

MD: 2850.81m Azi:
179.97°
TVD: 2503.4 m Incl:
54.91°

CLYST: m dk gy, frm-hd, sbblky-blky, grd to Sltst

MW: 12.00 ppg FV: 96
PV: 45 YP: 35
Gels: 14/25/29
O/W: 69.6/30.4

SST: lt gy, trnsl-trnsp, m-crs gr, occ v crs gr, frm-fri, sbang-sbrndd, sbsph, mod srt, tr arg mtrx, pr vis por, no shw

MD: 2881.69 m Azi:
185.74°
TVD: 2520.7m Incl: 57.25°

CLYST: m gy-dk gy, frm-hd, sbblky-sbfiss, slty, grd to Sltst

MD: 2911.49 m Azi:
188.17°
TVD: 2535.6 m Incl:
62.80°

CLYST: m gy-dk gy, occ gysh blk, sft-frm, occ hd, sbblky-sbfiss

MD: 2941.41m Azi:
188.76°
TVD: 2548.7m Incl: 65.11°

SST: lt gy, trnsl, frm-fri, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, mod srt, pr vis por, no shw

MW: 12.00 ppg FV: 92
PV: 45 YP: 32
Gels: 14/25/29
O/W: 70/30

CLYST: lt gy-dk gy, frm-hd, sbblky-blky, occ sbfiss

SST: dk gy-m gy, lt gy i/p, occ wh, trnsl- trnsp, occ opq, fri-mod hd, uncons i/p, vf-f gr, crs gr i/p, sbang-sbrndd, ang i/p, sbelong-sbsph, pr-mod srt, calc cmt, tr slt, tr glauc, pr inf por, no shw

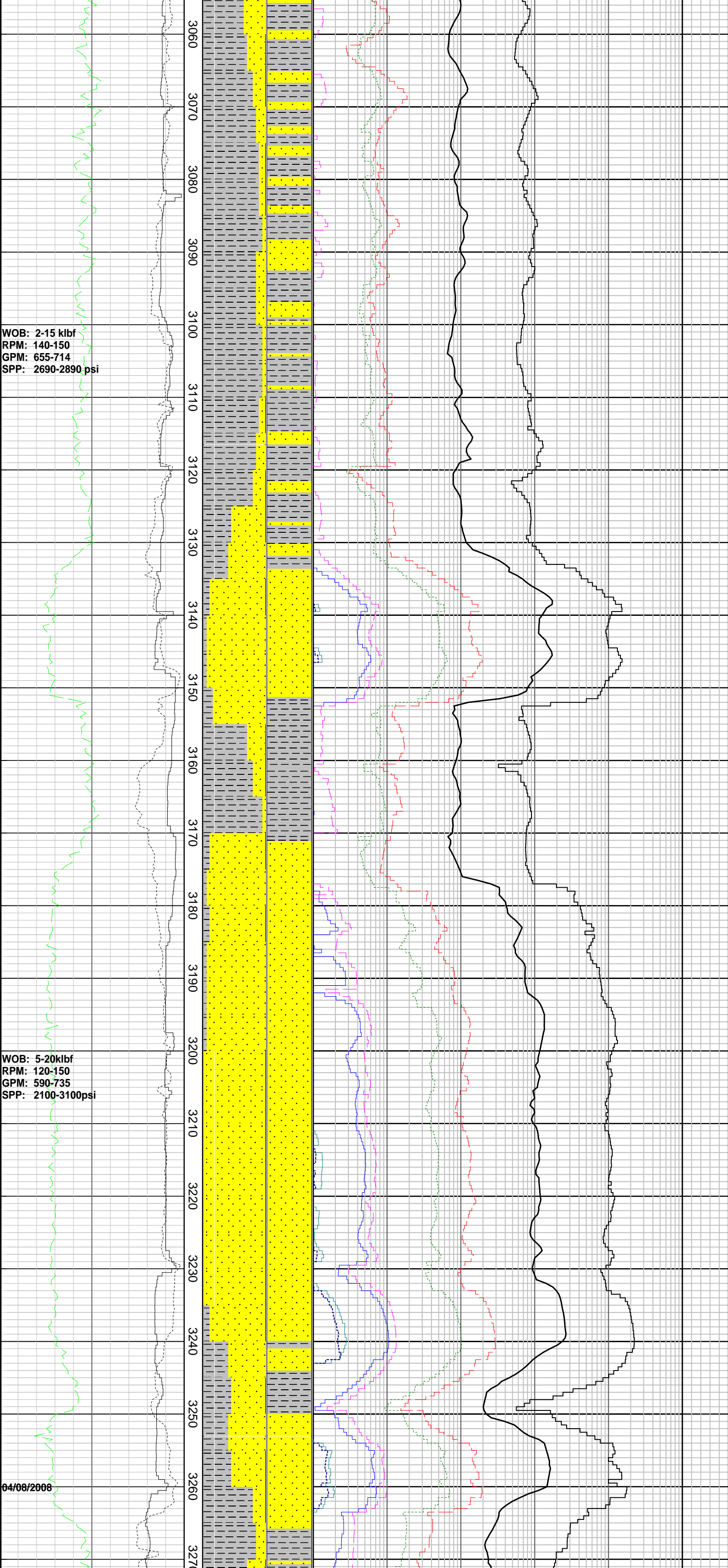
CLYST: lt gy-dk gy, frm-hd, sft i/p, amor-blky, occ sbfiss, n calc, grd to Sltst

COAL: blk, frm, blk-ysbbilky, erthy-sbvit lus, brit

MD: 3016.23 m Azi:
189.15°
TVD: 2577.3 m Incl: 69.92°

SST: dk gy-m gy, lt gy i/p, occ wh, trnsl-trnsp, occ opq, fri-mod hd, uncons i/p, vf-f gr, crs gr i/p, sbang-sbrndd, ang i/p, sbelong-sbsph, pr-mod srt, calc cmt, tr slt, tr carb mat, tr glauc, pr inf por, no shw

CLYST: lt gy- dk gy, frm-hd, sft i/p, amor-blky, occ sbfiss, n calc, grd to Sltst



SST: dk gy-m gy, lt gy i/p, occ wh, trnsi-trnsp, occ opq, fri-mod hd, vf-f gr, crs gr i/p, sbang-sbrndd, ang i/p, sbsph, pr-mod srt, calc cmt, tr slt, tr carb mat, tr glauc, tr arg mtrx, tr miclam, pr inf por, no shw

MD: 3076.35 m	Azi: 190.05°
TVD: 2596.3 m	Incl: 72.83°

SST: dk gy-m gy, lt gy i/p, occ wh, trnsi-trnsp, occ opq, fri-mod hd, vf-f gr, crs gr i/p, sbang-sbrndd, ang i/p, sbsph, pr-mod srt, calc cmt, tr slt, tr carb mat, tr glauc, tr arg mtrx, tr miclam, pr inf por, no shw

MD: 3106.22 m	Azi: 185.49°
TVD: 2605.1 m	Incl: 72.92°

CLYST: lt gy- dk gy, frm-hd, sft i/p, amor-blky, occ sbfiss, n calc, grd to Sltst

SST: dk gy-m gy, lt gy i/p, occ wh, trnsi-trnsp, occ opq, fri-mod hd, vf-f gr, crs gr i/p, sbang-sbrndd, ang i/p, sbsph, pr-mod srt, calc cmt, tr slt, tr carb mat, tr glauc, tr arg mtrx, tr miclam, pr inf por, no shw

MD: 3136.04 m	Azi: 186.22°
TVD: 2613.1 m	Incl: 75.98°

SST: lt gy, trnsi, pred frm agg, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr-mod srt, tr arg mtrx, pr vis & inf por, no shw

MD: 3164.24 m	Azi: 185.24°
TVD: 2618.9 m	Incl: 80.13°

CLYST: m dk gy-dk gy, sft-frm, amor-blky, occ sbfiss, n calc

MD: 3194.93 m	Azi: 185.98°
TVD: 2624.3 m	Incl: 79.46°

SST: lt gy, trnsi-trnsp, pred frm agg, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr srt, tr arg mtrx, tr flsp gr i/p, pr vis por, no shw

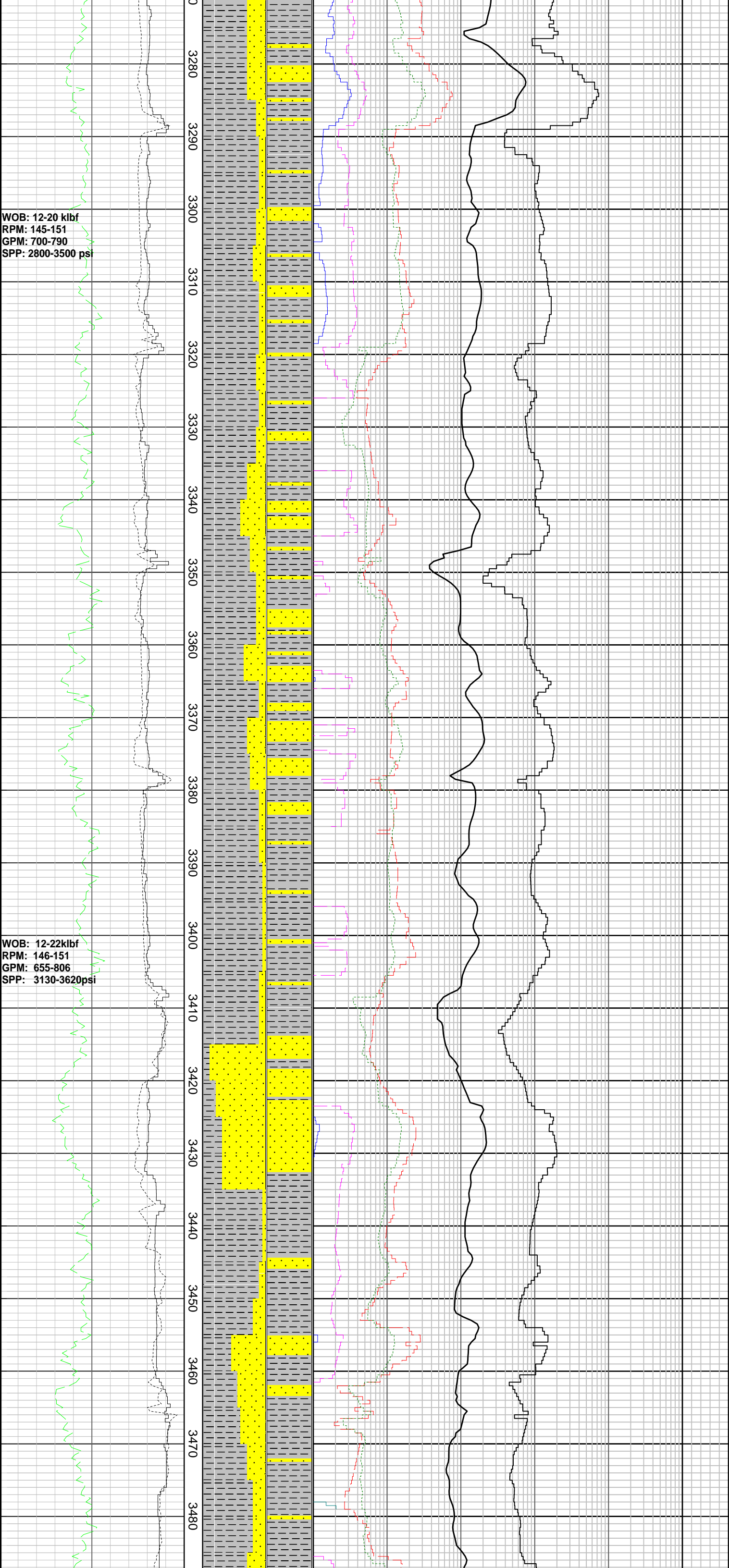
MD: 3224.35 m	Azi: 184.32°
TVD: 2629.2 m	Incl: 81.52°

SST: v lt gy-lt gy, trnsi-trnsp, pred frm agg, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, mod-wl srt, tr arg mtrx, sil cmt, tr glau, pr vis por, no shw

CLYST: dk gy-m dk gy, occ lt gy, sft-frm, hd i/p, sbblky-blky, amor i/p, n calc, tr carb frag

MD: 3254.13 m	Azi: 184.05°
TVD: 2632.8 m	Incl: 84.39°

SST: v lt gy-lt gy, trnsi-trnsp, pred frm f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, mod-wl srt, tr arg mtrx, sil cmt, tr glau, rr dissemin pyr, pr vis por, no shw



CLYST: dk gy-m dk gy, occ lt gy, sft-frm, hd i/p, sbblky-blky, amor i/p, n calc, tr carb frag

MD: 3283.78 m	Azi: 180.52°
TVD: 2635.0 m	Incl: 87.22°

CLYST: dk gy-m dk gy, occ lt gy, sft-frm, hd i/p, sbblky-blky, amor i/p, n calc, tr carb frag

MD: 3313.51 m	Azi: 179.55°
TVD: 2635.6 m	Incl: 90.41°

MW: 12.00 ppg	FV: 80
PV: 47	YP: 31
Gels: 14/25/29	
O/W:74.4/25.6	

SST: v lt gy-lt gy, trnsI-trnsp, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr srt, tr arg mtrx, sil cmt, tr glauc, pr vis por, no shw

MD: 3343.47 m	Azi: 182.41°
TVD: 2634.7 m	Incl: 93.13°

CLYST: dk gy-m dk gy, occ lt gy, sft-frm, hd i/p, sbblky-blky, amor i/p, n calc, tr carb lit

MD: 3373.36 m	Azi: 181.60°
TVD: 2632.8 m	Incl: 94.02°

CLYST: dk gy-m dk gy, sft-frm, blky, n calc

MD: 3402.75 m	Azi: 178.76°
TVD: 2630.8 m	Incl: 93.92°

SST: v lt gy-lt gy, trnsI-trnsp, frm, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr srt, tr arg mtrx, tr glauc, pr vis por, no shw

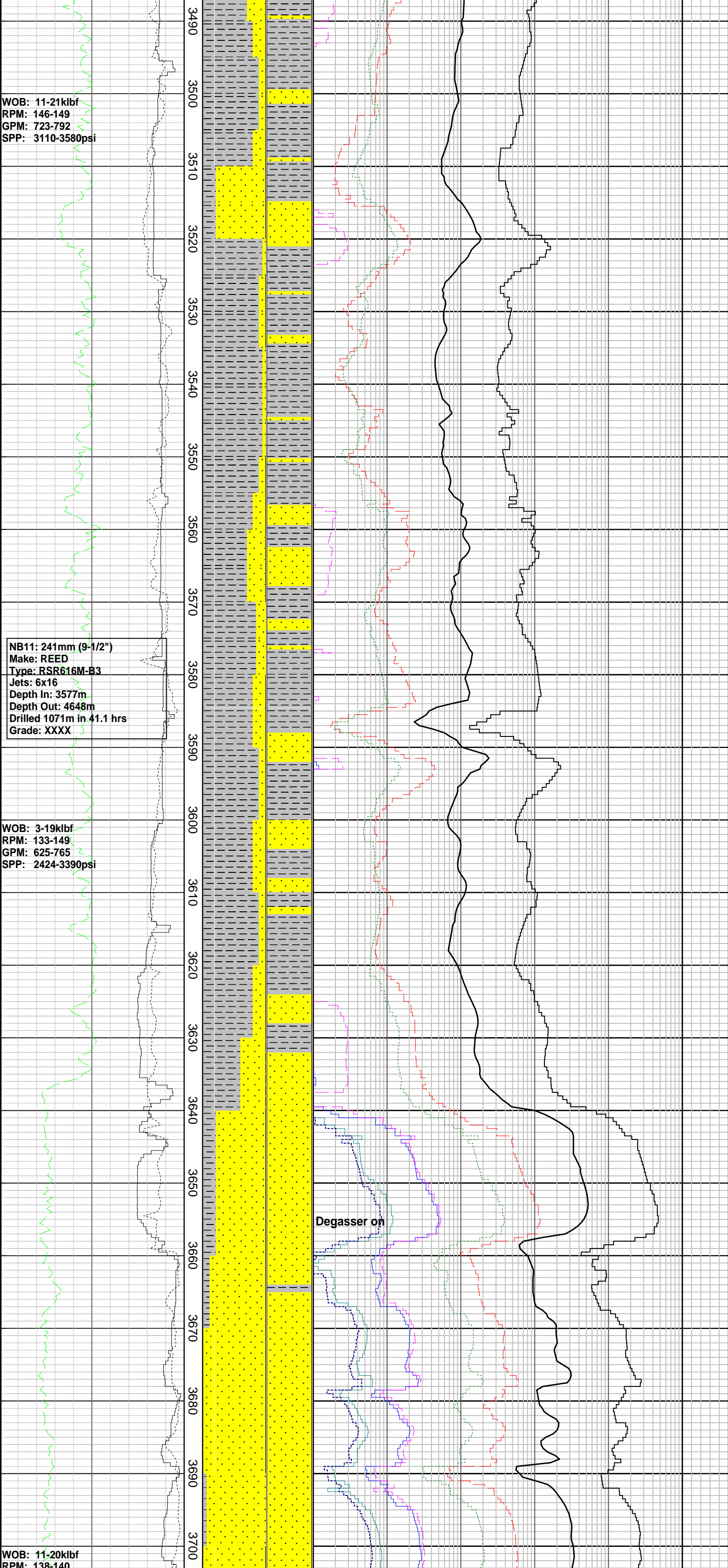
MD: 3431.88 m	Azi: 178.07°
TVD: 2629.5 m	Incl: 91.13°

CLYST: dk gy-m dk gy, sft-frm, blky, n calc

SST: v lt gy-lt gy, trnsI-trnsp, frm, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr-mod srt, tr arg mtrx, tr glauc, pr vis por, no shw

MD: 3461.34 m	Azi: 178.76°
TVD: 2628.8 m	Incl: 91.68°

CLYST: m lt gy-m dk gy, sft-frm, blky, tr carb mat, n calc



MD: 3492.03 m Azi: 180.60°
TVD: 2627.9 m Incl: 91.51°

MW: 12.00 ppg FV: 92
PV: 44 YP: 27
Gels: 14/22/27
O/W:74.4/25.6

SST: v lt gy-lt gy, trnsl-trnsp, frm aggs, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr-mod srt, tr arg mtrx, tr glau, pr vis por, no shw

MD: 3521.63 m Azi: 178.88°
TVD: 2627.2 m Incl: 91.27°

CLYST: m lt-m dk gy, sft-frm, blk, tr carb mat, n calc

MD: 3551.39 m Azi: 180.83°
TVD: 2626.5 m Incl: 91.44°

SST: v lt gy-lt gy, trnsl-trnsp, frm aggs, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr-mod srt, tr arg mtrx, tr glau, pr vis por, no shw

MD: 3564.74 m Azi: 180.85°
TVD: 2626.2 m Incl: 91.37°

MW: 12.01 ppg FV: 110
PV: 43 YP: 31
Gels: 14/23/27
O/W:75/25

SST: v lt gy-lt gy, occ wh, clr-trnsl, occ opq, f-crs gr, occ v crs gr, sbang-sbrndd, sbsph, pr-mod srt, tr arg mtrx, tr glauc, tr blk lit, pr vis por, no shw

MD: 3594.59 m Azi: 180.97°
TVD: 2625.5 m Incl: 91.46°

CLYST: m dk gy-dk gy, sft-frm, sbbkly-blky, tr carb mat, n calc

SST: lt olv gy-m lt gy, clr-trnsl, fri, vf-f gr, occ m gr, sbang-sbrndd, sbsph, wk srt, pr-mod calc cmt, tr blk lith, pr vis por, no shw

MD: 3653.86 m Azi: 184.27°
TVD: 2623.9 m Incl: 91.66°

CLYST: m gy-m dk gy, sft-frm, sbbkly-blky, fiss i/p, n calc

MW: 12.00 ppg FV: 80
PV: 44 YP: 27
Gels: 14/22/27
O/W:72.5/27.5

MD: 3684.08 m Azi: 183.77°
TVD: 2623.4 m Incl: 90.26°

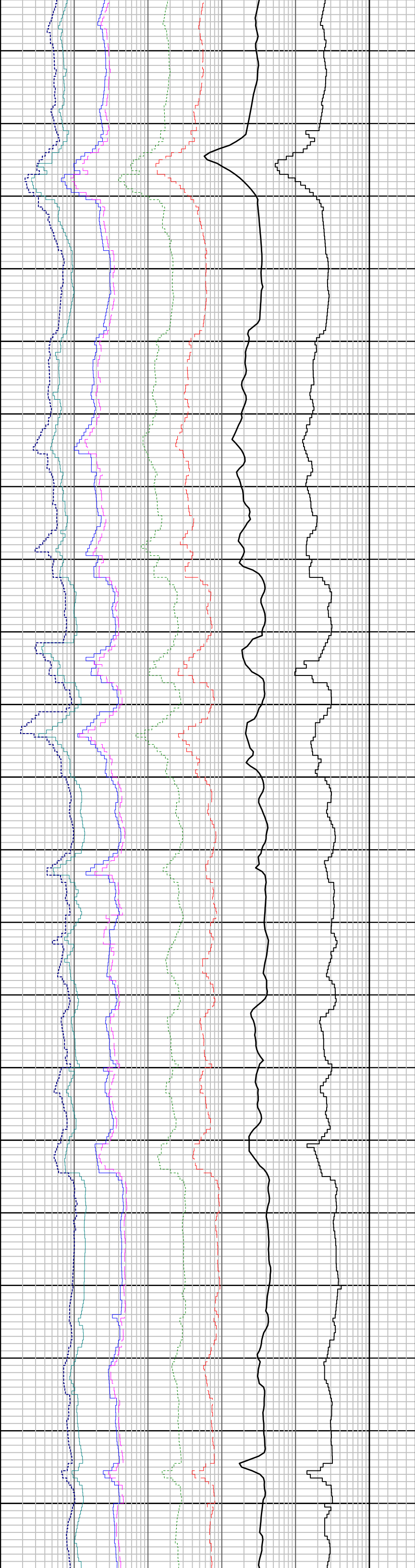
SST: olv gy, occ or gr, clr-trnsl, fri, vf-m gr, ang-sbang, sbsph, mod srt, wk calc cmt, tr blk lith, tr glau, pr vis

GPM: 579-660
SPP: 2210-2860psi

07/08/2008

WOB: 3-20klbf
RPM: 129-156
GPM: 588-701
SPP: 1780-2880psi

3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3



MD: 3711.90 m Azi: 185.04°
TVD: 2623.4 m Incl: 89.74°

MW: 12.10 ppg FV: 81
PV: 42 YP: 32
Gels: 14/25/-
O/W: 72.5/27.5

SST: olv gy, m lt gy, occ orng gr,
clr-trnsl, fri, vf-m gr, sbang-sbrndd,
sbsph, mod srt, wk calc cmt, tr blk
lith, tr glau, pr vis por, no shw

MD: 3740.99 m Azi: 184.85°
TVD: 2623.8 m Incl: 88.54°

SST: olv gy, occ orng gr, clr-trnsl, fri
aggs, vf-m gr, ang-sbang, sbsph, mod
srt, wk calc cmt, tr blk lith, tr glau, pr
vis por, no shw

MD: 3770.39 m Azi: 184.63°
TVD: 2625.3 m Incl: 85.50°

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MD: 3799.79 m Azi: 184.62°
TVD: 2627.8 m Incl: 83.81°

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MD: 3829.12 m Azi: 183.90°
TVD: 2631.1 m Incl: 82.94°

COAL: blk, frm, blk-ssblk, y,
erthy-sbvit lus, brit

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MW: 12.00 ppg FV: 80
PV: 44 YP: 33
Gels: 15/25/29
O/W: 72.5/27.5

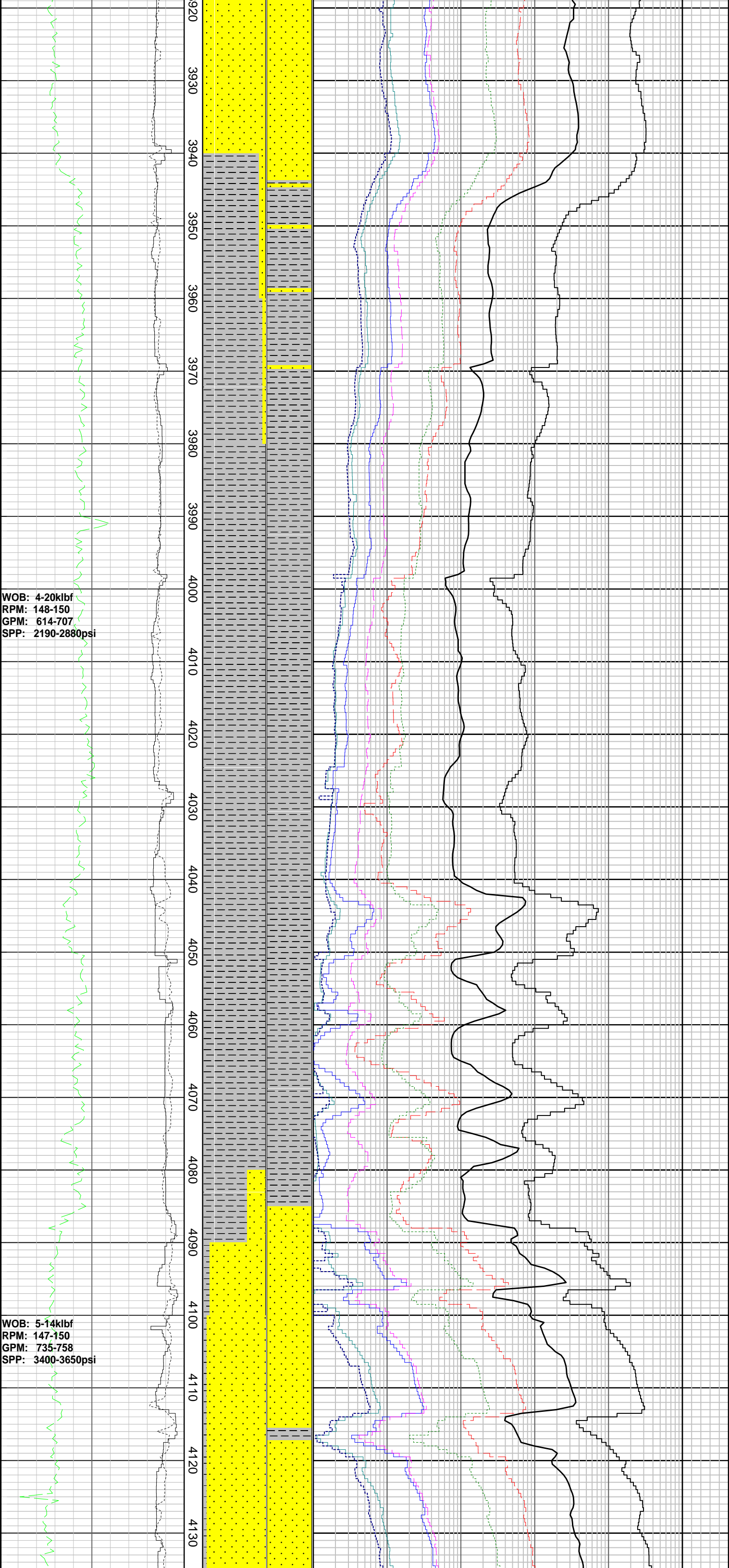
MD: 3859.22 m Azi: 183.23°
TVD: 2634.6 m Incl: 84.01°

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MD: 3888.65 m Azi: 183.06°
TVD: 2637.1 m Incl: 86.73°

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MD: 3919.67 m Azi: 185.50°
TVD: 2640.6 m Incl: 89.74°



MD: 3918.67 m Azi: 185.50°
TVD: 2638.4 m Incl: 88.74°

SST: olv gy-lt olv gy, occ orng gr,
clr-trnsl, occ opq, fri, vf-m gr, crs gr
i/p, sbang-sbrndd, sbsph, pr-mod srt,
wk calc cmt, tr blk lith, tr glauc, pr inf
por, no shw

MD: 3948.65 m Azi: 186.27°
TVD: 2638.9 m Incl: 89.63°

CLYST: m dk gy-dk gy, sft-frm,
sbbiky-blky, tr carb mat, n calc, grd to
Sltst

MD: 3977.71 m Azi: 185.58°
TVD: 2639.7 m Incl: 86.96°

CLYST: m gy-olv gy, sft-frm,
sbbiky-blky, n calc, grd to Sltst

MD: 4006.54 m Azi: 184.14°
TVD: 2642.1 m Incl: 83.81°

CLYST: m gy-olv gy, sft-frm,
sbbiky-blky, n calc, grd to Sltst

MD: 4035.61 m Azi: 183.23°
TVD: 2645.6 m Incl: 82.10°

CLYST: m gy-olv gy, sft-frm,
sbbiky-blky, n calc, tr carb mat, grd to
Sltst

MD: 4065.35 m Azi: 182.76°
TVD: 2649.7 m Incl: 82.21°

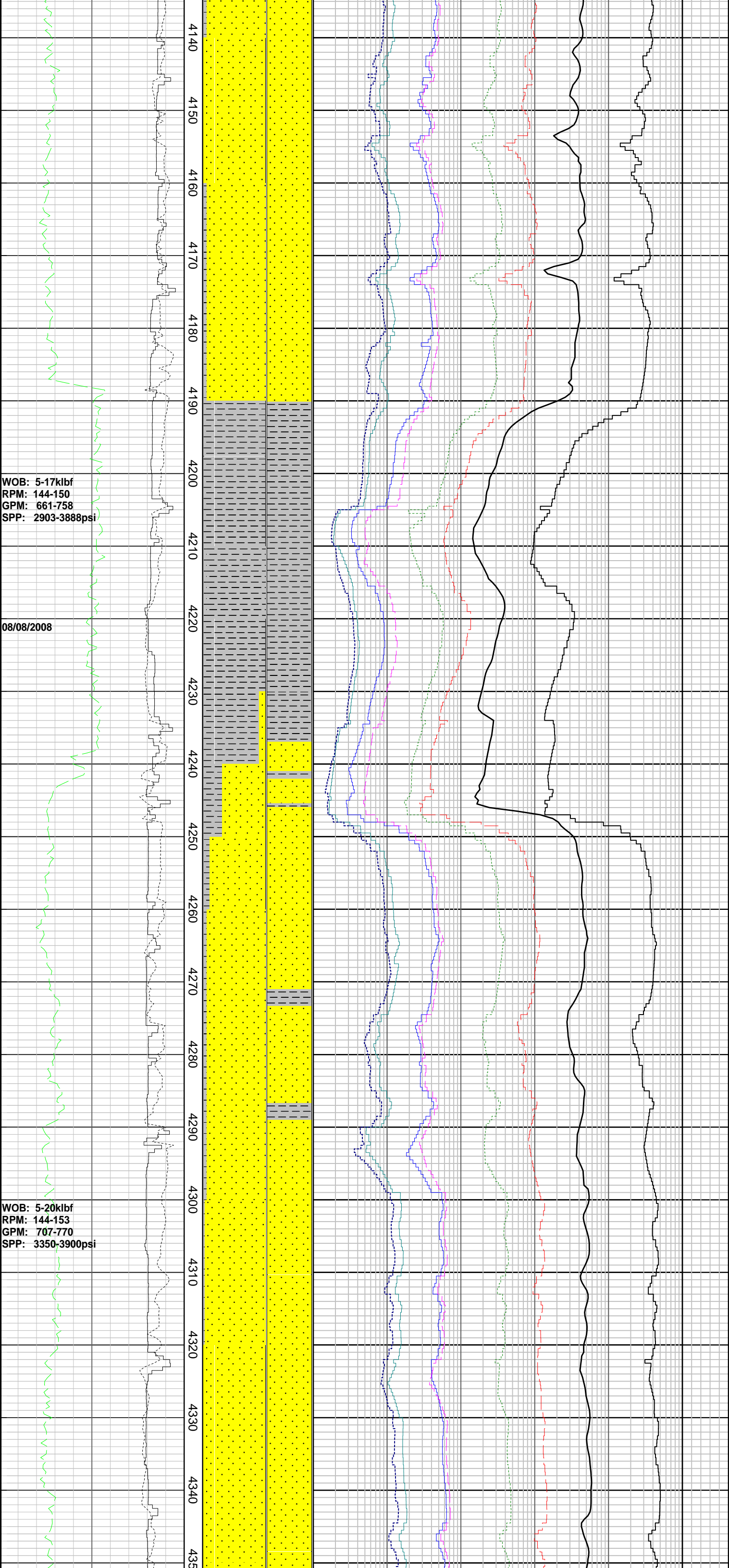
CLYST: m gy-olv gy, sft-frm,
sbbiky-blky, n calc, tr carb mat, grd to
Sltst

MW: 12.00 ppg FV: 71
PV: 41 YP: 33
Gels: 14/24/27
O/W:71.8/28.2

MD: 4094.84 m Azi: 183.49°
TVD: 2654.3 m Incl: 79.90°

SST: m lt gy-lt olv gy, occ Fe stng,
trnsp-trnsl, fri-frm, vf-f gr, occ m gr,
ang-sbang, sbsph, mod srt, wk-mod
calc cmt, com blk lith, tr glau, pr vis
por, no shw

MD: 4124.38 m Azi: 183.62°
TVD: 2660.0 m Incl: 77.56°



WOB: 5-17klbf
RPM: 144-150
GPM: 661-758
SPP: 2903-3888psi

08/08/2008

WOB: 5-20klbf
RPM: 144-153
GPM: 707-770
SPP: 3350-3900psi

SST: m lt gy-lt olv gy, tr Fe stng, clr-trnsl, fri-frm, vf-m gr, occ crs gr, ang-sbang, sbsph, pr srt, wk-mod calc cmt, com blk lith, tr glau, pr vis por, no shw

MW: 12.00 ppg FV: 75
PV: 40 YP: 41
Gels: 18/29/25
O/W:74.4/25.6

MD: 4159.10 m Azi: 185.00°
TVD: 2666.1 m Incl: 78.91°

SST: m lt gy-lt olv gy, tr Fe stng, clr-trnsl, fri-frm, vf-m gr, occ crs gr, ang-sbang, sbsph, pr srt, wk-mod calc cmt, com blk lith, tr glau, pr inf por, no shw

MD: 4183.07 m Azi: 187.28°
TVD: 2671.0 m Incl: 81.41°

CLYST: brnsh blk, olv gy, m lt gy i/p, sft-frm, blk-sbblky, n calc, tr carb mat

MD: 4212.97 m Azi: 190.26°
TVD: 2674.5 m Incl: 85.21°

CLYST: brnsh blk, olv gy, m lt gy i/p, sft-frm, blk-sbblky, tr carb mat, n calc

MD: 4242.27 m Azi: 193.94°
TVD: 2675.8 m Incl: 89.34°

SST: m lt gy-lt gy, occ wh, tr Fe stng, trnsp-trnsl, occ opq, fri-hd, v hd i/p, vf-m gr, sbang-sbrndd, sbsph, pr-mod srt, calc cmt, tr glau, tr arg mtrx, abt coal frag, tr micrlam, pr inf por, no shw

MD: 4270.99 m Azi: 195.73°
TVD: 2675.1 m Incl: 92.69°

SST: m lt gy-lt gy, occ wh, tr Fe stng, trnsp-trnsl, occ opq, fri-hd, v hd i/p, vf-m gr, sbang-sbrndd, sbsph, pr-mod srt, calc cmt, tr glau, tr arg mtrx, abt coal frag, tr micrlam, pr inf por, no shw

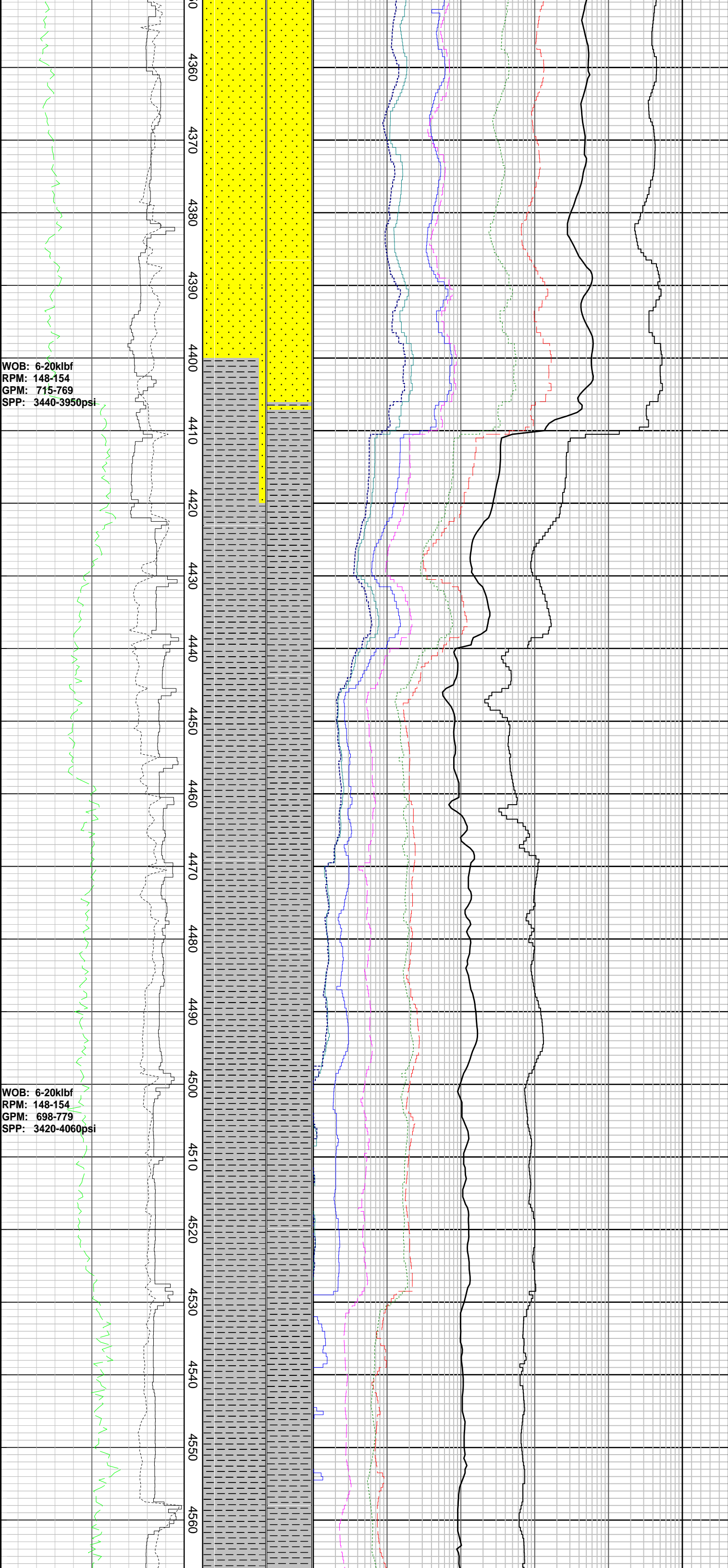
MW: 12.00 ppg FV: 73
PV: 47 YP: 40
Gels: 18/32/34
O/W:74.4/25.6

MD: 4301.34 m Azi: 195.79°
TVD: 2673.9 m Incl: 92.03°

SST: m lt gy-lt gy, occ wh, tr Fe stng, trnsp-trnsl, occ opq, fri-hd, v hd i/p, vf-m gr, sbang-sbrndd, sbsph, pr-mod srt, calc cmt, tr glau, tr arg mtrx, abt coal frag, tr micrlam, pr inf por, no shw

MD: 4331.01 m Azi: 195.62°
TVD: 2672.6 m Incl: 92.98°

SST: m lt gy-lt gy, occ wh, tr Fe stng, trnsp-trnsl, occ opq, fri-hd, v hd i/p, vf-m gr, sbang-sbrndd, sbsph, pr-mod



coal frag, tr micrlam, pr inf por, no shw

MD: 4360.69 m	Azi: 195.41°
TVD: 2671.6 m	Incl: 90.97°

SST: m lt gy-lt gy, occ wh, tr Fe stng, trnsp-trnsl, occ opq, fri-hd, v hd i/p, vf-m gr, sbang-sbrndd, sbsph, pr-mod srt, calc cmt, tr glau, tr arg mtrx, abt coal frag, tr micrlam, pr inf por, no shw

MD: 4390.61 m	Azi: 193.25°
TVD: 2671.9 m	Incl: 87.74°

CLYST: brnsh blk, olv gy, m lt gy i/p, sft frm, blk-sbbly, tr carb mat, n calc

MD: 4419.25 m	Azi: 189.93°
TVD: 2673.8 m	Incl: 84.58°

CLYST: m dk gy-dk gy, sft frm, occ hd, blk-sbbly, tr carb mat, n calc, grd to Sltst

MD: 4448.12 m	Azi: 190.34°
TVD: 2678.7 m	Incl: 85.64°

CLYST: m dk gy-dk gy, sft frm, occ hd, blk-sbbly, tr carb mat, n calc, grd to Sltst

MD: 4478.07 m	Azi: 191.52°
TVD: 2678.7 m	Incl: 84.87°

CLYST: m dk gy-dk gy, sft frm, occ hd, blk-sbbly, tr carb mat, n calc, grd to Sltst

MD: 4507.60 m	Azi: 193.02°
TVD: 2681.4 m	Incl: 84.61°

MW: 12.00 ppg	FV: 77
PV: 60	YP: 35
Gels: 15/24/27	
O/W: 73.4/26.6	

CLYST: m dk gy-dk gy, sft frm, occ hd, blk-sbbly, tr carb mat, n calc, grd to Sltst

MD: 4538.99 m	Azi: 192.67°
TVD: 2684.4 m	Incl: 84.55°

CLYST: brnsh gy, olv gy, frm-hd, sbbly-sbang, tr carb mat, n calc, grd to Sltst

MW: 12.00 ppg	FV: 75
PV: 60	YP: 33
Gels: 15/24/27	
O/W: 73.4/26.6	

