

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Randel #1-20
Location: 1765' FNL&1320' FWL, Sec. 20-T27S-R18W, Kiowa County, KS.
Licence Number: 15-097-21771-00-00 Region: Unnamed Field
Spud Date: 10/26/2013 Drilling Completed: 11/5/2013
Surface Coordinates: 1765' FNL & 1320' FWL, Sec. 20-T27S-R18W

Bottom Hole Same as Above
Coordinates:
Ground Elevation (ft): 2204' K.B. Elevation (ft): 2215'
Logged Interval (ft): 3400' To: 4919' Total Depth (ft): 4919'
Formation: Kinderhook at Total Depth
Type of Drilling Fluid: Freshwater/Gel to 3326'; Chemical Gel 3326' to 4919'
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

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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' Porosity) 4202' - 4221'(Corrected Depths to LOG) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/4.5 Min., FFP Strong Blow 15 Sec., Gas to Surface in 30 Min., Volume To Small To Measure, 0.25" Blowback on FSI; REC: 4170' Gas in Pipe, 35' WM(34%W, 66%M), CI 68,000, Mud 3000; IFP 17-23#, ISIP 1457#, FFP 13-30#, FSIP 1450#, IHP 2055#, FHP 2038#, BHT 114 Deg. F.

DST #2(Kansas City 'I' Zone) 4420' - 4440'(Corrected Depths to LOG) Test Times 15"-45"-30"-60" IFP Strong Blow BOB/6 Min., FFP Fair Blow building to BOB Blow in 27 Min., 1" Blowback on FSI, no GTS; REC: 415' Gas in Pipe, 2' Clean Oil, 95' OCMW(3%O, 63%W, 34%M), 213' SW, CI 92,000, Mud 3000; IFP 32-88#, ISIP 1359#, FFP 99-167#, FSIP 1334#, IHP 2153#, FHP 2122#, BHT 119 Deg. F.

DST #3(Cherokee/Miss. Chert) 4738' - 4788'(Corrected Depths to LOG) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/30 Sec. Gas to Surface in 14 Min., FFP Strong Blow Gas to Surface Gauged Max. 169.9 MCFG(11# on 0.5" Choke), Surface Blowback on FSI; REC: 4674' GIP, 65' SGCM(2%G, 98%M), NO WATER; IFP 95-91#, ISIP 1516#, FFP 94-110#, FSIP 1493#, IHP 2496#, FHP 2312#, BHT 120 Deg. F.

DST #4(Miss. Chert) 4788' - 4803'(Corrected Depths to LOG) Test Times 15"-45"-45"-90" IFP Weak Blow built to 4", FFP Strong Blow BOB/15 Sec., no Gas to Surface, no Blowback on SI's; REC: 739' Gas in Pipe, 5' SGCM(2%G, 98%M), NO WATER; IFP 29-34#, ISIP 499#, FFP 13-25#, FSIP 940#, IHP 2338#, FHP 2262#, BHT 121 Deg. F.

Comments

10/26/13 MIRU Sterling Drilling Rig #2, Spud at 5:45 PM.; 10/27/13 TD. 608' - Cementing Surface Casing,; 10/28/13 Drilling at 1256';10/29/13 Drilling at 2530'; 10/30/13 Drilling at 3305'; 10/31/13 Drilling at 4042'; 11/1/13 TD. 4225' - Lay down Test Tool after DST #1; 11/2/13 TD. 4444' - DST #2; 11/3/13 Drilling at 4685'; 11/4/13 TD. 4792' - TIH after DST #3; 11/5/13 Drilling at 4885' - RTD. 4919' at 9:30 AM., LTD. 4917'; 11/6/13 Running 5 1/2" Production Casing.

Set new 8 5/8"(24#) Surface Casing at 603' with 350 sx. of Cement(Basic Energy Services). Cement Did Circulate. PD. at 7:00 AM. on 10/27/13. Cement fell 50', so used 1" to fill up to base of cellar with 100 sx. Cement(Basic Energy Services) - Cement held OK.

Set new 5 1/2"(15.5#) Production Casing at 4909' with 200 sacks of "Loeb Blend" Cement(Basic Energy Services). PD. 11:45 AM. 11/6/13.

Surveys: 0.75 Deg. at 608'(Surface Casing); 0.25 Deg. at 4225'(DST #1); 1 Deg. at 4444'(DST #2); 1 Deg. at 4792'(DST #3); 0.75 Deg. at 4919' RTD.

Pipe Strap at 4225'(DST #1): Strap 1.01' Short to the Board, no correction made to the Board.

After review of the Halliburton Logs, DST data and positive indications of commercial amounts of recoverable hydrocarbons, the operator elected to set new 5 1/2" Production Casing for completion in the Mississippi Chert.

LOG TOPS: Chase 2453(-238), Stotler Lmst. 3401(-1186), Howard 3608(-1393), Queen Hill Shale 3912(-1697), Heebner Shale 4043(-1828), Toronto 4058(-1843), Brown Lmst. 4193(-1978), Lansing "A" 4198(-1983), K.C. 'I' 4412(-2197), Kansas City "J" 4450(-2235), Stark Shale 4498(-2283), Hertha 4556(-2341), BKC 4584(-2369), Marmaton 4626(-2411), Cherokee Shale 4712(-2497), Miss. Unconformity 4770(-2555), Kinderhook Shale 4821(-2606), Kinderhook Sand 4850(-2635).

NOTE: This log was shifted upward by 3' to 4' for Correlation purposes with the Halliburton Logs.

NOTE: Prior to abandonment of the Randel #1-20, the Kansas City "J" zone should be perforated and tested from 4452' - 4456'(Log depths). There was a 30 Unit gas kick in this zone, and favorable log calculations. Also, the Lansing "A" zone should be tested from 4200' - 4208' based on log calculations and gas shows recovered in DST #1.

ROCK TYPES

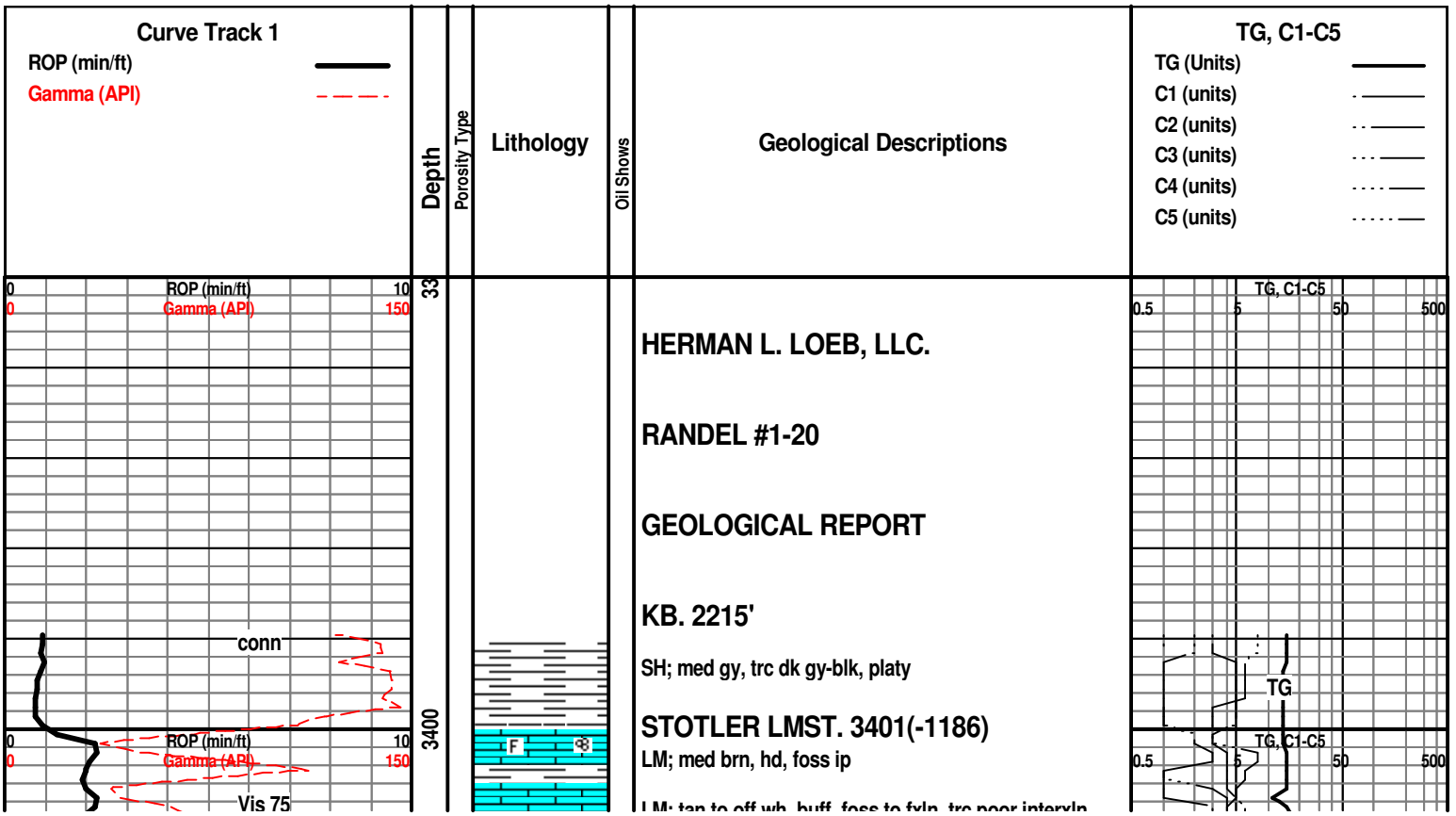
Anhy	Clyst	Gyp	Mrlst	Shgy
Bent	Coal	Igne	Salt	Sltst
Brec	Congl	Lmst	Shale	Ss
Cht	Dol	Meta	Shcol	Till

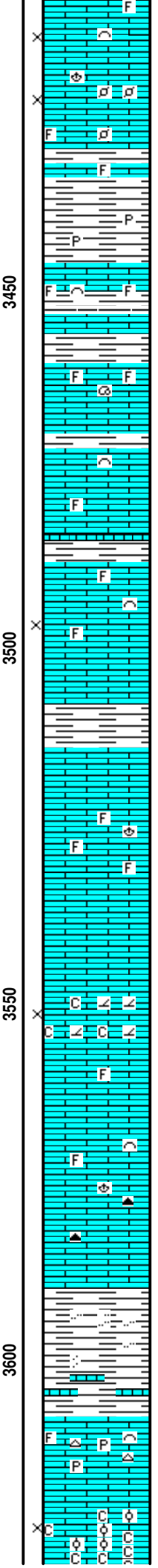
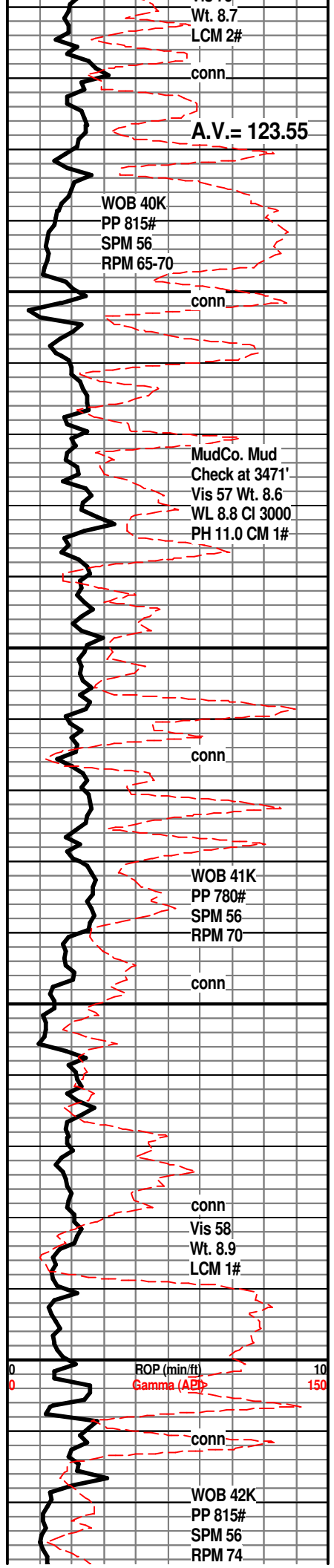
ACCESSORIES

MINERAL	Gyp	FOSSIL	Ostra	Sltstrg
Anhy	Hvymin	Algae	Pelec	Ssstrg
Arggrn	Kaol	Amph	Pellet	TEXTURE
Arg	Marl	Belm	Pisolite	Boundst
Bent	Minxl	Bioclst	Plant	Chalky
Bit	Nodule	Brach	Strom	Cryxln
Brecfrag	Phos	Bryozoa	STRINGER	Earthy
Calc	Pyr	Cephal	Anhy	Finexln
Carb	Salt	Coral	Arg	Grainst
Chtdk	Sandy	Crin	Bent	Lithogr
Chtlt	Sil	Echin	Coal	Microxln
Dol	Sulphur	Fish	Dol	Mudst
Feldspar	Tuff	Foram	Gyp	Packst
Ferrpel		Fossil	Ls	Wackest
Ferr		Gastro	Mrst	
Glau		Oolite		

OTHER SYMBOLS

POROSITY	Vuggy	ROUNDING	Spotted	EVENT
Earthy	SORTING	Rounded	Ques	Rft
Fenest	Well	Subrnd	Dead	Sidewall
Fracture	Moderate	Subang	INTERVAL	
Inter	Poor	Angular	Core	
Moldic		OIL SHOW	Dst	
Organic		Even		
Pinpoint				





LM; tan to off wh, buff, foss to fxln, trc poor interxn por, scat lt yel min fluor, no stn, no gas kick, ns.

LM; off wh, tan, foss w/scat finely pelletal lm, interbdd wh chalky mtx, lt to med yel fluor, no stn, ns.

SH; lt gy, gy grn, firm, occ pyr

LM; med gy brn, med brn, highly foss, tite

LM; tan to off wh, lt brn, foss ip, interbdd hd micrite, scat lt yel min fluor, ns.

LM; tan to buff, lt brn, foss ip, fxln to micritic, much dense blocky tite lmst, no vis por, ns.

SH; med gy, grn, platy

LM; tan to off wh, buff, fxln, scat foss mat, most well cem, trc poor interpart por, dull to lt yel min fluor, no stn or odor, ns.

SH; med to dk gy, platy, calc.

LM; med brn, gy brn, most dense, micritic, scat well cem foss, interbdd tan to buff fxln lmst, no vis por, dull yel to no fluor, ns.

LM; off wh, wh, buff, fxln w/scat sucrosic text, partly dolomitic, fair interxn por, chalky ip, lt yel fluor, no stn or odor, no vis gas bubbles

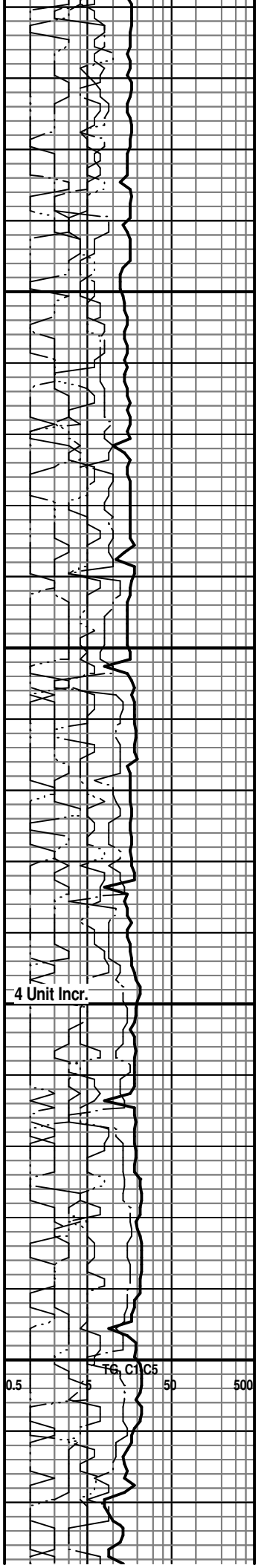
LM; off wh, tan, buff, fxln w/scat chalky mtx, most dense, dull yel fluor, ns.

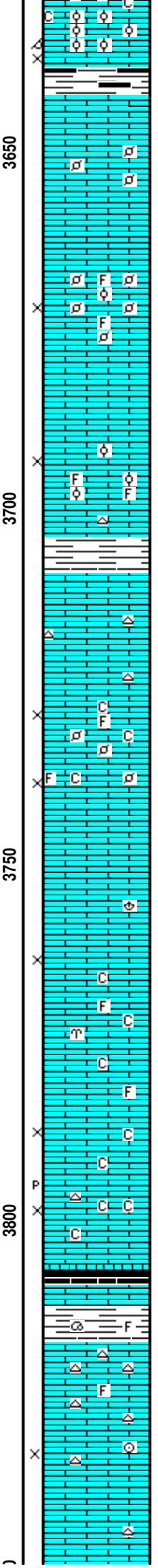
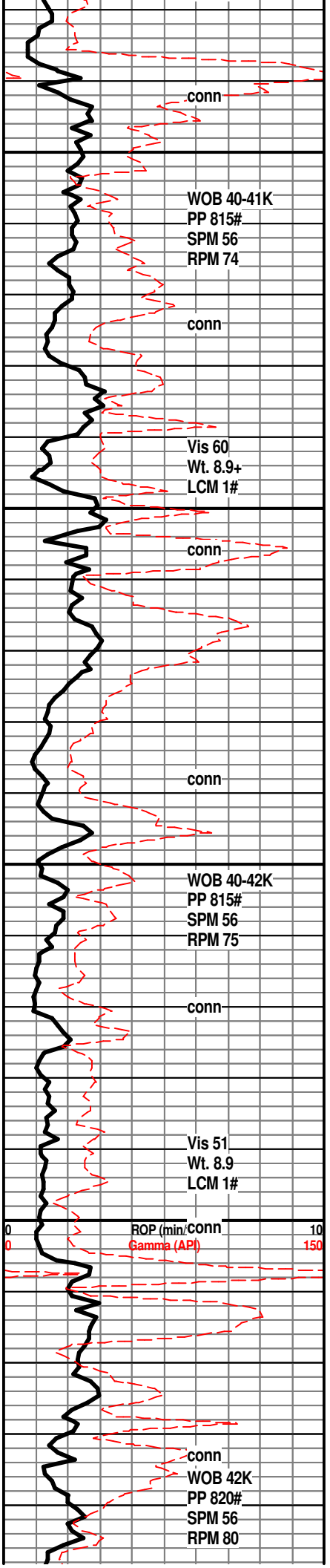
LM; med to dk brn, foss ip, scat dk brn cht, most dense

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

HOWARD 3608(-1393)
LM; tan to lt brn, fxln w/occ gy cht, well cem, trc pyr hd lmst, no vis por, ns.

LM; tan to off wh, wh, foss w/scat ooids and pellets, very chalky mtx, fair interpart por, scat lt yel fluor, no stn or odor, no gas kick, ns.





LM; tan to buff, foss - oolitic to pelletal, fair interpart w/trc oomoldic por, lt yel fluor, much soft chalky mtx, no stn or odor

SH; med to dk gy, trc blk, platy

LM; tan to lt brn, foss ip - well cem, scat small pellets, no vis por, no fluor, ns.

LM; tan to buff, lt brn, foss w/scat ooids and pellets, some foss hash, fair interpart por, dull yel min fluor, ns.

LM; off wh, tan, foss to med xln, fair interxln/interpart por, lt yel fluor, no stn, ns.

LM; lt to med gy, gy brn, dense, blocky, dense, scat off wh cht

LM; tan to buff, lt brn, foss w/occ pellets and foss hash, fair interpart por, minor soft chalky mtx, no stn or odor, ns.

LM; tan to cream, buff, f to med xln, scat foss, fair to occ gd interxln por, soft chalky mtx ip, lt to dull yel min fluor, no stn, ns.

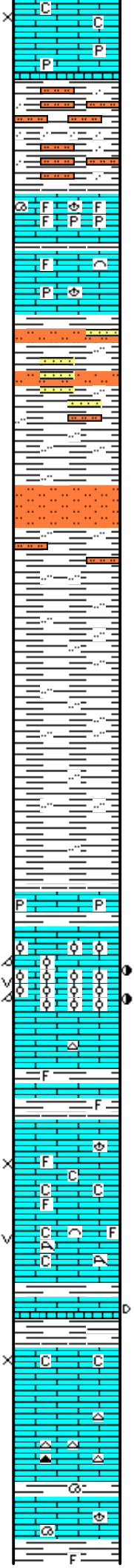
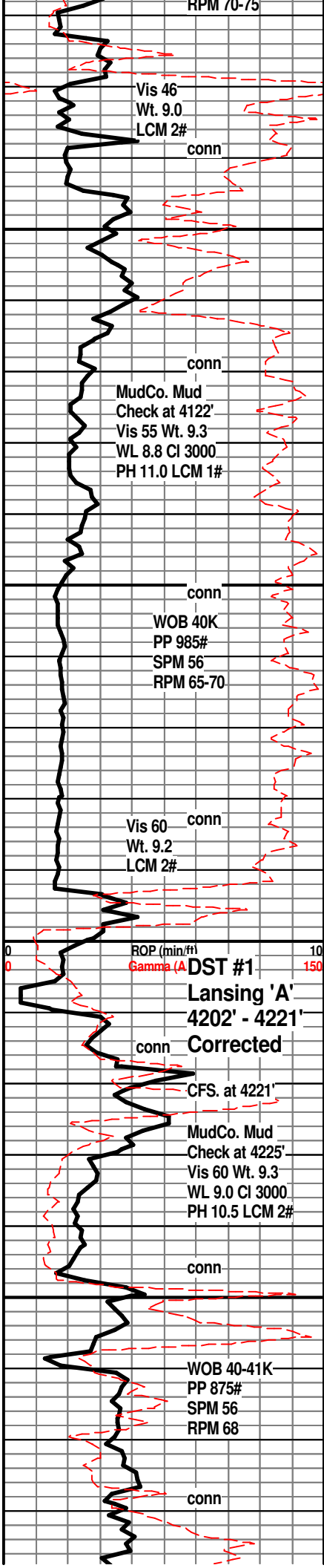
LM; tan to lt brn, buff, foss w/interbdd f to med xln lmst, fair to gd interpart w/scat p-p por, lt yel min fluor, no stn, ns.

SH; dk gy, trc blk, platy

LM; lt to med brn, blocky, scat gy cht, tite

LM; tan to lt brn, buff, f to med xln, scat fair interxln por, no fluor, scat gy foss cht, no stn, no gas kick, ns.





LM; off wh, wh, buff, med to cse xln, gd interxn por, minor chalky mtx, scat lt yel fluor, no stn or odor, no gas kick, ns.
DOUGLAS SHALE 4079(-1864)

SH; lt gy, silty w/interbdd sandy sltst, interbdd hd sandy lmst.

LM; med brn, hd, v. foss, pyr ip, well cem, tite

LM; med to occ dk brn, foss ip, hd, most dense, dull yel min fluor, ns.

SLTST; lt gy, sandy, mica ip w/interbdd vf gr qtz ss, firm

SH; lt gy, occ gy grn, platy, occ silty

SH; lt to med gy, platy, occ silty w/interbdd mica sltst.

SH; lt to med gy, smooth, platy to flakey, occ silty

BROWN LMST. 4193(-1978)
LM; med brn, hd, occ pyr, tite

LANSING 'A' 4198(-1983)
LM; tan to lt brn, oolitic w/med size ooids at top, bcm oomoldic w/med to brite yel fluor, fair odor, SSFO, show of gas bubbles, fair to gd oomoldic w/some vug por, fair cut, spotted lt brn stn

DST #1: Lansing 'A': 4202' - 4221'
Corrected Depths to Log

LANSING 'B' 4225(-2010)
LM; off wh, lt gy brn, foss w/scat foss hash, fair interpart por, minor chalky mtx, dull yel fluor, no stn or odor

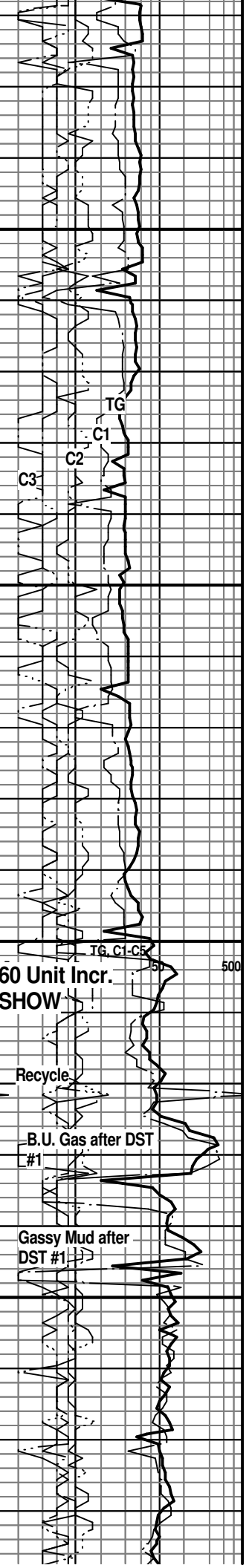
LM; lt gy, gy brn, foss ip - w/ scat corals, fair vug por, minor chalky mtx, dull yel fluor, no stn or odor, ns.

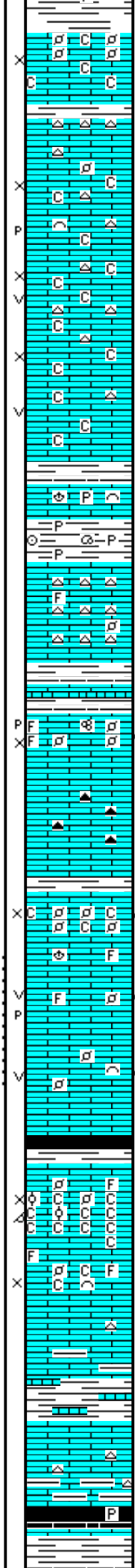
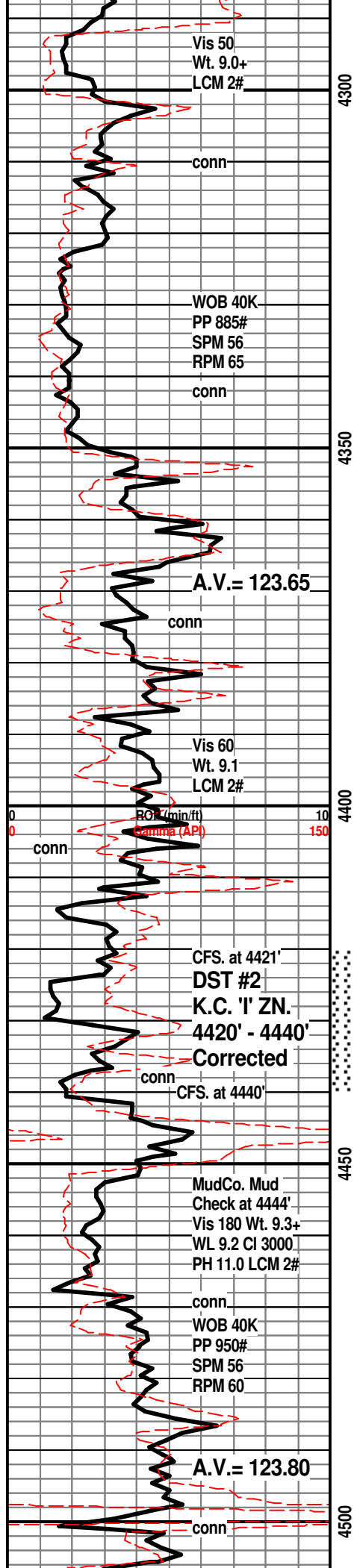
LM; med to dk brn, foss, scat blk tar/gils., tite

LM; off wh, tan, buff, f to med xln, fair to gd interxn por, minor chalky mtx, lt yel fluor, no vis stn, no odor, ns.

LM; med brn, rare dk brn, hd, cherty ip, tite

LM; med brn, foss, well cem, no vis por, ns.





SH; med gy, maroon, some varic.

LM; tan to buff, cream, foss w/scat small pellets, partly soft w/chalky mtx, poor to fair interpart por, dull yel fluor, no stn, no gas kick, ns.

LM; tan to cream, buff, f to med xln, trc sucrosic text, fairly soft w/some chalky mtx, poor vis interxln w/occ p-p por, occ med to cse spar calc xtals, dull blue/yel min fluor, no stn or odor, ns.

LM; tan to cream, off wh, med xln w/scat wh to lt gy cht, interbdd soft chalky mtx, poor to fair interxln w/occ small vug por, dull blue/yel fluor, no stn, no gas kick, ns.

LM; tan to cream, lt gy, med xln w/abnt spar calc xtals, med yel min fluor, scat chalky mtx, occ vug por, no stn, ns.

LM; med brn, dense, foss ip, occ pyr

SH; med gy, grn, platy, scat pyr, foss

LANSING/K.C. 'H' 4366(-2151)

LM; tan to cream, off wh, fxln w/abnt opaque and transl. cht, rare foss mat, lt yel min fluor, no stn, ns.

SH; med gy, gy grn, platy

LM; tan to cream, foss w/scat foss mat and small pellets, poor interpart w/trc p-p por, trc spotted lt brn stn, spotty brite yel fluor, most tite w/ns.

LM; tan to lt brn, hd, scat smoky/dk brn cht, tite

K.C. 'I' ZONE 4412(-2197)

LM; off wh, buff, foss - finely pelletal ip, fair interpart por, minor chalky mtx, 2-3 pcs. w/trc. lt brn spotted stn, no odor, lt yel fluor, very little to no show

LM; tan to off wh, lt gy, med xln w/scat gd p-p and vug por, med to occ brite yel fluor, SFO, sev. gas bubbles, strong odor, spotted v. light brn oil stn, fair to gd cut

LM; lt brn, tan, off wh, foss, med xln w/scat gd vug por, strong odor, gas bubbles, SFO, spotted lt brn stn, med to brite yel fluor

DST #2: K.C. 'I' ZONE 4420' - 4440'

K.C. 'J' ZONE 4450(-2235)

LM; lt brn, foss - partly oolitic, poor interpart w/trc poor oomoldic por, faint to fair odor, very chalky w/much pure soft chalk, scat med yel fluor, no vis oil stn, no vis gas bubbles

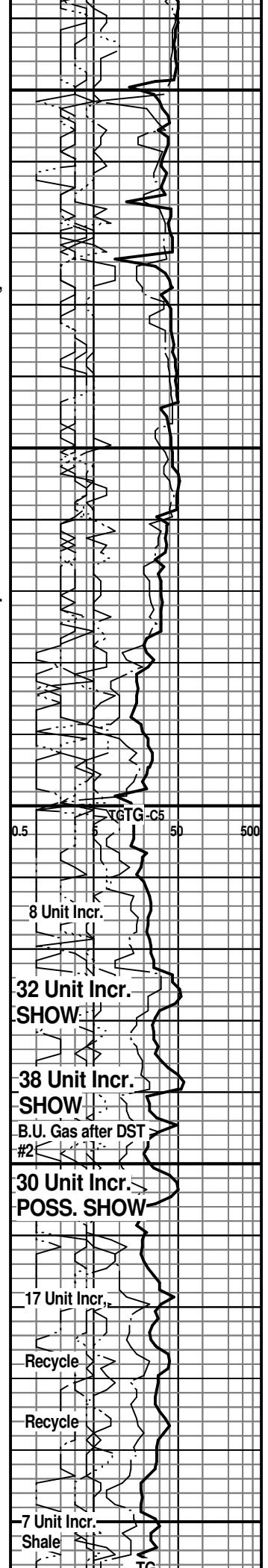
LM; tan to cream, buff, foss ip w/scat hash, most fxln w/poor to fair interxln por, no fluor, no stn, minor chalky mtx, ns.

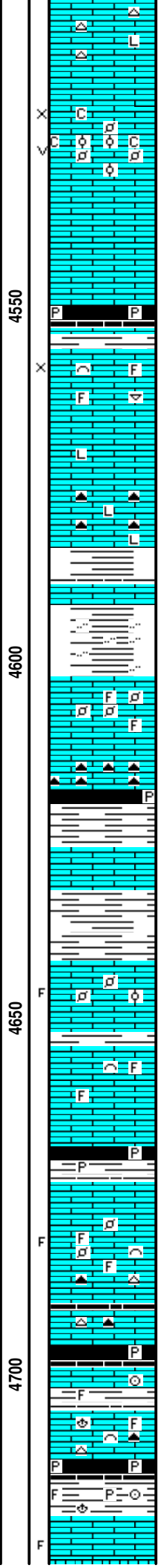
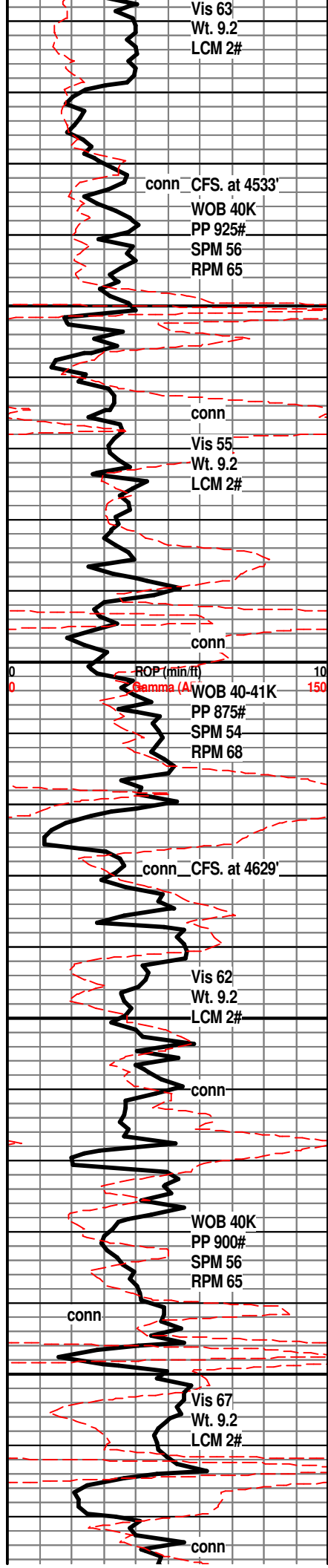
LM; lt to med brn, hd, occ gritty text, scat gy to tan cht, argil ip, tite

STARK SHALE 4498(-2283)

SH; blk, carb ip, trc pyr

SWOPE 4507(-2292)





LM; lt gy brn, lt brn, most dense, some litho, hd, scat tan to gy cht, no vis por, no fluor, ns.

LM; tan to buff, foss ip w/scat small pellets and occ hash, trc oolitic lmst, fair interpart w/rare vug por, minor chalky mtx, lt yel min fluor, no vis stn, no odor, no sample shows

LM; tan to lt brn, buff, fxln to micritic, blocky, scat tan to gy cht, tite

SH; blk, carb ip, occ pyr

HERTHA 4556(-2341)
LM; off wh, buff, tan, foss w/scat med xln lmst, trc poor interxln por, lt/med yel min fluor, no stn or odor, no gas kick

LM; tan to buff, off wh, fxln bcm med to dk brn, hd, no vis por, med yel min fluor, ns.

LM; med to dk brn, hd, litho, interbdd blk to smoky cht, tite

BASE KANSAS CITY 4584(-2369)
LM; dk brn, blocky, dense

SH; varic, gy, grn, maroon, platy, occ silty

PLEASANTON 4601(-2386)
LM; off wh, tan, foss w/scat pellets and occ hash, most well cem, lt yel min fluor, no stn or odor, ns.

LM; dk brn, hd, blocky, scat blk cht, tite

SH; blk, some varic, pyr, trc gas

MARMATON 4626(-2411)
LM; lt brn, rare pale grn tint, dense, blocky, no vis por, ns.

SH; med gy, grn, some varic, firm, smooth

LM; off wh, wh, buff, foss ip, fxln w/scat soft chalky mtx, few pcs w/blk tar/gils, trc tracs, no live shows, lt yel fluor, no odor, no cut

LM; wh, off wh, fxln w/occ foss, rare dk brn/blk dead/residual oil stn, no live show, poor interxln por, lt yel fluor, no gas kick

SH; dk gy - blk, platy, occ pyr

PAWNEE 4673(-2458)
LM; tan to lt brn, foss w/scat small pellets and hash, most well cem, scat fracs w/dk brn/blk edge stn, no odor, occ lt yel fluor, no live shows

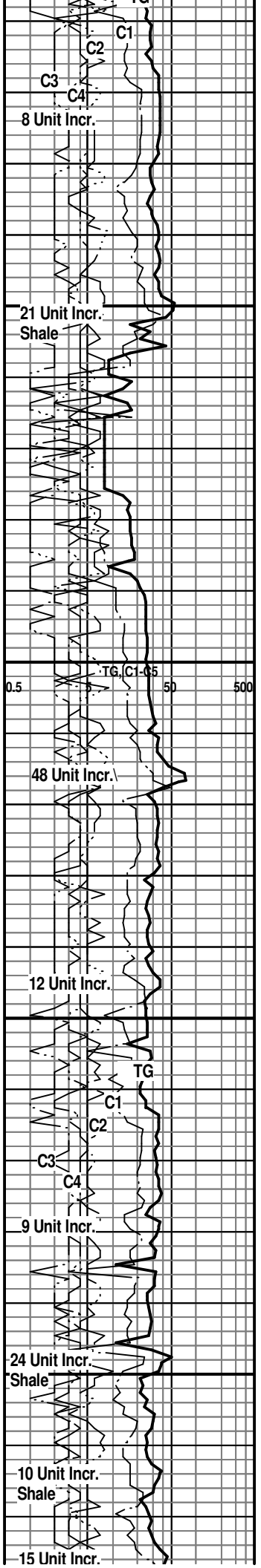
LM; med brn, most dense, occ cherty, tite

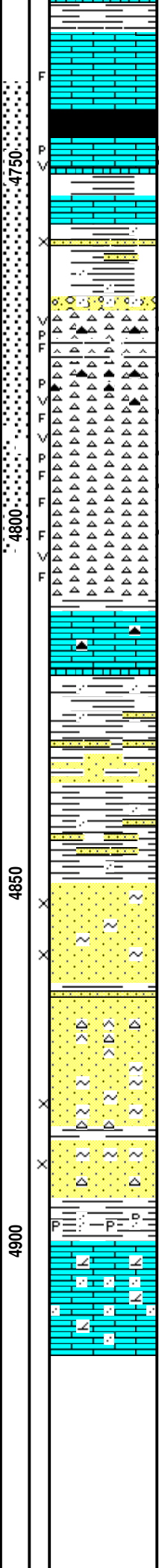
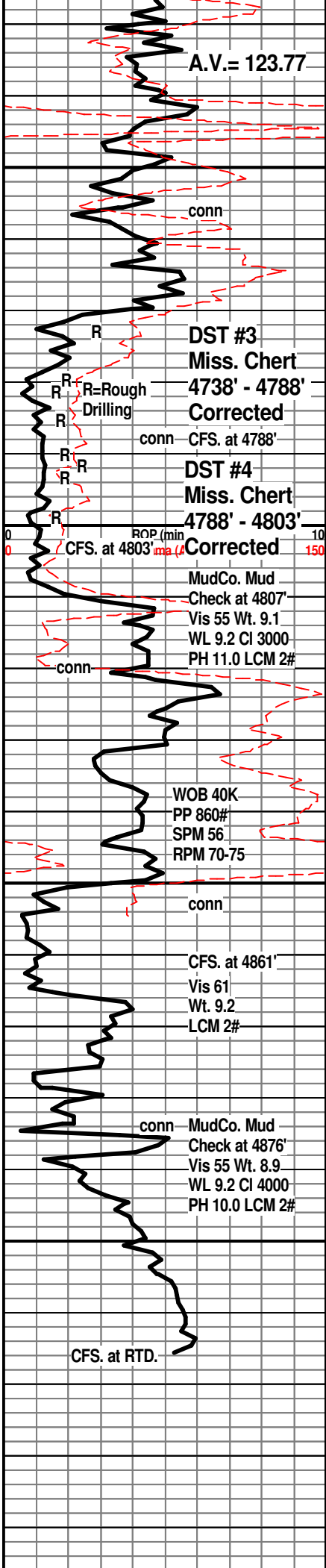
SH; blk, carb ip, pyr, trc gas

LM; med brn, foss ip, well cem. scat tan to amber cht, lt yel min fluor, no stn or odor, ns.

CHEROKEE SHALE 4712(-2497)
SH; blk, dk gy, gy grn, foss ip, occ pyr

LM; lt brn, fxln w/scat spar calc xtals, vis fracs w/trc gas bubbles, dull to lt yel fluor, no odor





LM; tan to buff, off wh, f to occ med xln, occ spar calc xtals, trc frags, rare blk tar/gils on few pcs, poss. faint odor, dull yel fluor, looks tite

LM; lt brn, fxltn, few pcs. w/spotted to even med brn stn, faint odor, fair p-p and small vug por, brite yel fluor, streaming cut, some bleeding oil

SS; lt gy, grn, vf to f gr qtz, some qtzitic, some fri clusters w/vis gas bubbles, tite to fair intergran por, lt yel fluor, no vis oil stn

SH; varic, sandy ip w/scat cse rnd qtz gr

MISSISSIPPI UNCONF. 4770(-2555)
CHT; wh tripolite w/gd p-p & occ vug por, spotted live med brn stn, SSFO, much varic. fresh cht - org, amber, off wh, frags w/live edge stn, some blk tar, faint odor, med w/occ brite yel fluor, few gas bubbles

CHT; varic, wh, fresh and trip, much live oil stn in vug por and frac edges, fair odor

DST #3: Miss. Chert 4738' - 4788'
CHT; most wh/off wh, fresh w/weathered parts, some trip, med/brite yel fluor, fair odor, spotted live med brn stn, occ blk tar, less vug por - more frags w/edge stn, Trc FO, gas bubbles

DST #4: Miss. Chert 4788' - 4803'
CHT; wh, fresh, blk tar/gils, scat vug por, frags

LM; med red brn, weath/oxidized, blocky, scat red hd cht, no vis por

KINDERHOOK SHALE 4821(-2606)
SH; med grn, gy grn, maroon, occ sandy

SS; lt grn, vf to f gr, argil ip, clusters, looks tite, no fluor, ns.

SH; med gy grn, platy, sev. grn f gr ss strngs

KINDERHOOK SAND 4850(-2635)
SS; clr, lt gy, pale grn tint, f gr qtz, clusters, gd intergran por, subrnd/subang gr, occ glau/chlorite incl, no fluor, no stn or odor, questionable gas bubbles

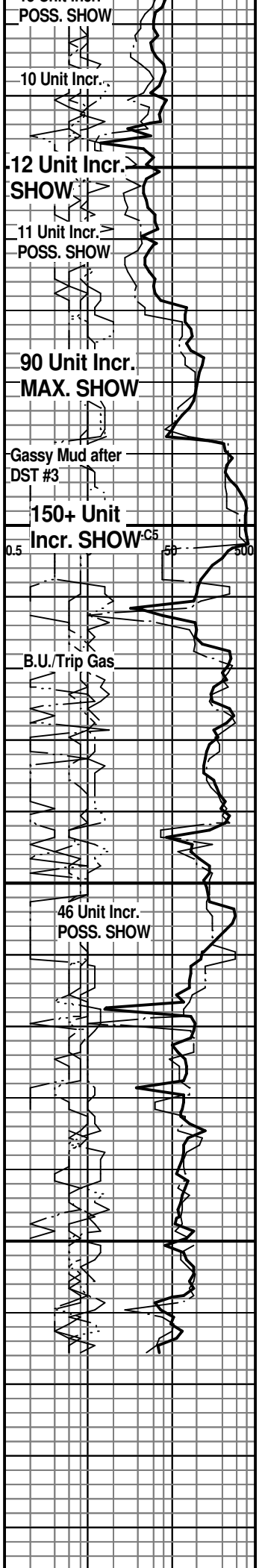
SS; wh, off wh, siliceous, dense, wh sandy cht, tite

SS; wh, pale grn, f gr qtz, fri w/fair to gd intergran por, abnt glau/chlorite, no fluor, no stn or odor, no sample shows

SS; off wh pale grn, tan, f gr qtz, interbdd hd qtzitic cherty sand and sandy cht, poor/fair intergran por, glau ip, no stn/odor, no fluor, ns.

SH; med brn, sandy to gritty, occ pyr

LM; med brn, sandy to gritty, dense, partly dolomitic, no vis por, ns.



RTD. 4919' at 9:30 AM. 11/5/13

LTD. 4917'

