



Company : Apache

Well : Elver-1

Interval : 3240.00 - 4838.97 meters

Created : 10/Jan/2009 9:39:08 AM

INTEQ

FORMATION EVALUATION LOG

Drilling Rate		MD meters 1:500	TVDRT meters	Cuttings Lithology	Oil Show	Visual Inferred Porosity	Gas Data		Chromatograph Data		Calcmetry	Interpreted Lithology	Lithology Description
ROP (m/hr)	ROP (m/hr)						Gas Hydrocarbon Avg %	Methane ppm	Ethane ppm	Propane ppm			
200	200	200	2.0				0.1 1 10 100	1	100000	1			244mm (9 5/8") casing shoe @ 3243.9 mMDRT
180	180	180	3250				Resistivity Shallow	1	10000	1			Reached 311mm (12 1/4") section TD @ 3248.9 mMDRT @ 1300 hrs on 29th December 2008
160	160	160	2505.6				ohm.m	1	100000	1			POOH @ 3252.0 mMDRT to change the failed MWD tool
140	140	140	3260				Resistivity Deep	1	10000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to CLCLT, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
120	120	120	3270				ohm.m	1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
100	100	100	3280					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
80	80	80	3290					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
60	60	60	3300					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
40	40	40	3310					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
20	20	20	3320					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly
200	200	200	3330					1	100000	1			CALCAREOUS CLAYSTONE: med gy-med lt gy, lt olv gy, abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissempyr, tr ang qtz, tr microfos, sft-frm, amor-sbbkly

SPP: 3880-4250psi

NB4 Smith Mi716
216 mm (8 1/2")
Jets: 7x13
Depth In: 3248.9m
Depth Out: 3252.0m
Drilled: 3.1 m in 0.3 hrs
Grade: 0-1-BT-Z-X-I-PN-DT

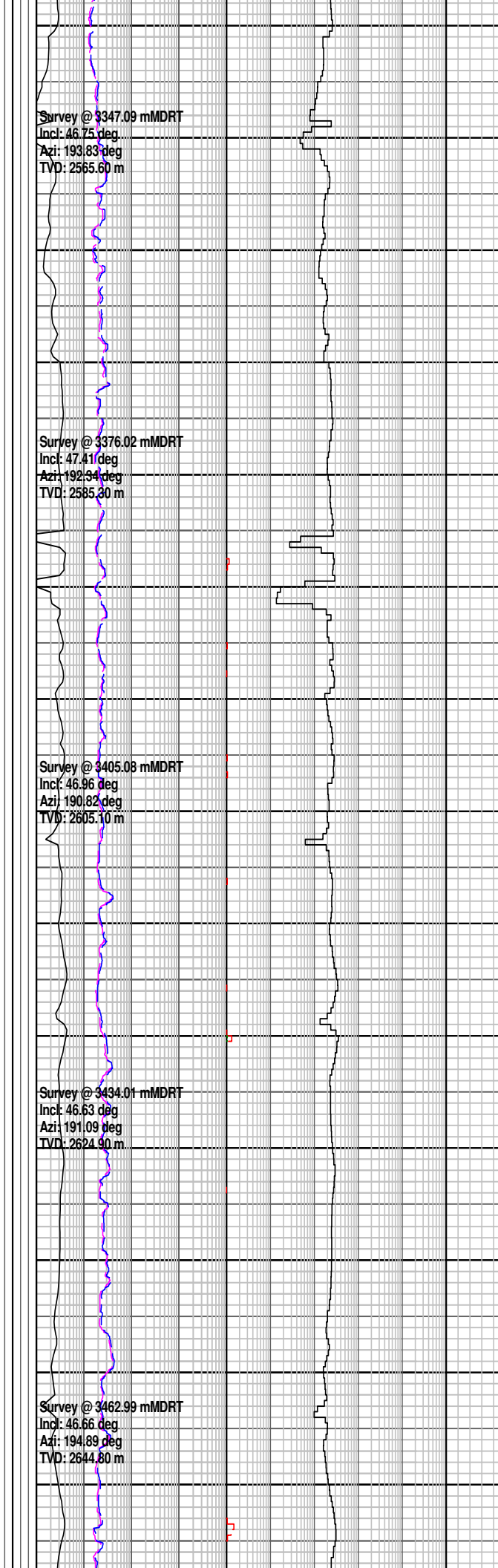
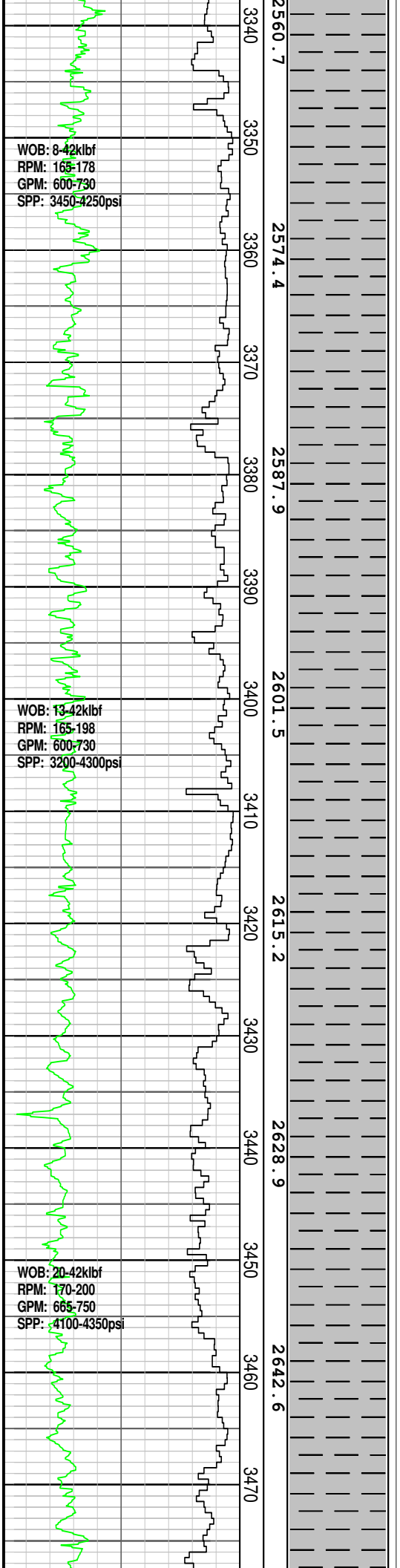
4RR1 Smith Mi716
216mm (8 1/2")
Jets: 7x13
Depth In: 3252.0m
Depth Out: 4433.0m
Drilled: 1181.0 m in 63.7 hrs
Grade: 3-1-CT-A-X-IN-BU-TQ

WOB: 8-41klbf
RPM: 68-178
GPM: 351-779
SPP: 1712-4280psi

Survey @ 3258.55 mMDRT
Incl: 47.12 deg
Azi: 192.57 deg
TVD: 2504.60 m

Survey @ 3289.21 mMDRT
Incl: 46.56 deg
Azi: 190.31 deg
TVD: 2525.60 m

Survey @ 3818.02 mMDRT
Incl: 45.87 deg
Azi: 190.74 deg
TVD: 2545.50 m



carb spks, tr disse
pyr, tr ang qtz, tr microfos,
sft-frm, amor-sbblky

CALCAREOUS CLAYSTONE:
med gy-med lt gy, lt olv gy, tr
micmic, tr v f glauc, tr v f-med
carb spks, tr pyr nod, tr ang
qtz, tr microfos, sft-frm,
amor-sbblky, sbfiss i/p

CALCAREOUS CLAYSTONE:
med gy-med lt gy, lt olv gy, tr
micmic, tr v f glauc, tr v f-med
carb spks, tr pyr nod, tr ang
qtz, tr microfos, sft-frm,
amor-sbblky, sbfiss i/p

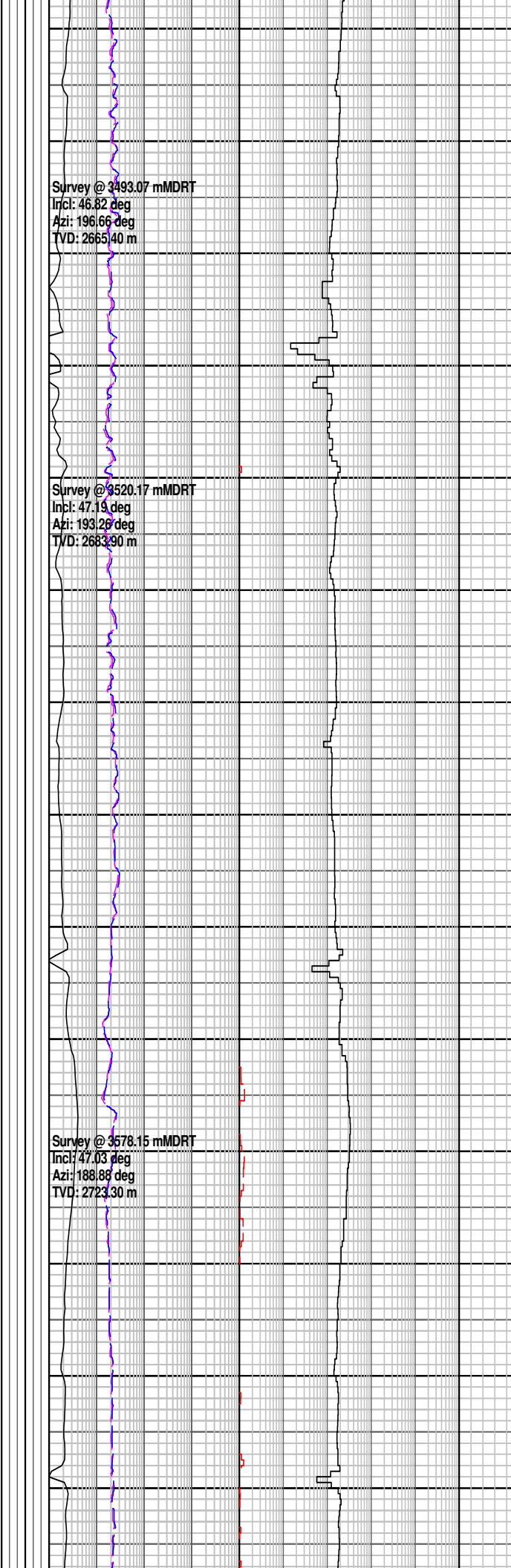
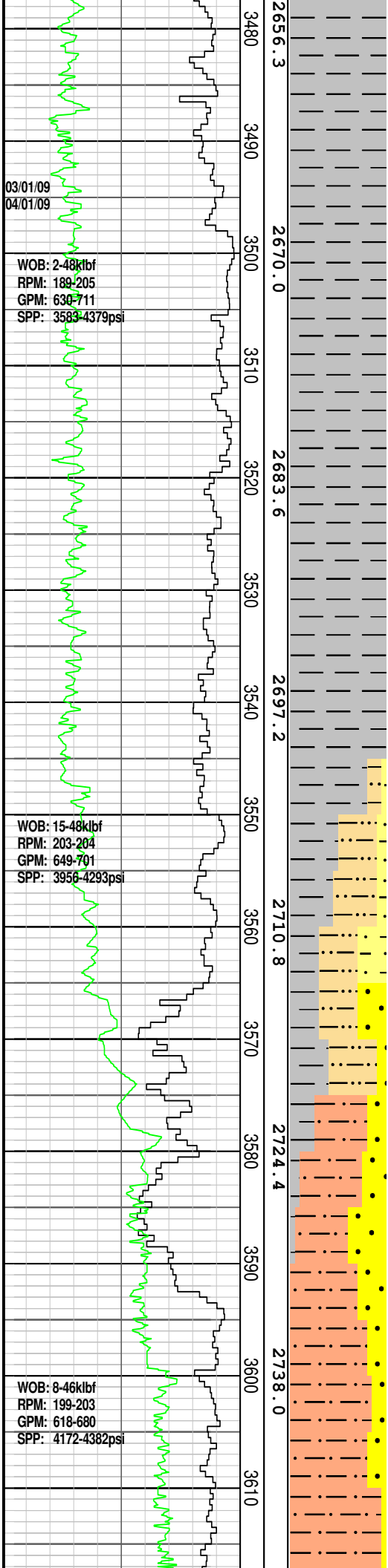
CALCAREOUS CLAYSTONE:
med gy-med lt gy, lt olv gy, tr
micmic, tr f aren, tr v f glauc,
tr v f-med carb spks, tr pyr
nod, tr ang qtz, tr microfos,
sft-frm, amor-sbblky, sbfiss
i/p

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv
gy-lt gnsh gy, mod calc, slt
i/p, tr imcmic, tr v f glauc, tr v
f aren, tr v f carb spks, dom
frm-mod hd, amor-sbblky, tr
sbfiss i/p

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv
gy-lt gnsh gy, mod calc, slt
i/p, tr imcmic, tr v f glauc, tr v
f aren, tr v f carb spks, tr
nod-dissem pyr, dom
frm-mod hd, amor-sbblky

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv
gy-lt gnsh gy, mod calc, slt
i/p, tr imcmic, tr v f glauc, tr v
f aren, tr v f carb spks, tr
dissem pyr, dom frm-mod hd,
amor-sbblky

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv
gy-lt gnsh gy, mod calc, slt
i/p, tr imcmic, tr v f glauc, tr v



f gy, tr v f glauc, tr v f aren, tr v f carb spks, tr dissep pyr, dom frm-mod hd, amor-sbbly

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv gy-lt gnsh gy, mod calc, slt i/p, tr imcmic, tr v f glauc, tr v f aren, tr v f carb spks, tr dissep pyr, dom frm-mod hd, amor-sbbly

MW: 1.15	FV: 70
PV: 19	YP: 31
pH: 10.0	CK: 6.0
GELS: 6/8/11	CL: 53000

CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv gy-lt gnsh gy, mod calc, slt i/p, tr imcmic, tr v f glauc, tr v f aren, tr v f carb spks, tr dissep pyr, dom frm-mod hd, amor-sbbly

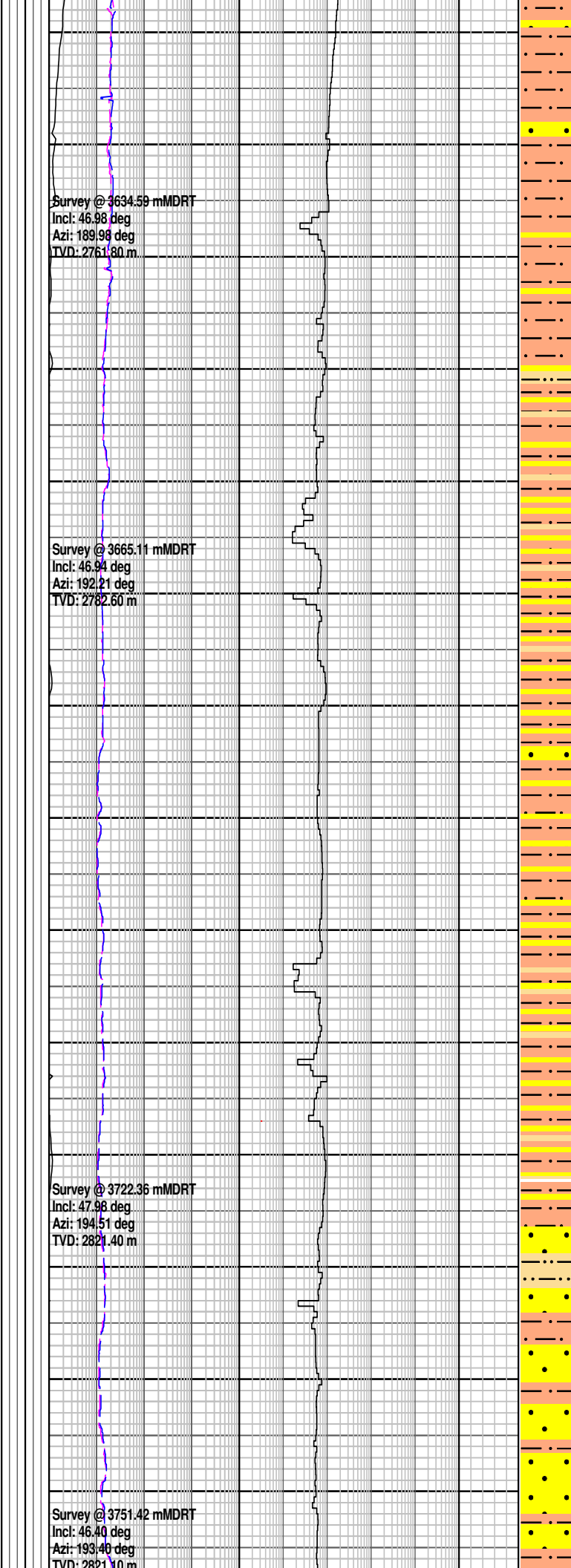
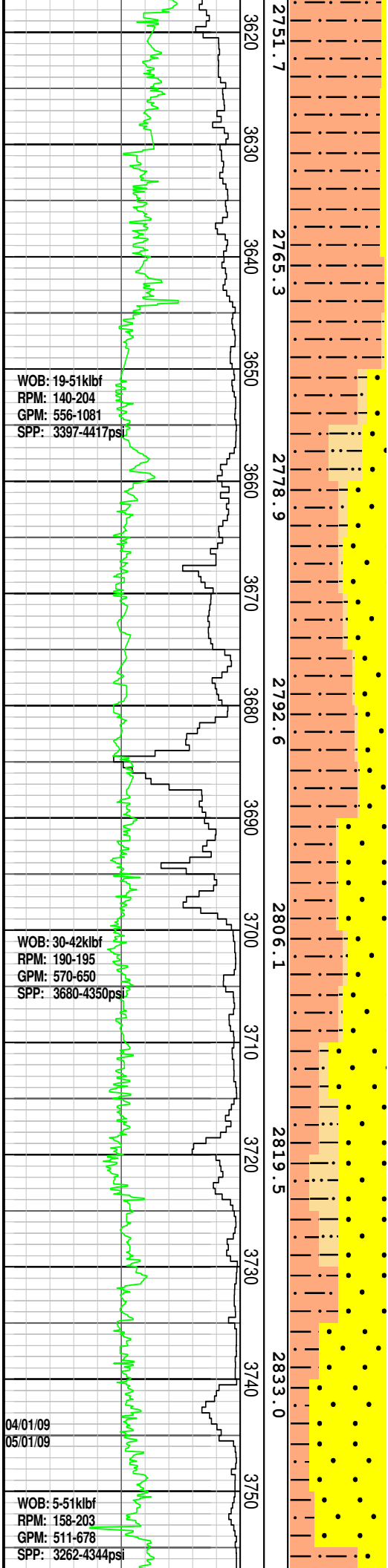
CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv gy, lt gnsh gy, mod calc, v slt, tr imcmic, tr v f glauc, com v f aren grd to SDY SLTST, tr v f carb spks, dom frm-mod hd, amor-sbbly

SANDY SILTSTONE: clr-trnsl, dom v f-f, wl srt, dom sbrndd-rndd, abdt slt mtx sft-frm agg, tr v f glauc, tr calc, p vis por, no hydc fluor

SILTSTONE: gy brn-dus brn, n calc, v aren grd to SANDY SILTSTONE, tr-com micmic, tr glauc, frm, dom sbfiss-sbbly

SANDSTONE: clr-trnsl, lt olv gy-pl yel brn, v f-dom f, tr med-crs, mod srt, dom sbrndd-rndd, occ sft-frm agg wt slt mtx, tr v f glauc, tr pyr nod, dom lse,p-fr vis por, no hydc fluor

SILTSTONE: gy brn-dus brn, dk olv gy, n calc, v aren grd to SANDY SILTSTONE, tr-com micmic, tr glauc, frm, dom sbfiss-sbbly



SILTSTONE: gy brn-dus brn, dk olv gy, n calc, v aren grd to SANDY SILTSTONE, tr-com micmic, tr glauc, frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, lt olv gy-pl yelsh brn, v f-dom f, tr med & crs, mod srt, dom sbrnrd-rnrd, occ sft-frm agg w/ v disp argl mtrx, tr-com v f glauc grd i/p to GLUAC SST, tr pyr nod, dom lse, p-fr por vis, no hydc fluor

GLAUCONITIC SANDSTONE: clr-trnsl, lt gnsh gy, dom v f-f, wl srt, dom sbrnrd-rnrd, sft to frm agg w/v disp argl & glauc mtrx, com to abdt v f glauc & glauc pel, occ lse, p vis por, no hydc fluor

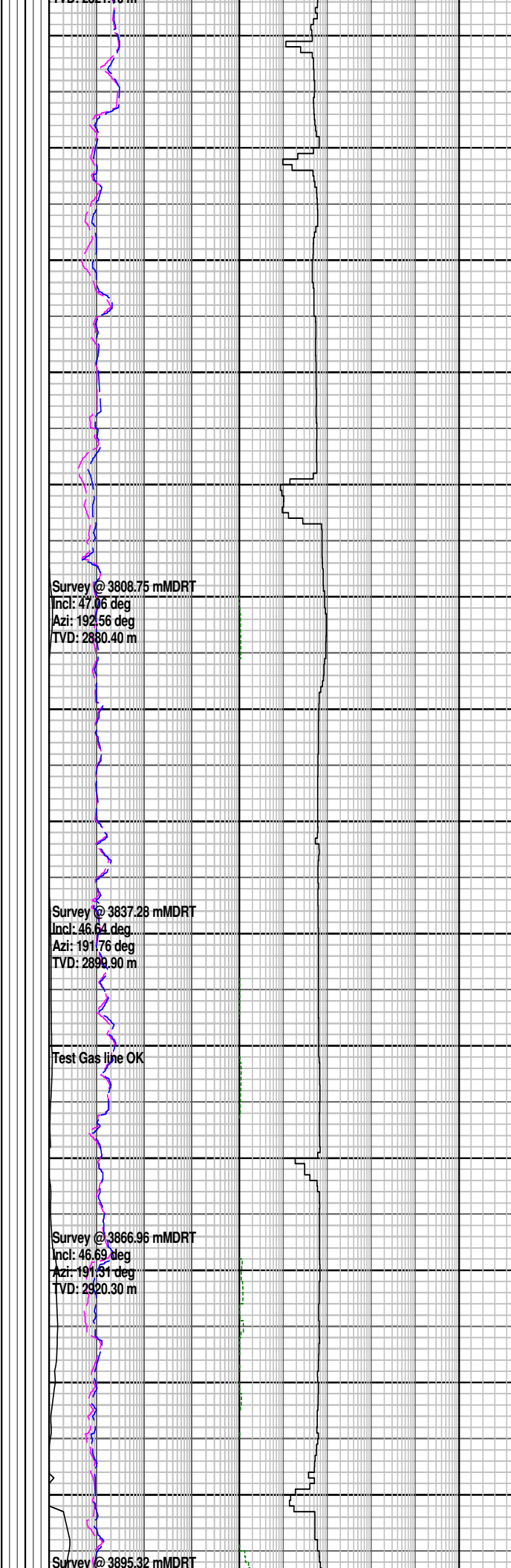
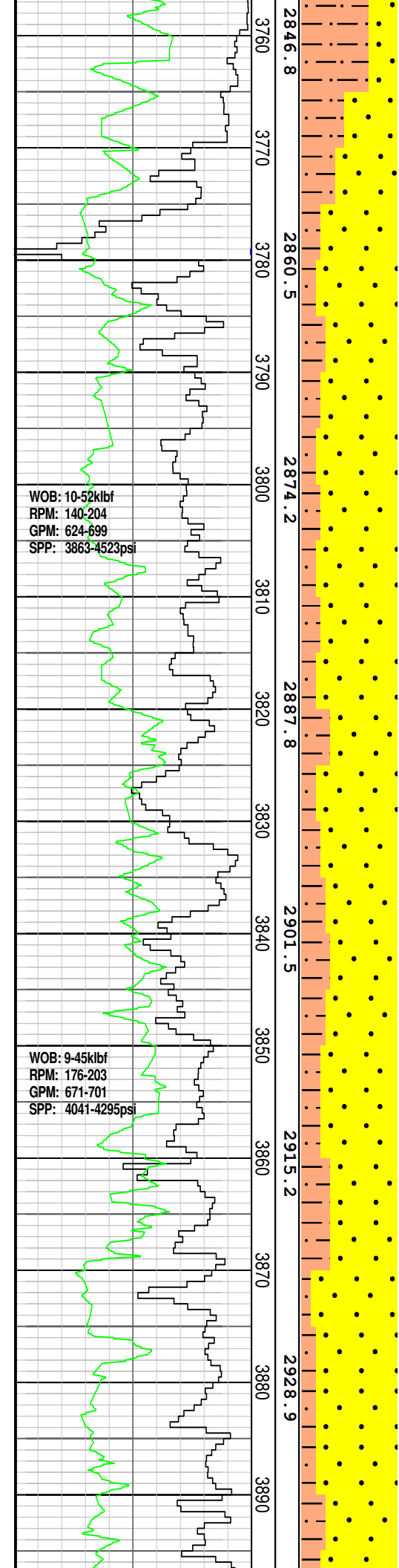
SILTSTONE: gysh brn-dsky olv gy, non calc, v aren, grd to SDY SLTST, tr disse pyr, tr pyr nod, tr-com micmic, tr-com glauc grd to GLAUC SLTST, frm, dom sbfiss-sbblky

SANDY SILTSTONE: off wh-v lt gy, lt gnsh gy, com v f aren grs grd i/p to SLTY SST, tr calc, tr v f glauc, tr micmic, sft-dom frm, sbfiss-sbblky

GLAUCONITIC SANDSTONE: clr-trnsl, lt gnsh gy, dom v f-f, wl srt, dom sbrnrd-rnrd, sft to frm agg w/ v disp lt gy-dk gnsh gy glauc argl mtrx, com-abdt v f-med glauc grs, occ lse, p vis por, no hydc fluor

SILTSTONE: olv gy-lt gy, gysh brn-dsky brn, non calc, v aren, grd to SDY SLTST, tr disse pyr, tr pyr nod, tr-com micmic, tr-com glauc grd to GLAUC SLTST, frm, dom sbfiss-sbblky

GLAUCONITIC SANDSTONE: clr-trnsl, lt gnsh gy, dom v f-f, tr crs grs, wl srt, dom sbrnrd-rnrd, sft to frm agg w/ v disp lt gy-dk gnsh gy glauc argl mtrx, com-abdt v f-med



glauc grs, occ lse, p vis por, no hydc fluor

SILTSTONE: olv gy-dk olv gy, gysh brn-dsky brn, non calc, v aren grd to SDY SLTST, tr pyr nod, tr-com micmic, tcom f com glauc grd to GLAUC SLTST, frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, tr frs, med-v crs, dom crs, mod srt, ang-sbang, r sbrnnd, clr, lse, p-fr por, no hydc fluor

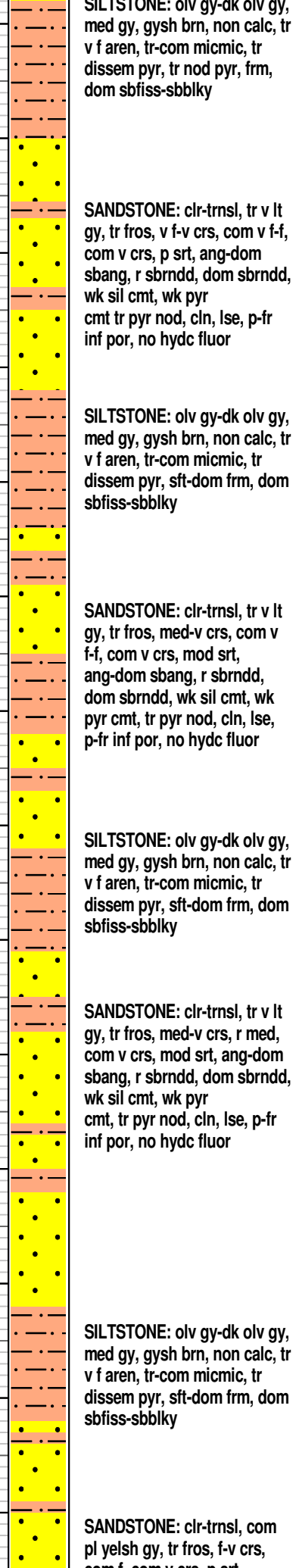
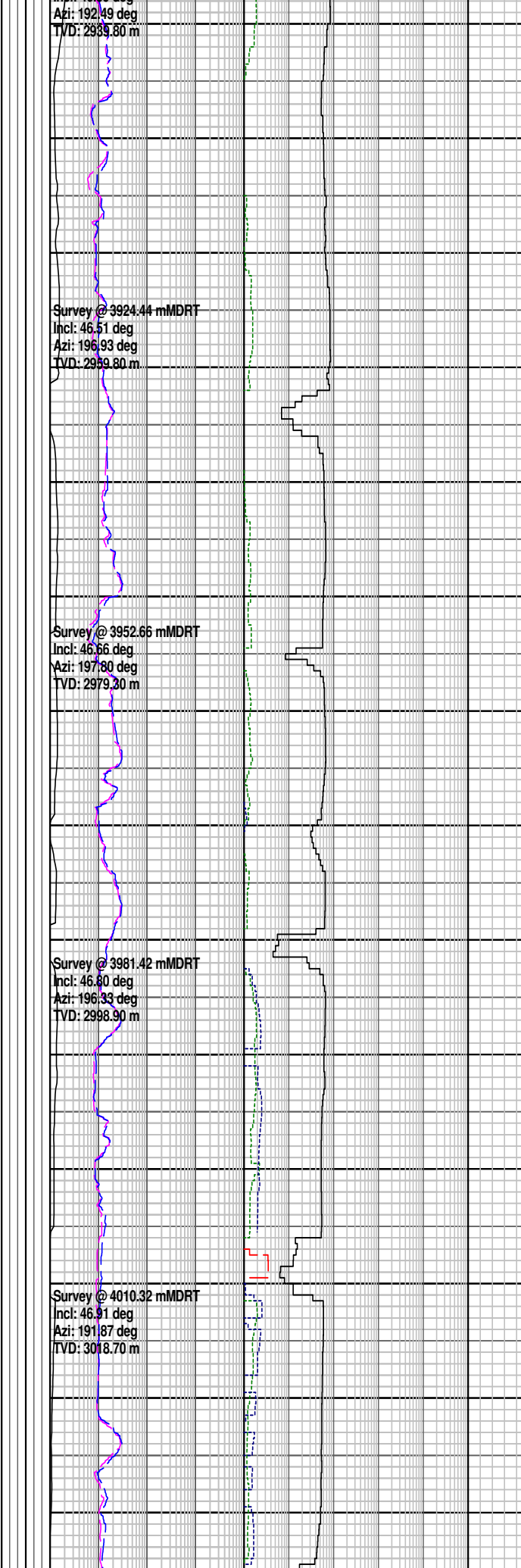
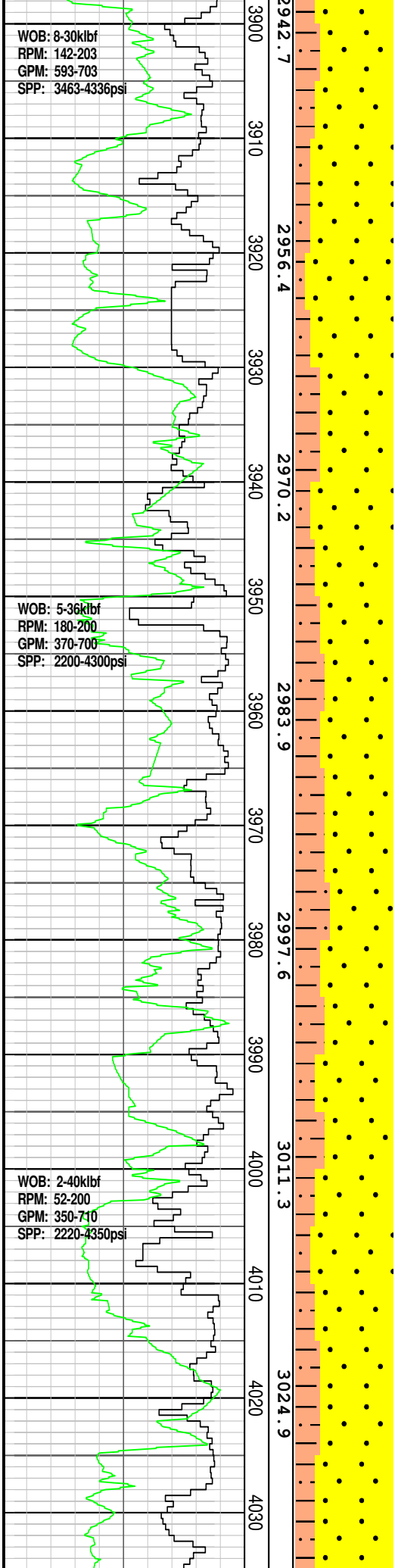
SANDSTONE: clr-trnsl, tr lt gy, tr frs, dom crs-v crs, mod srt, ang-sbang, r sbrnnd, clr, lse, tr pyt nod, p-fr por, no hydc fluor

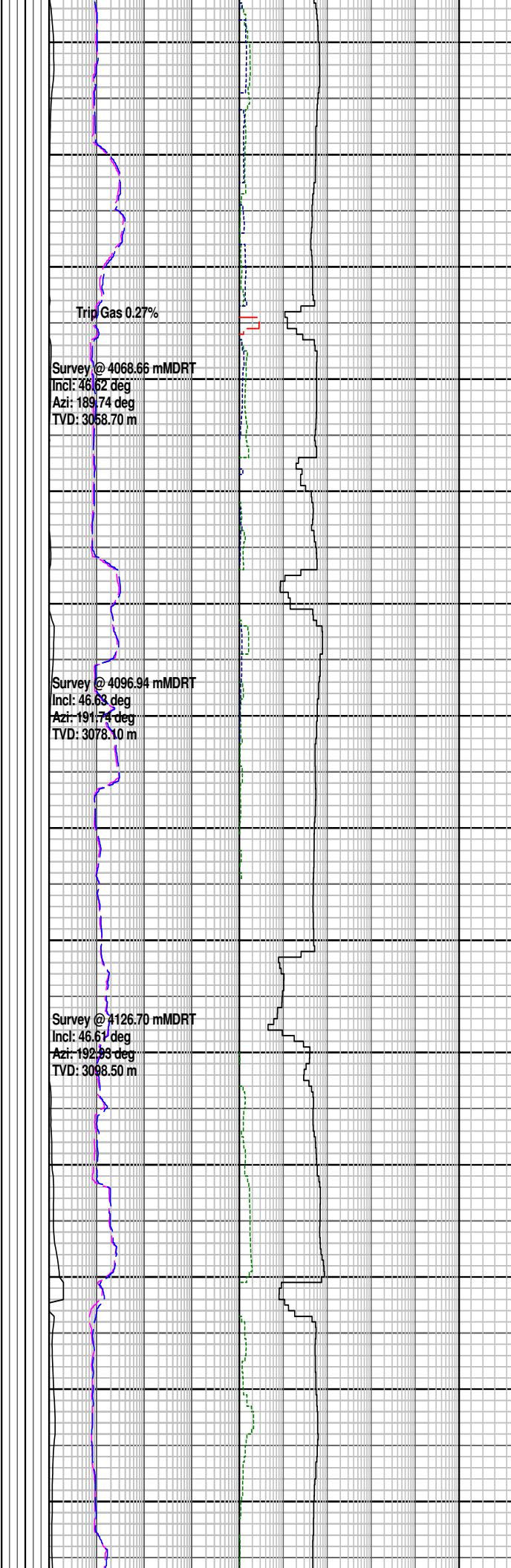
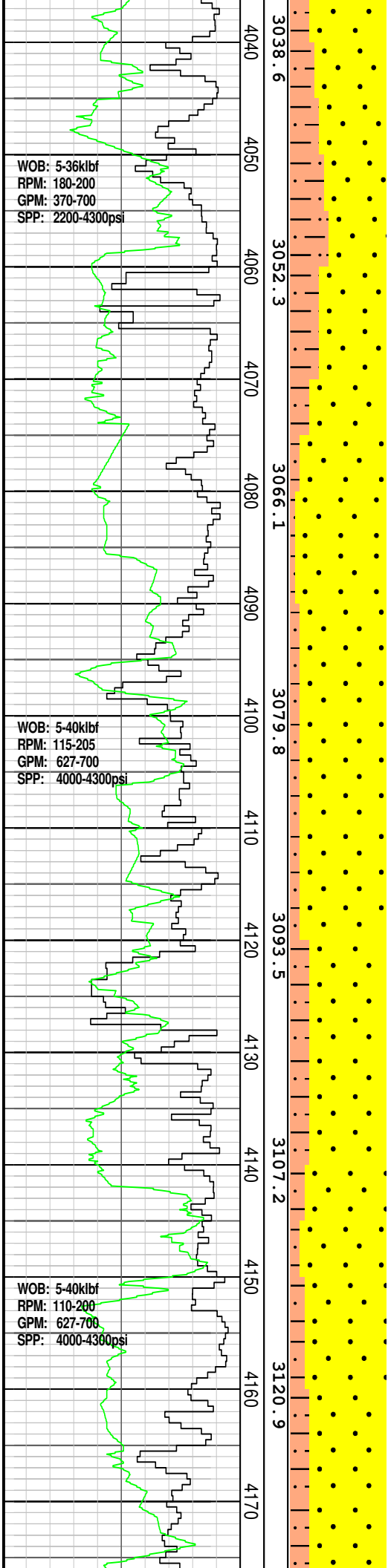
SILTSTONE: olv gy-dk olv gy, gysh brn-dsky brn, non calc, v aren grd to SDY SLTST, tr pyr nod, tr-com micmic, tcom f com glauc grd to GLAUC SLTST, frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, tr v lt gy, tr fros, med-v crs, dom crs-v crs, wl srt, ang-dom sbang, r sbrnnd, wk sil cmt, wk pyr cmt, tr pyr nod, cln, lse, pr-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk olv gy, med gy, gysh brn, non calc, tr v f aren, tr-com micmic, tr disse pyr, tr nod pyr, frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, tr v lt gy, tr fros, v f-v crs, com v f-f, com v crs, p srt, ang-dom sbang, r sbrnnd, dom sbrnnd, wk sil cmt, wk pyr cmt on crs grs, tr pyr nod, cln, lse, pr-fr inf por, no hydc fluor





ang-dom sbang, r sbrndd, dom sbrndd, wk sil cmt, wk pyr cmt, tr pyr nod, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr disse pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, com pl yelsh gy-pl yelsh or, tr fros, med-v crs, dom crs-v crs, mod srt, ang-dom sbang, r sbrndd, dom sbrndd, wk sil cmt, wk pyr cmt, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr disse pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbblky

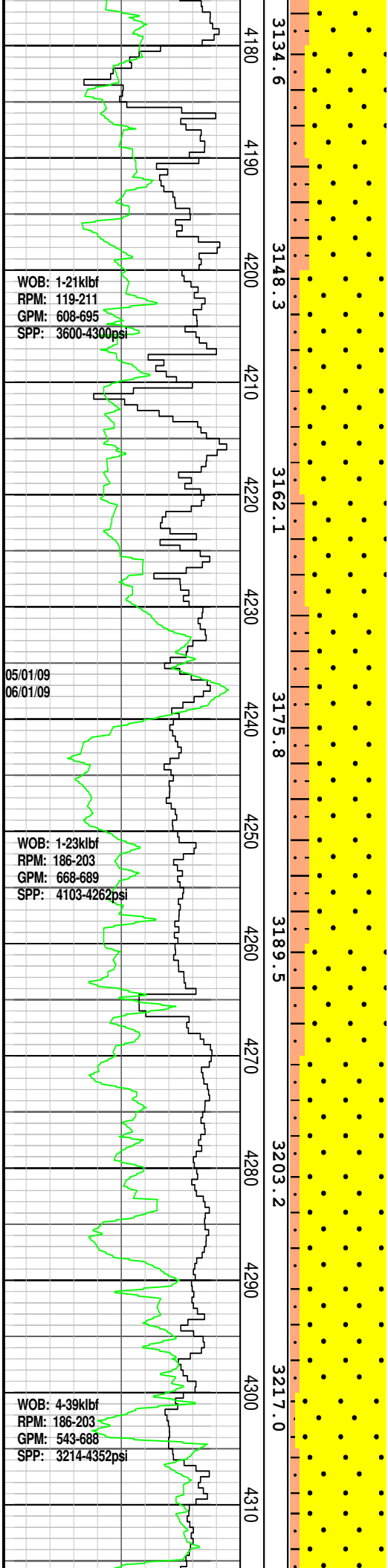
SANDSTONE: clr-trnsl, com pl yelsh gy-pl yelsh or, tr fros, med-v crs, dom crs-v crs, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr disse pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbblky

SANDSTONE: clr-trnsl, r pl yelsh gy-pl yelsh or, tr fros, med-v crs, dom crs-v crs, mod srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, cln, lse, p-fr inf por, no hydc fluor

SANDSTONE: clr-trnsl, r pl yelsh gy-pl yelsh or, tr fros, med-v crs, dom crs-v crs, mod srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, tr nod pyr, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr



Survey @ 4183.93 mMDRT
Incl: 46.78 deg
Azi: 191.20 deg
TVD: 3137.80 m

Survey @ 4241.84 mMDRT
Incl: 46.79 deg
Azi: 183.00 deg
TVD: 3177.50 m

Survey @ 4270.08 mMDRT
Incl: 46.59 deg
Azi: 179.28 deg
TVD: 3195.90 m

dissem pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbbly

SANDSTONE: clr-trnsl, r pl yelsh gy-pl yelsh or, tr fros, f-v crs, dom crs-v crs, tr f, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, tr nod pyr, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr dissem pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbbly

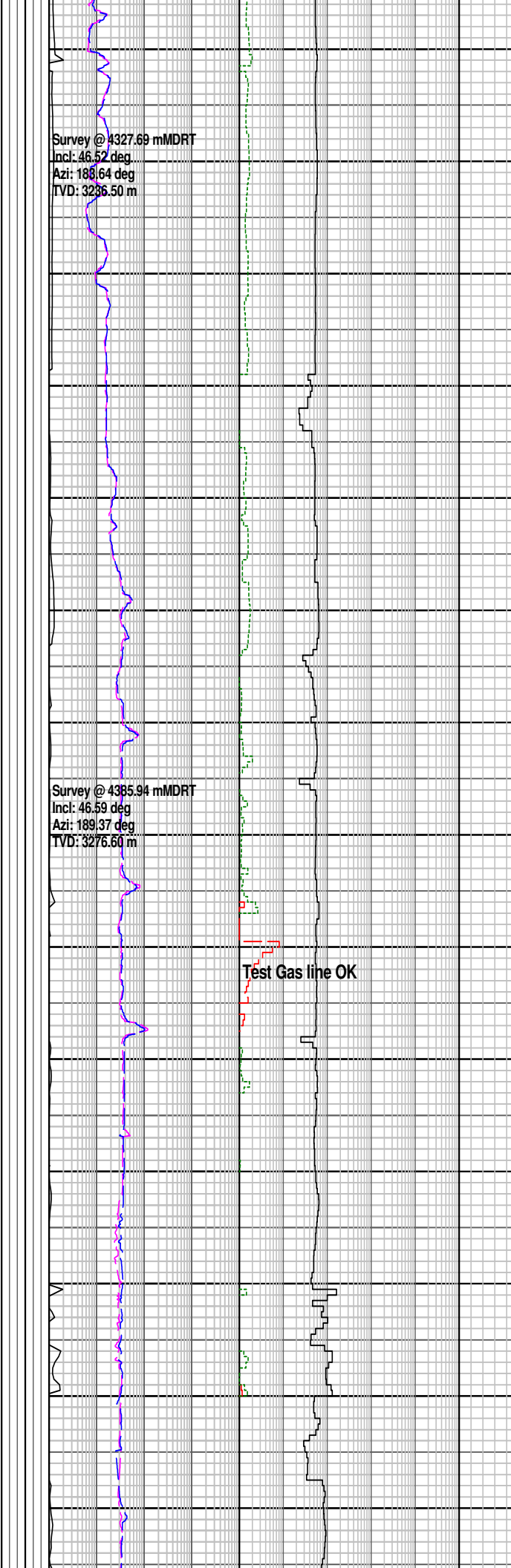
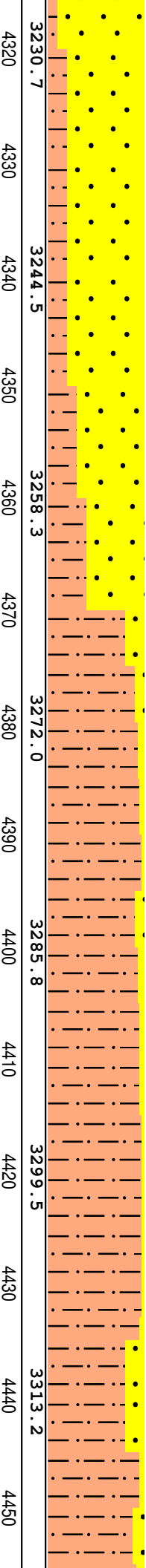
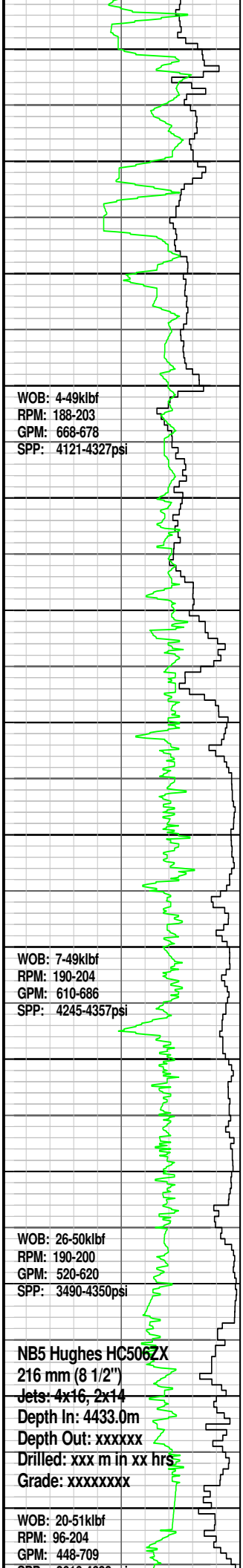
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SANDSTONE: clr-trnsl, r pl yelsh gy-pl yelsh or, tr fros, f-v crs, dom crs-v crs, tr f, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, tr nod pyr, cln, lse, p-fr inf por, no hydc fluor

SANDSTONE: clr-trnsl, tr fros, f-v crs, com f, com v crs, tr f, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, cln, lse, p-fr inf por, no hydc fluor

SANDSTONE: clr-trnsl, tr fros, f-v crs, min f, com v crs, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, tr nod pyr, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-mnr micmic, tr



dissem pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbbblky

SANDSTONE: clr-trnsl, tr fros, med-v crs, dom crs-v crs, tr f, mod srt, ang-dom sbang, mnr sbrndd, wk sil cmt, wk pyr cmt, cln, tr pyr nod, lse, p-fr inf por, no hydc fluor

SANDSTONE: clr-trnsl, tr fros, med-v crs, dom crs-v crs, tr f, mod srt, ang-dom sbang, mnr sbrndd, wk sil cmt, wk pyr cmt, cln, r pyr nod, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh gy, med dk gy, non calc, tr v f aren, tr-mnr micmic, tr v f glauc grs, sft-dom frm, dom sbfiss-sbbblky

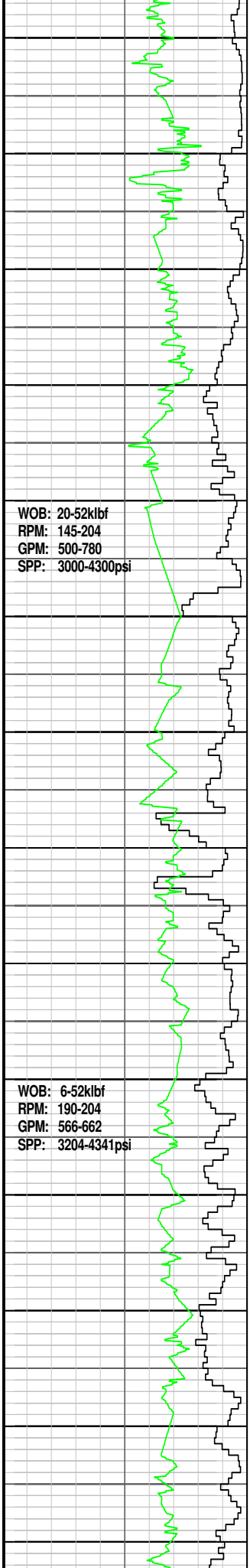
SILTSTONE: lt gy-med gy, med dk gy-tr gy blk, non calc, tr v f aren, tr-mnr micmic, tr-com dissem pyr, tr-com pyr nod, tr v f glauc, sft-dom frm, dom sbfiss-sbbblky

SILTSTONE: lt gy-med gy, med dk gy-tr gy blk, non calc, tr v f aren, tr-mnr micmic, tr-com dissem pyr, tr-com pyr nod, tr v f glauc, sft-dom frm, dom sbfiss-sbbblky

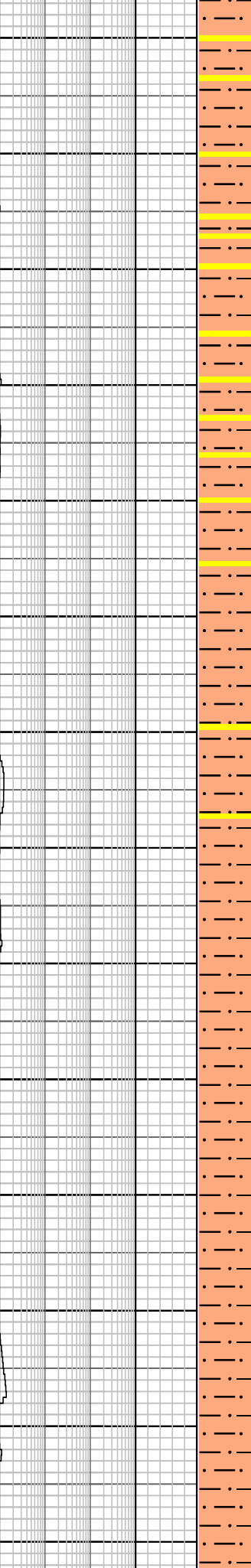
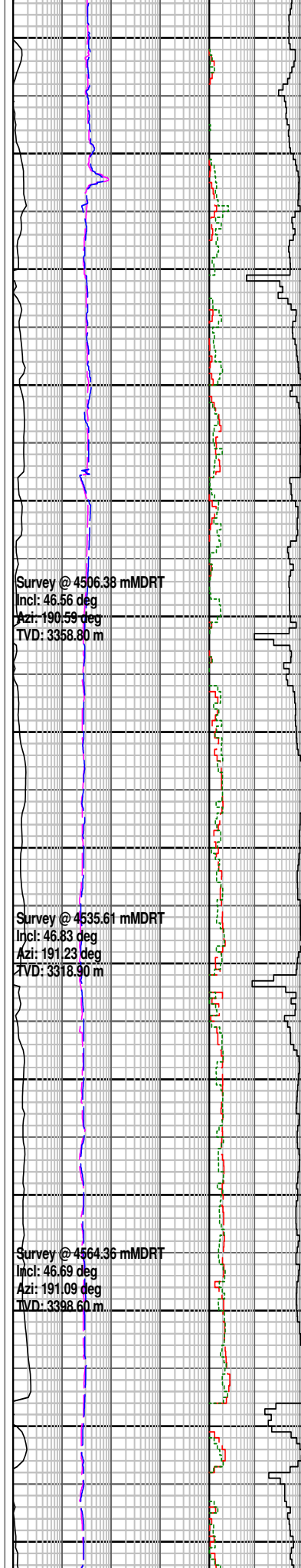
SANDSTONE: clr-trnsl, tr fros, med-v crs, dom crs-v crs, tr f, mod srt, ang-dom sbang, mnr sbrndd, wk sil cmt, wk pyr cmt, cln, r pyr nod, lse, p-fr inf por, no hydc fluor

POOH @ 4433.0 mMDRT to pick up drill pipe & change Bit

SILTSTONE: lt gy-med gy, med dk gy-tr gy blk, com dsk brn, non calc, tr v f aren, tr-mnr micmic, tr-com dissem pyr, tr-com pyr nod, tr v f glauc, sft-dom frm, dom sbfiss-sbbblky



4460 3327.0
4470 3340.7
4480 3354.5
4490 3368.2
4500 3381.9
4510 3395.6
4520 3409.3
4530
4540
4550
4560
4570
4580
4590



SILTSTONE: lt gy-med gy, med dk gy-gy blk gy, com dsky brn, non calc, tr v f aren, tr-mnr micmic, tr dissem pyr, tr pyr nod, tr v f glauc, sft-dom frm, r mod hd, disp, sbfiss-sbblky, amor i/p

SANDSTONE: 1:3% clr-trnsl, tr v lt gy, dom v f-f, wl srt, dom sbrnrd-sbang, v f-f grs, occ w/ v disp lt gy argl mtrx that is washed out, p-fr inf por, no hydc fluor

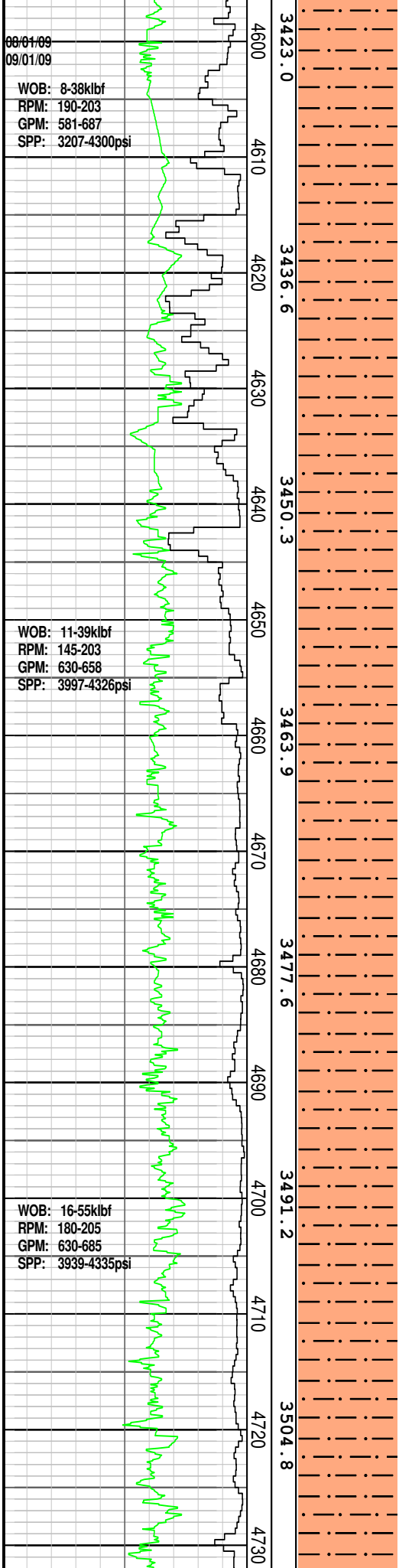
SANDSTONE: 2:3% (possible cavings), clr-trnsl, tr v lt gy, crs-v crs, wl srt, dom sbang-sbrnrd, wl sil cmt & wk pyr cmt on crs grs, tr nod pyr, dom cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr gnsh gy, non calc, tr v f aren, tr-mnr micmic, tr dissem pyr, tr pyr nod, tr v f glauc, sft-dom frm, sbfiss-sbblky, amor i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr gnsh gy, non calc, tr v f aren, tr-mnr micmic, tr dissem pyr, tr pyr nod, tr v f glauc, sft-dom frm, r mod hd, disp, sbfiss-sbblky, amor i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr gnsh gy, non calc, tr v f aren, tr-mnr micmic, tr dissem pyr, tr pyr nod, tr v f glauc, sft-dom frm, r mod hd, disp, sbfiss-sbblky, amor i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr dk gnsh gy, non calc, tr-r v f aren, tr-mnr micmic, tr nod&dissem pyr, tr v f glauc, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p



Survey @ 4595.29 mMDRT
Incl: 47.03 deg
Azi: 194.92 deg
TVD: 3419.70 m

Survey @ 4624.10 mMDRT
Incl: 47.06 deg
Azi: 195.32 deg
TVD: 3439.30 m

Survey @ 4650.20 mMDRT
Incl: 46.84 deg
Azi: 195.16 deg
TVD: 3457.20 m

Survey @ 4680.43 mMDRT
Incl: 47.09 deg
Azi: 194.32 deg
TVD: 3477.80 m

Survey @ 4708.89 mMDRT
Incl: 47.07 deg
Azi: 193.66 deg
TVD: 3497.20 m

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr dk gnsh gy, non calc, tr-r v f aren, tr micmic, tr disse pyr, tr v f glauc, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr dk gnsh gy, non calc, tr-r v f aren, tr micmic, mnv v f lse qtz grs, tr disse pyr, tr v f glauc, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, tr dk gnsh gy, non calc, tr-r v f aren, tr micmic, tr disse pyr, tr v f glauc, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p

SILTSTONE: med lt gy-gy blk, tr brnsh blk, r-mnr dk gnsh gy, non calc, tr v f aren, tr v f lse qtz grs, arg grd to SLTY CLYST i/p, tr micmic, tr disse pyr, tr v f glauc, tr glauc cl pel, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p

SILTSTONE: med lt gy-olv gy, tr brnsh blk, r-mnr dk gnsh gy, non calc, tr v f aren, tr v f lse qtz grs, arg grd to SLTY CLYST i/p, tr micmic, tr disse pyr, tr v f glauc, tr glauc cl pel, sft-dom frm, r mod hd, amor-sbblky, sbfiss i/p

