



Company : Apache

Well : Elver-1

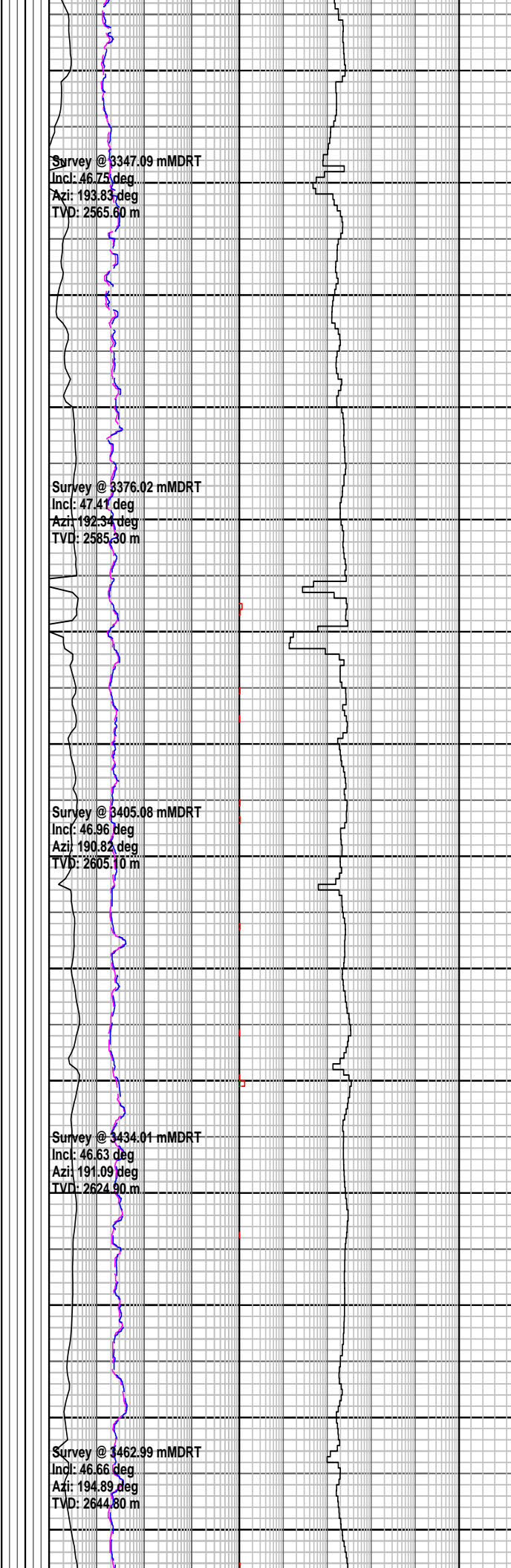
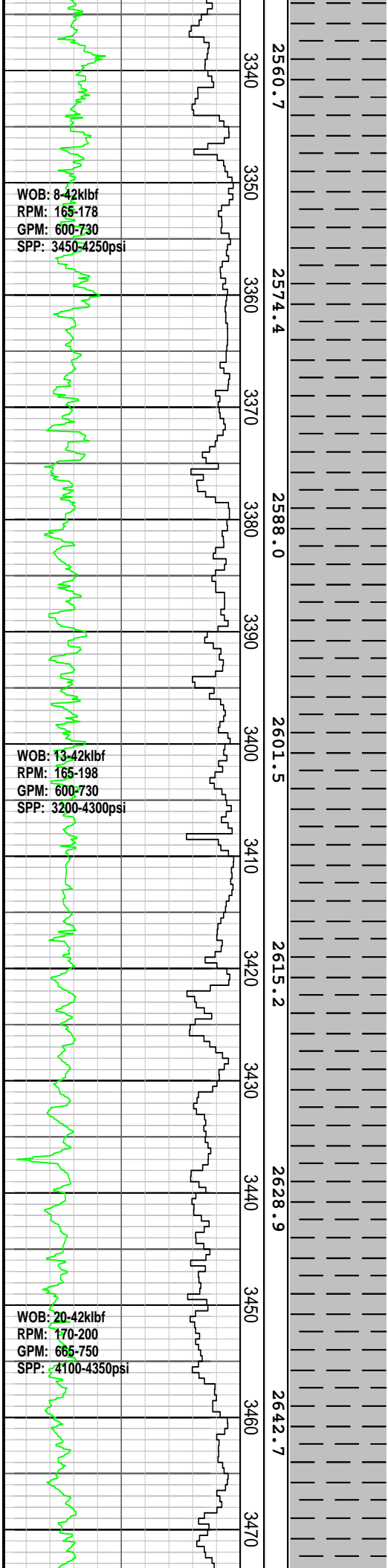
Interval : 3236.00 - 4439.34 meters

Created : 06/Jan/2009 4:35:10 PM

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)							Gas Hydrocarbon Avg %		Methane ppm				
<p>ROP (m/hr) scale: 20 to 200</p> <p>ROP (m/hr) scale: 20 to 400</p> <p>Gamma Ray scale: 200</p> <p>API scale: 200</p>							<p>0.1 1 10 100</p> <p>Resistivity Shallow 1000</p> <p>ohm.m</p> <p>Resistivity Deep 1000</p> <p>ohm.m</p>	<p>1</p> <p>Ethane ppm 100000</p> <p>Propane ppm 100000</p> <p>iso-Butane ppm 100000</p> <p>n-Butane ppm 100000</p> <p>iso-Pentane ppm 100000</p> <p>n-Pentane ppm 100000</p>					
<p>WOB: 10-20kibf</p> <p>RPM: 180-195</p> <p>GPM: 805-880</p> <p>SPP: 3880-4250psi</p>		3240	2492.0									<p>amor-sbblky,</p> <p>244mm (9 5/8") casing shoe @ 3243.9 mMDRT</p> <p>Reached 311mm (12 1/4") section TD @ 3248.9 mMDRT @ 1300 hrs on 29th December 2008</p> <p>POOH @ 3252.0 mMDRT to change the failed MWD tool</p>	
<p>NB4 Smith Mi716</p> <p>216 mm (8 1/2")</p> <p>Jets: 7x13</p> <p>Depth In: 3248.9m</p> <p>Depth Out: 3252.0m</p> <p>Drilled: 3.1 m in 0.3 hrs</p> <p>Grade: 0-1-BT-Z-X-I-PN-DT</p>		3250	2505.5				<p>Survey @ 3258.55 mMDRT</p> <p>Incl: 47.12 deg</p> <p>Azi: 192.57 deg</p> <p>TVD: 2504.60 m</p>					<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	
<p>4RR1 Smith Mi716</p> <p>216mm (8 1/2")</p> <p>Jets: 7x13</p> <p>Depth In: 3252.0m</p> <p>Depth Out: 4433.0m</p> <p>Drilled: 1181.0 m in 63.7 hrs</p> <p>Grade:</p>		3270	2519.2				<p>Survey @ 3289.21 mMDRT</p> <p>Incl: 46.56 deg</p> <p>Azi: 190.31 deg</p> <p>TVD: 2525.60 m</p>					<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	
<p>WOB: 8-41klbf</p> <p>RPM: 68-178</p> <p>GPM: 351-779</p> <p>SPP: 1712-4280psi</p>		3300	2533.0									<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	
		3310	2546.8				<p>Survey @ 3318.02 mMDRT</p> <p>Incl: 45.87 deg</p> <p>Azi: 190.74 deg</p> <p>TVD: 2545.50 m</p>					<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	
		3320										<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	
		3330										<p>CALCAREOUS CLAYSTONE:</p> <p>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 dissem pyr, tr ang qtz, tr microfos, sft-frm, amor-sbblky</p>	



abdt calc grd to MARL, tr micmic, tr v f glauc, tr v f-med carb spks, tr dissem 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

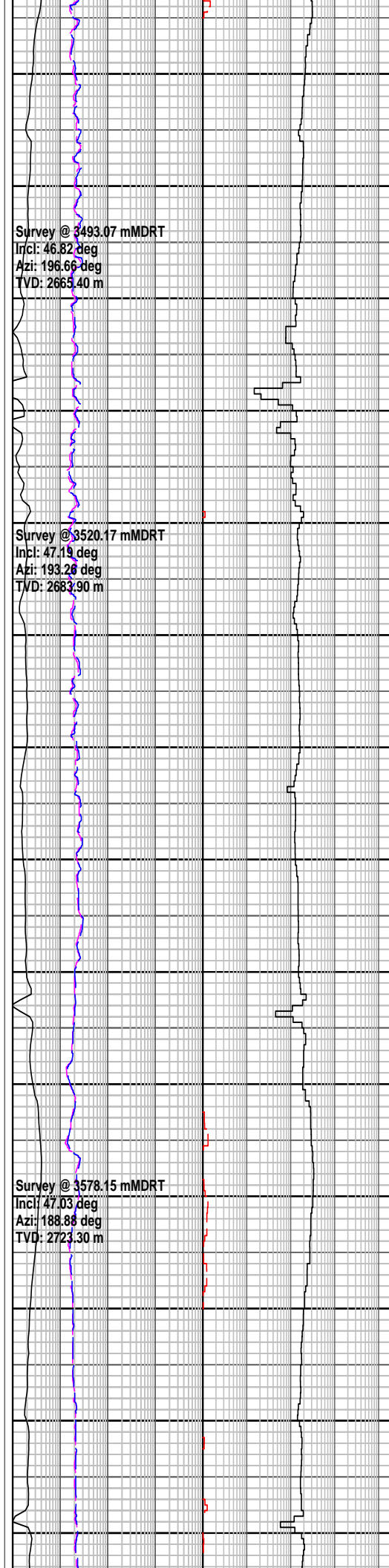
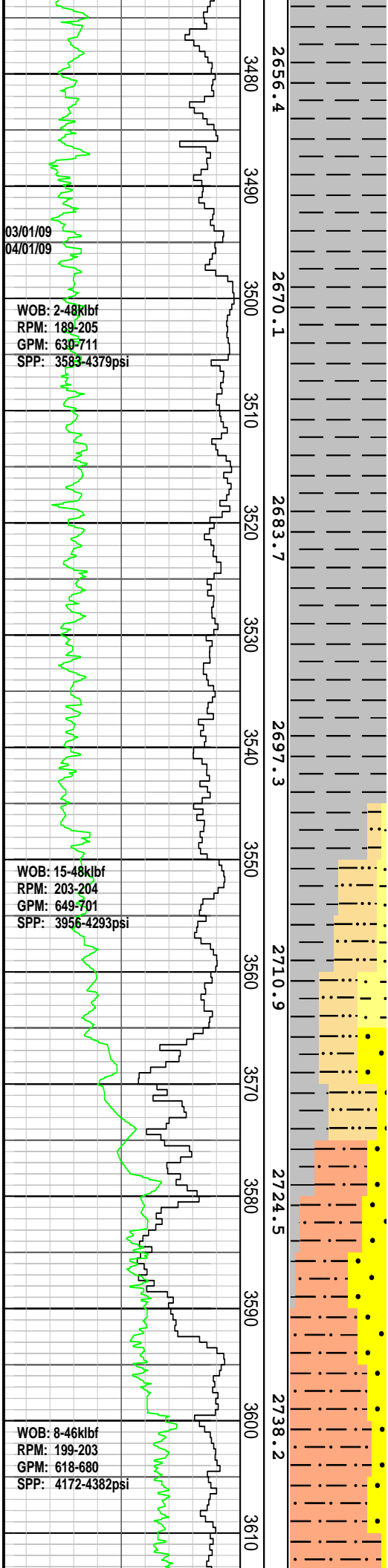
CALCAREOUS CLAYSTONE:
med gy-med lt gy, lt olv gy, tr micmic, tr v f glauc, tr v f-med carb spks, tr pyr nod, tr ang qtz, tr microfos, sft-frm, amor-sbblky, sbfiss i/p

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



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 aren, tr v f carb spks, tr
dissem pyr, dom frm-mod hd,
amor-sbblky

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
dissem pyr, dom frm-mod hd,
amor-sbblky

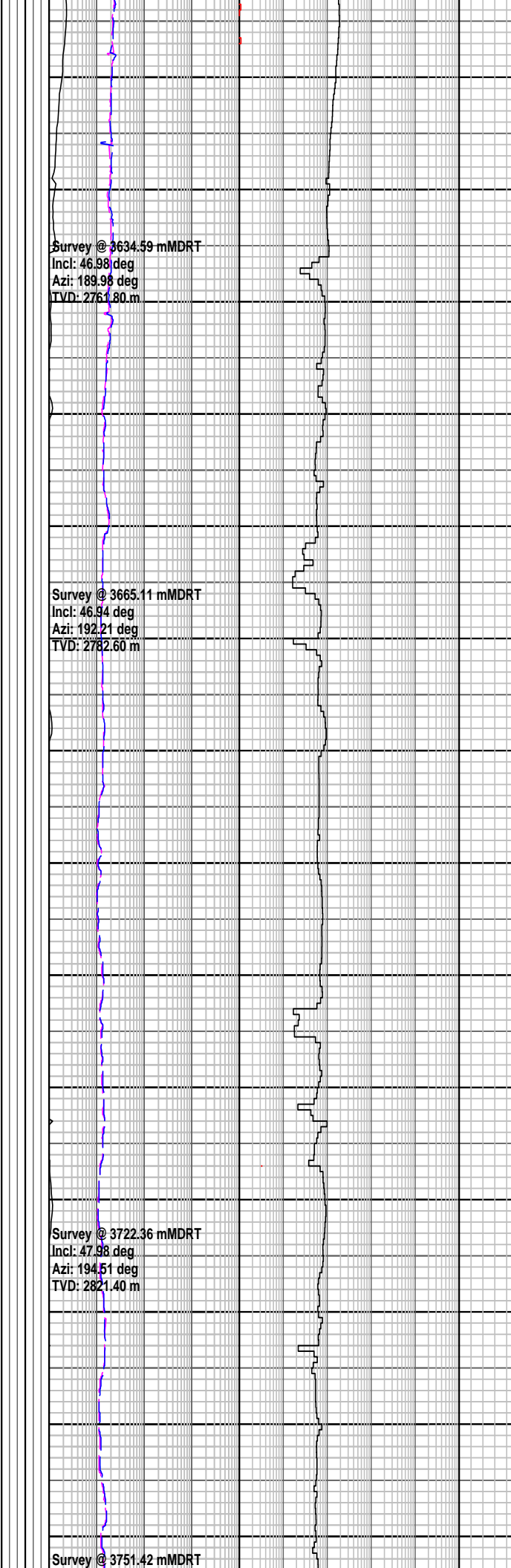
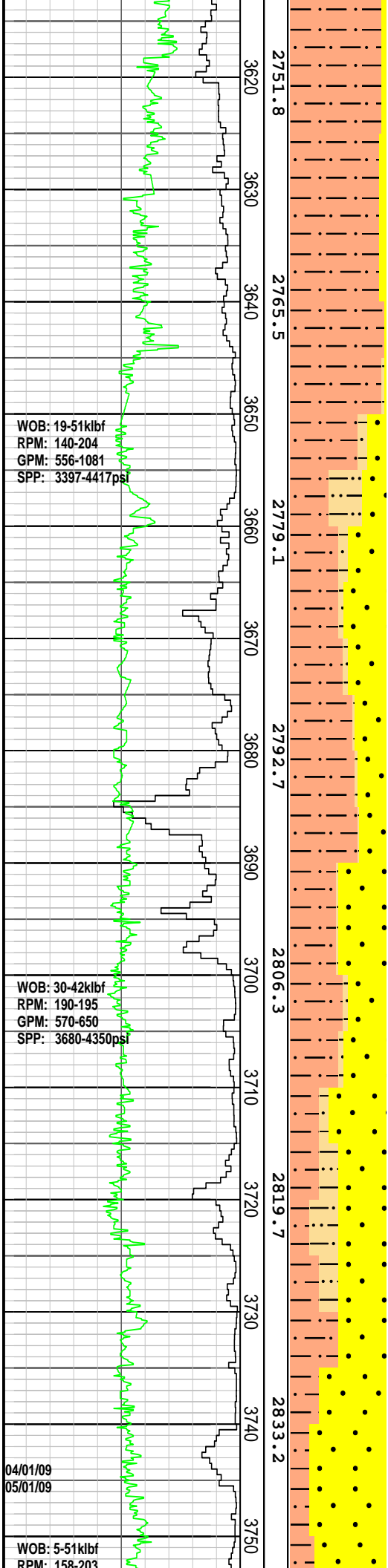
CALCAREOUS CLAYSTONE:
med lt gy-med dk gy, lt olv
gy, lt gnsh gy, mod calc, v
slt, tr imcmic, tr v f glauc,
com v f aren grd to SDY
SLTST, tr v f carb spks, dom
frm-mod hd, amor-sbblky

SANDY SILTSTONE: clr-trnsl,
dom v f-f, wl srt, dom
sbrndd-rnnd, 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-sbblky

SANDSTONE: clr-trnsl, lt olv
gy-pl yel brn, v f-dom f, tr
med-crs, mod srt, dom
sbrndd-rnnd, 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-sbbkly

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

SANDSTONE: clr-trnsl, lt olv gy-pl yelsh brn, v f-dom f, tr med & crs, mod srt, dom sbrnrd-rnnd, occ sft-frm agg w/ v disp argl mtrx, tr-com v f gluac 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-rnnd, 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-sbbkly

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-sbbkly

GLAUCONITIC SANDSTONE: clr-trnsl, lt gnsh gy, dom v f-f, wl srt, dom sbrnrd-rnnd, 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

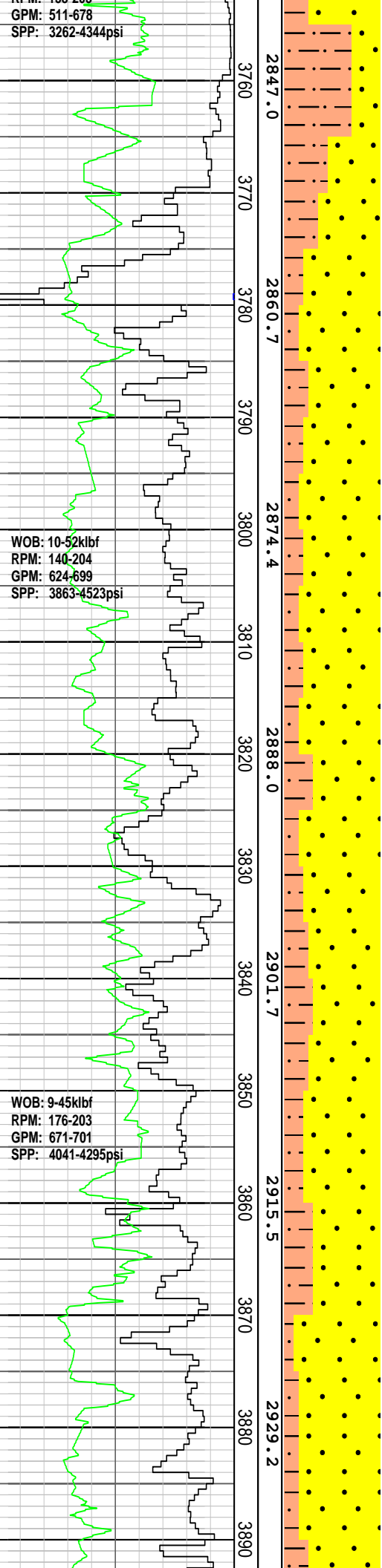
SILTSTONE: olv gy-lt gy, gysh brn-dsky brn, non calc, v aren, grd to SDY SLTST, tr disse pyr, tr pyr nod, tr-com micmic, tr-com glauc grd to GLAUC SLTST, frm, dom sbfiss-sbbkly

GLAUCONITIC SANDSTONE: clr-trnsl, lt gnsh gy, dom v f-f, tr crs grs, wl srt, dom sbrnrd-rnnd, sft to frm agg

GPM: 511-678
SPP: 3262-4344psi

WOB: 10-52klbf
RPM: 140-204
GPM: 624-699
SPP: 3863-4523psi

WOB: 9-45klbf
RPM: 176-203
GPM: 671-701
SPP: 4041-4295psi



2847.0
2860.7
2874.4
2888.0
2901.7
2915.5
2929.2

Incl: 46.40 deg
Azi: 193.40 deg
TVD: 2821.10 m

Survey @ 3808.75 mMDRT
Incl: 47.06 deg
Azi: 192.56 deg
TVD: 2880.40 m

Survey @ 3837.28 mMDRT
Incl: 46.64 deg
Azi: 191.76 deg
TVD: 2899.90 m

Test Gas line OK

Survey @ 3866.96 mMDRT
Incl: 46.69 deg
Azi: 191.51 deg
TVD: 2920.30 m

w/ v disp lt gy-dk gnsh gy
glaucontr, 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 sbrnrd, clr, lse,
p-fr por, no hydc fluor

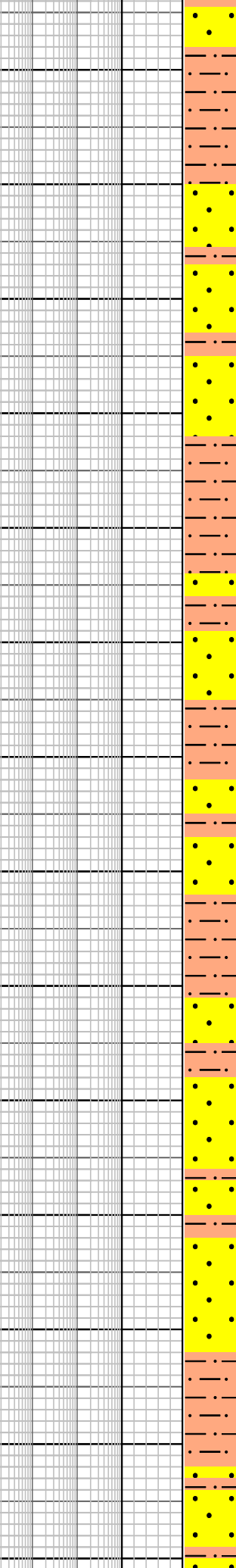
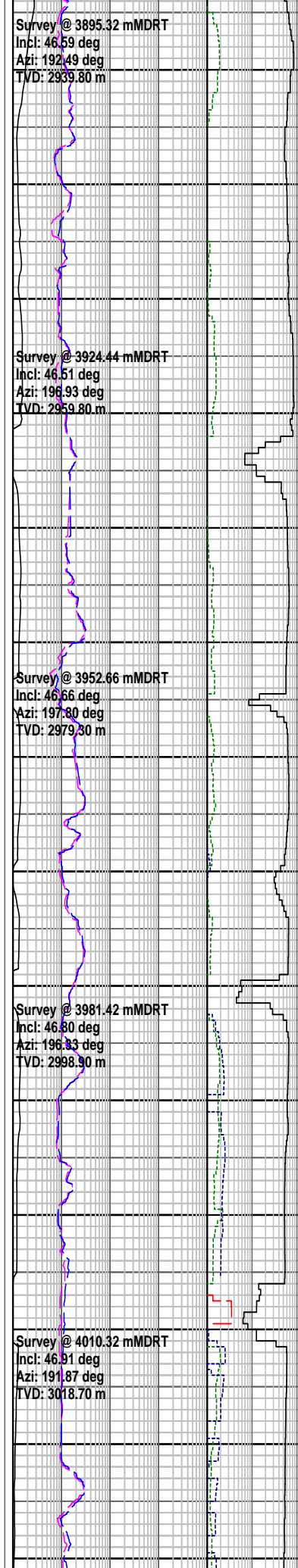
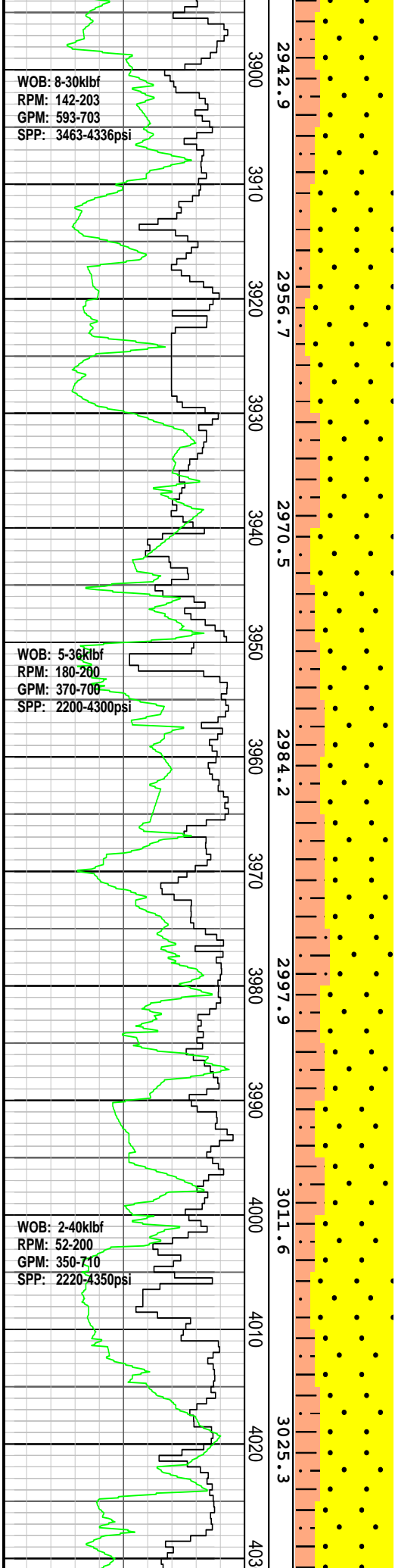
SANDSTONE: clr-trnsl, tr lt
gy, tr frs, dom crs-v crs, mod
srt, ang-sbang, r sbrnrd, clr,
lse, tr pyt nod, p-fr por, no
hydc fluor

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 sbrnrd, 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
dissem 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 sbrnrd, dom
sbrnrd, wk sil cmt, wk pyr
omtrs grs, 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 dissep pyr, tr nod pyr, frm, dom sbfiss-sbblyk

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 sbrndd, dom sbrndd, wk sil cmt, wk pyr tr pyr nod, cln, lse, p-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 dissep pyr, sft-dom frm, dom sbfiss-sbblyk

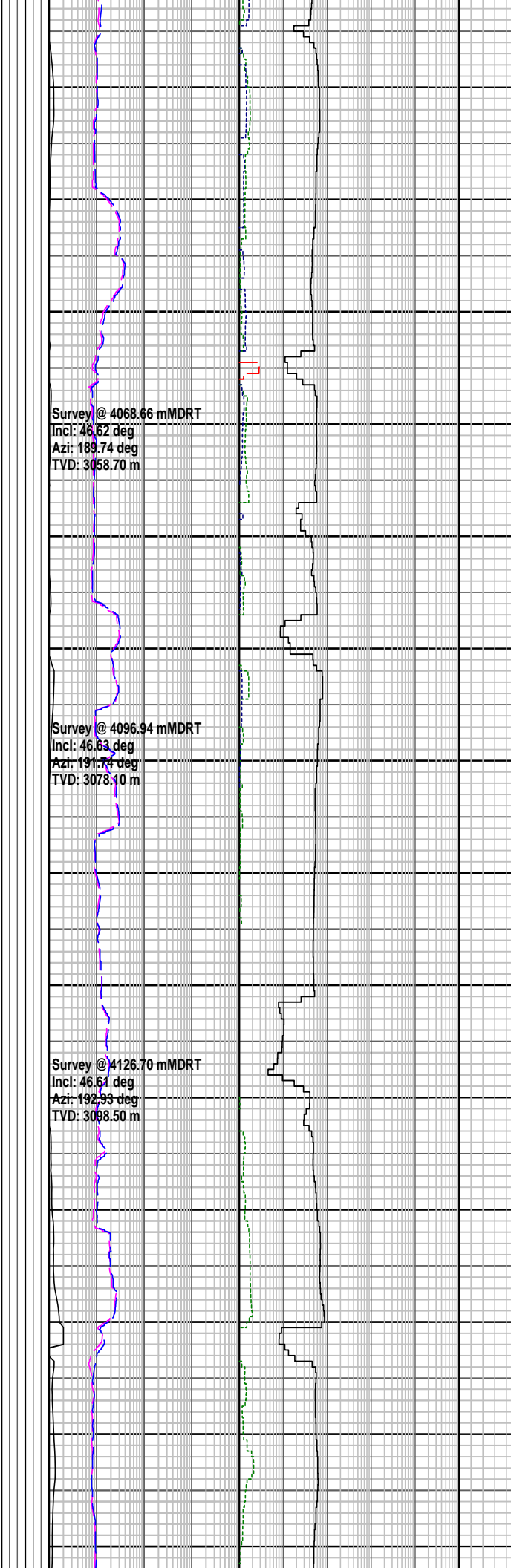
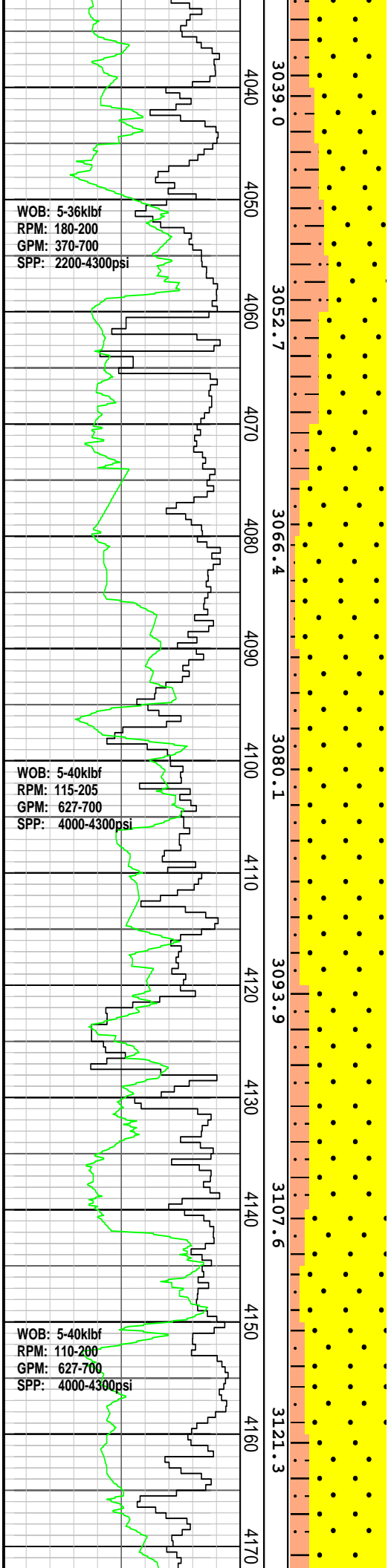
SANDSTONE: clr-trnsl, tr v lt gy, tr fros, med-v crs, com v f-f, com v crs, mod srt, ang-dom sbang, r sbrndd, dom sbrndd, wk sil cmt, wk pyr cmt, tr pyr nod, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk olv gy, med gy, gysh brn, non calc, tr v f aren, tr-com micmic, tr dissep pyr, sft-dom frm, dom sbfiss-sbblyk

SANDSTONE: clr-trnsl, tr v lt gy, tr fros, med-v crs, r med, com v crs, mod srt, ang-dom sbang, r sbrndd, dom sbrndd, wk sil cmt, wk pyr tr pyr nod, cln, lse, p-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 dissep pyr, sft-dom frm, dom sbfiss-sbblyk

SANDSTONE: clr-trnsl, com



pl yelsh gy, tr fros, f-v crs, com f, com v crs, p srt, 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

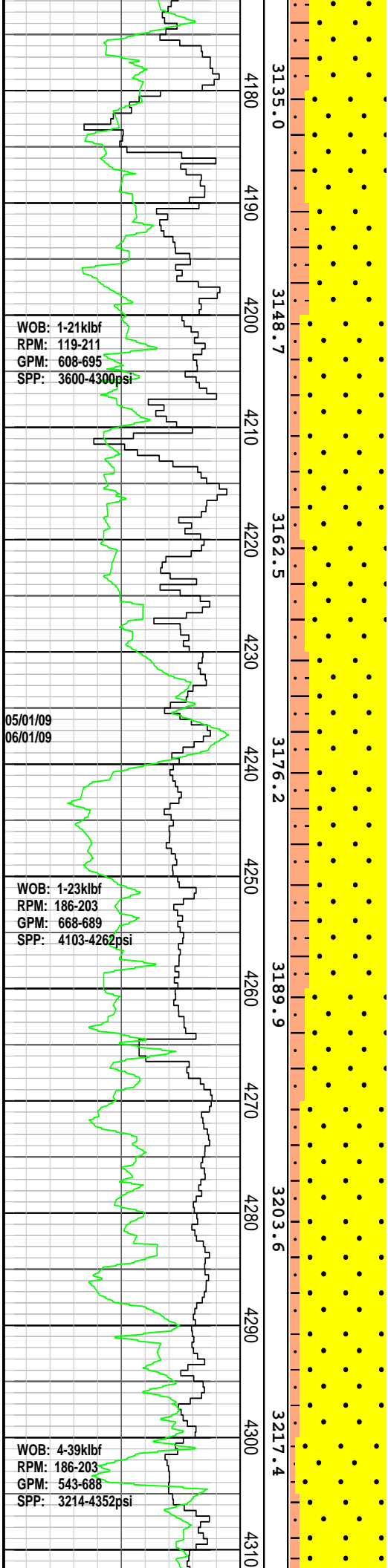
SANDSTONE: clr-trnsl, com pl yelsh gy-pl yelsh or, tr fros, med-v crs, dom crs-v crs, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr cmt, lse, p-fr inf por, no hydc fluor

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, 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 pyr nod, cln, lse, p-fr inf por, no hydc fluor

SILTSTONE: olv gy-dk gnsh



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: 3196.90 m

gy, med dk gy, non calc, tr v f aren, tr-com micmic, tr dissemin pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbblky

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 trnod 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 dissemin pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbblky

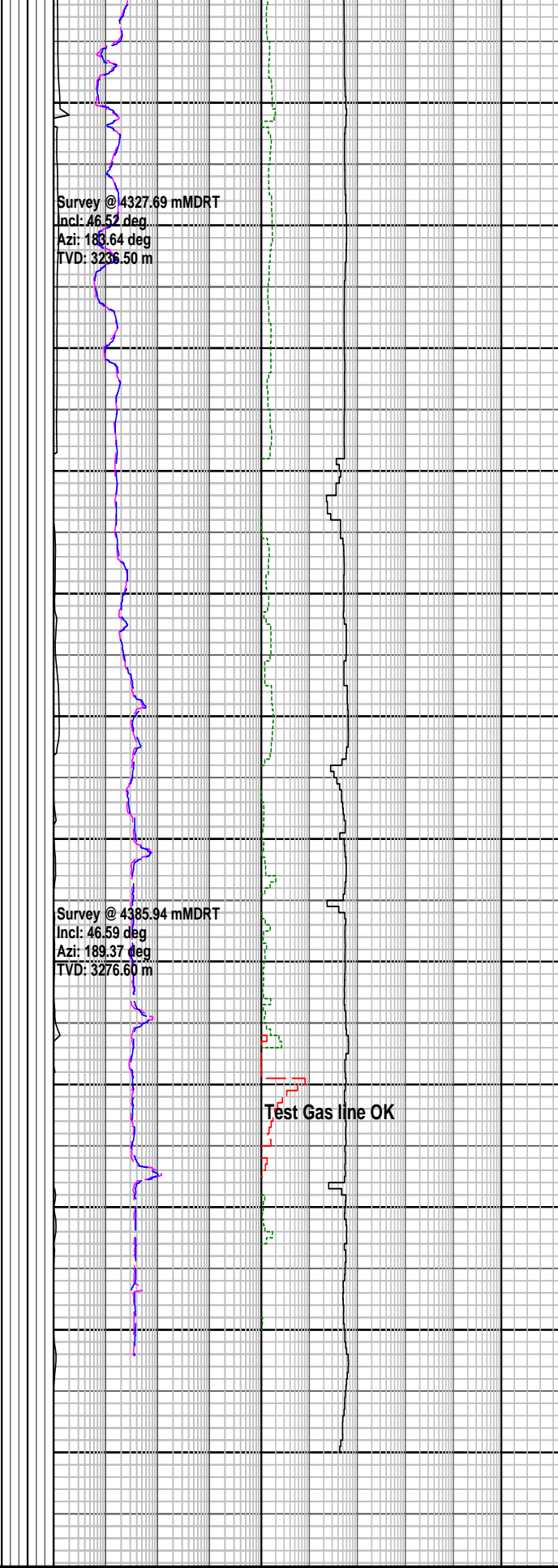
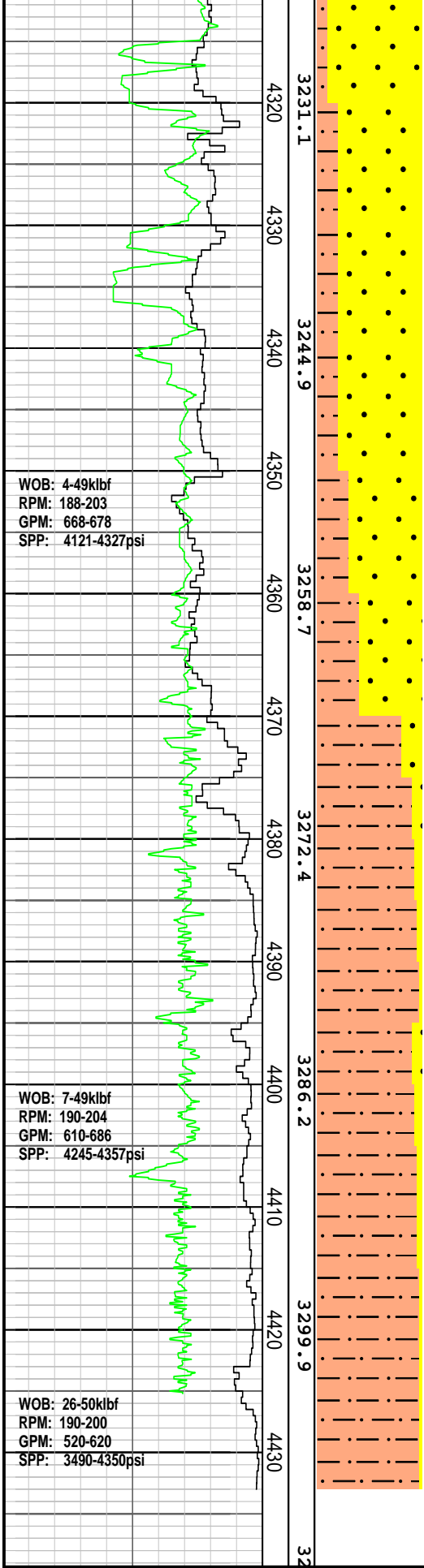
SANDSTONE: clr-trnsl, r pl yelsh gy-pl yelsh or, tr fros, f-v crs, dom crs-v crs, tr f, p srt, ang-dom sbang, r sbrndd, wk sil cmt, wk pyr trnod pyr, cln, lse, p-fr inf por, no hydc fluor

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 trnod 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 av-dk gnsh



gy, med dk gy, non calc, tr v f aren, tr-mnr micmic, tr disseminated pyr, tr v f glauc grs, sft-dom frm, dom sbfiss-sbbkly

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-sbbkly

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

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

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

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

FORMATION EVALUATION LOG

Drilling Rate		MD meters	TVDRT m	Cuttings L	Oil Show	Visual Inf	Gas Data		Chromatograph Data		Calcmetry	Interprete	Lithology Description
ROP (m/hr)							Gas Hydrocarbon Avg %	Methane ppm	Ethane ppm				
200	180	160	140	120	100	80	60	40	20	100000	100000		
						Resistivity Shallow							

ROP (m/hr)	1:500
Gamma Ray	200
API	

1:500

eters

lithology

Resistivity	ohm.m	1
Resistivity Deep	ohm.m	1

Propane ppm	100000
iso-Butane ppm	100000
n-Butane ppm	100000
iso-Pentane ppm	100000
n-Pentane ppm	100000

d Lithology