

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Musselman #4-34
Location: 1265' FSL & 1230' FWL, Sec. 34-T21S-R16W, Pawnee Co., KS.
Licence Number: 15-145-21690-0000 Region: Larned Field
Spud Date: 10/19/2012 Drilling Completed: 10/25/2012
Surface Coordinates: 1265' FSL & 1230' FWL, Sec. 34-T21S-R16W

Bottom Hole Same as above
Coordinates:
Ground Elevation (ft): 1986' K.B. Elevation (ft): 1997'
Logged Interval (ft): 3200' To: 3879' Total Depth (ft): 3879'
Formation: Arbuckle at Total Depth
Type of Drilling Fluid: Freshwater/Gel to 2795'; Chemical Gel 2795' to 3879'
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' + 'B' zones) 3511' - 3547'(Corrected Depths to LOG) Test Times 15"-45"-30"-60" IFP Weak 0.5" Blow, FFP Weak Blow built to Fair 4" Blow, no Blowback on SI's; REC: 40' Gas in Pipe, 20' SGCM(2%G, 98%M), no Oil, no Water; IFP 20-27#, ISIP 540#, FFP 28-36#, FSIP 264#, IHP 1877#, FHP 1738#, BHT 107 Deg. F.

DST #2(Arbuckle) 3864' - 3877'(Corrected Depth to LOG) Test Times 15"-45"-15"-45" IFP Strong Blow BOB/15 Sec., BOB Blowback with Gas to Surface on ISI, FFP Strong Blow - Gas to Surface throughout - volume TSTM, BOB Blowback on FSI would not bleed off; REC: 1495' Gas in Pipe, 2356' CGO(30%G, 70%O) API 49 Deg. , no water(Reversed approx. 31 Bbl. oil into Tanker); IFP 677-881#, ISIP 1290#, FFP 1002-1168#, FSIP 1287#, IHP 2238#, FHP 1962#, BHT 119 Deg. F.

Comments

10/19/12 MIRU Sterling Rig #2, Spud at 10:30 PM.; 10/20/12 Drilling at 569'; 10/21/12 TD. 1010' - WOC; 10/22/12 Drilling at 1950'; 10/23/12 Drilling at 2953'; 10/24/12 TD. 3551' - CCH for DST #1; 10/25/12 Drilling at 3725'; 10/26/12 TD. 3879' - TOH with DST #2; 10/27/12 RTD. 3879', LTD. 3877' - 5 1/2" Production Casing set, PD. 5:00 AM.

Set new 8 5/8" (23#) Surface Casing at 994' w/ 400 sx.(Basic Energy Services). Cement did not Circulate. Cemented from top through 1" with additional 175 sx., Circulated cement to Pit. P.D. 12:30 AM. 10/21/12.

Set new 5 1/2"(15.5#) Production Casing at 3867' with 200 sx. of "Loeb Blend" Cement(Basic Energy Services). PD. 5:00 AM. 10/27/12.

Surveys: 1 Deg. at 1010'(Surface Casing); 1.75 Deg. at 3551'(DST #1); 0.5 Deg. at 3879'(DST #2).


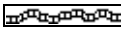
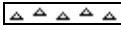
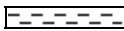




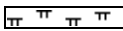

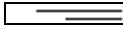
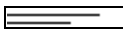



Pipe Strap at 3551'(DST #1): Strap 4.40' Short to the Board, no correction made to the Board.

After review of the Nabors Services, Co. 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 Arbuckle.








































































LOG TOPS: Anhydrite 987(+1010), Base Anhydrite 1005(+992), Chase 1960(+37), Krider 1980(+17), Topeka 3032(-1035), Queen Hill Shale 3286(-1289), Heebner Shale 3392(-1395), Toronto 3412(-1415), Brown Lmst. 3496(-1499), Lansing 'A' 3504(-1507), Lansing 'B' 3534(-1537), Base Kansas City 3723(-1726), Marmaton 3736(-1739), Conglomerate 3758(-1761), Simpson Shale 3814(-1817), Arbuckle 3862(-1865).

NOTE: This log was shifted upward by 2' to 4' for correlation purposes with the Nabors Services LOGS.

ROCK TYPES

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

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	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	 Sltstrg  Ssstrg TEXTURE  Boundst  Chalky  Cryxln  Earthy  Finexln  Grainst  Lithogr  Microxln  Mudst  Packst  Wackest
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OTHER SYMBOLS

- POROSITY**
 [E] Earthy
 [F] Fenest
 [X] Fracture
 [M] Inter
 [O] Moldic
 [P] Organic
 [P] Pinpoint

[V] Vuggy

- SORTING**
 [W] Well
 [M] Moderate
 [P] Poor

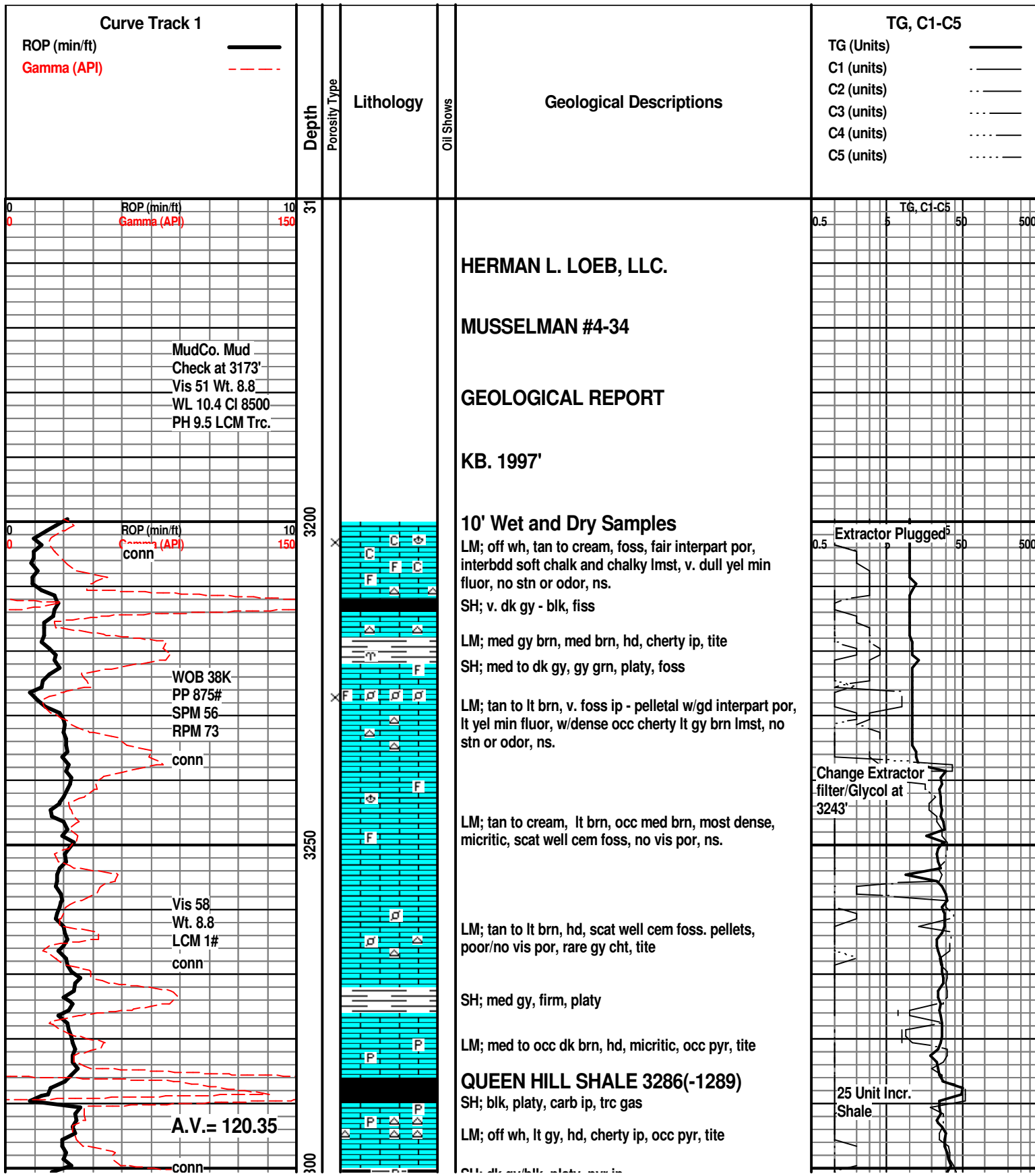
- ROUNDING**
 [R] Rounded
 [r] Subrnd
 [a] Subang
 [A] Angular

OIL SHOW
 [●] Even

- [●] Spotted
 [○] Ques
 [D] Dead

- INTERVAL**
 [■] Core
 [□] Dst

- EVENT**
 [▽] Rft
 [▲] Sidewall



MudCo. Mud
 Check at 3173'
 Vis 51 Wt. 8.8
 WL 10.4 Cl 8500
 PH 9.5 LCM Trc.

WOB 38K
 PP 875#
 SPM 56
 RPM 73
 conn

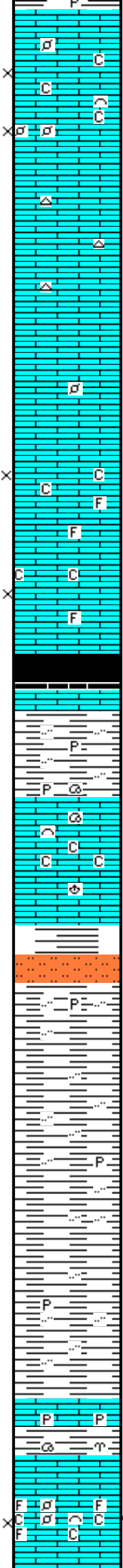
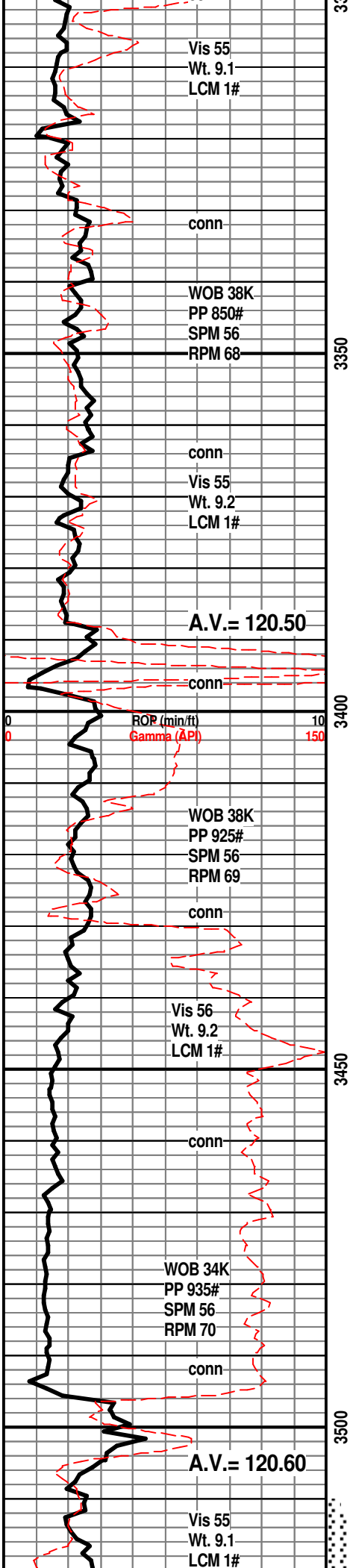
Vis 58
 Wt. 8.8
 LCM 1#
 conn

A.V.= 120.35

Extractor Plugged⁵

Change Extractor filter/Glycol at 3243'

25 Unit Incr. Shale



SH; dk gy/blk, platy, pyr ip.

LM; tan to lt brn, buff, med xln to gran text, occ foss mat, fair interxln por, scat chalky mtx, spotted lt yel min fluor, no stn or odor, ns.

LM; tan to lt brn, occ lt gy brn, most hd, blocky, scat gy cht, poor/no vis por, no stn or odor, no gas kicks, ns.

LM; tan to cream, off wh, f to med xln, scat foss mat, minor soft chalky mtx, v. dull yel to no fluor, no stn or odor, ns.

HEEBNER SHALE 3392(-1395)
SH; blk, carb, platy, trc gas bubbles
LM; med brn, dense, blocky
SH; grn, gy grn, trc brn, silty ip, firm to soft, rarely pyr

TORONTO 3412(-1415)
LM; off wh, tan - cream, f to med xln ip, foss ip, scat cse spar calc xtals, interbdd soft chalky lmst, lt yel min fluor, poor interxln por, no stn or odor, no gas kick, ns.

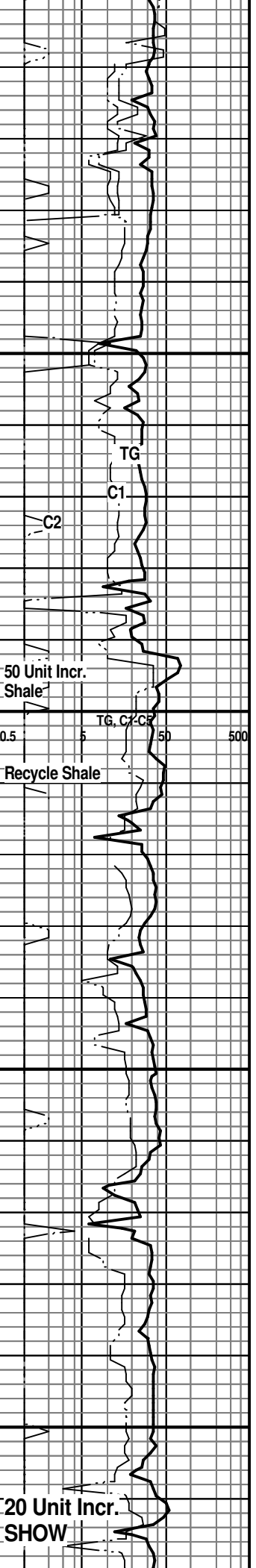
DOUGLAS SHALE 3430(-1433)
SH; varic, gy, rust red, tan, platy
SLTST; lt gy, soft, mica ip, platy

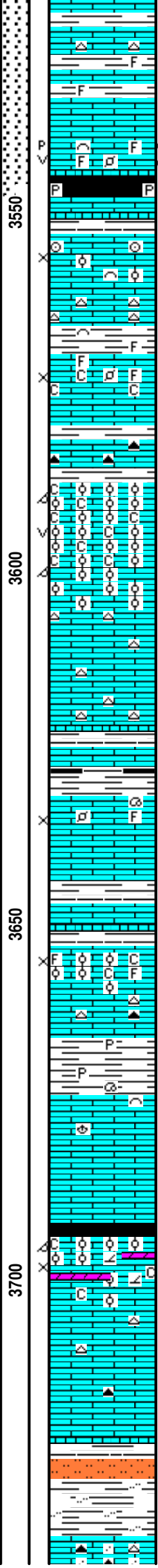
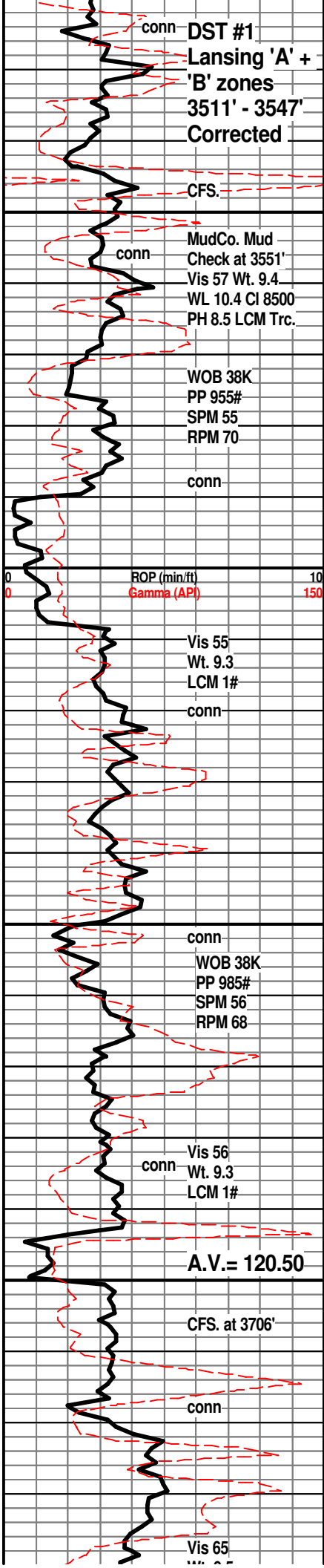
SH; lt gy, occ gy grn, silty, most soft, rare pyr

SH; lt to occ med gy, silty, platy

BROWN LMST. 3496(-1499)
LM; med brn, hd, blocky, occ pyr, tite

LANSING 'A' 3504(-1507)
LM; tan to cream, foss - occ small pellets/ooids, scat poor to fair interpart por, spotted lt to med brn stn, no FO., med to occ brite yel fluor, occ chalky, no odor, weak cut, some tite





LM; tan to off wh, buff, cherty ip, blocky, tite

SH; med gy, firm, occ foss

LANSING 'B' 3534(-1537)

LM; wh, off wh, foss/ fxln, fair p-p and vug por, lt brn spotted/even stn, fair odor, brite yel fluor, SSFO, trc gas bubbles, fair to gd cut

DST #1: Lans. 'A' + 'B': 3511' - 3547' Corrected Depths to LOG

LM; tan to buff, foss ip, poor to fair interpart por, most dense, trc blk tarry dead oil flakes, lt to med yel fluor, no live shows, no odor, cherty

SH; med gy, platy, foss

LM; wh, off wh, foss ip, fair interpart por, minor soft chalky mtx, lt yel min fluor, no stn or odor, ns.

LM; med/dk brn, hd, smoky to dk brn cht, tite

LANSING 'G' POROSITY 3590(-1593)

LM; tan to buff, off wh, oolitic, med size molds w/gd oomoldic por, occ vug por, much soft chalk and chalky mtx, dull yel fluor, no stn or odor, oolitic chert near base, ns.

LM; tan to lt brn, most micritic, cherty ip, hd, no vis por, ns.

SH; dk gy, trc blk, platy

LANSING/KC. 'H' 3632(-1635)

LM; tan to cream, buff, fxln w/rare foss, trc poor interxln por, dull yel min fluor, no stn or odor, much hd micrite, ns.

SH; dk gy, gy grn, fiss

KANSAS CITY 'I' 3653(-1656)

LM; off wh, tan, foss - finely oolitic, fair to gd interpart por, minor soft chalky mtx, lt yel min fluor only, no stn or odor, no gas kick, ns.

SH; med gy, occ dk gy w/trc blk, platy, most smooth, scat pyr

KANSAS CITY 'J' 3674(-1677)

LM; tan to lt brn, rare buff, foss ip, most well cem, blocky, no vis por, scat pyr, v. dull yel min fluor, no stn or odor, ns.

SH; dk gy - blk, platy

KANSAS CITY 'K' 3694(-1697)

LM; tan to off wh, buff, foss - oolitic, partly dolomitic w/interbdd dolo, occ soft chalky mtx, most w/gd oomoldic/interxln por, lt yel min fluor only, no stn or odor, no gas kick, ns.

LM; tan to cream, buff, most dense, micritic, scat gy to org cht, hd, no vis por, ns.

BASE KANSAS CITY 3723(-1726)

SH; varic, grn, gy, rust red, maroon, silty ip w/occ sltst

MARMATON 3736(-1739)

LM: lt av. lt brn. aritv text ip. most micritic. scat av to

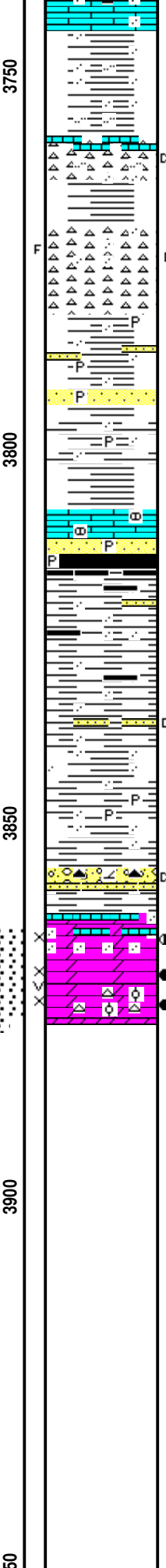
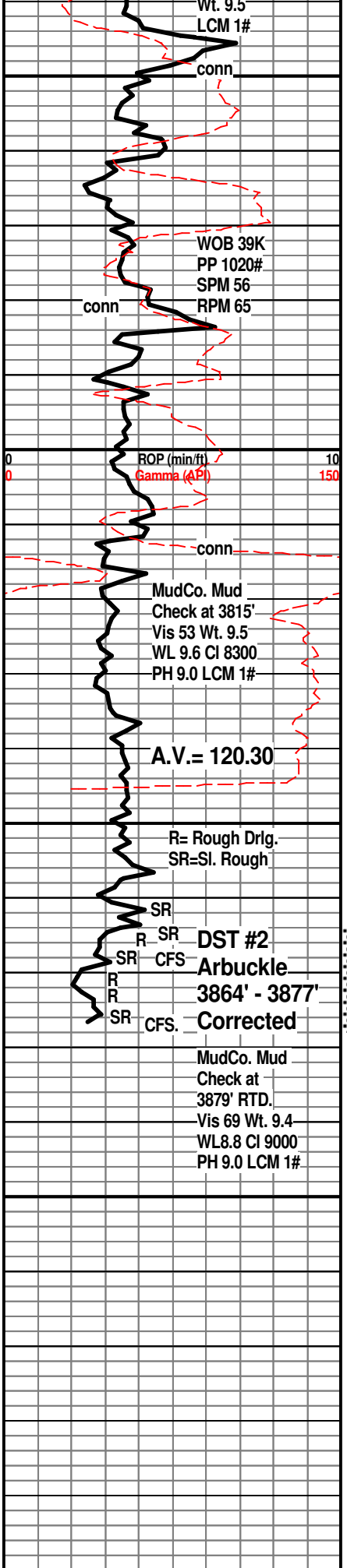
48 Unit Incr.
 SHOW

54 Unit Incr.
 BU/Trip

0.5 TG, C1-C5 50 500

TG
 C2
 C1
 C3

TG
 C1
 C2
 C3
 C4



amber cht, lt yel min fluor, no por, ns.

SH; varic, grn, gy, maroon, rust red, platy, silty to occ sandy

CONGLOMERATE 3758(-1761)
 CHT; brite org, yel, off wh, brn, fresh - sharp, trc frags, some nodular weathered lmst, trc blk tar/gilsonite, interbdd varic shales, no live shows, no gas kick

CHT; much brite org, yel, fresh - sharp, trc frags, some sandy, trc blk tar/gils, no fluor, no live shows

SH; varic, maroon, gy, grn, platy, scat pyr

SH; grn, gy grn, some varic - maroon, rust red, sandy, interbdd dk gy sandy sh w/few loose med/cse rnd qtz gr

LM; rust red, trc pink, weathered, nodular ip, hd

SIMPSON SHALE 3814(-1817)
 SH; dk gy, trc blk, platy, sandy ip, scat carb - pyr

SH; grn, waxy ip, sandy w/occ f to med gr qtz embdd in shale, rare carb strks.

SH; grn, turquoise, yel-grn, sandy, scat med/cse gr qtz ss strng, some gilsonite

CONGL & SS; clr, med gr, qtz clusters, shaly, abnt blk tar/gils, no live shows, few pcs. of reworked wh dolo, occ dk gy cht, fair odor

ARBUCKLE 3862(-1865)
 DOL; wh, off wh, very lmy, hd, scat stn, sandy ip.
 DOL; off wh, f to med rhombic, fair interxln por, med yel fluor, v. gd odor, SSFO, spotted stn, v. sandy w/med gr qtz in dolo, fair/gd cut
 DOL; med rhombic, gd interxln w/some vug por, oil saturated, gas bubbles, gd/strong odor, GSFO, brite yel fluor, streaming cut, scat oolitic chert, occ bleeding oil droplets

DST #2: Arbuckle 3864' - 3877' Corrected Depths to LOG

RTD. 3879' on 10/26/12

LTD. 3877'

NABORS Services Co.
 DIL, NEU/DEN with PE

NOTE: This log was shifted upward by 2' to 4' for correlation purposes with the Nabors Services Co. Logs.

