



Alta Mesa Holdings, LP

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

Well Name:	Barlow 1-14	ALTA MESA SERVICES
API:	11-075-20033	
Location:	Sec 14, T8N, R5W	Payette County, ID
License Number:	AFE: 0004313DC1	Region: Wildcat-Fruitland, ID
Spud Date:	1/17/2018	Drilling Completed: 1/25/2018
Surface Coordinates:	See drilling report	
Bottom Hole Coordinates:	See drilling report	
Ground Elevation (ft):	2164'	K.B. Elevation (ft): 2176' (12')
Logged Interval (ft):	136' To: 4150'	Total Depth (ft): 4150'
Formation:	Wildcat Sands	
Type of Drilling Fluid:	Water/Gel to SCP, LSND/Poly to TD	

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

OPERATOR

Company: Alta Mesa Services
Address: 15021 Katy Freeway
4th Floor
Houston, TX 77094-1813

GEOLOGIST




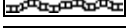


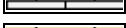




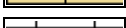





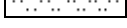

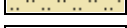
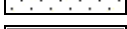
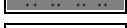


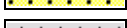
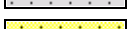









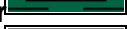







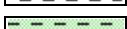















Name: Phil Littlefield, Lester Ballard
Company: King Canyon Buffalo, Inc.
Address: 33 King Canyon Rd.
Chadron, NE 69337

Comments












Alta Mesa Consultant: Richard Walling
Alta Mesa Geologist: Mike McMennamy/Dave Smith
Contractor: PGDS Rig #7 (Paul Graham Drilling Service)
Tool Pusher: (Consultant) Jeff Lopez, Dave Gilbert
Mud Company: Sinclair Well Products Services
Mud Engineer: Sean Hart
KCB Wellsite Geology: Phil Littlefield, Lester Ballard, Nosreddine Madbouhi, Mike Kaul, Kelly Loony

CONFIDENTIAL


























ROCK TYPES

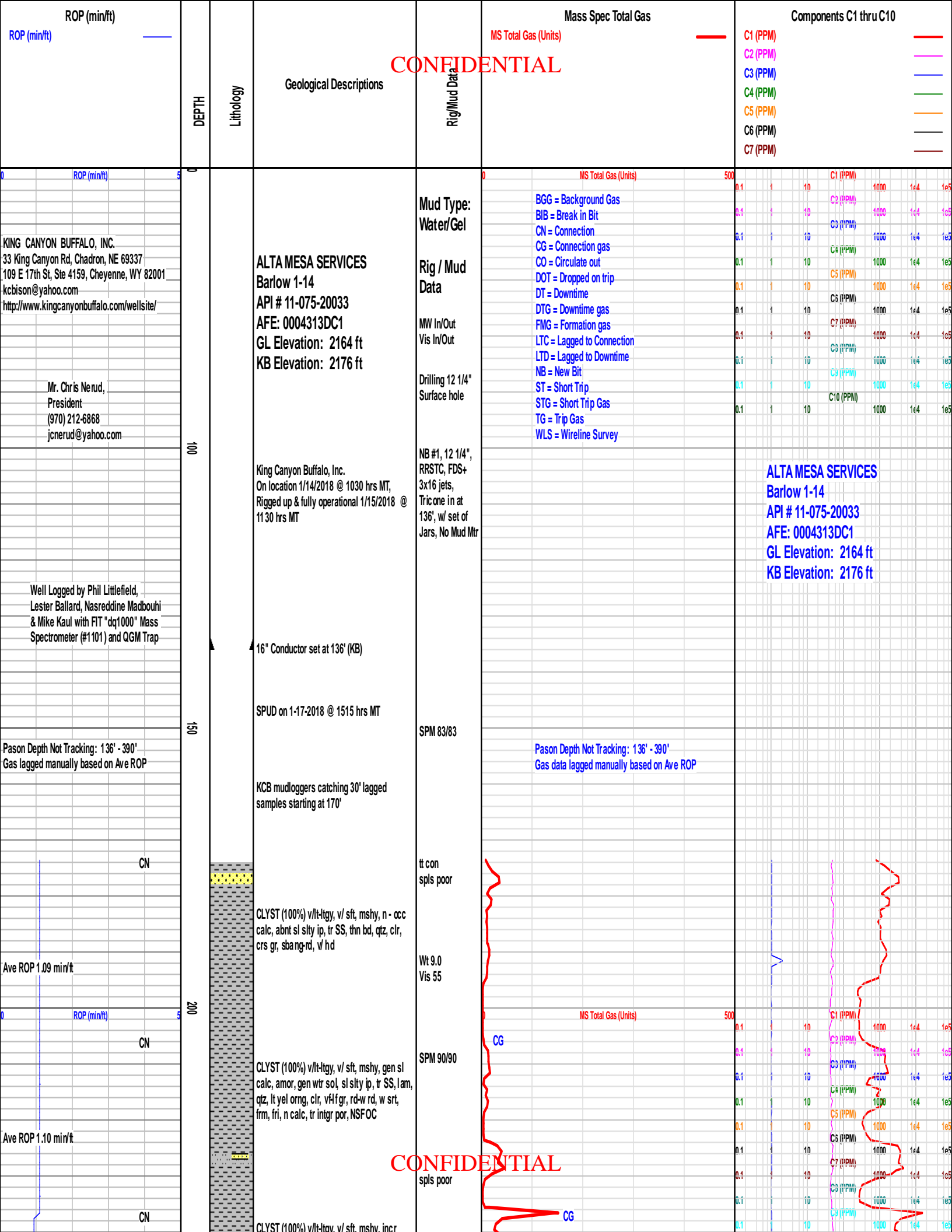
 Dol gy  Anhy rose  Anhy wh  Bent  Cht  Coal  Ls off wh  Ls crmtn  Congl  Dol brn  Ls ltgy  Ls tn  Ls wh  Ls med brn  Ls medgy	 Sh medgy  Sltst brn  sltst wh  sltst ltgy  Sltst tn  Ss clr-trnsl, vf-mgr  sltst mgy  Ss clr-trnsl, crs-v/crs, uncoh  Sltst  Ss crs  Ss gy  Ss  Sh rdbrn  Shale sndy  Sh brn	 Sh tan  Sh ltblu  Carbshdkgy  Sh carb  Sh dkgy  Sh grn  Sh medgy  Sh ltgy  nosmpl  Csgpt  clyst tan/buff  clyst brn  clyst mar  clyst wh  clyst ltgrn
		 clyst rdbrn  clyst blgy  clyst lt-mgy  Coal  Tuff ltgy  Tuff ltgrn  Tuff white  Tuff dkgy  Tuff orng  Basalt flow top  Basalt entab  Basalt columnade  Carbsh  clyst m-mdkgy

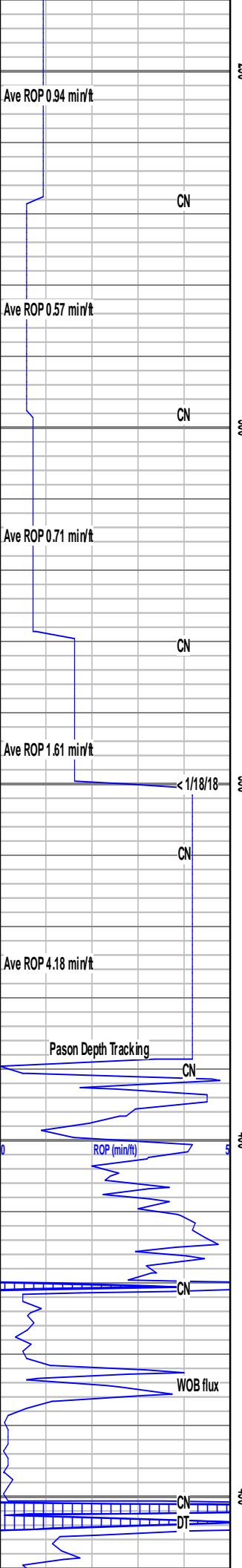
ACCESSORIES

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

OTHER SYMBOLS

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





250
300
350
400
450

calc, amor-lmpy, gen wtr sol, slty-sl aren ip, tr SS, lam, qtz, lt yel org, clr, vf-lm gr, rd-w rd, mod srt, v/ hd, fri, sil cmt, tr intgr por, NSFOC

SS (40%) ltgy-gy, lvf-uvf gr, pp carb intclst, lvf-uf gr rd, mod srt-slty, w cons sft, mshy-sl fri, calc cly cmt-occ cly mtx, NFSOC.
CLYST (40%) ltgy-mgy, pred slty-aren ip, sft mshy-lmpy, n calc-sl calc, SLTST (20%) ltgy, sft, aren-sl calc, TR Coal, blk, extr hd, dull-silky tex, grnlr w/ RR Tuff: lt org vit, hd, aphantic frag

CLYST (90%) v/lt-ltgy, v/ sft, mshy, gen calc, amor-lmpy, gen wtr sol, slty-sl aren ip, SS (10%) thin bd, ltgy-gy, lvf-uf gr, pp carb intclst, lvf-uf gr rd, mod srt-slty, w cons sft, mshy-sl fri, calc cly cmt-occ cly mtx, grdg arg SLTST, TR LS, crm-bu, vf grnlr mdst tex, lam, tr arg-chky tex

CLYST (90%) v/lt-ltgy, v/ sft, mshy, gen slty-aren, calc-sl lmy ip, amor-lmpy, 60% wtr sol, SS (10%) ltgy-gy, lvf-um gr, spy carb intclst, rd, mod-p srt, arg-slty, p cons sft, mshy, calc-cly cmt-cly mtx, grdg arg SLTST, TR LS, crm-bu, vf grnlr mdst tex, lam, tr arg-chky tex, RR Tuff: lt org vit, hd, aphantic frag

CLYST (100%) v/lt-ltgy, tr lt tn, v/ sft, mshy, gen slty, decr aren, calc-sl lmy ip, amor-lmpy, 80% wtr sol, rr mrlty

CLYST (100%) v/lt-ltgy, tr gywh, v/ sft, mshy, gen slty, calc-sl lmy ip, amor-lmpy, tr inbd biot, 90% wtr sol, w/ tr SLTST: ltngy-ltgy, v/ sft, calc, rr sdy ip, w/ trs frm org Tuff, w/ trs free blk mica

CLYST (100%) v/lt-ltgy, gywh, v/ sft-mshy, slty ip, sl-mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ tr SLTST: ltngy-ltgy, v/ sft, calc, rr sdy ip, w/ trs frm org slty Tuff, w/ trs free blk mica

CLYST (95%) v/lt-ltgy, v/ sft-mshy, slty ip, sl-mod calc, amor-lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (5%) ltgy, v/sft, sl calc, rr sdy ip, w/ trs SS ltgy, vfgr, sb/ rnd, wrst, pcom, fri, consnl, cly fil cmt, NFSOC, no vis poro

CONFIDENTIAL

WLS @ 258' = 1.25°

SPM 92/90

Wt 9.0+
Vis 57

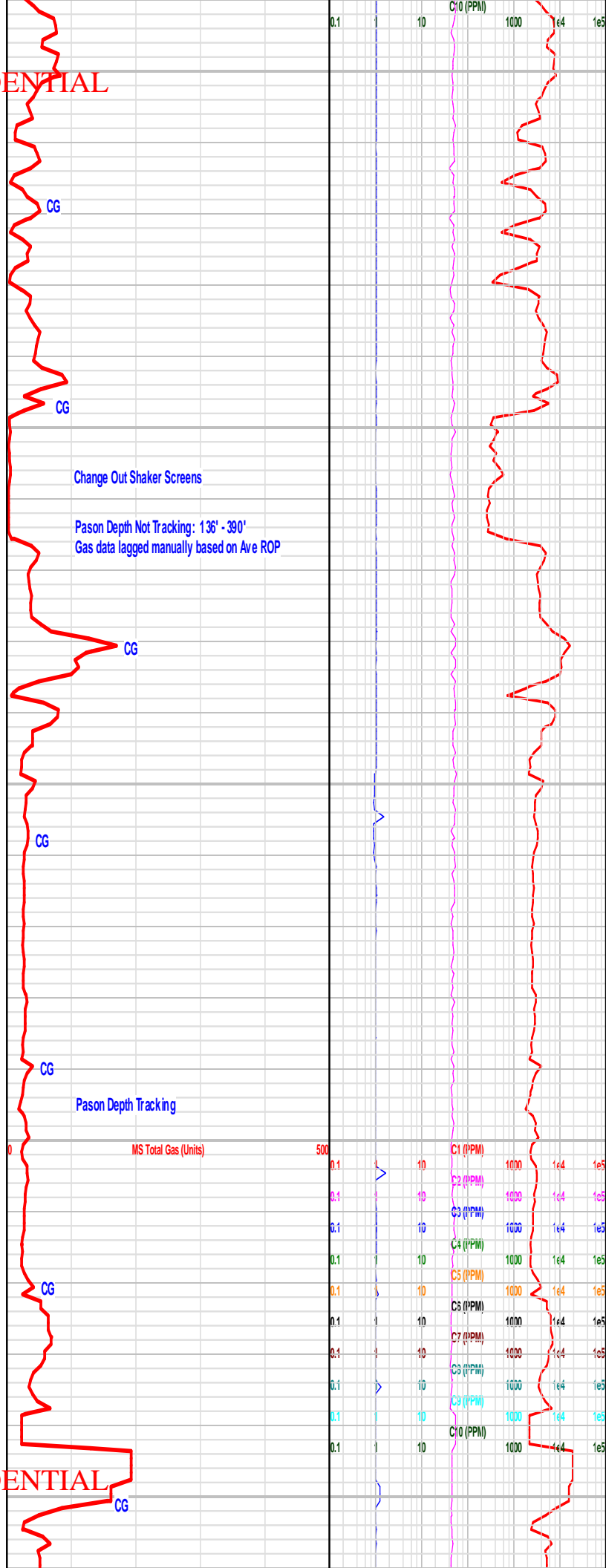
SPM 84/81

spls poor

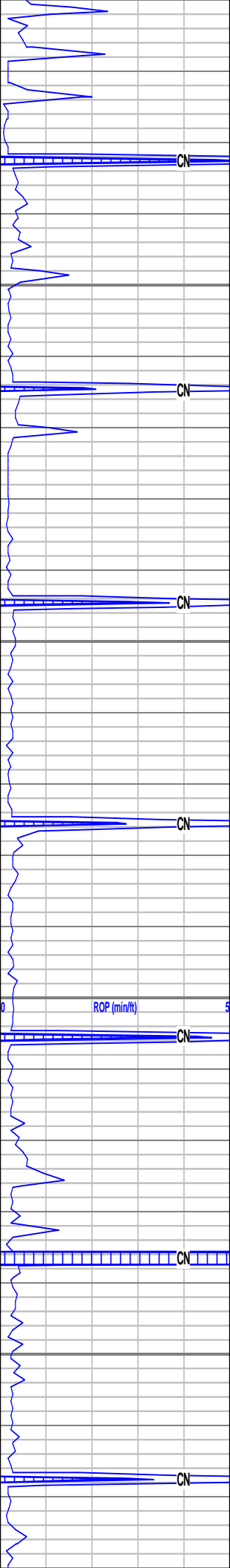
SPM 109/110

spls poor

DT - Cln off shkr scrns



CONFIDENTIAL



500
550
600
650

w/ tr free blk mica

Clyst (100%) v/l-tlgy, v/ sft-mshy, sl- occ mod slty, sl-r mod calc, amor- lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (5%) lty, v/ sft, sl calc, rr sdy ip, mod-v/ clyish, w/ rr free blk mica

Clyst (60%) v/l-tlgy, v/ sft-mshy, sl- occ v/ slty, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (40%) lty, v/ sft, sl-mod calc, mod-v/ sdy - grdg to lvfgr slty SS, tr inbd biot, w/ tr LS wh, tnwh, mic xln, mod sft-frm, rr inbd qtz, w/ tr free qtz, clr-trnsi-opp, v/crsgr, sbmd-sl sbang

Clyst (75%) v/l-tlgy, v/ sft-mshy, mod-occ v/ slty, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (25%) lty, v/ sft, sl-mod calc, mod-v/ sdy - grdg to lvfgr slty SS, tr inbd biot, w/ tr LS wh, tnwh, micxln, mod sft-frm, rr clr mica

Clyst (80%) v/l-tlgy, v/ sft-mshy, mod- v/ slty ip, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (20%) lty, v/ sft, sl-mod calc, mod-v/ sdy-occ grdg to lvfgr slty SS, tr inbd biot, w/ tr LS wh, tnwh, micxln, mod frm

Clyst (90%) v/l-tlgy, v/ sft-mshy, mod- v/ slty ip, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (10%) lty, v/ sft, sl-mod calc, mod-v/ sdy-occ grdg to lvfgr slty SS, tr inbd biot, w/ tr LS wh, tnwh, micxln, mod frm

Clyst (85%) v/l-tlgy, v/ sft-mshy, mod- v/ slty ip, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (10%) lty, v/ sft, sl-mod calc, mod-v/ sdy-occ grdg to lvfgr slty SS, tr inbd biot, w/ LS (5%) wh, offwh, micxln, mod frm, slty ip, NFSOC

Clyst (90%) v/l-tlgy, v/ sft-mshy, mod- v/ slty ip, sl-r mod calc, amor- lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (10%) lty, v/ sft, sl-mod calc, mod-v/ sdy-occ grdg to lvfgr slty SS, tr inbd biot, w/ tr LS wh, micxln, mod frm

Lwr spm
SPM 82/80

spls fair

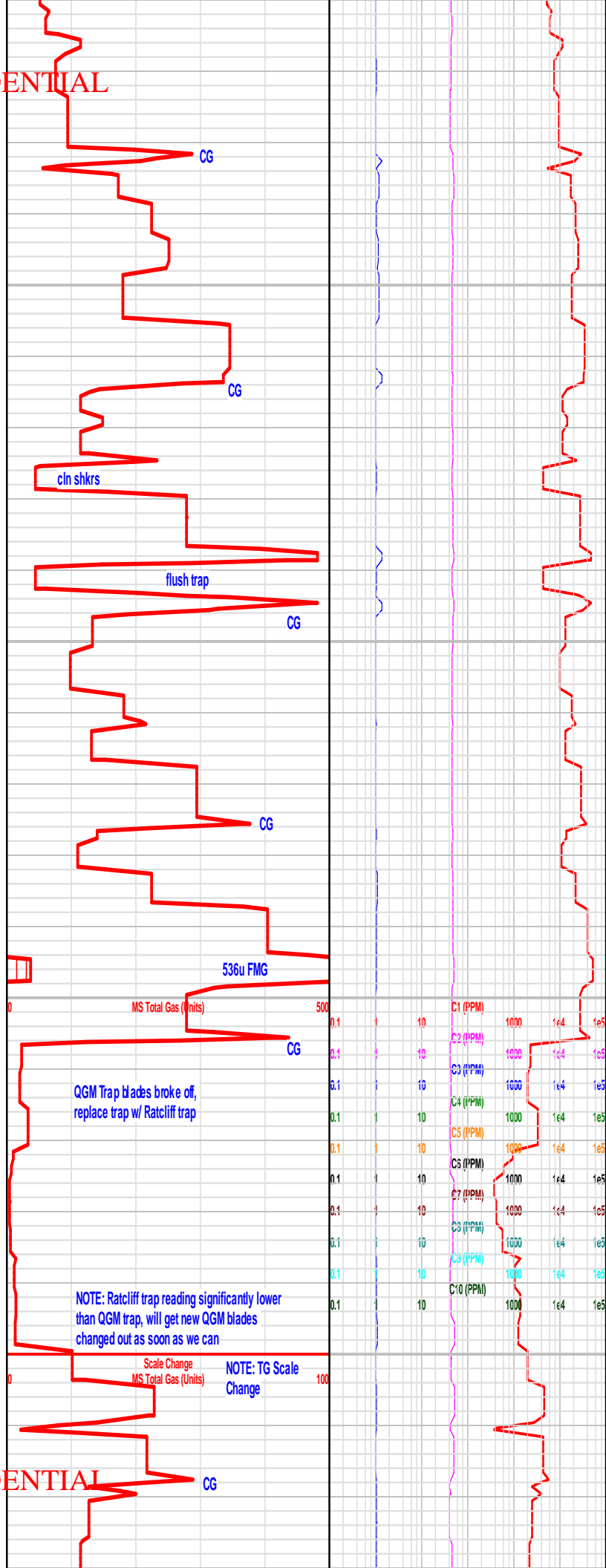
Wt 9.0+
Vis 56

WLS @ 595' =
0.0°

SPM 82/81

636' - CO, WLS

spls fair-poor



CG

CG

cin shkrs

flush trap

CG

CG

536u FMG

MS Total Gas (Units)

500

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

C1 (PPM)

C2 (PPM)

C3 (PPM)

C4 (PPM)

C5 (PPM)

C6 (PPM)

C7 (PPM)

C8 (PPM)

C9 (PPM)

C10 (PPM)

1000

1000

1000

1000

1000

1000

1000

1000

1e4

1e4

1e4

1e4

1e4

1e4

1e4

1e4

1e4

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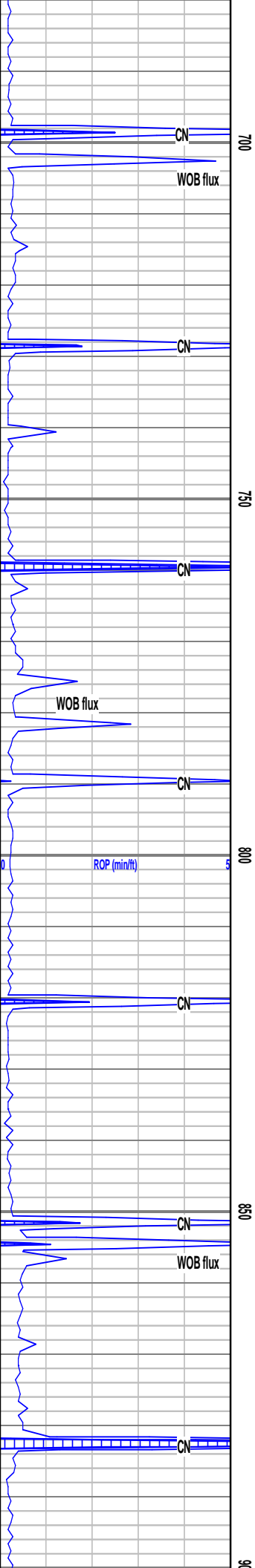
1e5

1e5

1e5

1e5

CONFIDENTIAL



CLYST (100%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ tr SLTST lty, v/ sft, sl-mod calc, mod-v/sdy, tr inbd biot

CLYST (95%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (5%) lty, v/ sft, sl-mod calc, mod-v/sdy, tr inbd biot

CLYST (100%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) lty, v/ sft, sl-mod calc, mod-v/sdy, w/ tr inbd biot

CLYST (95%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (5%) lty, v/ sft, sl-mod calc, mod-v/sdy, tr inbd biot

CLYST (100%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (tr) lty, v/ sft, sl-mod calc, mod-v/sdy, rr inbd biot

CLYST (95%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl-rr mod calc, amor-lmpy, tr inbd biot, 85% wtr sol, w/ SLTST (5%) lty, v/ sft, sl-mod calc, mod-v/sdy, rr-tr inbd biot

CLYST (100%) v/l-tlgy, v/ sft-mshy, mod -v/ slty ip, sl mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) lty, v/ sft, sl-mod calc, mod sdy, rr inbd biot

CLYST (100%) v/l-tlgy, v/ sft-mshy, mod -sl

CONFIDENTIAL

SPM 81/80

trap plugging w/ gumbo mud

DT PU

spls poor-fair

SPM 80/80

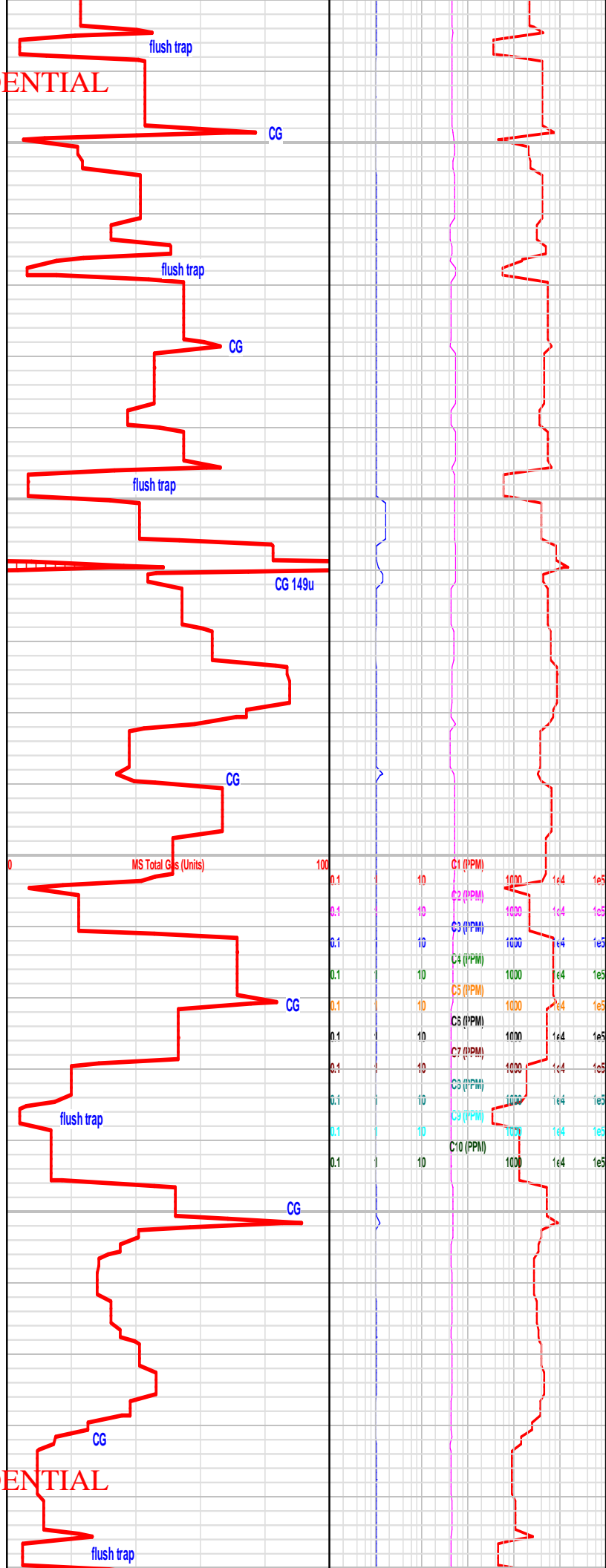
NOTE: Incr MW

Wt 9.3
Vis 50

trap plugging w/ gumbo mud

spls poor-fair

CONFIDENTIAL



flush trap

CG

flush trap

CG

flush trap

CG 149u

CG

MS Total Gas (Units)

100

C1 (PPM)

1000

1e4

1e5

C2 (PPM)

1000

1e4

1e5

C3 (PPM)

1000

1e4

1e5

C4 (PPM)

1000

1e4

1e5

C5 (PPM)

1000

1e4

1e5

C6 (PPM)

1000

1e4

1e5

C7 (PPM)

1000

1e4

1e5

C8 (PPM)

1000

1e4

1e5

C9 (PPM)

1000

1e4

1e5

C10 (PPM)

1000

1e4

1e5

0.1

10

0.1

10

0.1

10

0.1

10

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0.1

10

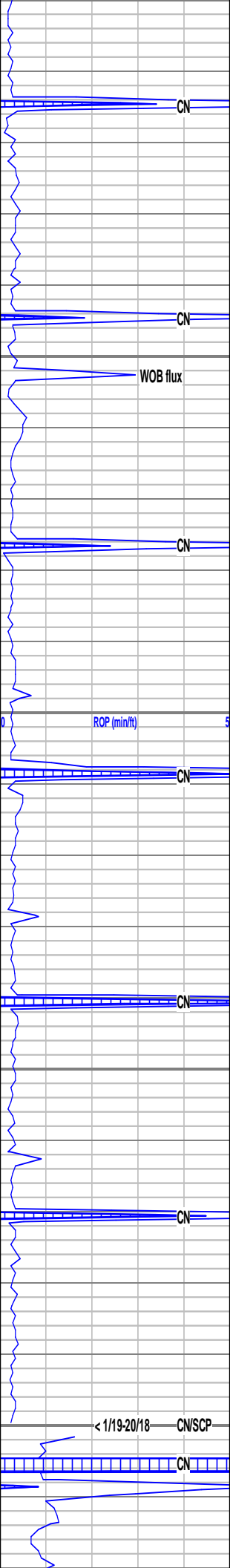
0.1

10

0.1

10

flush trap



stly ip, sl calc, v/ rr mod calc, amor- lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, rr inbd biot, rr free blk mica

CLYST (100%) v/lt-ltgy, v/ sft-mshy, mod-sl stly ip, sl calc, rr mod calc, amor- lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, rr inbd biot

CLYST (100%) v/lt-ltgy, v/ sft-mshy, mod-sl stly ip, sl calc, rr mod calc, amor- lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, rr inbd biot, w/ rr tr blk brit wthrd Tuff

CLYST (100%) v/lt-ltgy, v/ sft-mshy, mod slty ip, sl calc, rr mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, w/ rr tr inbd biot, w/ SS (5%) clr-trmsl-opq un/ consol qtz, v/crsgr, sbang, wsrt, w/ rr tr inbd biot

CLYST (100%) v/lt-ltgy, v/ sft-mshy, mod slty ip, sl calc, v/ rr mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, rr inbd biot

CLYST (100%) v/lt-ltgy, v/ sft-mshy, mod slty ip, sl calc, v/ rr mod calc, amor-lmpy, tr inbd biot, 90% wtr sol, w/ SLTST (tr) ltgy, v/ sft, sl-mod calc, mod sdy, rr inbd biot

9 5/8" Surf Csg set @ 1092'

CLYST (70%) ltgy-mgy, pred stly, vsft, lmpy occ grdg vf aren, gen n calc SS (30%) ltgy-crm, arg-stly, p-p carb - occ spy carb intclst, lvi-lf gr, rd, mod-w srt, v sft, n fri w/ cly mx supt, TR w srt, sft, fri, wk calc/cly

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SPM 82/81

Wt 9.3+ Vis 54

trap plugging w/ gumbo mud

Raise spm

SPM 90/90

sppls poor-fair

trap plugging w/ gumbo mud

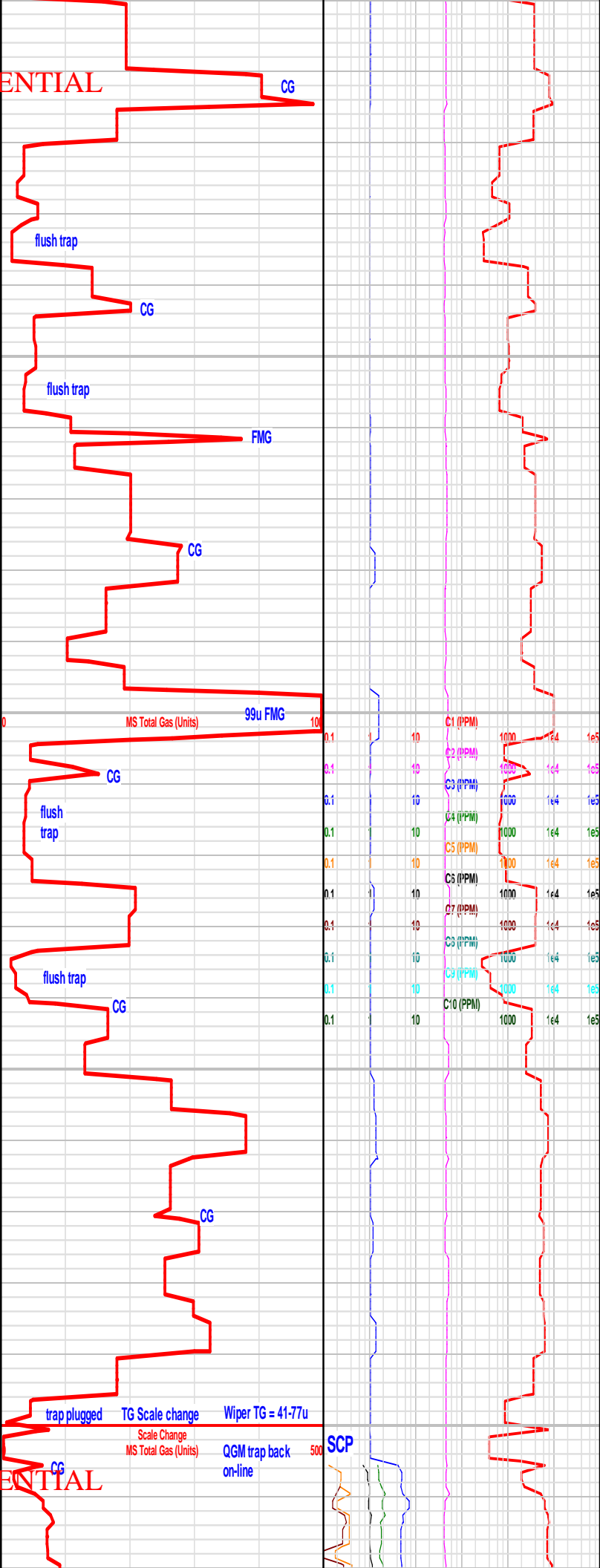
Wt 9.3 Vis 56

WLS @ 1061' = 1.0°

Bit #1 Drld 964' in 19.25 hrs (avg 50.07 ft/hr)

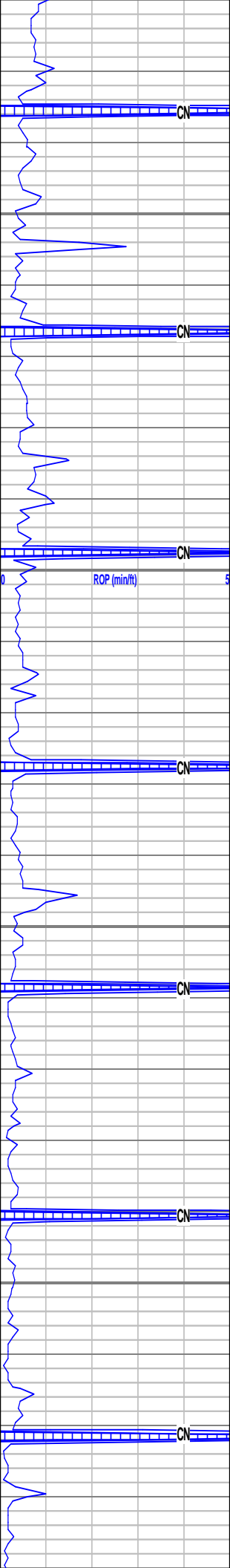
NB #2, 8.5", Smith (RR), FDS, 3x16 jets, Tricone in at 1100', w/set of Jars, No Mtr

1100' - TD for SCP on 1-18-18 @ 1116 hrs, CO C&C, Wiper trip to bit, TIH, C&C, Wiper trip to shoe, TIH, C&C,



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1150
1200
1250
1300

cmt, tr g por, sciatise grns-slt, l R crs-v crs sbang qtz-chrty

TOOH, Run 9
5/8" csg to 1092', CO csg, Cmt csg, WOC ND/NL, Test

BOP, PU bit, TIH, Drill 5', FIT to 11.0 lb EMM, Displace hole w/ LSND mud, Drilling

Wt 9.1
Vis 40
pH 7.5

SPM 96/96

Swap Generator

trap plugged

flush trap

SS (90%) ltgy-gy, trns-clr, p-p to s&p w/ tr coal intclst, lvf-um gr, rd-sbrd, mod-occ mod w srt, w cons, sft-fm, sl fri, wk calc cmt w/ decr cly, sme grdg slst, tr por, NFSO, v/ fnt milky wh flur, tr rd org suc mnrl & glau gr, mic, CLYST (10%) gy-mgy, tngy, bcmg smth-occ gsy tex, v/ sft, lmpy

CLYST (80%) gy-mgy, sft-v/ sft, decr slty-aren ip, n-v sl calc, lmpy, RR crs-v crs sbang qtz LS (20%) lbrn, gy, mdst tex, gen arg, sft, f-vf lam, tr vf aren-sity

LS (80%) lbrn, occ gy, arg, mdst tex, sft, tr wkst tex, sbblky-sbply CLYST (20%) gy-mgy, v/ sft, occ slty-sl aren ip, lmpy, occ lmy-mrly

CLYST (100%) gy-mgy, tn, tngy, pred arg, sft-v/ sft, lmpy-mshy, occ slty-tr sl aren ip, n-v sl calc w/ LS frag-lmy intclst

CLYST (100%) gy-mgy, tngy, gngy, pred slty, occ grdg v/ sl aren, sft-v/ sft, lmpy, sl calc-occ lmy w/ abnt vf lam LS, mdst-occ wkst tex, rr grnst tex, tr micln calc, dns, poss frac fill

CLYST (75%) gy-mgy, tngy, pred slty, n calc, occ grdg sl aren-sl calc, sft-v/ sft, lmpy, abnt v/ calc SLTST w/ occ lmy intclst, tr micln calc - med lam w/ SS (25%) ltgy-gy, trns-clr, pp-s&p carb w/ mic intclst, lvf-ufgr, rd-sbrd, mod srt, w cons, sft-fm, sl fri clust, wk calc cmt w/ occ intr cly, sme grdg slst, tr por, NFSO, tr trnsp str m, no res, tr red org suc mnrl

CLYST (60%) gy-mgy, tngy, bcmg smth-occ gsy tex, v/ sft, lmpy, SS (30%) ltgy-gy, trns-clr, p-p to s&p, lvf-um gr, rd-sbrd, mod occ mod w srt, w cons, sft-fm, sl fri clust, wk calc cmt w/ occ intr cly, sme grdg slst, tr vis por, NSOC, v/ fnt dull milky wh flur, tr rd org suc mnrl, tr mic, SLTST (10%) lt gy-v/ lt gy, sft, sbblky-sbply, v/ calc, occ aren ip, occ sl lmy ip

TOOH, Run 9
5/8" csg to 1092', CO csg, Cmt csg, WOC ND/NL, Test

BOP, PU bit, TIH, Drill 5', FIT to 11.0 lb EMM, Displace hole w/ LSND mud, Drilling

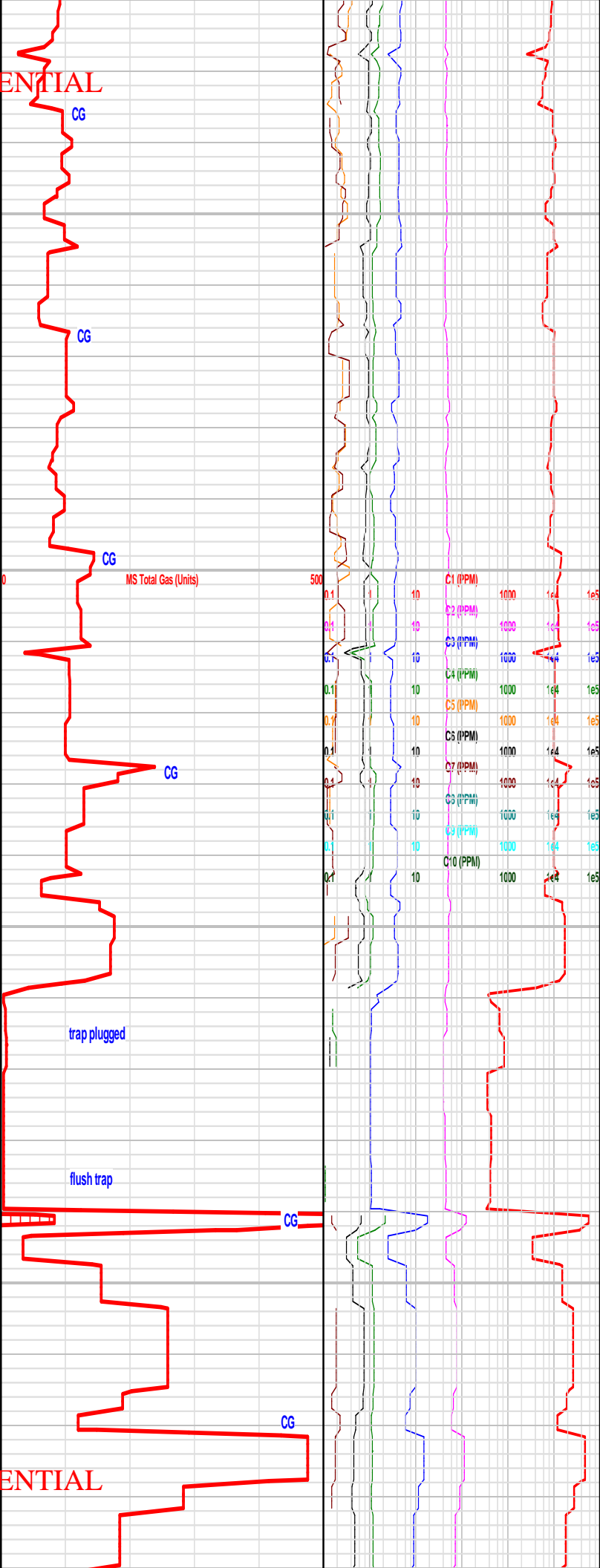
Wt 9.1
Vis 40
pH 7.5

SPM 96/96

Swap Generator

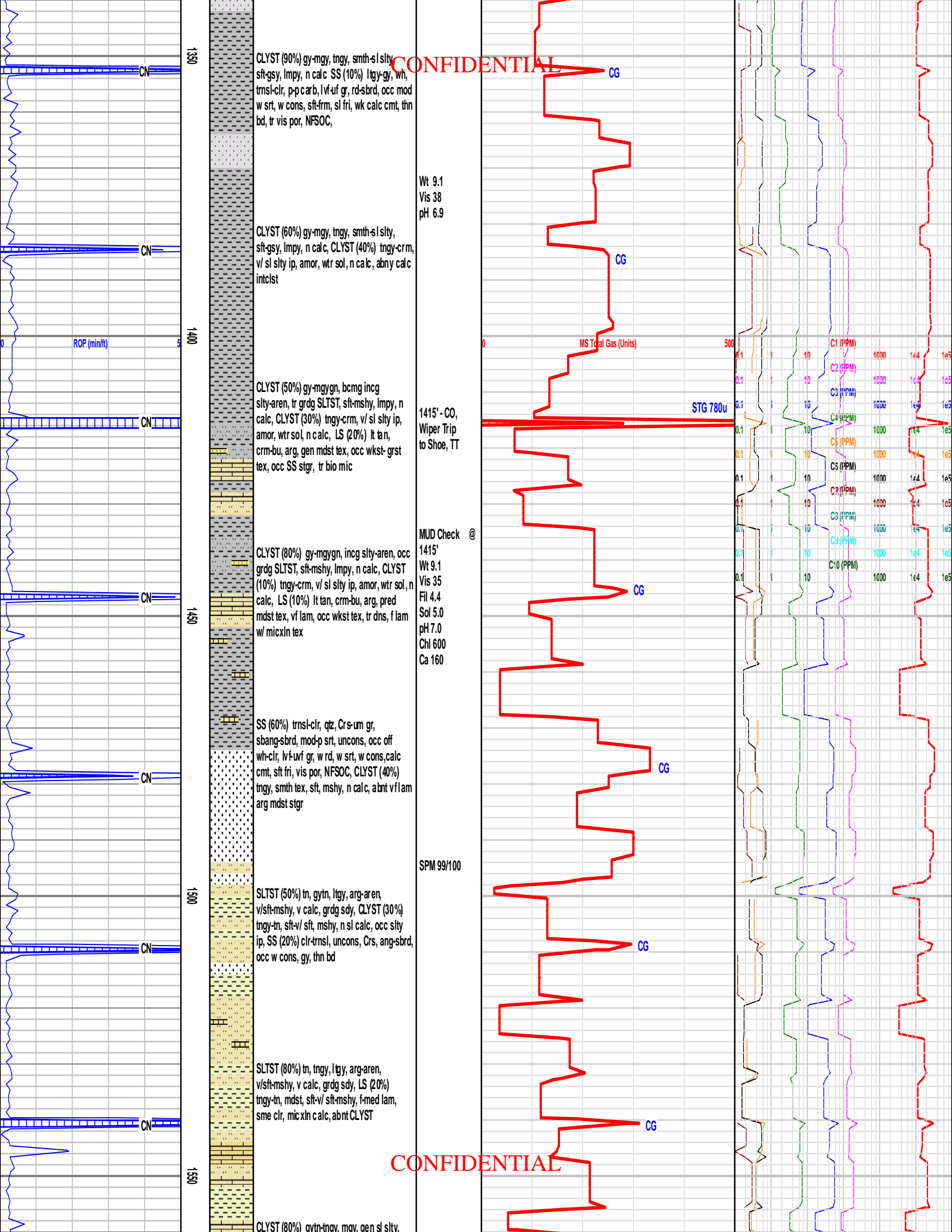
trap plugged

flush trap

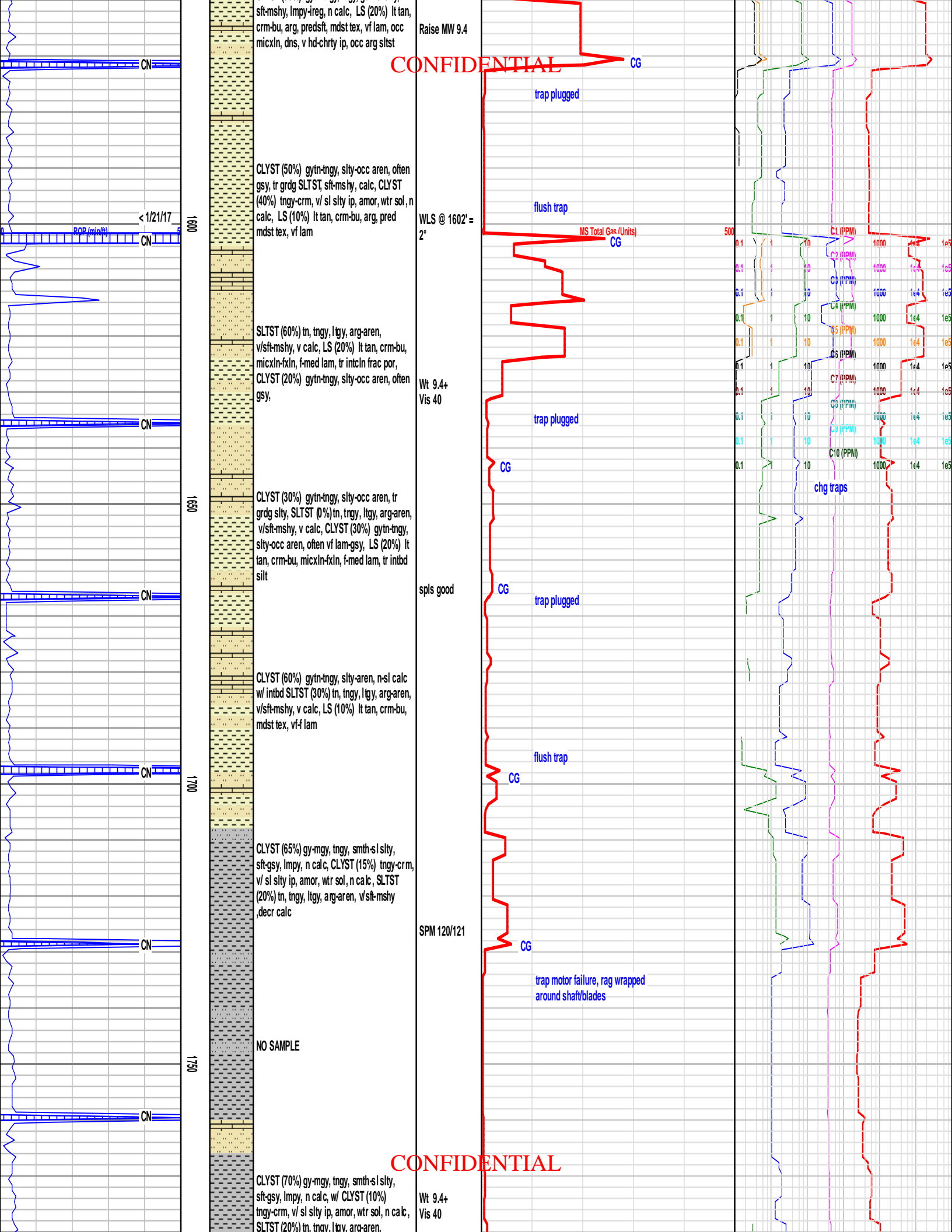


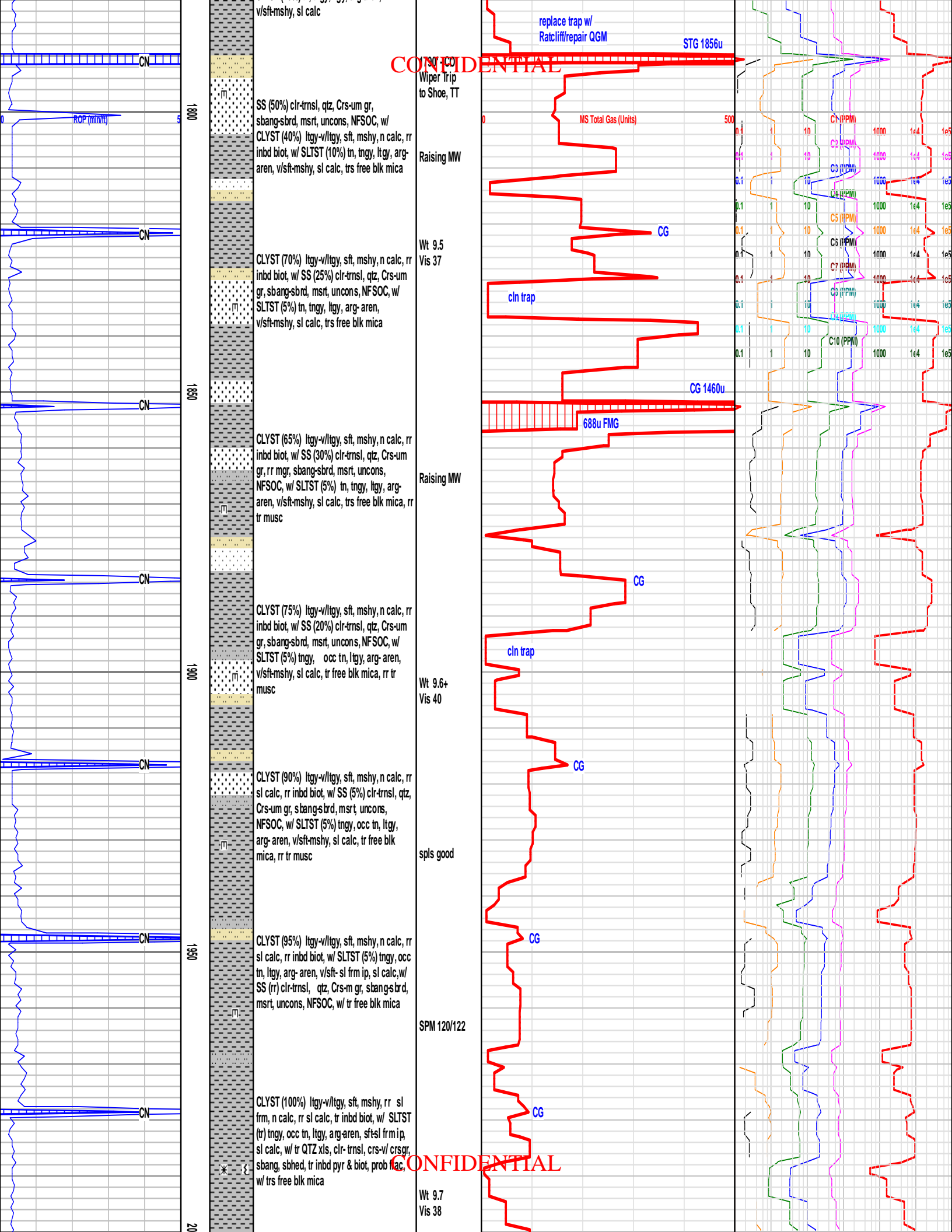
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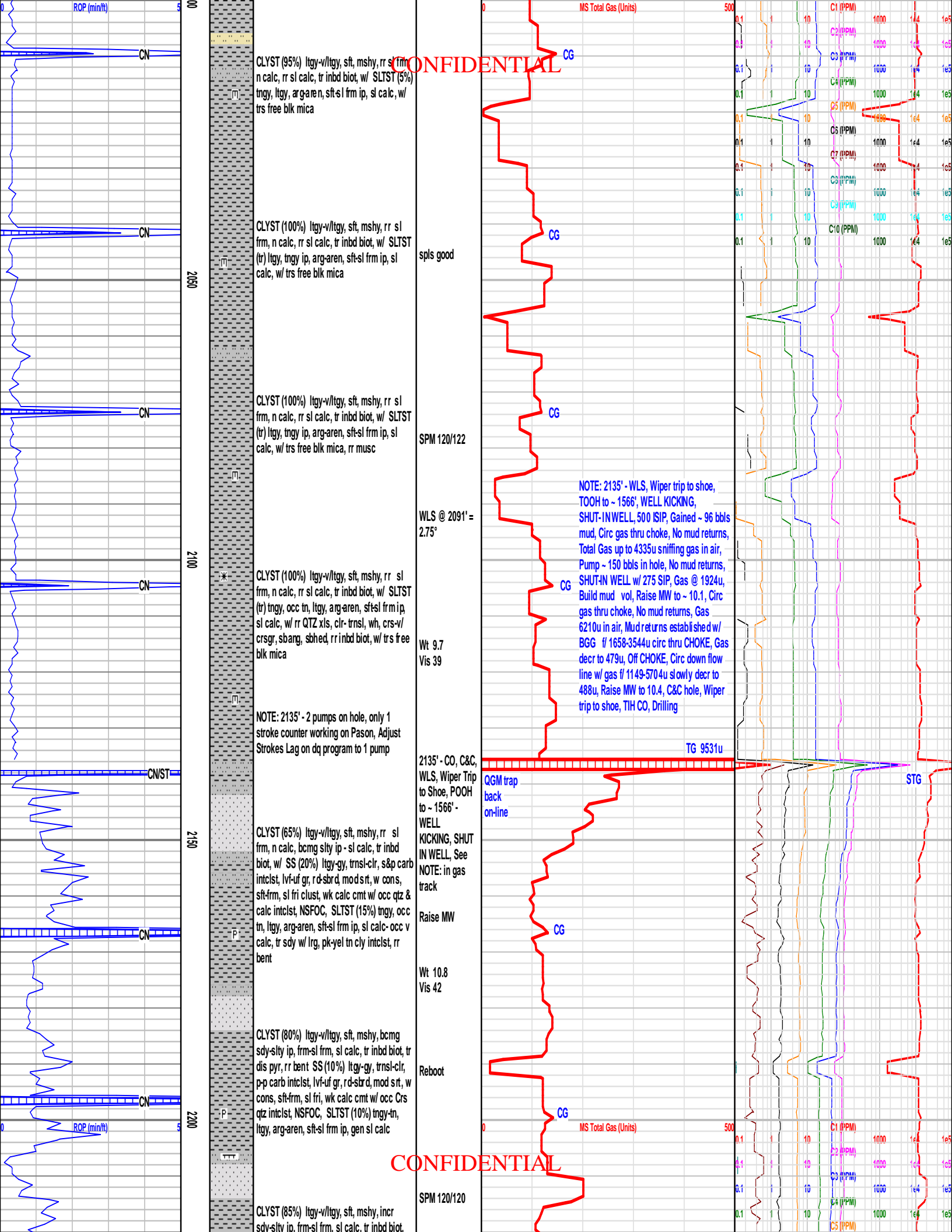
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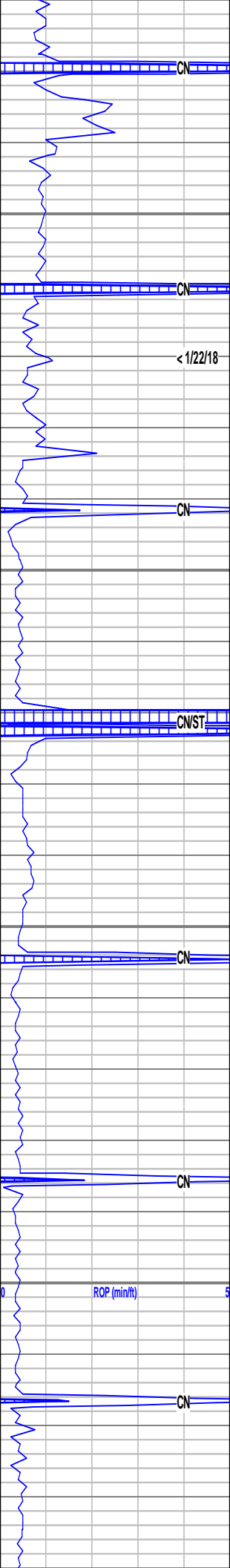


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2250
2300
2350
2400

SS (10%) ltgy-gy, wh, lvf-uvf gr, rd, arg-sily, mod srt, p cons, sft, gen mshy, wk calc cmt-clly mx, NSFOC, SLTST (5%) tngy-tn, ltgy, arg-aren, sft-sl frm ip, gen sl calc w/ occ mrlly intclst, rr vf lam mdst

CLYST (90%) ltgy-v/ltgy, sft, mshy, bcmg gsy, decr sily ip, sl calc, tr inbd biot, SS (10%) ltgy-gy, lvf-lf gr, rd, gen sily, mod srt, p cons, sft, sl fri, wk calc cmt, thn intbd silt, NSFOC

CLYST (85%) ltgy-v/ltgy, sft, mshy, bcmg incr sily, w/ abnt wtr sol, gen sl calc, SS (15%) ltgy-gy, lvf-lf gr, rd, pred sily-arg, mod srt, p cons, sft, sl fri, wk calc cmt, thn intbd silt, NSFOC

SLTST (60%) tngy, ltgy, crm-bu, gen arg-sily-aren, v/sft-mshy, sl calc, vf-f-med lam-intbd, occ calc intclst, tr blk mica, CLYST (40%) ltgy-mgy, sft, mshy, n calc, gen sily

SLTST (40%) tn, tngy, ltgy, arg-aren, v/sft-mshy, sl calc, CLYST (40%) ltgy-v/ltgy, sft, mshy, n calc, occ sl sily w/ SS (20%) clr-trnsl, qtz, Crs-um gr, sbang-sbrd, msrt, uncons, NFSOC

CLYST (50%) ltgy-v/ltgy, sft, mshy, n calc, gen sl sily w/ SLTST (40%) tn, tngy, ltgy, arg-aren, v/sft-mshy, sl calc w/ abnt arg Sand, LS (10%) lt tan, crm-bu, micxln-fxn, f-med lam, tr mas pyr

CLYST (70%) ltgy-v/ltgy, sft, mshy, rr sl frm, n calc, rr sl calc, tr inbd biot, w/ SLTST (20%) tngy, occ tn, ltgy, arg-aren, sft-sl frm ip, sl calc, SS (10%) clr-trnsl, qtz, Crs-um gr, sbang-sbrd, msrt, uncons, NFSOC

CLYST (85%) ltgy-v/ltgy, sft, mshy, incr sdy-sily ip, frm-sl frm, sl calc, tr inbd biot, SLTST (15%) tngy-tn, ltgy, arg-aren, sft-sl frm ip, gen sl calc w/ occ mrlly intclst, rr vf lam

MUD Check @ 2235
Wt 10.8
Vis 44
Fil 4.4
Sol 10.0
pH 6.7
Chl 700
Ca 120

spls fair-good

Wt 10.8
Vis 41

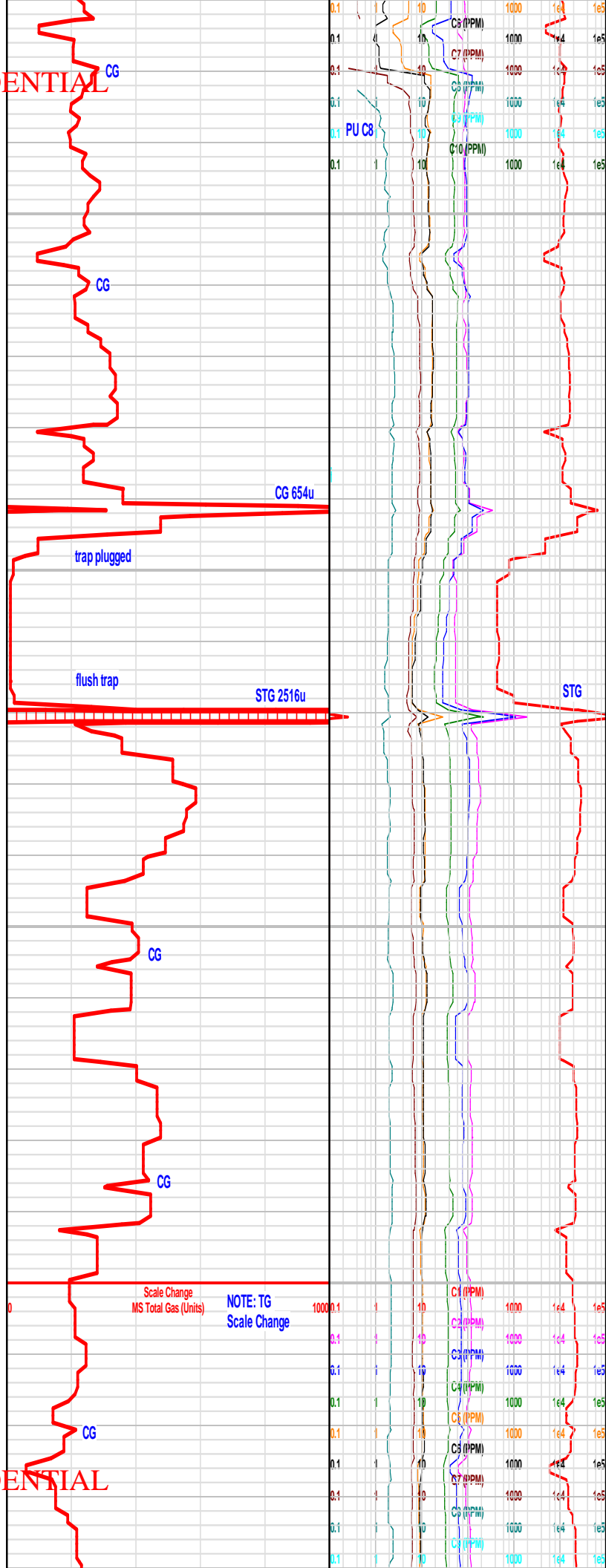
SPM 120/121

Wt 10.8
Vis 42

spls fair

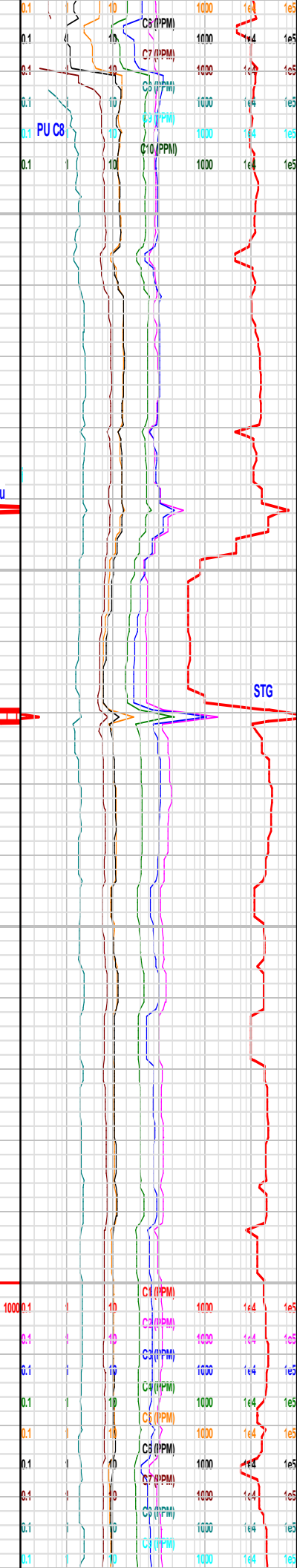
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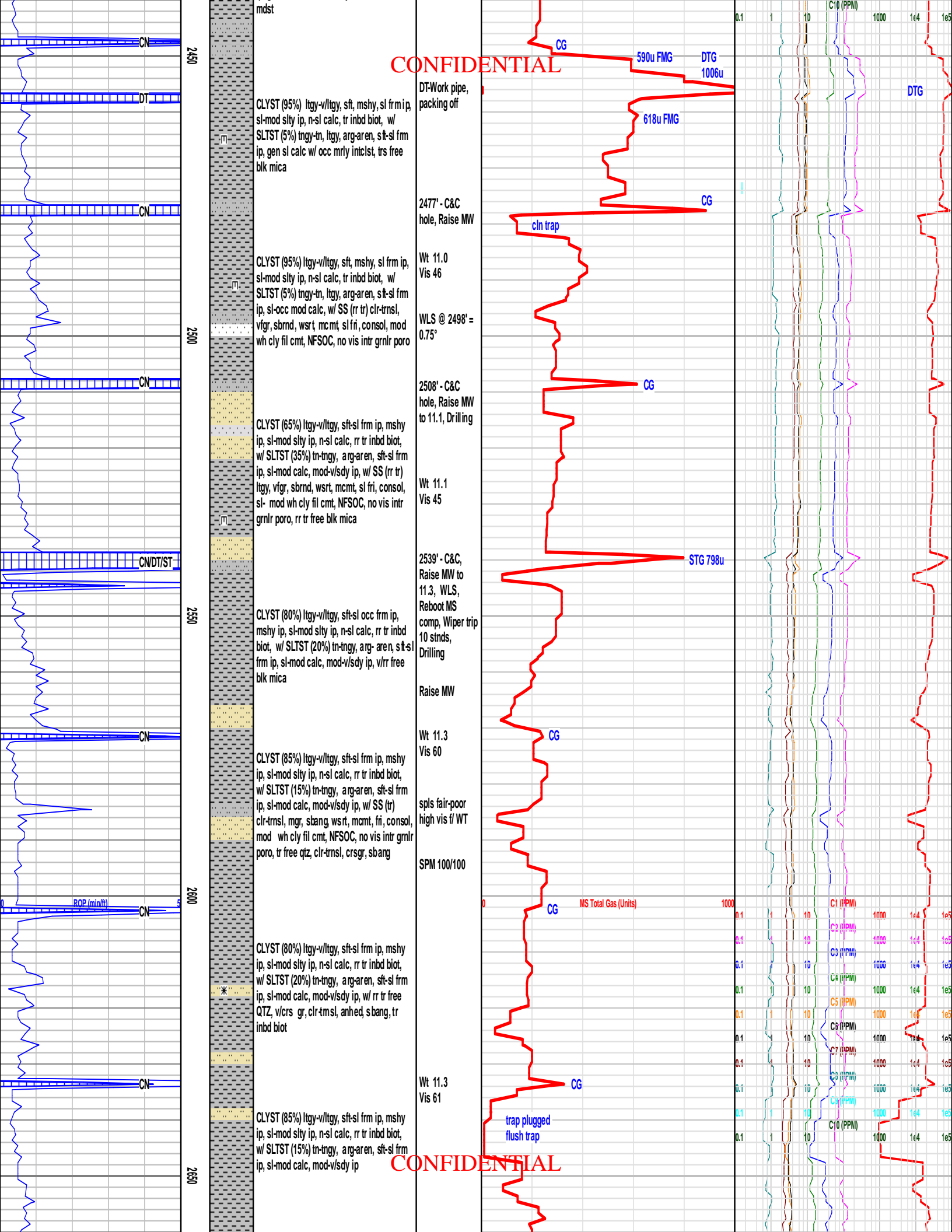
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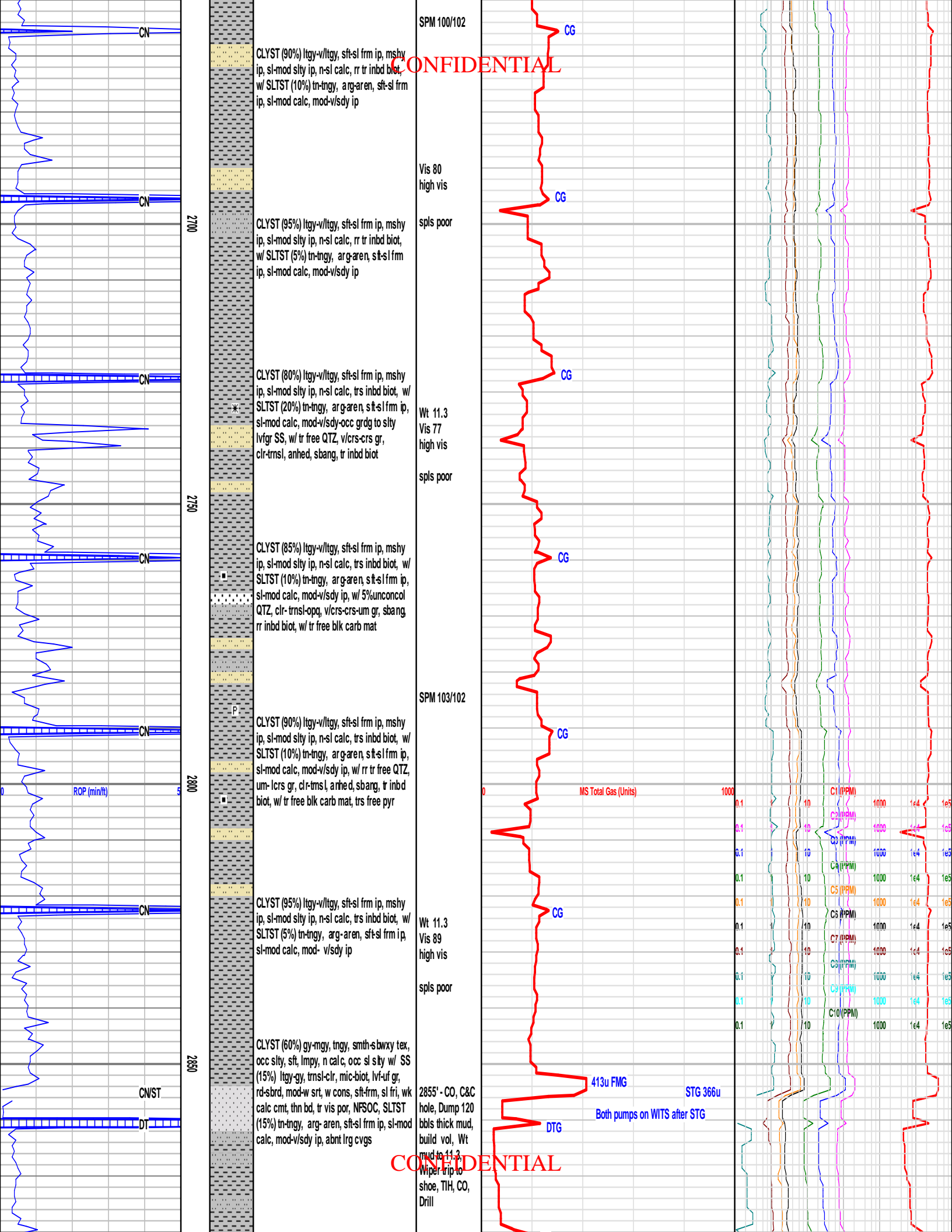


Scale Change
MS Total Gas (Units)

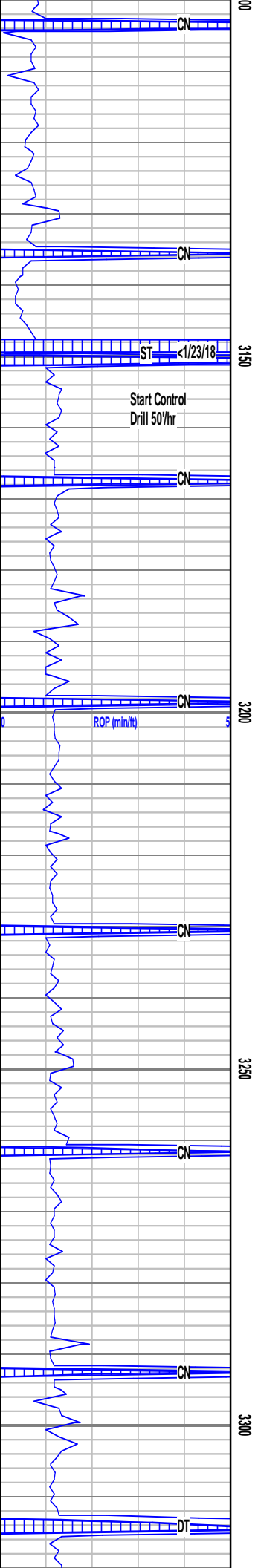
NOTE: TG
Scale Change







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CLYST (45%) lty-gy, mgy, sft-mshy ip, sl-mod slty ip, n calc, CLYST (45%) wh-v/ ltyg, amor, wtr sol, SS (10%) clr-trnsl, pred uncons, vf-um gr, s brnd, mod ws rt, occ thn bd mic sand, w cons, sft, sl fri clus, mcmt, mod wh cly fil cmt, NFSOC, tr grdg slty-v calc w/ tr lam mdst

CLYST (40%) lty-gy, mgy, sft-mshy ip, sl-mod slty ip, n calc, CLYST (40%) wh-v/ ltyg, amor, wtr sol, w/ SLTST (10%) lty-gy, tngy, v arg-calc, sft-mshy, incr lam arg mdst, SS (5%) clr-trnsl, uncons, uf-um gr, sbrnd

CLYST (70%) lty-gy, mgy, sft-mshy, sl-mod slty ip, n calc-sl calc, abnt amor, wtr sol, w/ SLTST (20%) lty-gy, tngy, v arg-calc, sft-mshy, occ sl aren w/ LS (10%) lt tan, crm-bu, arg, mdst-wkst tex, vf-lam, tr mass pyr

CLYST (80%) lty-gy, mgy, sft-mshy, sl-mod slty ip, n calc-sl calc, abnt amor, wtr sol, w/ SLTST (20%) lty-gy, tngy, n-sl arg-calc, sft-mshy, occ sl aren, rr blgy ash remn

CLYST (80%) lty-gy, mgy, sft-mshy, sl-mod slty ip, n calc-sl calc, abnt amor, wtr sol, w/ SLTST (20%) lty-gy, tngy, n-sl arg-calc, sft-mshy, occ sl aren w/ tr uncons qtz, m-Crs gr, clr-trnsl, sbrnd, r free pyr

LS (40%) tn, bufn, vfxln, mod sft-frm ip, fr inbd vfg sd grs, dolmitic, v/sity, even dul yel flor, NSOC, no vis intr xln poro, w/ CLYST (40%) ltyg, sft-mshy, mod slty ip, n-sl calc, w/ SLTST (20%) lty-gy, tngy, sl calc, sft, w/ tr uncons qtz, m-Crs gr, clr-trnsl, sbrnd, free pyr

SS (30%) clr-trnsl, m-Crs gr, sbang unconsol qtz, tr inbd biot & pyr, NFSOC, w/ CLYST (45%) ltyg, sft, mod slty, n-sl calc, w/ LS (25%) tn, vfxln, mod sft, tr-fr inbd vfg sd grs, dolmitic, v/ slty, even dul yel flor, NSOC, no vis intr xln poro

SS (70%) clr-trnsl, crs-v/crs-m gr, sb/ ang-ang, unconsol qtz, mod inbd biot, NFSOC, w/ CLYST (20%) ltyg, sft, mod slty, n-sl calc, w/ SLTST (10%) tn-tngy, s-occ mod calc, sft, tr-fr free blk mica, tr clr mica, rr musc

SS (60%) clr-trnsl, crs-m-v/crs gr, sb/ ang-ang, unconsol qtz, tr-fr inbd biot, sl milky pool cut, v/ dul yel res rng cut, NFSO, w/ CLYST (20%) ltyg, sft, mod slty, n-sl calc, w/ SLTST (20%) tn-tngy, sl-mod calc, sft, tr free blk mica, tr clr mica, rr tr tn LS aa, min flor, NSOC

SS (25%) clr-trnsl, crs-m-occ v/crs gr, sbang-ang, unconsol qtz, trs inbd biot, v/ fnt milky pool cut, v/ fnt dul yel res rng cut, NFSO, w/ CLYST (55%) ltyg, sft, mod slty, n-sl calc, w/ SLTST (30%) tn-tngy, sl-mod calc, sft, tr free blk mica

MUD Check @ 3147
 Wt 11.3+
 Vis 42
 Fil 3.2
 Sol 15.0
 pH 6.6
 Chl 1000
 Ca 200

3140' - start 20' smpls

3150' - Control drill 50/hr

Wt 11.4
 Vis 44

SPM 115/116

Wt 11.4
 Vis 39
 pH 6.6

spils poor

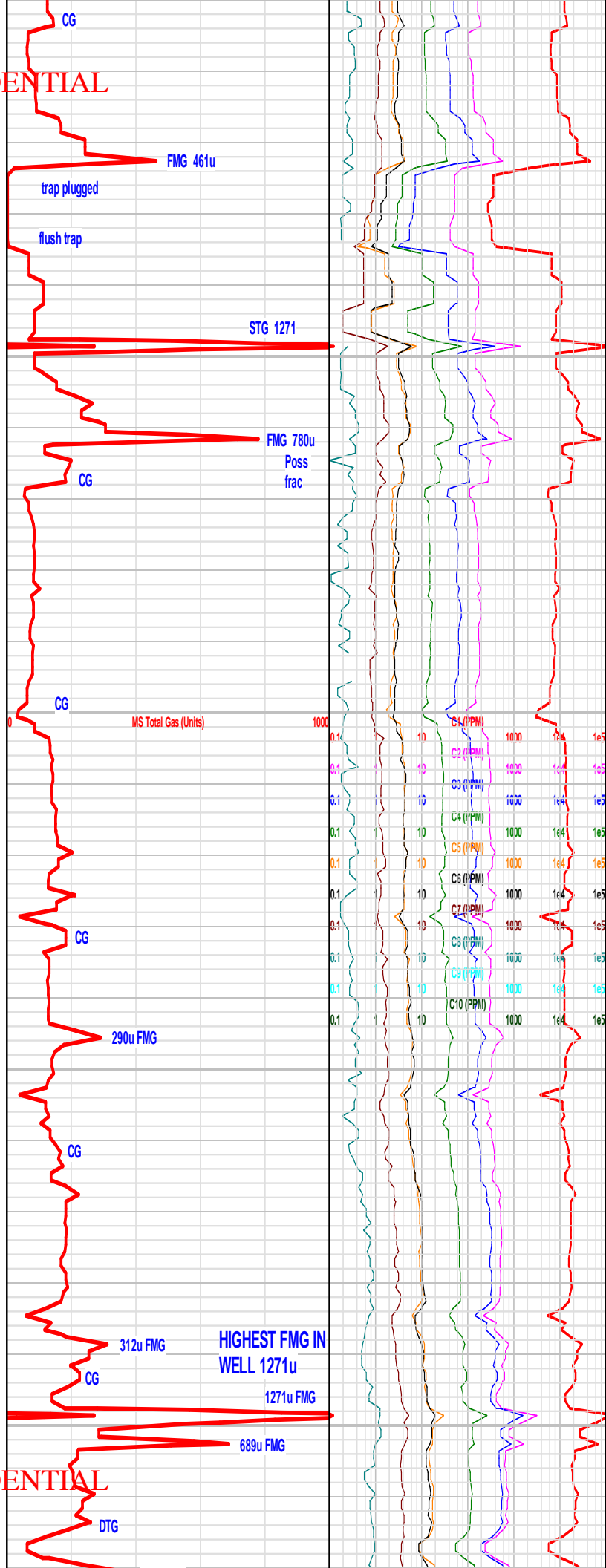
Wt 11.3
 Vis 39

SPM 116/115

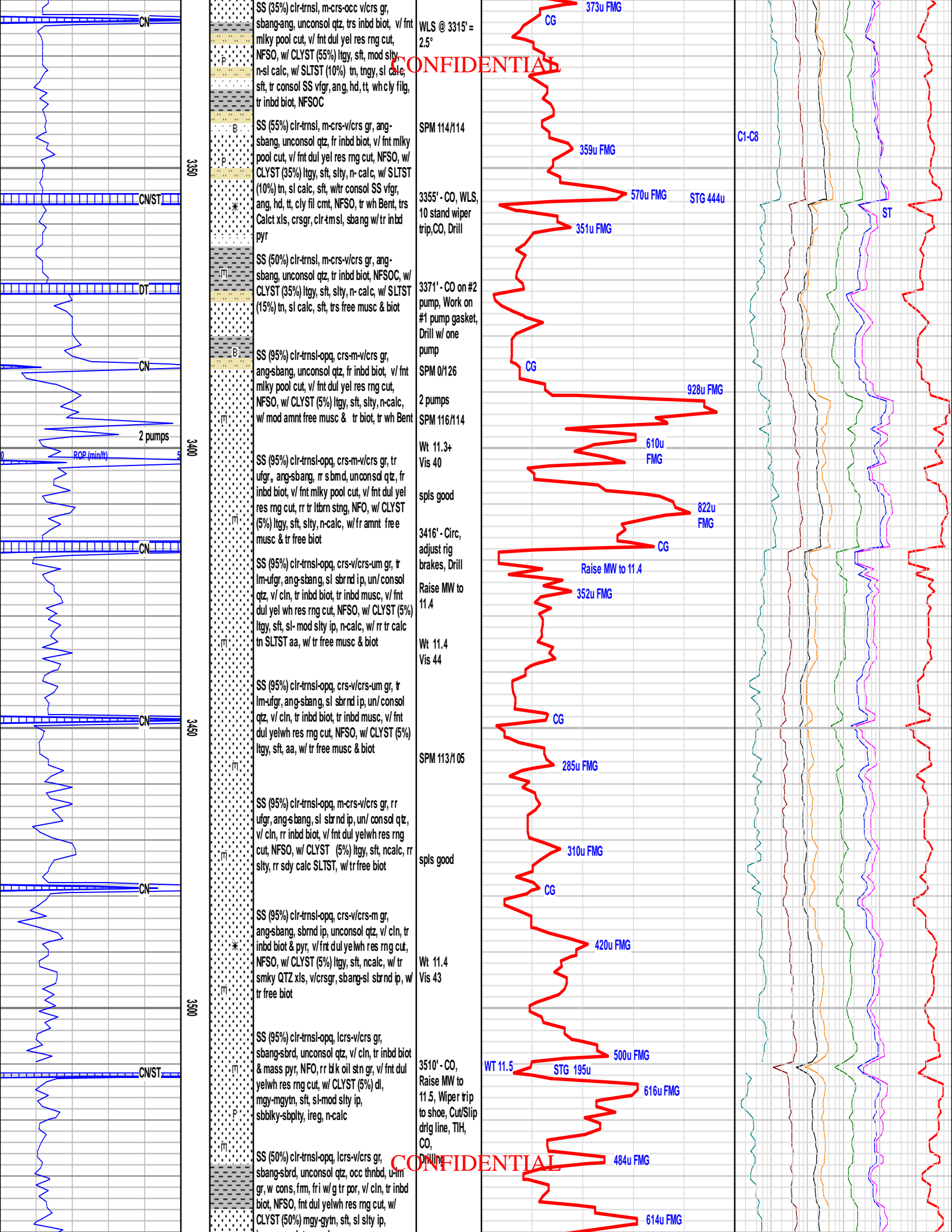
spils fair-good

Wt 11.3
 Vis 40

DT 3313' - CO gas, drilling



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3350

3400

3450

3500

SS (35%) clr-trnsl, m-crs-v/crs gr, sbang-ang, unconsol qtz, trs inbd biot, v/fnt milky pool cut, v/fnt dul yel res rng cut, NFSO, w/ CLYST (55%) ltgy, sft, mod slty, n-sl calc, w/ SLTST (10%) tn, tngy, sl calc, sft, tr consol SS vfgr, ang, hd, tt, wh cly filg, tr inbd biot, NFSOC

SS (55%) clr-trnsl, m-crs-v/crs gr, ang-sbang, unconsol qtz, fr inbd biot, v/fnt milky pool cut, v/fnt dul yel res rng cut, NFSO, w/ CLYST (35%) ltgy, sft, slty, n-calc, w/ SLTST (10%) tn, sl calc, sft, w/tr consol SS vfgr, ang, hd, tt, cly fil cmt, NFSO, tr wh Bent, trs Calcit xls, crsgr, clr-trnsl, sbang w/ tr inbd pyr

SS (50%) clr-trnsl, m-crs-v/crs gr, ang-sbang, unconsol qtz, tr inbd biot, NFSOC, w/ CLYST (35%) ltgy, sft, slty, n-calc, w/ SLTST (15%) tn, sl calc, sft, trs free musc & biot

SS (95%) clr-trnsl-opq, crs-m-v/crs gr, ang-sbang, unconsol qtz, fr inbd biot, v/fnt milky pool cut, v/fnt dul yel res rng cut, NFSO, w/ CLYST (5%) ltgy, sft, slty, n-calc, w/ mod amnt free musc & tr biot, tr wh Bent

SS (95%) clr-trnsl-opq, crs-m-v/crs gr, tr ufgr, ang-sbang, rr sbrnd, unconsol qtz, fr inbd biot, v/fnt milky pool cut, v/fnt dul yel res rng cut, rr tr ltrn stng, NFO, w/ CLYST (5%) ltgy, sft, slty, n-calc, w/fr amnt free musc & tr free biot

SS (95%) clr-trnsl-opq, crs-v/crs-um gr, tr lm-ufgr, ang-sbang, sl sbrnd ip, un/ consol qtz, v/ cln, tr inbd biot, tr inbd musc, v/fnt dul yel wh res rng cut, NFSO, w/ CLYST (5%) ltgy, sft, sl-mod slty ip, n-calc, w/ rr tr calc tn SLTST aa, w/ tr free musc & biot

SS (95%) clr-trnsl-opq, crs-v/crs-um gr, tr lm-ufgr, ang-sbang, sl sbrnd ip, un/ consol qtz, v/ cln, tr inbd biot, tr inbd musc, v/fnt dul yelwh res rng cut, NFSO, w/ CLYST (5%) ltgy, sft, aa, w/ tr free musc & biot

SS (95%) clr-trnsl-opq, m-crs-v/crs gr, rr ufgr, ang-sbang, sl sbrnd ip, un/ consol qtz, v/ cln, rr inbd biot, v/fnt dul yelwh res rng cut, NFSO, w/ CLYST (5%) ltgy, sft, ncalc, rr slty, rr sdy calc SLTST, w/ tr free biot

SS (95%) clr-trnsl-opq, lcrs-v/crs gr, ang-sbang, sbrnd ip, unconsol qtz, v/ cln, tr inbd biot & pyr, v/fnt dul yelwh res rng cut, NFSO, w/ CLYST (5%) ltgy, sft, ncalc, w/ tr smky QTZ xls, v/crsgr, sbang-sl sbrnd ip, w/ tr free biot

SS (95%) clr-trnsl-opq, lcrs-v/crs gr, sbang-sbrnd, unconsol qtz, v/ cln, tr inbd biot & mass pyr, NFO, rr blk oil stn gr, v/fnt dul yelwh res rng cut, w/ CLYST (5%) dl, mgy-mgytn, sft, sl-mod slty ip, sbbiky-sbpty, ireg, n-calc

SS (50%) clr-trnsl-opq, lcrs-v/crs gr, sbang-sbrnd, unconsol qtz, occ thnbd, u-lm gr, w cons, fm, fri w/ g tr por, v/ cln, tr inbd biot, NFSO, fnt dul yelwh res rng cut, w/ CLYST (50%) mgy-gytn, sft, sl slty ip,

WLS @ 3315' = 2.5°

SPM 114/114

3355' - CO, WLS, 10 stand wiper trip, CO, Drill

3371' - CO on #2 pump, Work on #1 pump gasket, Drill w/ one pump

SPM 0/126

2 pumps

SPM 116/114

Wt 11.3+ Vis 40

spls good

3416' - Circ, adjust rig brakes, Drill

Raise MW to 11.4

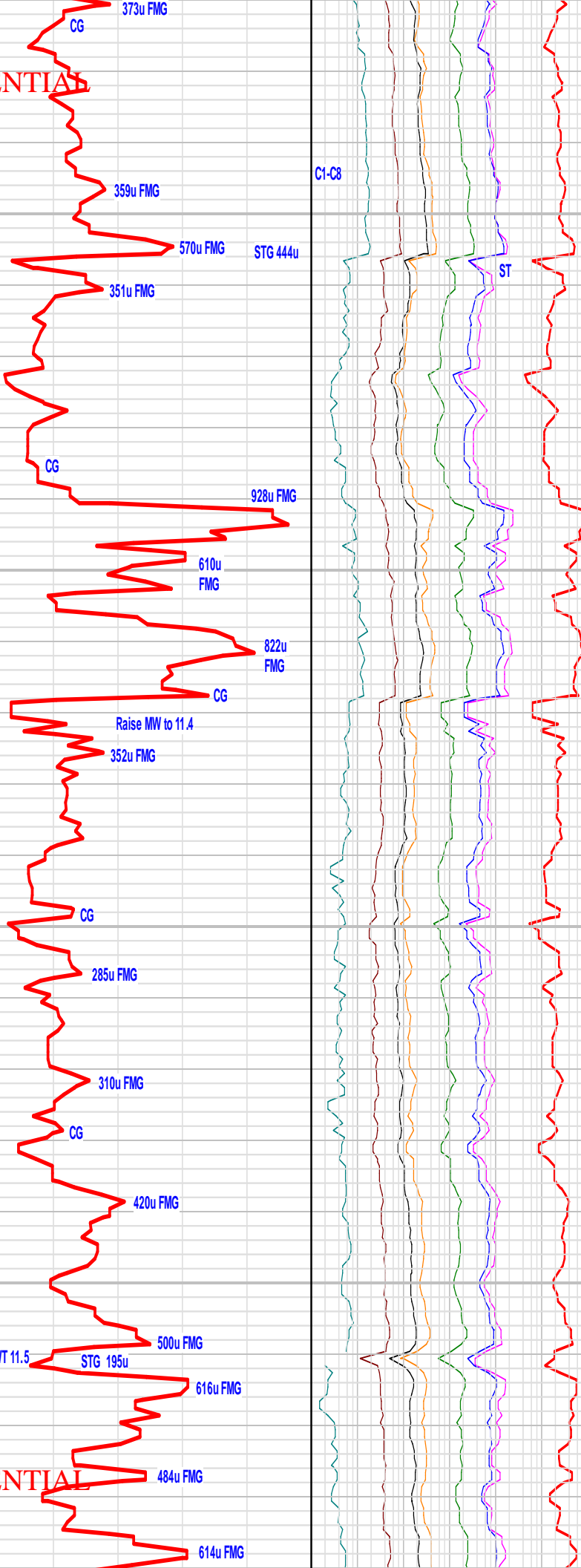
Wt 11.4 Vis 44

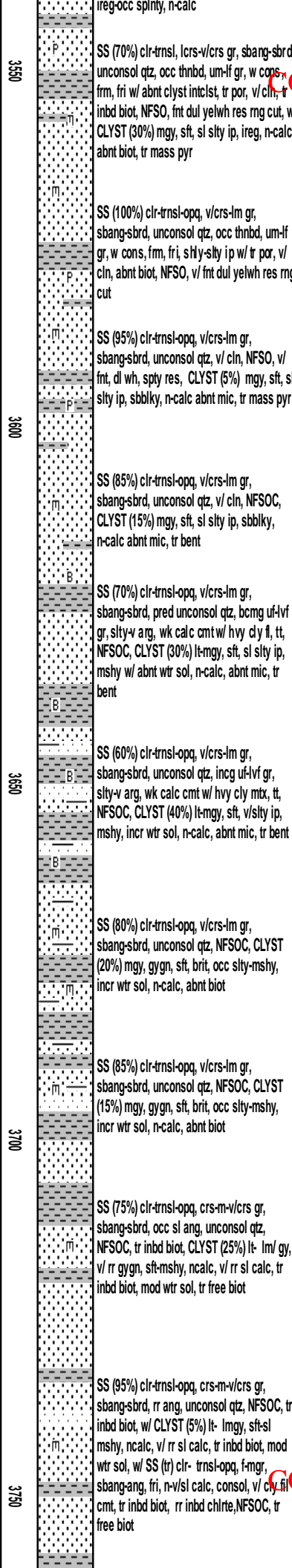
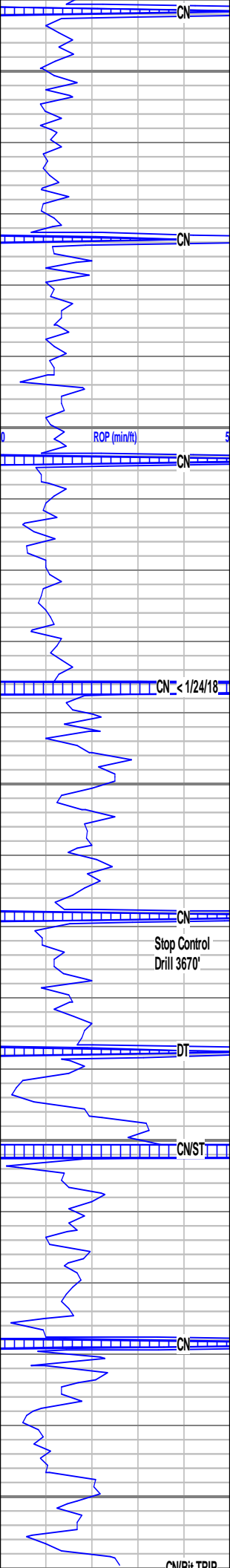
SPM 113/105

spls good

Wt 11.4 Vis 43

3510' - CO, Raise MW to 11.5, Wiper trip to shoe, Cut/Slip drlg line, TIH, CO, Drill





Wt 11.4
Vis 44

SPM 115/113

spls good

MUD Check @ 3635'
Wt 11.5
Vis 44
Fil 3.6
Sol 15.0
pH 7.0
Chl 900
Ca 200

spls poor-fair

Wt 11.5
Vis 43
pH 7.1

3670' - Stop Control drilling

3701' - 10 stnd wiper trip, Drilling

WLS @ 3720' = 2.75°

Bit #2 Drld 2660' in 70.0 hrs (avg 38.0 ft/hr)

NB #3, 8.5", Smith, XR+, 10/16/18, Tricone in at 3760', w/set of Jars, No Mr

SS (70%) clr-trnsl, lcrs-v/crs gr, sbang-sbrd, unconsol qtz, occ thnbd, um-lf gr, w cons, frm, fri w/ abnt clyst intlct, tr por, v/ cln, tr inbd biot, NFSO, fnt dul yelwh res rng cut, w CLYST (30%) mgy, sft, sl stly ip, ireg, n-calc, abnt biot, tr mass pyr

SS (100%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, occ thnbd, um-lf gr, w cons, frm, fri, shly-sly ip w/ tr por, v/ cln, abnt biot, NFSO, v/ fnt dul yelwh res rng cut

SS (95%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, v/ cln, NFSO, v/ fnt, dl wh, sply res, CLYST (5%) mgy, sft, sl stly ip, sbblky, n-calc abnt mic, tr mass pyr

SS (85%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, v/ cln, NFSOC, CLYST (15%) mgy, sft, sl stly ip, sbblky, n-calc abnt mic, tr bent

SS (70%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, pred unconsol qtz, bcmg uf-lvf gr, sly-v arg, wk calc cmt w/ hvy cly fl, tt, NFSOC, CLYST (30%) lt-mgy, sft, sl stly ip, mshy w/ abnt wtr sol, n-calc, abnt mic, tr bent

SS (60%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, incg uf-lvf gr, sly-v arg, wk calc cmt w/ hvy cly mx, tt, NFSOC, CLYST (40%) lt-mgy, sft, v/sly ip, mshy, incr wtr sol, n-calc, abnt mic, tr bent

SS (80%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, NFSOC, CLYST (20%) mgy, gygn, sft, brit, occ sly-mshy, incr wtr sol, n-calc, abnt biot

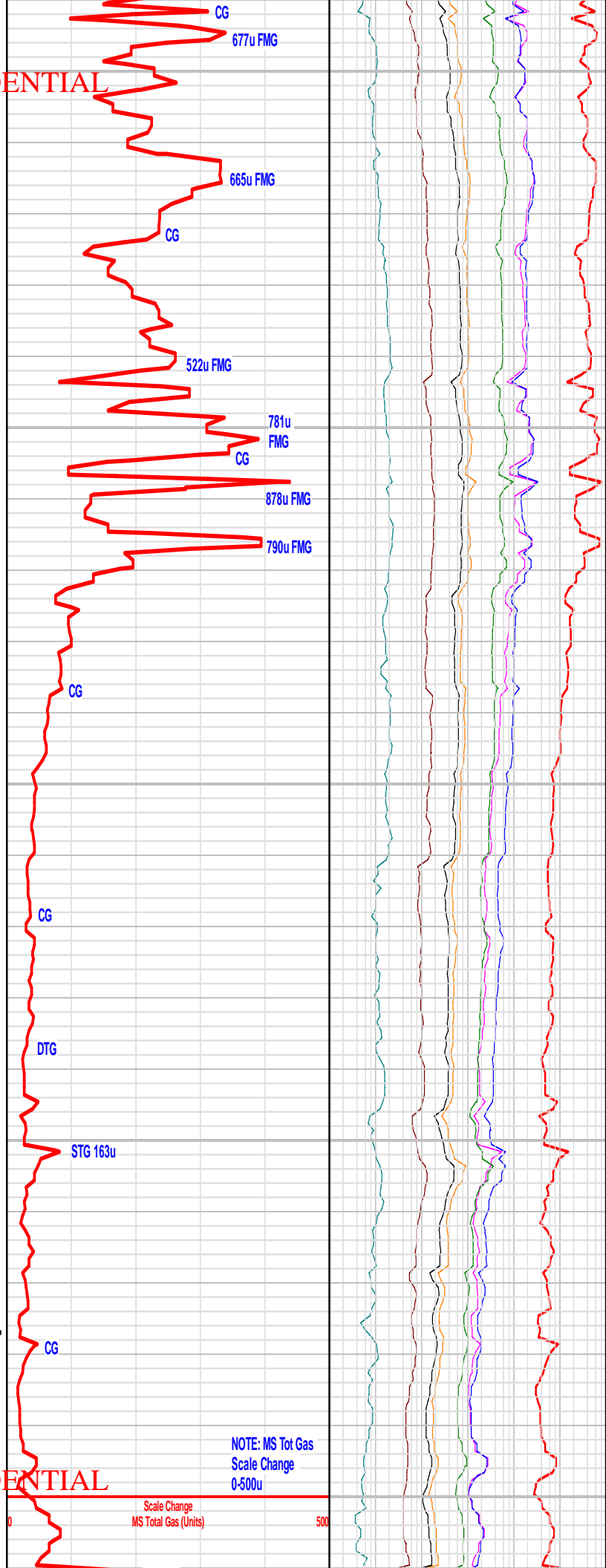
SS (85%) clr-trnsl-opq, v/crs-lm gr, sbang-sbrd, unconsol qtz, NFSOC, CLYST (15%) mgy, gygn, sft, brit, occ sly-mshy, incr wtr sol, n-calc, abnt biot

SS (75%) clr-trnsl-opq, crs-m-v/crs gr, sbang-sbrd, occ sl ang, unconsol qtz, NFSOC, tr inbd biot, CLYST (25%) lt- lm/ gy, v/ rr gygn, sft-mshy, ncalc, v/ rr sl calc, tr inbd biot, mod wtr sol, tr free biot

SS (95%) clr-trnsl-opq, crs-m-v/crs gr, sbang-sbrd, rr ang, unconsol qtz, NFSOC, tr inbd biot, w/ CLYST (5%) lt- lmg, sft-sl mshy, ncalc, v/ rr sl calc, tr inbd biot, mod wtr sol, w/ SS (tr) clr- trnsl-opq, f-mgr, sbang-ang, fri, n-v/sl calc, consol, v/ cly fl cmt, tr inbd biot, rr inbd chlrtc, NFSOC, tr free biot

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677u FMG

665u FMG

522u FMG

781u FMG

878u FMG

790u FMG

CG

CG

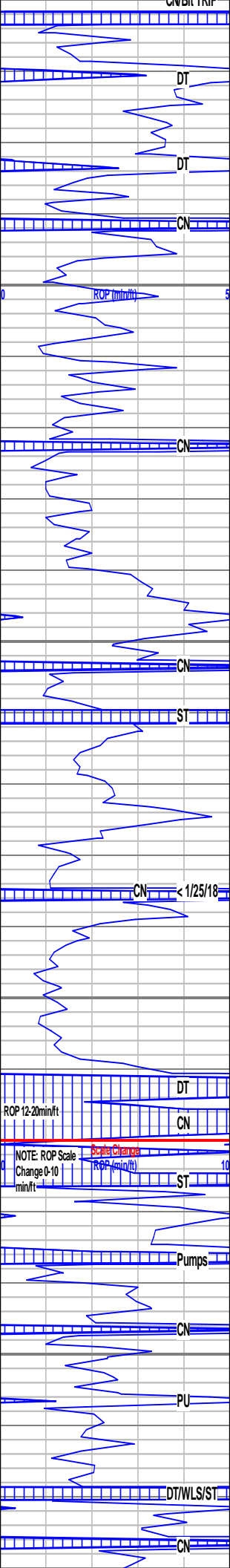
DTG

STG 163u

CG

NOTE: MS Tot Gas Scale Change 0-500u

Scale Change MS Total Gas (Units) 500



3860
3860
3900
3950

SS (80%) clr-trnsl-opq, crs-v/crs-m gr, sbang-sbrd, rr ang, unconsol qtz, occ mdt-wkst-pkst-micxln intclst, abnt uvf-lm gr, sbrd, gen w srt, w cons, frm, sl fri, NFSOC, w/ CLYST (20%) mgy, tngy, gygn, sft, brit-sl mshy, ncalc, abnt mass pyr, tr free biot, tr bent

SS (90%) clr-trnsl-opq, crs-v/crs-m gr, sbang-sbrd, unconsol qtz, incr arg-sity, uvf-lm gr, sbrd, gen w srt, w cons, frm, sl fri, NFSOC, w/ CLYST (10%) mgy, tngy, gygn, sft, brit-sl mshy, mod wtr sol ncalc, tr pyr, tr free biot, tr bent

SS (75%) clr-trnsl-opq, crs-v/crs-m gr, sbang-sbrd, rr ang, unconsol qtz, occ mdt-micxln-sity calc intclst, abnt uvf-lm gr, sbrd, gen w srt, w cons, frm, sl fri, NFSOC, w/ CLYST (25%) mgy, gy, tngy, sft, mshy, ncalc, occ sity, tr bent

SS (65%) clr-trnsl-opq, crs-v/crs gr, sbang-sbrd, incr ang, unconsol qtz-occ chrty, abnt p cons, hd, fri, abnt micxln calc intrg-cmt, NFSOC, w/ CLYST (35%) mgy, gy, tngy, sft, brit-flky, bcmg sity w/ occ lam slst, ncalc, tr pyr, tr bent

SS (95%) clr-trnsl-opq, crs-v/crs gr, sbang-sbrd, occ ang, unconsol qtz- chrty, v/ fnt dul wh spty res rng, NFSO, w/ CLYST (5%) mgy, gy, tngy, sft, brit- flky, gen sity w/ occ lam slst, ncalc, tr mic, tr bent

BASALT (60%) blk-v/dkgy, mafic, aphan-aphyric, micxln, hd-brit-frm, abnd blk mica, w/ tr ASH wh, frm, inbd vfg sd, dul yel flor, w/ 40% unconsol qtz sd aa, NFSOC, w/ tr SS clr-trnsl, m-ufgr, hd, tt, ang, abnd inbd Basalt/rr olivine, ncalc, NFSOC, rr gy Bent, tr free pyr

BASALT (50%) blk-v/dkgy, mafic, aphan, mic-vfxln, hd-brit-frm, abnd blk mica, abnd inbd f-mgr clr ang qtz, tr inbd musc/rr oliv, w/ (15%) wh chiky cly w/ blk carb strks, w/ SS (25%) clr-trnsl, crs-v/crs-umgr, sbang-ang, uncon qtz, trs gy-tngy Bent, rr wh sft ASH-inbd vfg sd, dul yel flor, tr free pyr, tr tmsl CHT, w/ CLYST (10%) gy, tn, sft-sl frm, n-sl calc, sity-occ grdg to SLTST, trs wh vfxln cal plag, rr trmlne x1?

BASALT (65%) blk-v/dkgy, mafic, aphan, mic-vfxln, hd-brit-frm, abnd blk mica, abnd inbd f-mgr clr ang qtz, tr inbd musc/rr oliv, w/ (10%) wh chiky cly w/ blk carb strks, SS (25%) clr-trnsl, crs- v/crs-umgr, sbang-ang,

3760 - CO, C&C hole, WLS, TOOH, Chg bits, TIH, CO, Drilling

Wt 11.4
Vis 40
pH 7.2

spls fair

SPM 110/110

MUD Check @ 3860'

Wt 11.4
Vis 40
Fil 3.2
Sol 16.0
pH 7.2
Chl 800
Ca 160

Wt 11.5
Vis 40
pH 7.0

3860' - CO, 10 stnd wiper trip, Drilling

spls good

SPM 113/112

Wt 11.5
Vis 40
pH 7.0

WLS @ 3929' = 2.50"

10' spls
spls good

3925' - CO, 10 stnd wiper trip, Drilling

3936' - Circ on pump #2-120 spm, Work on #1 pump, #1 back on-line

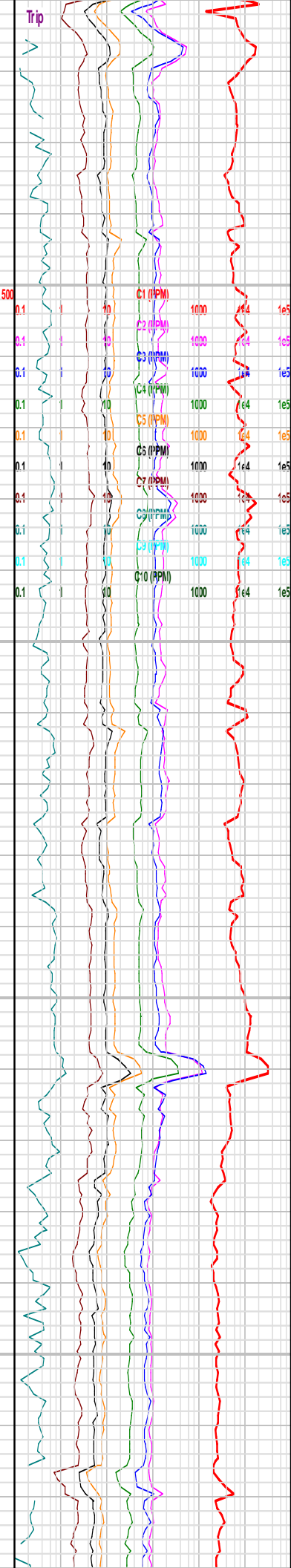
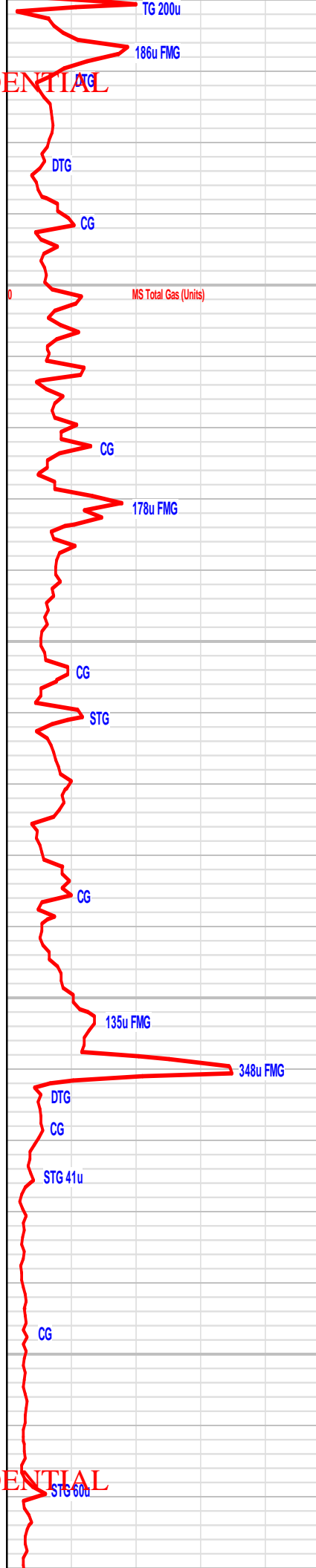
SPM 106/105

Wt 11.5
Vis 40
pH 7.0

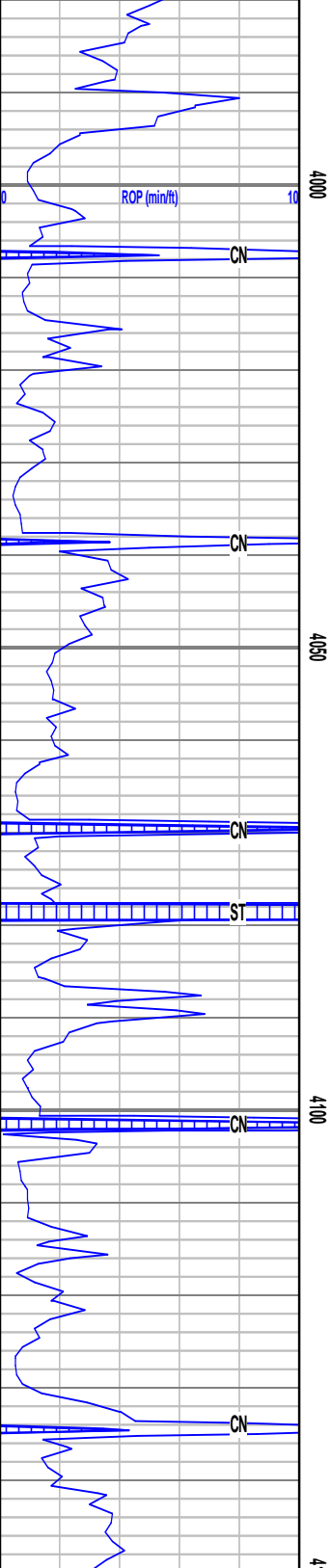
3969' WLS, 10 stnd wiper trip, Drilling

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ASH-inbnd vfr sd, dul yel flr, tr free pyr, w/ CLYST (5%) gy, tn, sft-sl frm, n-sl calc, mod slty- occ grgd to clyish SLTST

SS (70%) clr-trnsl-opq, crs-m-v/crs-gr, sbang-ang-sl sbrd, unconsol qtz, v/cln, NFSOC, rr inbd biot, w/ CLYST (20%) lt-mgy, tngy, sft, sl slty, rr mshy, n-calc, tr inbd biot, w/ BASALT (10%) blk-v/dk/gy, mafic, aphan, mic xln, hd-brit-frm, abnd blk mica, abnd inbd f-mgr clr ang qtz, tr free pyr, tr free biot

SS (95%) clr-trnsl-opq, crs-v/crs gr, sbang-sbrd, occ ang, qtz-chrty, v/cln unconsol, NFSOC, tr micxln LS inclst- pos cmt-mtx, occ IG inclst w/ oliv frag, CLYST (5%) tngy, sft, sl slty, n calc, sl slty w/ tr slst w/ dis pyr, tr tuffstg

SS (95%) clr-trnsl-opq, incr crs-um gr, sbang-sbrd, qtz-chrty, unconsol, v/cln, NFSOC, occ IG incl w/ oliv frag, TUFF (5%) dky-gn, hd-extr hd, vf xln glsy tex, blk, occ spilty gn glsy alt sil mtrl w/ ash

SS (100%) clr-trnsl-opq, crs-v/crs, occ um gr, sbang-sbrd, occ ang, v/cln, NFSOC, qtz-chrty, unconsol, occ IG inclst & oliv frag, tr micxln calc inclst-pos cmt-mtxtr smky chrt w/ occ IG inclst

SS (95%) clr-trnsl-opq, incr v/crs-um gr, sbang-sbrd, qtz-chrty, unconsol, v/cln, NFSOC, occ IG incl w/ oliv frag, TUFF (5%) dky-gn, hd-extr hd, vf xln- glsy tex, occ frm-slty, blk, tr sbbkly gn alt suc sil mtrl, tr ltgy-wh ash

SS (95%) clr-trnsl-opq, incr v/crs-um gr, sbang-sbrd, qtz-chrty, unconsol, v/cln, occ IG incl w/ oliv frag, tr micxln LS inclst, NFSOC w/ TUFF (5%) dky-gn, hd-extr hd, vf xln-glsy tex, occ frm, grnlr, ply, tr suc ncalc mtrl, tr ltgy ash, rr mass pyr

SS (90%) clr-trnsl-opq, crs-v/crs gr, sbang-sbrd, occ ang, qtz-chrty, v/cln unconsol, NFSOC, tr IG inclst, tr mass oliv frag, tr mdst-wkst-micxln LS inclst w/ CLYST (5%) plgn, tngy, sft, sl slty-smth, n calc, bcmg slty w/ tr slst w/ dis pyr w/ TUFF (5%) dky-gn, hd-extr hd, vf xln-glsy tex, ireg, rr mass pyr

spls good

SPM 107/106

20' spls

Wt 11.5
Vis 40
pH 7.0

spls good

4078' - CO, 10
stnd wiper trip,
Drilling

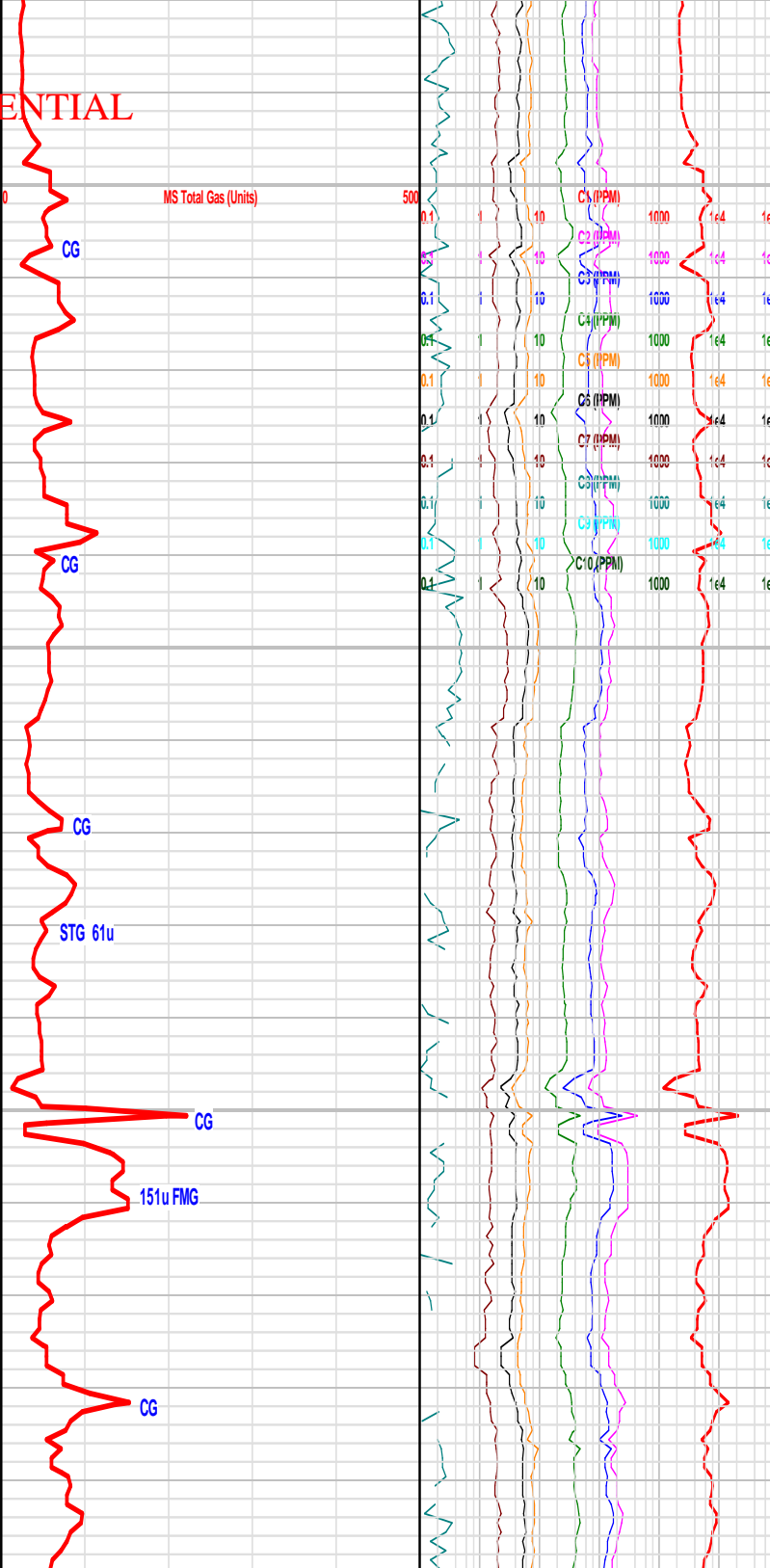
SPM 104/105

Wt 11.5
Vis 41

spls good

SPM 107/105

Wt 11.5
Vis 44



TD: 4150' @ 21:45 hrs on 1/25/18

Driller TD = 4150'

Logger TD = 4143'

Driller Surf Csg = 1092'

Logger Surf Csg = 1088'

THANK YOU FOR USING
KING CANYON BUFFALO

Phil Littlefield / Lester Ballard

Logging unit released on
1-xx-2018 @ xxxx hrs MT

TD: 4150' @ 21:45 hrs on 1/25/18, CO, 20 stand wiper trip, TIH, CO, Wiper trip to shoe, TIH to - 2027', C&C hole, TOOH to shoe, TIH, C&C, TOOH for LOGS, RU Loggers, LOG run #1 (Sonic/Dip Meter/ Spectral Gamma) Log run #2 (Triple Combo) Rig Down Loggers, TIH to bottom, CO, C&C mud, Wiper trip to shoe

MUD Check @ 4150'

Wt 11.5
Vis 44
Fil 3.6
Sol 16.0
pH 7.0
Chl 800
Ca 160

Bit #3 Drld 390' in 22.5 hrs (avg 1.67 in/hr)

BGG @ TD 59u

4150' TD

20 stand wiper STG = 48u w/ 11.5 MW

Wiper trip to shoe, C&C @ 2027' w/ 70u w/ 11.5 MW

Wiper trip to shoe = 170u w/ 11.4 MW

TG after LOG run = 418u w/ 11.5 MW

ALTA MESA SERVICES
Barlow 1-14
API # 11-075-20033
AFE: 0004313DC1
GL Elevation: 2164 ft
KB Elevation: 2176 ft

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