

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Petra #1-8
Location: 1497' FSL & 802' FWL, Sec. 8-T30S-R18W, Kiowa Co., KS.
Licence Number: 15-097-21820-00-00 Region: Alford
Spud Date: 4/2/2015 Drilling Completed: 4/12/15
Surface Coordinates: 1497' FSL & 802' FWL, Sec. 8-T30S-R18W

Bottom Hole Same as Above
Coordinates:
Ground Elevation (ft): 2230' K.B. Elevation (ft): 2243'
Logged Interval (ft): 4000' To: 5375' Total Depth (ft): 5375'
Formation: Viola at Total Depth
Type of Drilling Fluid: Freshwater/Gel to 3635'; Chemical Gel 3635' to 5375'

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

OPERATOR

Company: Herman L. Loeb, LLC.
Address: P.O. Box 838
Lawrenceville, IL. 62439-0838

GEOLOGIST

Name: Jon D. Christensen
Company: Consulting Petroleum Geologist
Address: 9002 W. Silver Hollow St.
Wichita, KS. 67205-8856

Cores

None Taken

DSTs

DST #1(Lansing 'A' Zone) 4389' - 4405' Test Times 15"-45"- 45"-90" IFP Strong Blow BOB/7 Min., FFP Fair to Strong Blow BOB/33 Min, no Gas to Surface, no Blowback on SI's; REC: 830' Gas in Pipe, 55' OCM(5%O, 95%M), 123' SOCMW(1%O, 89%W, 10%M) CI 55,000, Mud 8000; IFP 55-71#, ISIP 1408#, FFP 73-105#, FSIP 1376#, IHP 2239#, FHP 2104#, BHT 111 Deg. F.

DST #2(Kansas City Hertha) 4750' - 4776' Test Times 15"-45"-30"-60" IFP Weak Blow built to 7.5", FFP Weak Blow built to 5.5", No Blowback on SI's; REC: 82' Gas in Pipe, 40' OCMW(4%O, 66%W, 30%M), 122' SW, CI 59,000, Mud 11,000; IFP 30-55#, ISIP 1666#, FFP 61-99#, FSIP 1659#, IHP 2485#, FHP 2376#, BHT 116 Deg. F.

DST #3(Miss. Warsaw Dolomite) 4992' - 5007' Test Times 15"-45"-60"-120" IFP Strong Blow BOB/9 Min., FFP Strong Blow BOB/30 Sec., Gas to Surface in 26 Min. Gauged 45.1 MCFG/60" of FFP(14# on a 0.25" Choke - Gas Burns OK), no Blowback on SIs; REC: 20' GCM(5%G, 95%M), no oil or water; IFP 16-22#, ISIP 787#, FFP 12-30#, FSIP 783#, IHP 2711#, FHP 2603#, BHT 115 Deg. F.

DST #4(Miss. Dolomite/Chert) 5010' - 5062' Test Times 15"-45"-45"-90" IFP Strong Blow BOB/9 Min., FFP Strong Blow BOB/10 Sec., Gas to Surface in 36 Min. Gauged 6.9 MCFG/45 Min. of FFP(4# on a 0.125" Choke - Gas burns OK), no Blowback on SI's; REC: 65' GCM(5%G, 95%M), no oil or water; IFP 38-46#, ISIP 1034#, FFP 39-52#, FSIP 1026#, IHP 2686#, FHP 2625#, BHT 115 Deg. F.

Comments

4/2/15 MIRU Sterling Drilling Co. Rig #5, Spud at 7:15 PM.; 4/3/15 TD. 639' - Wiper Trip; 4/4/15 TD. 639' - Rig Repairs; 4/5/15 Drilling at 1600'; 4/6/15 Drilling at 3600'; 4/7/15 TD. 4405' - DST #1; 4/8/15 Drilling at 4720'; 4/9/15 Drilling at 4865'; 4/10/15 TD. 5007' - TOH with DST #3; 4/11/15 Drilling at 5123'; 4/12/15 RTD. 5375' at 12:50 AM., LTD. 5375' - Logging well(Halliburton) - set new 5 1/2" Production Casing.

Set new 8 5/8"(24#) Surface Casing at 634' KB. with 400 sacks cement(Basic Energy Services). Cement did Circulate. PD. at 10:45 AM. on 4/3/15.

Set new 5 1/2"(15.5#) Production Casing at 5163' with 200 sacks of "Loeb Blend" cement(Basic Energy Services). PD. at 11:00 PM. on 4/12/15.

Surveys: 0.50 Deg. at 639'(Surface Casing); 1.0 Deg. at 4405'(DST #1); 0.75 Deg. at 4776'(DST #2); 0.50 Deg. at 5007'(DST #3); 1.0 Deg. at 5375' RTD.

Pipe Strap at 4405'(DST #1): Strap 1.01' Long to the Board, no correction made to the Board.

After review of the Halliburton Logs, DST data and Sample shows, the operator elected to set new 5 1/2" Production Casing for completion in the Mississippi Dolomite zones.

LOG TOPS: Chase 2554(-311), Stotler Lmst. 3516(-1273), Heebner Shale 4186(-1943), Toronto 4203(-1960), Brown Lmst. 4365(-2122), Lansing 'A' 4383(-2140), Lansing/KC 'H' 4556(-2313), Stark Shale 4700(-2457), Base Kansas City 4798(-2555), Marmaton 4844(-2601), Cherokee Shale 4926(-2683), Miss. Dolomite 4985(-2742), Kinderhook Shale 5286(-3043), Viola 5305(-3062).

NOTE: This log was on depth with the Halliburton openhole Logs, no shifting was necessary.

ROCK TYPES

 Anhy  Bent  Brec  Cht	 Clyst  Coal  Congl  Dol	 Gyp  Igne  Lmst  Meta	 Mrlst  Salt  Shale  Shcol	 Shgy  Sltst  Ss  Till
---	---	---	---	---

ACCESSORIES

- MINERAL**
- Anhy
 - Arggrn
 - Arg
 - Bent
 - Bit
 - Breclfrag
 - Calc
 - Carb
 - Chtdk
 - Chtlt
 - Dol
 - Feldspar
 - Ferrpel
 - Ferr
 - Glau

- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

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

- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

- STRINGER**
- Anhy
 - Arg
 - Bent
 - Coal
 - Dol
 - Gyp
 - Ls
 - Mrst

- Siltstrg
- Ssstrg

- TEXTURE**
- Boundst
 - Chalky
 - Cryxln
 - Earthy
 - Finexln
 - Grainst
 - Lithogr
 - Microxln
 - Mudst
 - Packst
 - Wackest

OTHER SYMBOLS

- POROSITY**
- Earthy
 - Fenest
 - Fracture
 - Inter
 - Moldic
 - Organic
 - Pinpoint

- Vuggy
- SORTING**
- Well
 - Moderate
 - Poor

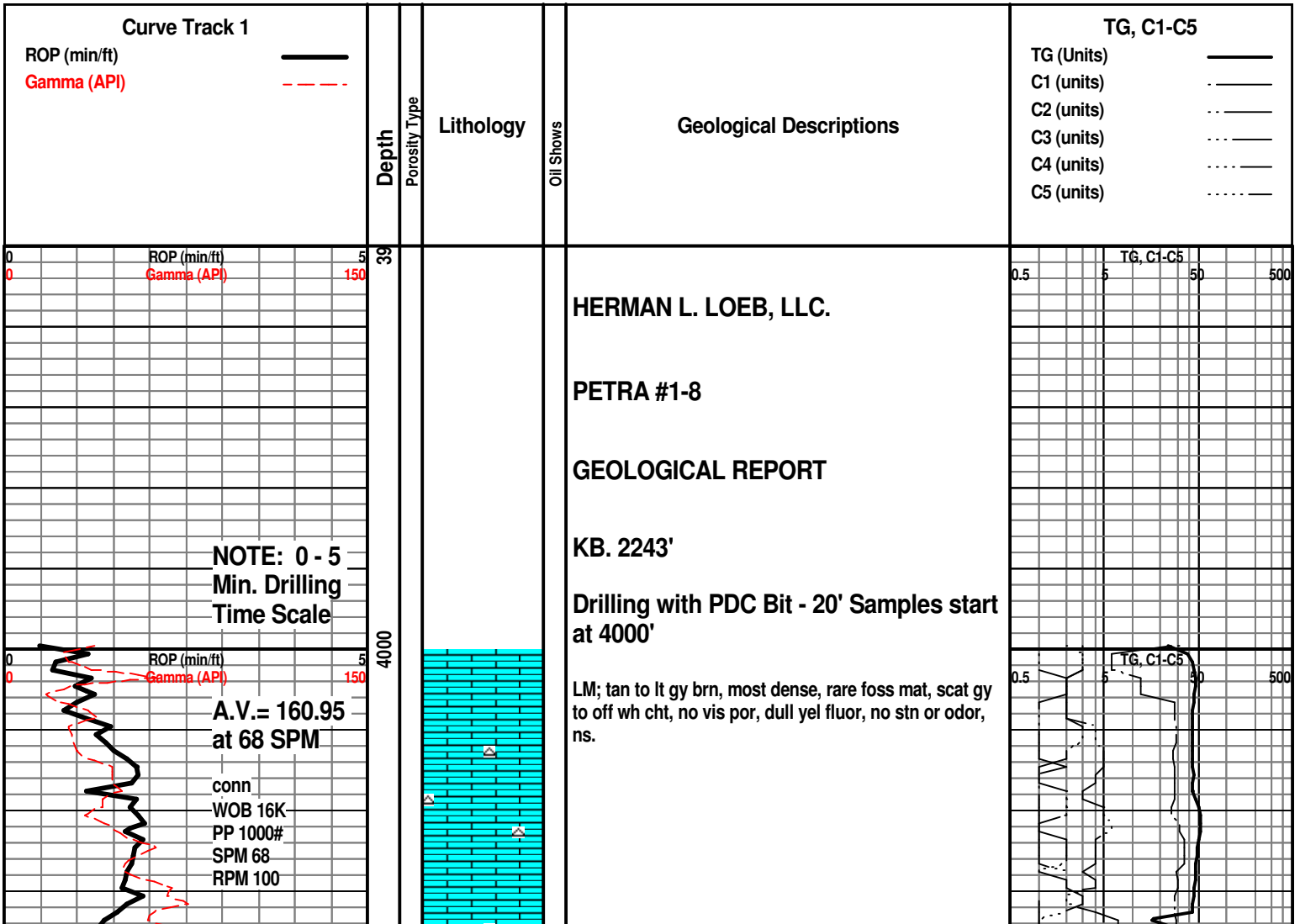
- ROUNDING**
- Rounded
 - Subrnd
 - Subang
 - Angular

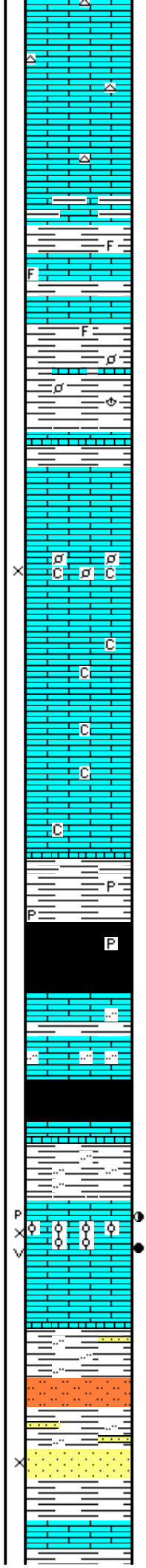
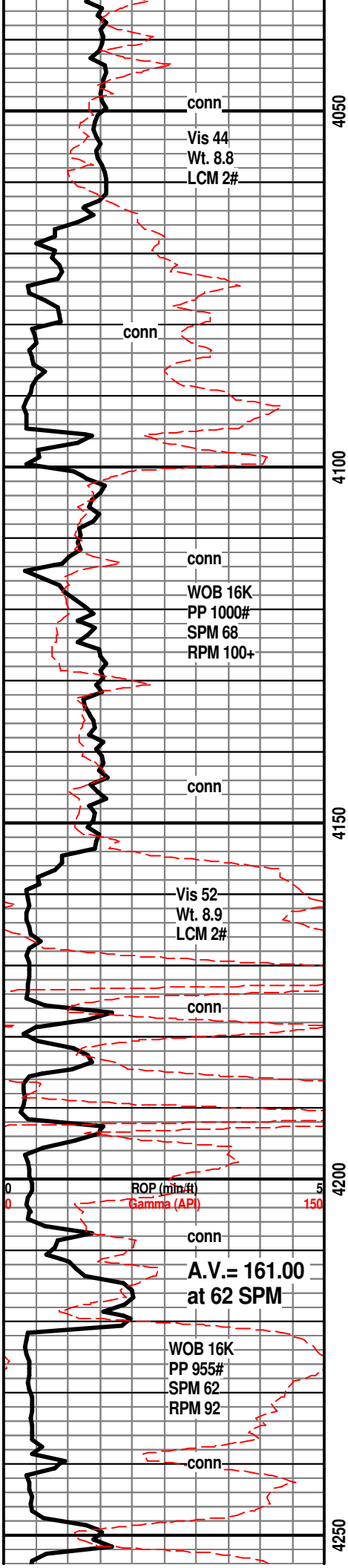
- Spotted
- Ques
- Dead

- EVENT**
- Rft
 - Sidewall

- INTERVAL**
- Core
 - Dst

- OIL SHOW**
- Even





LM; tan to lt brn, fxl n to micritic, blocky, scat gy cht, no vis por, scat dull yel fluor, ns.

SH; med gy, gy brn, lmy w/interbdd lmy sh, foss ip

SH; med to dk gy, foss ip, platy, rarely interbdd lmst strngs.

LM; med to dk brn, dense, micritic

LM; off wh, tan, foss ip - scat pelletal lmst, chalky mtx, fair interpart por, no stn or odor, ns.

LM; tan to cream, off wh, foss ip, scat chalky mtx, lt yel min fluor, no vis por, ns.

SH; med to dk gy, platy, occ pyr

SH; blk, carb ip, trc gas

LM; med gy brn, gritty - silty text ip, some cse xln, no vis por, tite
HEEBNER SHALE 4186(-1943)
SH; blk, carb ip, platy, faint gas odor

SH; grn, gy grn, silty ip.
TORONTO 4203(-1960)
LM; off wh, wh, foss - finely oolitic, fair p-p and w/occ lrg vug por, much rextalized, lt brn oil stn, SSFO, most w/brite yel fluor, fair odor, spotted/occ even stn, gas bubbles, gd cut

DOUGLAS SHALE 4221(-1978)
SH; lt gy, platy, interbdd lt gy sltst and vf gr qz ss, platy

SS; lt gy, vf to f gr, clusters, mica ip, poor intergran por, no fluor, ns.

LM; med brn, cse xln ip, dense, blocky, no vis por, ns.



Vis 51
Wt. 9.0
LCM 2#
conn

conn
WOB 16K
PP 1000#
SPM 62
RPM 90+

Vis 50
Wt. 9.1
LCM 2#
conn

DST #1
Lansing 'A'
4389' - 4405'

CFS. at 4405'
Scale Chan
ROP (min/ft) 10
Gamma (API) 150

MudCo. Mud
Check at 4405'
Vis 52 Wt. 9.4
WL 10.0 PH 10.0
CI 11,000 LCM 2#
conn

A.V.= 150.50
at 55 SPM

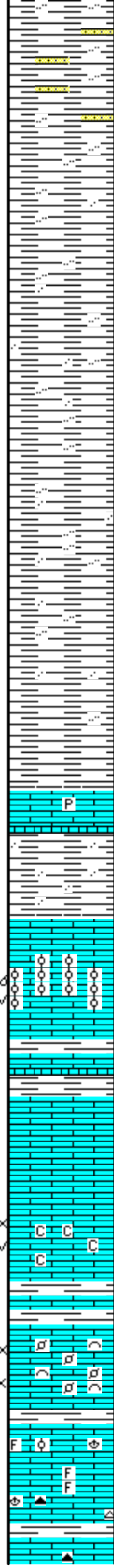
conn
WOB 40-41K
PP 925#
SPM 60
RPM 68

4300

4350

4400

4450



SH; lt gy, silty to sandy, some interbdd vf to f gr qtz

SH; lt to med gy, platy, silty to occ sandy

SH; lt to med gy, silty to sandy, platy

BROWN LMST. 4365(-2122)

LM; med brn, blocky, hd, rare pyr

SH; lt gy, silty ip, fiss, soft

LANSING 'A' 4383(-2140)

LM; tan to lt brn, oolitic, most med size molds, v. gd oomoldic w/some vug por, much even lt brn oil stn, SSFO, gd odor, most w/uniform brite yel fluor, sev. gas bubbles

DST #1: Lansing 'A' 4389' - 4405'

LANSING 'B' 4408(-2165)

LM; tan to lt gy, most dense, blocky, no vis por, no fluor, ns

LM; lt gy, off wh, buff, fxl n w/poor vis interxln w/fair disconnected vug por, occ chalky mtx, occ spar calc xtals, med yel min fluor, no stn or odor, ns.

LM; tan to lt brn, foss w/small pellets, hash, fair interpart por, soft ip, v. dull yel min fluor, no stn or odor, ns.

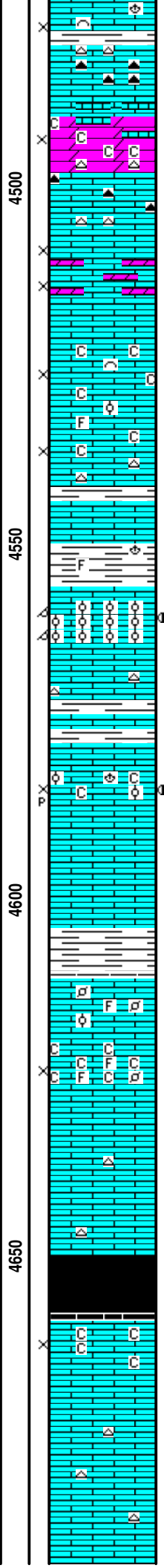
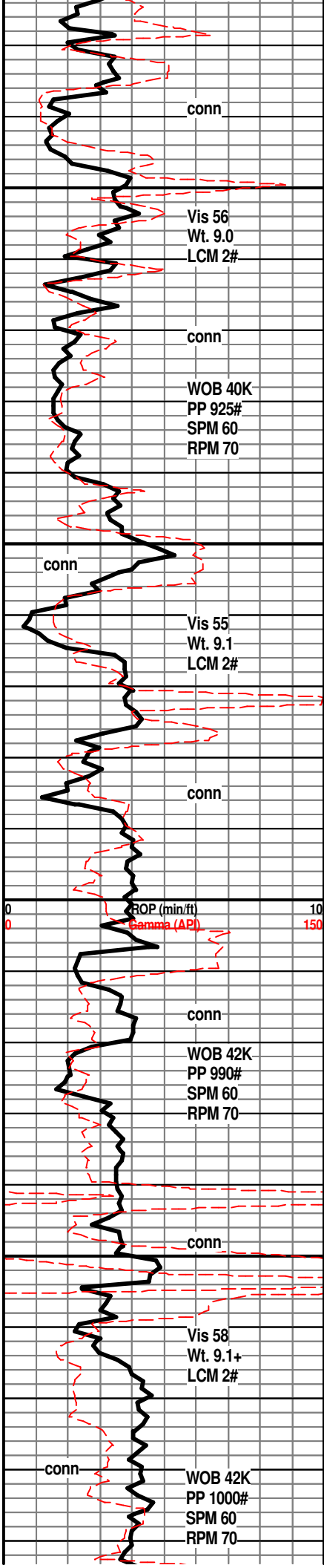
LM; tan to lt brn, foss ip, scat cse spar calc xtals w/lt min fluor, poor to no vis interpart por, no stn or odor, interbdd gy to dk brn cht, ns.

LM; lt to med brn, fxl n, scat foss mat, poor to fair

225 Unit Incr.
SHOW

0.5 1G, C1-C5 50 500

11 Unit Incr.



interpart/ interxln por, interbdd dk gy/brn cht, dull yel min fluor, no stn, ns.

DOL; tan, buff, sucrosic, fair interxln por, some lmy w/interbdd chalky soft lmst, dull yel min fluor, no stn or odor, bcm very cherty, ns.

LM; tan to buff, lt brn, fxln w/some dolomitic lmst interbdd, fair interxln por, scat foss mat, no fluor, no stn or odor, ns.

LM; off wh, buff, fxln w/scat foss mat, most w/chalky mtx, fairly soft, poor to fair interpart/interxln por, no fluor, no stn, ns.

SH; med gy, gy grn, foss ip.

LANSING/K.C. 'H' 4556(-2313)

LM; lt brn, oolitic, most w/med size molds, gd oomoldic por, no vis vug por, sev. pcs w/spotted med brn oil stn, some barren por, med yel fluor, fair odor, fair cut

LM; tan to buff, lt brn, foss - partly oolitic, poor interpart w/scat p-p por, minor chalky mtx, rare med yel fluor, trc med brn v. spotted stn, v. faint odor

LM; lt brn, hd, micritic, most blocky, tite

KANSAS CITY 'I' 4611(-2368)

LM; off wh, wh, buff, fxln w/occ foss mat, much soft chalky mtx, fair interpart por, no fluor, no stn or odor, ns.

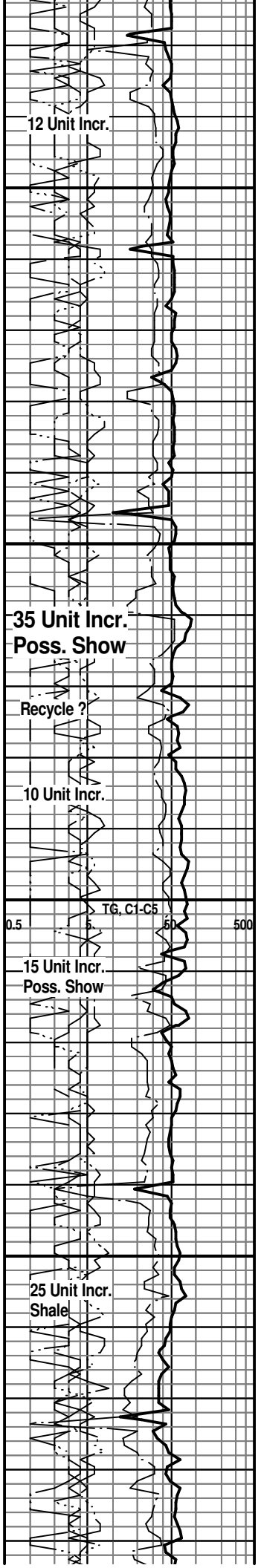
LM; off wh, tan, buff, most dense, rare off wh/tan cht, tite

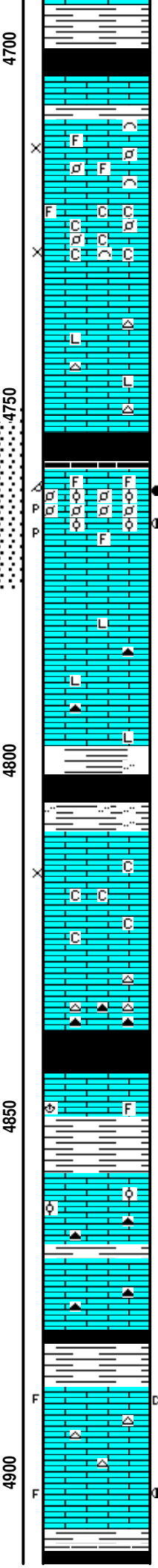
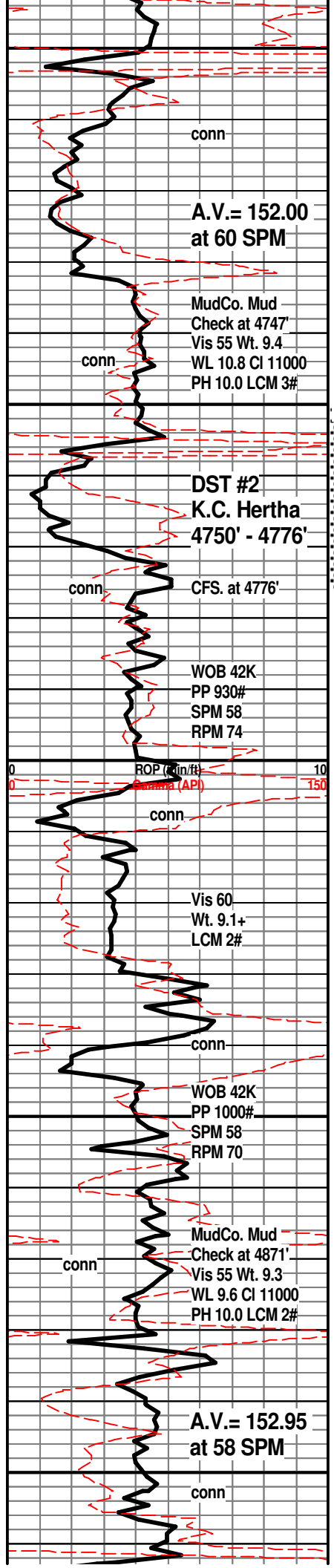
SH; dk gy - blk, platy, carb ip.

KANSAS CITY 'J' 4659(-2416)

LM; off wh, wh, fxln, soft, fair interxln por, chalky ip, soft, no fluor, no stn or odor, barren, ns.

LM; tan to lt brn, hd, blocky, most micritic, scat lt brn cht, tite





SH; med to dk gy, platy
STARK SHALE 4700(-2457)
SH; blk, carb, trc gas, platy

SWOPE 4708(-2465)
LM; lt to med brn, cse xln w/scat pellets and foss mat, loosely cem - fair interpart/interxln por, no fluor, no stn or odor, barren, ns.

LM; off wh, wh, buff, med to cse xln, scat foss mat, very chalky mtx, fair interxln/interpart por, dull yel fluor, no stn or odor, ns.

LM; med brn, gy brn, hd, some litho, scat gy cht, tite

SH; blk, carb, trc gas
HERTHA 4757(-2514)
LM; tan to lt brn, foss - finely pelletal to oolitic, gd p-p and moldic por, med to occ brite yel fluor, gd to strong odor, SSFO, few gas bubbles, fair to gd cut, less show w/some barren porosity at bottom of zone

DST #2: K.C. Hertha 4750' - 4776'

LM; med to dk brn, hd, micritic to litho, rare dk gy to smoky cht, tite

BASE KANSAS CITY 4798(-2555)

SH; grn, some varic, rust red, gy, platy, silty ip.

PLEASANTON 4810(-2567)
LM; off wh, wh, buff, fxln to micritic, poor to no vis interxln por, interbdd soft chalk and chalky lmst, lt yel min fluor, no stn or odor, ns.

LM; off wh, tan, med brn, fxln to dense, blocky, scat gy to smoky cht, no vis por, no fluor, ns.

SH; dk gy - blk, platy, soft
MARMATON 4844(-2601)
LM; lt brn, tan, rare foss mat, dense, no vis por, no fluor, ns.

SH; med gy, firm, platy
ALTAMONT LMST. 4858(-2615)
LM; tan to lt brn, foss ip, trc well cem ooids, most dense, no vis por, no fluor, scat brn foss cht, ns.

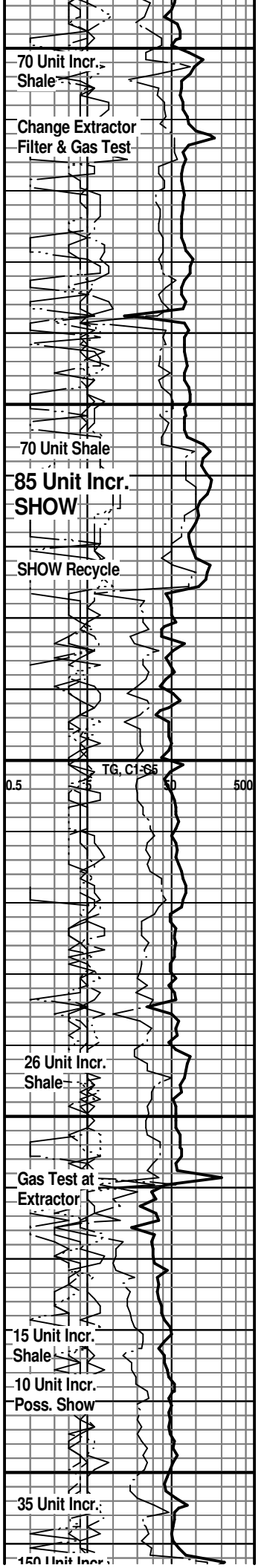
LM; lt to med brn, foss ip, well cem, blocky, no vis por, occ brn cht, no fluor, no stn, ns.

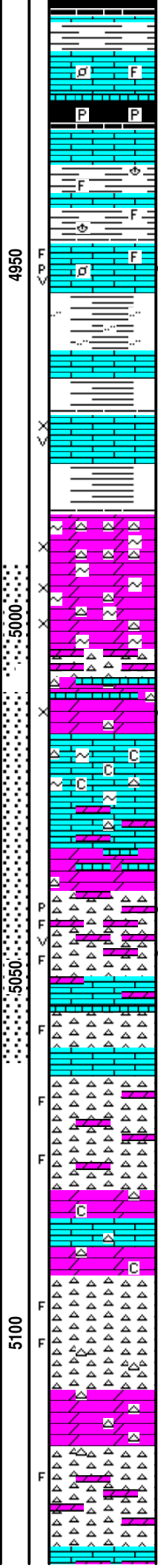
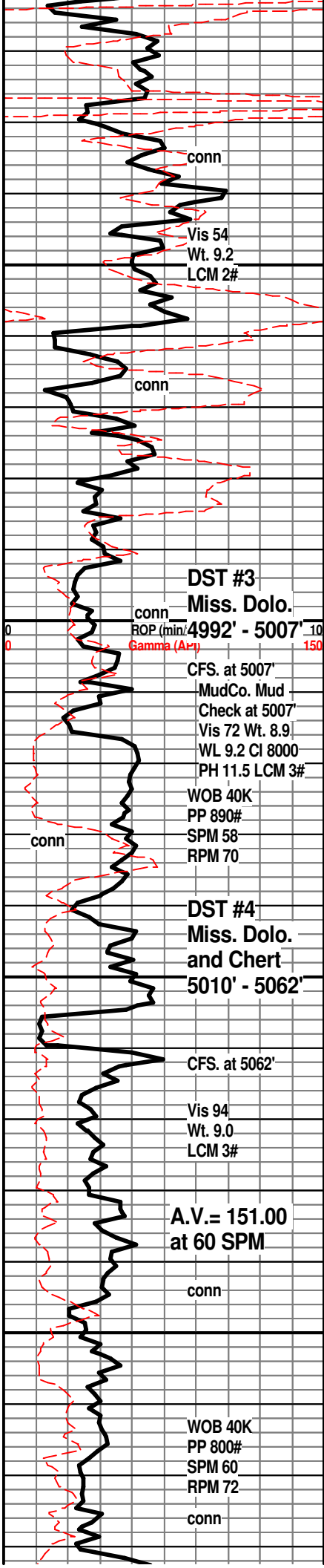
SH; blk, platy, carb ip.

PAWNEE 4888(-2645)
LM; lt brn, rare med brn, fxln to micritic, scat gy to tan cht, few pcs w/blk tar/gils, no live shows, scat lt yel fluor, occ spar calc xtals w/trc fracs, no odor, looks tite

LM; tan to lt brn, fracs w/spotted med brn oil stn, lt yel fluor, scat spar calc, no odor, fair cut, most looks tite

SH; blk carb, gas





SH; brk, carb, gassy

LM; med brn, foss ip, well cem, blocky, no vis por, rare dull yel fluor, ns.

CHEROKEE SHALE 4926(-2683)
SH; blk, carb ip, pyr
LM; tan to buff, lt brn, fxln w/scat calc xtals, med yel min fluor, no vis por, no odor, looks tite
SH; grn gy grn, foss ip, interbdd tite lmst.

LM; lt brn, foss ip, sev. fracs w/live edge stn, scat p-p and vug por, mostly spotted stn, SSFO, faint odor, med to occ brite yel fluor, fair/gd cut
SH; med gy, grn, some varic, silty, soft

LM; med brn, lt gy grn ip, dense
SH; varic, platy

LM; tan to lt brn, foss, scat fair interpart and occ vug por, dull yel fluor, poss. gas bubbles, lt yel fluor, no vis stn, no odor

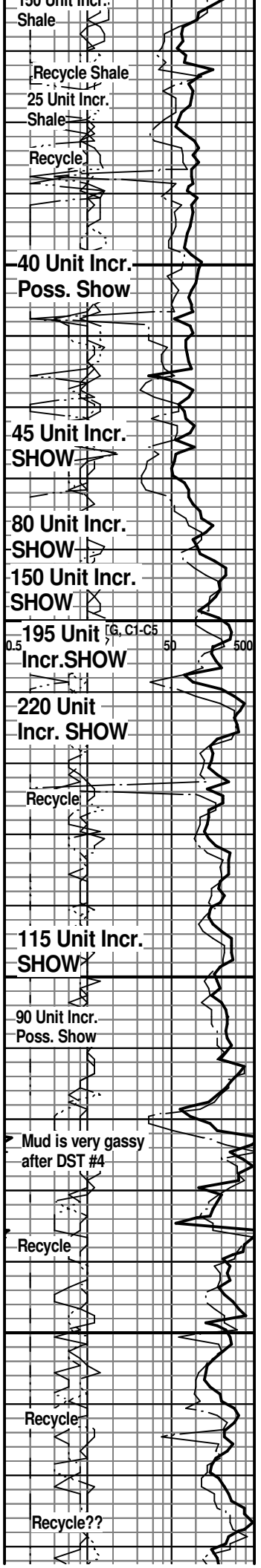
MISS. DOLOMITE 4985(-2742)
DOL; lt gy, tan, sucrosic, some glau, fair to gd interxln por, sev. gas bubbles, med yel fluor, cherty dolo interbdd, faint gas odor, gas show
DOL; tan/lt brn, sucrosic, glau, gd por, med yel fluor, grading into cherty dolomite/dolo. chert, gas bubbles, no vis oil stn, faint gas odor

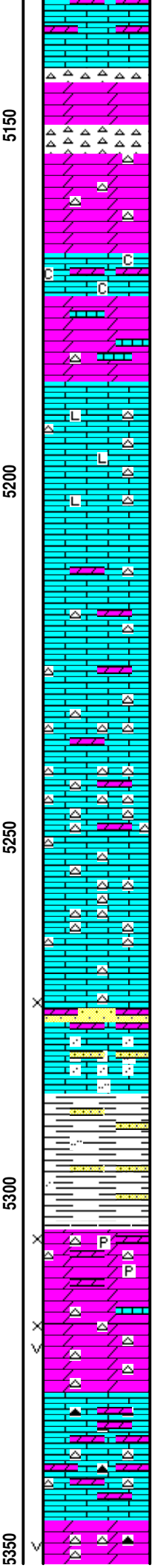
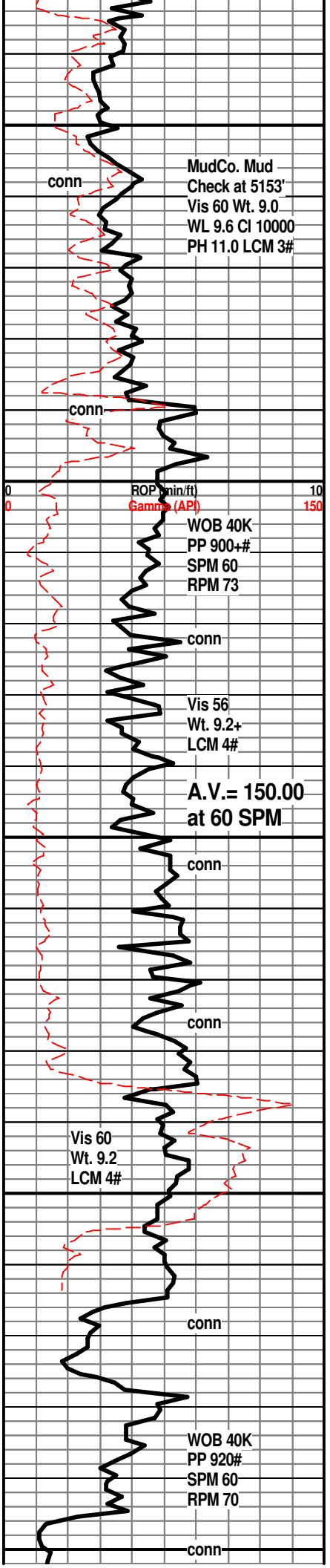
DST #3: Miss. Dolomite 4992' - 5007'
DOL; tan, sucrosic, fair interxln por, gas bubbles, spotted lt brn oil stn, SSFO., uniform med yel fluor, occ cse dolo rhombs, fair odor
LM; off wh, cse xln, chalky ip, scat grn clay(glau) incl, rare gy foss cht, no vis por, no fluor, ns.
LM; wh, off wh, cse xln, glau ip, tite, interbdd off wh/tan cherty tite dolomite, lt yel min fluor, no vis stn, no vis por

CHT; wh, off wh, dolomitic, spotty lt brn oil stn, faint to fair odor, poor to fair p-p and vug por, med to brite yel fluor, sev. fracs in fresh cht w/SFO and gas bubbles

LM; off wh, tan, med xln, partly dolomitic, tite
CHT; blue/gy, wh, fresh, fracs in some, lt yel fluor, no vis oil stn, poss gas bubbles

DST #4: Miss. Dolo./Chert 5010' - 5062'
CHT; wh, off wh, trip and fresh, partly dolomitic - gritty text, scat fracs in fresh cht, spotty lt yel fluor, no vis oil stn, no odor, ns.
DOL; lt gy, off wh, sucrosic, hd, cherty ip, minor chalky mtx, hd, no vis por, dull yel min fluor, interbdd gy cse xln lmst, ns.
CHT; lt to med gy, occ blue gy, fresh, sharp, occ fracs, no stn or odor, ns
DOL; lt gy, off wh, buff, cherty, most tite, ns.
CHT; lt blue gy, gy, fresh, dolomitic w/interbdd cherty dolo, poss fracs, poor interxln por, rare lt yel fluor, no stn or odor, no sample shows





LM; tan, buff, cse xln, dolomitic ip, tite

LARGE INFLUX OF UPHOLE SLOUGHING SHALES

DOL; tan to off wh, sucrosic, cherty w/bands of wh to lt gy cht and dolomitic cht, poor to fair interxln por, no fluor, ns.

LM; off wh, med xln, chalky - soft mtx, no vis por, no fluor, interbdd dolomitic lmst, ns.

LM; lt to med gy, hd, gritty text, interbdd med gy cht, dense, litho ip.

LM; lt gy, gy brn, lt brn, gritty ip, partly dolomitic, scat gy to wh foss cht, no vis por, no fluor, ns.

LM; tan to off wh, dolomitic ip w/interbdd gy to gy grn sucrosic dolo, incr. in med gy cht, no vis por, no fluor, ns.

LM; tan to lt brn, hd, very cherty w/gy, dk gy to transl cht, no fluor, no stn or odor, ns.

SS; lt gy, f to med gr qtz, dolomitic, loosely cem w/poor intergran por, no vis stn, no fluor, ns.

KINDERHOOK SHALE 5286(-3043)

SH; med gy grn, silty to sandy, interbdd thin ss strngs.

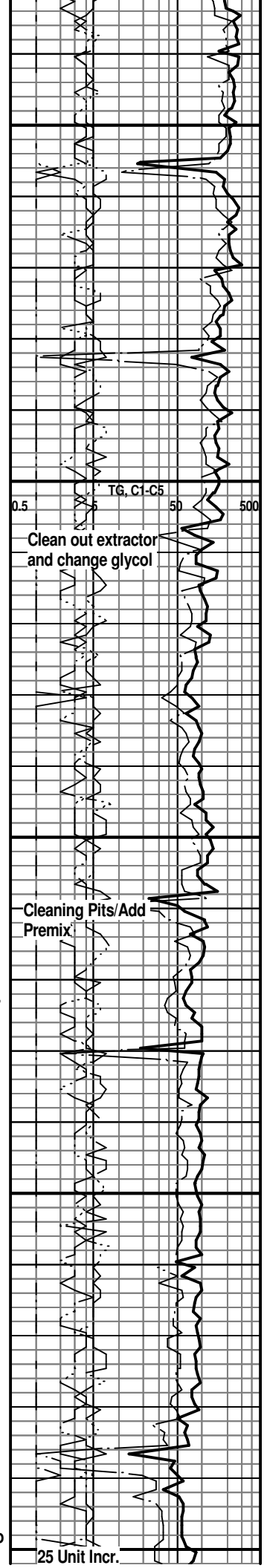
VIOLA 5305(-3062)

DOL; med gy, lmy, most dense, some sucrosic w/poor interxln por, pyr ip, v. dull yel to no fluor, occ dove gy cht, no stn or odor, ns.

DOL; tan to lt gy, sucrosic, scat vug por w/fair interxln por, lt yel min fluor no stn or odor, ns., no gas kick, cherty ip.

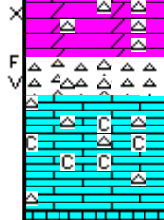
LM; med brn, hd brn fresh cht, interbdd dolomitic cherty lmst, lt yel min fluor, ns.

DOL; tan to cream, buff, very cherty w/much fresh wh to off wh cht, dull vel fluor, no stn or odor, no sample



Vis 61
Wt. 9.3
LCM 3#

CFS. at RTD.



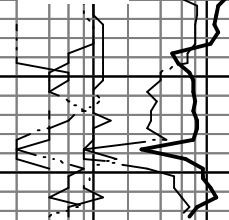
shows, cht has some vug por and fracs

LM; off wh, chalky ip, scat wh cht, tite

RTD. 5375' at 12:50 AM. on 4/12/15

LTD. 5375'

Halliburton ACRT, NEU/DEN, Microlog,
Sonic



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

5400

50

TG, C1-C5
0.5 5 50 500