#
 FSIP 1429#
 HP 2155-2135#
 Recvd: 2871' MW.

CFS @ 4300'
 30"60"

CFS @ 4332'
 30"60"



LS as above w/increase in chalk, no odor, ns.

Sltstn: red brn/brn/lt gry, vry arg, pred qtz, slt carb, firm, friable, some SH: red brn/gry, silty, no odor, ns.

Sltstn/SH as above, no odor, ns.

LS: crm, micro-med, foss frags, grainy, vry chalky, vry sndy, min frac por, no odor, ns.

LS: crm/lt gry, micro-fn xtal, min foss frags, vry silty/sndy, vry chalky, arg, some frac por, no odor ns.

SH: lt-med gry, silty, carb, soft-firm, fissile, no odor, ns.

SH: lt-dk gry/red brn/maroon, silty/sndy, slt carb, soft-firm, no odor, ns.

Sltstn: lt-med gry/red brn, vry arg, carb, hard/vry hard, some friable, no odor, ns.

Sltstn: red brn, vry arg, carb, hard, friable, no odor, ns.

LS: crm/lt gry, micro-fn w/some med xtal, foss frags, some vry sndy, some chalky, some frac por, no odor, ns.

SH: red brn/lt-med gry, vry silty, vry carb, soft-firm, no odor, ns.

LS: crm/lt-dk brn, micro-med xtal, foss frags/min algae, some vry sndy, some vry arg, some vry chalky, some ppt-fn in-xtal por, no odor, ns.

LS: crm/lt brn/lt gry, micro-med xtal, foss frags/algae, some silty/sndy, some ppt-med in-xtal por, no odor, ns.

SH: red brn/brn/ lt-med gry, vry silty, slt carb, firm some Sltstn: red brn/lt brn/lt gry, vry arg, hard, some friable, no odor, ns.

LS: crm/lt brn/lt gry, micro-med xtal, foss frags, some vry silty/sndy, some chalky, some frac por, no odor, ns.

SH: red brn/lt-med gry, some vry silty, carb, firm, fissile; some Sltstn: lt-med gry/red brn, vry arg, carb, firm, friable, no odor, ns.

Sltstn: lt gry/red brn, vry arg, carb, firm-hard, some friable; SH: lt-med gry/maroon/red brn, vry silty/sndy, carb, firm, no odor, ns.

Sltstn: lt brn/lt-med gry/red brn, vry arg, slt carb, firm-hard, friable, no odor, ns. Some SH: lt-dk gry/red brn, silty, slt carb, fissile; Some LS: crm, vry sndy, chalky.

SH: red brn/maroon/lt-med gry, vry silty, slt carb, firm, fissile, no odor, ns.

SH: as above, w/some Sltstn: lt gry/red brn, vry arg, slt carb, firm, friable, no odor, ns.

SH/Sltstn: as above, no odor, ns.

LS: crm/lt brn, micro-med xtal, some vry silty/sndy, some chalky, foss frags/crin, some frac por, no odor, ns.

LS: crm/lt gry/lt-med brn, micro-med xtal, vry silty/sndy, foss frags/crin/gastro, mostly dense w/2 pcs w/ppt-med in-xtal w/brn oil staining; SH/Sltstn as above, no odor, ns.

SH: red brn/brn/med-dk gry/min vel mottling, vry silty, carb, firm

Morgan Mud Check #9 @ 4360' 12/02/14 10:15am
wt vis pH chl
9.3 58 10.5 800
Filt LCM
7.2 3

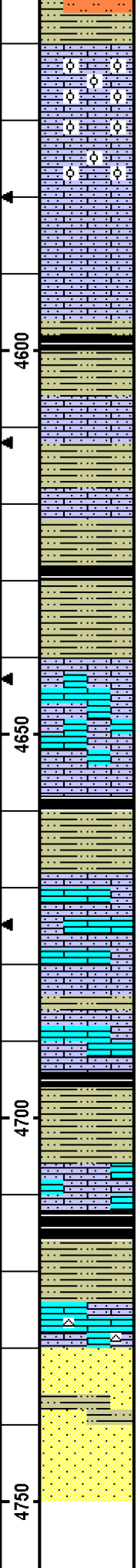
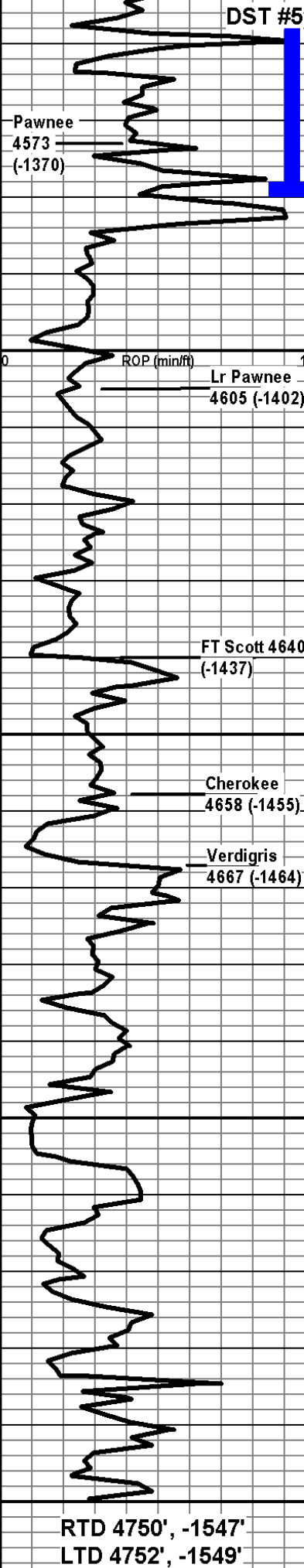
CFS @ 4390'
30"60"

CFS @ 4430'
30"60"

CFS @ 4450'
30"60"

DST5: 4535-4580

Pawnee
30/60/30/60
1st) surface blow built to 3/4", no BB.



CH: red brn/med-dk gry/med yel mottling, vry silty, carb, firm, fissile; Sltstn: lt-med gry/red brn, vry arg, firm, friable, no odor, ns.
 LS: crm/lt brn/lt gry-brn, micro-fn xtal, min foss frags/fn abund ool pcs, silty/sndy, some chalky, 22+ pcs w/ppt-med in-xtal/in-ool por w/sfo, dk brn fluid, dul yel flor, slt crush odor, gsfo.
 LS: as above, 18 pcs w/ppt-med in-xtal/in-ool por w/sfo, dk brn fluid, dul yel flor, slt crush odor, gsfo.
 LS: lt gry/lt brn, micro-med xtal, foss frags, some silty/sndy, some chalky, no vis por, no odor, ns.
 SH: lt-dk gy/red brn, vry silty/sndy, glauc, carb, firm, fissile.
 LS: crm/lt brn/lt gry, micro-med xtal, foss frags/some grainy, some vry silty/sndy, some vry chalky, min ppt in-xtal por, no odor, ns.
 SH: lt-dk gry/blk, some silty, slt carb, soft-firm, no odor, ns.
 LS: crm/lt brn/lt gry, micro-med xtal, foss frags, some sndy, some vry chalky, some ppt-med in-xtal por, no odor, ns.
 SH: med-dk gry, some silty, slt carb, firm, no odor, ns.
 SH: same as above, no odor, ns.
 LS: crm/lt gry/tan, micro-fn xtal, some vry silty, some chalky, foss frags/some grainy, min frac por, no odor, ns.
 LS: crm/tan/lt-med brn, micro-fn w/some med xtal, some vry silty/sndy, some vry chalky, foss frags, min frac por, no odor, ns.
 SH: med-dk gry/brn, vry silty/sndy, carb, firm, fissile, no odor, ns.
 LS: crm/tan/lt brn/lt gry, micro-med xtal, some vry silty/sndy, some vry chalky, foss frags/some grainy, mostly dense w/some fn-med in-xtal por, no odor, ns.
 LS: crm/tan/lt-med brn, micro-fn xtal, some vry silty, some chalky, foss frags/some grainy, some frac por, no odor, ns. Some SH: lt-dk gry/brn-gry, slt silty, carb, firm, fissile.
 SH: med-dk gry/blk/min dk maroon, some silty, carb, soft-firm, fissile, no odor, ns.
 LS: crm/lt-med gry/lt brn, micro-fn xtal, foss frags/some grainy, some vry silty, some vry chalky, min frac por, no odor, ns.
 SH: med-dk gry/blk/red brn, some vry silty, carb, firm, fissile, no odor, ns.
 LS: crm/lt gry-crm, micro-fn, some vry silty/sndy, some vry chalky, foss frags, some orange-brn chert, min frac por, no odor, ns.
 SS: wht/lt orange brn/red brn, f-m, sr-wr, pred qtz, some dk incl, carb, poss some in-part por, hard, slt friable, no odor, ns. Some SH: med gry/red brn/maroon, silty, carb, firm, fissile.
 SS: as above w/increase in red brn, some vry arg, no odor, ns.
 TD @ 4750'.

2nd) no blow, no BB.
 IFP 21-23#
 ISIP 40#
 FFP 24-25#
 FSIP 39#
 HP 2331-2312#
 Recvd: 5' Mud.
 CFS @ 4580'
 30"60"
 Morgan Mud Check #10 @
 4580' 12/03/14 11:00am
 wt vis pH chl
 9.4 73 10.5 700
 Filt LCM
 8.0 3
 CFS @ 4610'
 30"60"
 CFS @ 4650'
 30"60"
 CFS @ 4675'
 30"60"
 Morgan Mud Check #10 @
 4750' 12/04/14
 End of drilling, no analyses
 conducted.
 CFS @ 4750'
 30"60"
 Conducted 10 stand short
 trip then circulated one hour
 before TOH for logging.