



Company : Apache Energy Ltd

Well : Wasabi-1

Interval : 54.00 - 2184.03 meters

Created : 29/Feb/2008 7:30:12 AM

INTEQ

FORMATION EVALUATION LOG

Drilling Rate ROP (m/hr)		TVDRT meters MD meters 1:500	Cuttings Lithology	Oil Show P F G	Visual Inferred Porosity P F G	Gas Data		Chromatograph Data		Calcmetry CaCO3 % MgCO3 %	Interpreted Lithology	Lithology Description
ROP (m/hr)						Gas Hydrocarbon Avg %	Methane ppm					
200	20					0.01 0.1 1 10	1	100000				
180	40					0.2	1	100000	Ethane ppm			
160	60						1	100000	Propane ppm			
140	80						1	100000	iso-Butane ppm			
120	100						1	100000	n-Butane ppm			
100	120						1	100000	iso-Pentane ppm			
80	140						1	100000	n-Pentane ppm			
60	160											
40	180											
20	200											
Gamma Ray												
API												
<p>14/02/2008</p> <p>NB1: 660 mm (26") Smith Type: XR+C Jets: 4 X 18 Depth In: 66.0 mMDRT Depth out: 135.0 mMDRT Drilled 69.0 m in 2.5 hrs Grade: 1-1-WT-A-E-I-NO-TD</p> <p>Survey @ 115.0 mMDRT Inc: 0.14 Azi: 336.08 TVD: 115.45 mRT</p> <p>Survey @ 142.86 mMDRT Inc: 0.18 Azi: 296.21 TVD: 142.86 mRT</p>												
<p>RT - AHD: 39.015 mMDRT Water Depth: 26.985 mMDRT RT-Sea bed: 66.0 mMDRT</p> <p>Spud well @ 2300 hrs on 14/02/2008</p> <p>MW: 1.06 sg FV: 300 PV: 15 YP: 103 Gel: 80/110/113 pH: 9.2</p> <p>Drill with sea water and hi-vis pills, returns to sea bed from 66.0 m to 862.0 mMDRT</p> <p>660 mm (26") Section TD @ 135.0 mMDRT on 15/02/08</p>												

15/02/2008

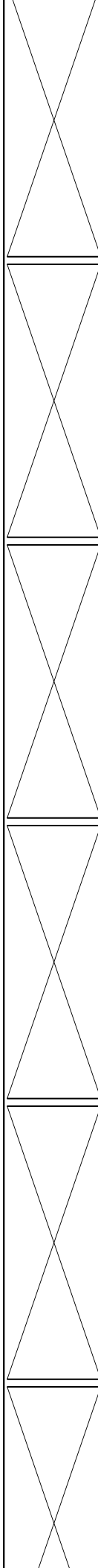
160
170
180
190
200
210
220
230
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270
280
290

WOB: 1 - 10 klbf
RPM: 60 - 105
GPM: 950 - 1230
SPP: 1215 - 2425 psi

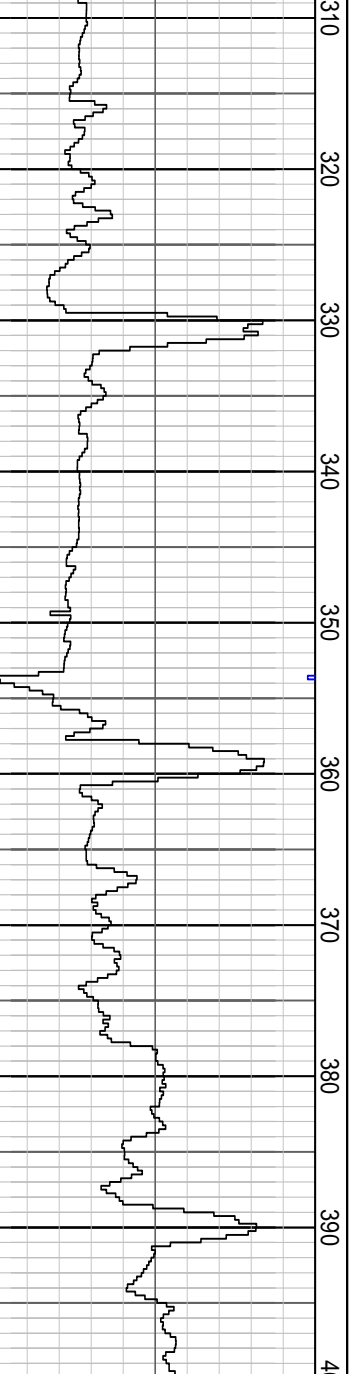
Survey @ 170.39 mMDRT
Inc: 0.09 Azi: 303.79
TVD: 170.39 mRT

Survey @ 201.95 mMDRT
Inc: 0.09 Azi: 130.71
TVD: 201.95 mRT

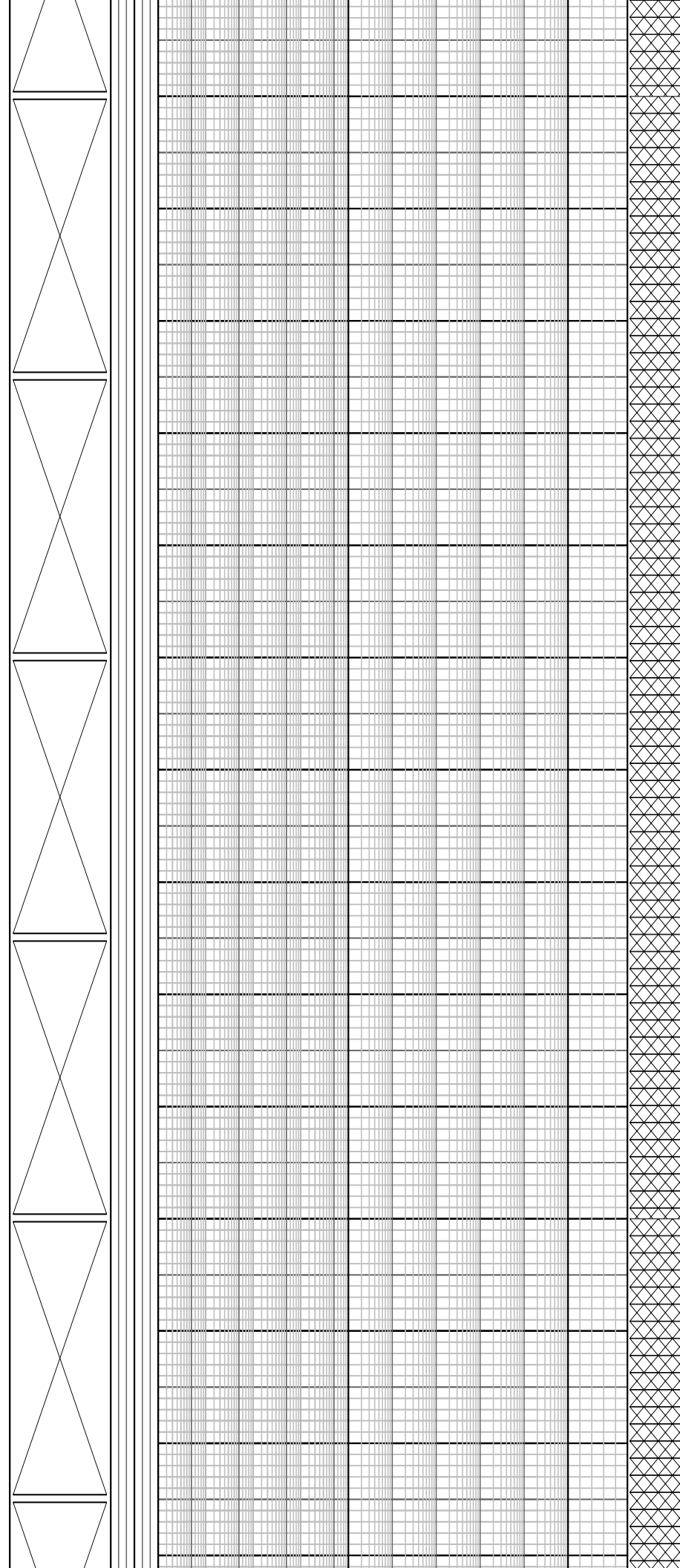
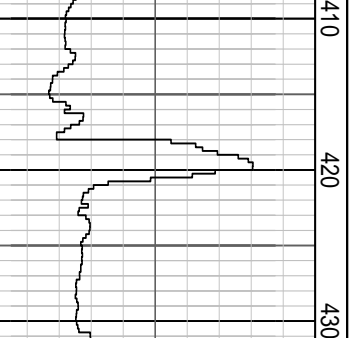
Survey @ 229.75 mMDRT
Inc: 0.10 Azi: 88.12
TVD: 229.75 mRT



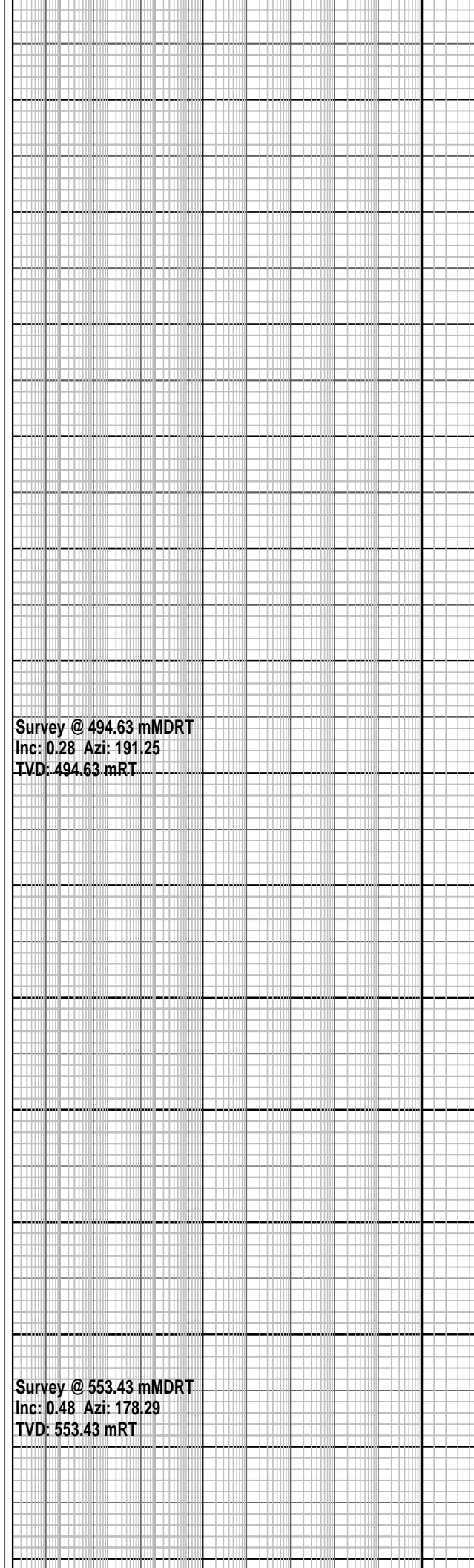
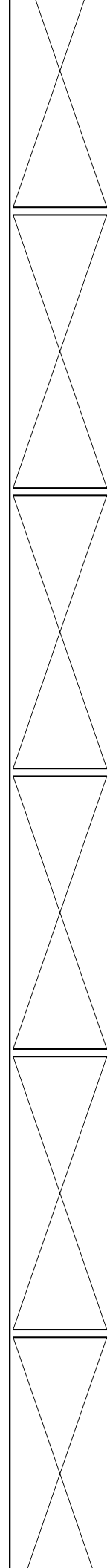
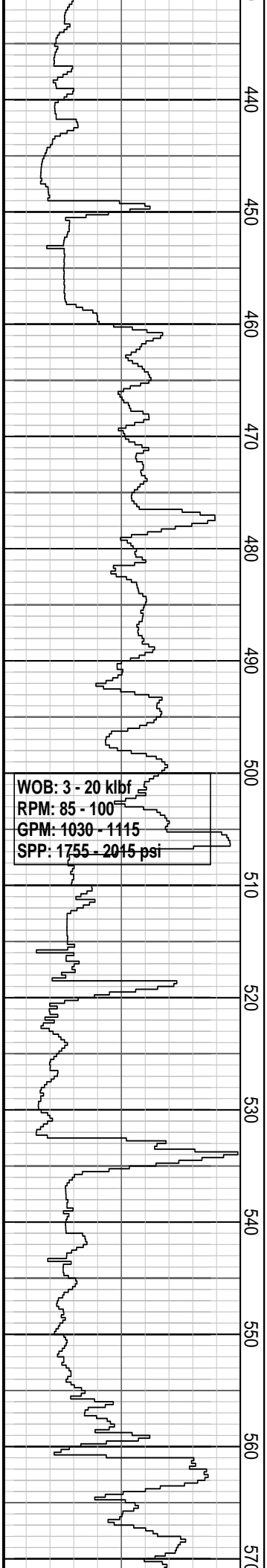
WOB: 1 - 20 kJbf
RPM: 60 - 105
GPM: 970 - 1160
SPP: 1405 - 2050 psi



WOB: 2 - 16 kJbf
RPM: 95 - 100
GPM: 980 - 1130
SPP: 1465 - 2000 psi

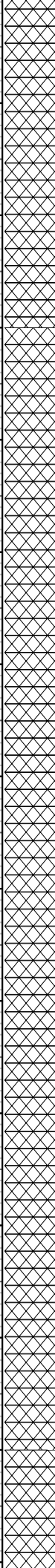
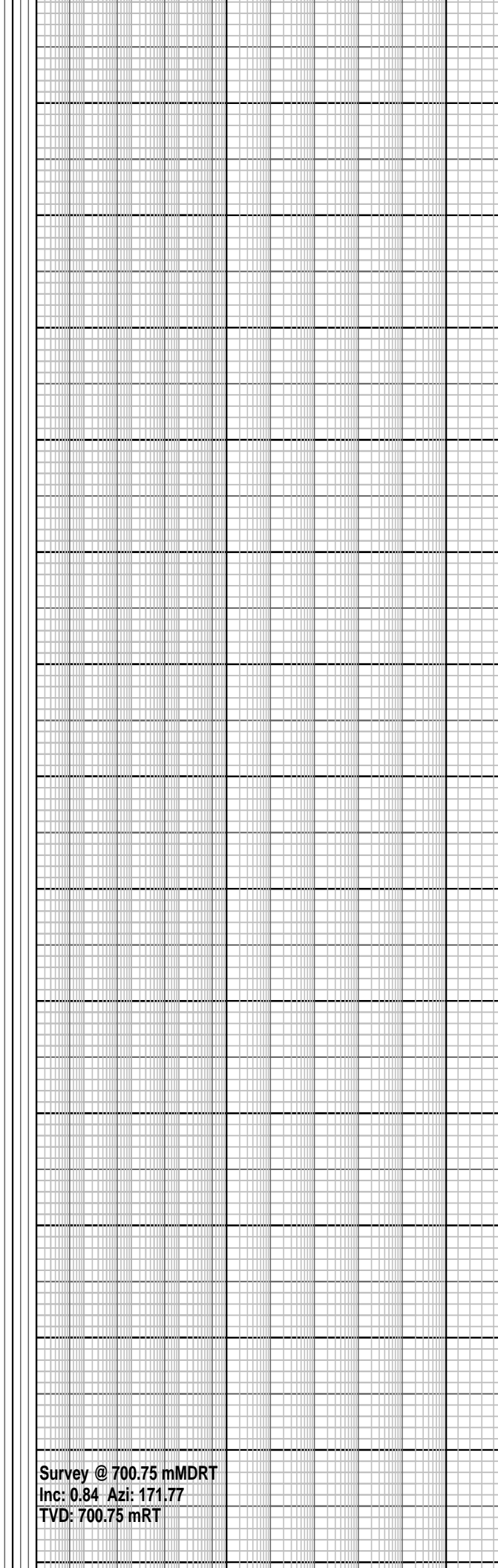
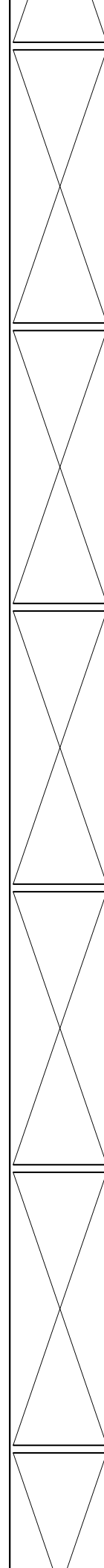
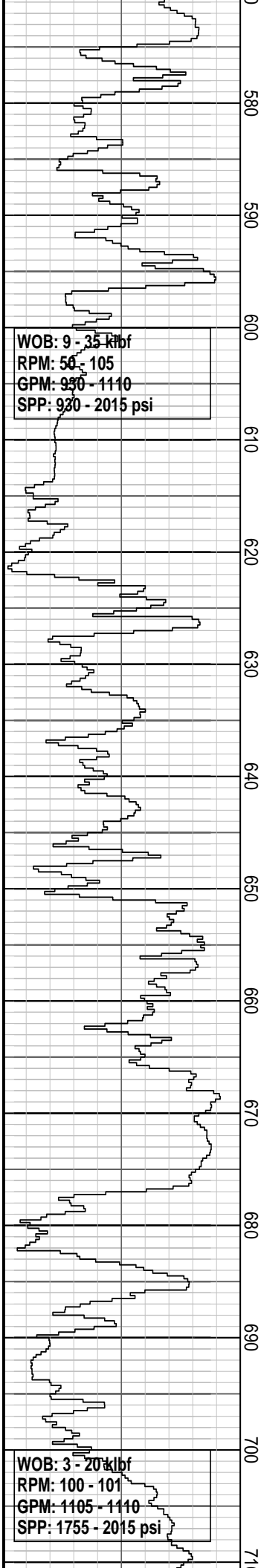


Drill with sea water and hi-vis pills, returns to sea bed from 66.0 m to 862.0 mMDRT



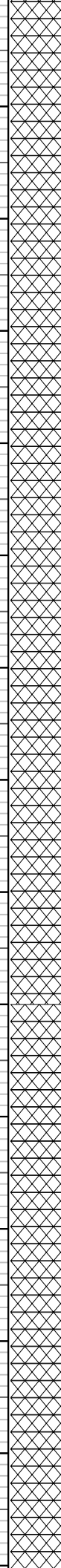
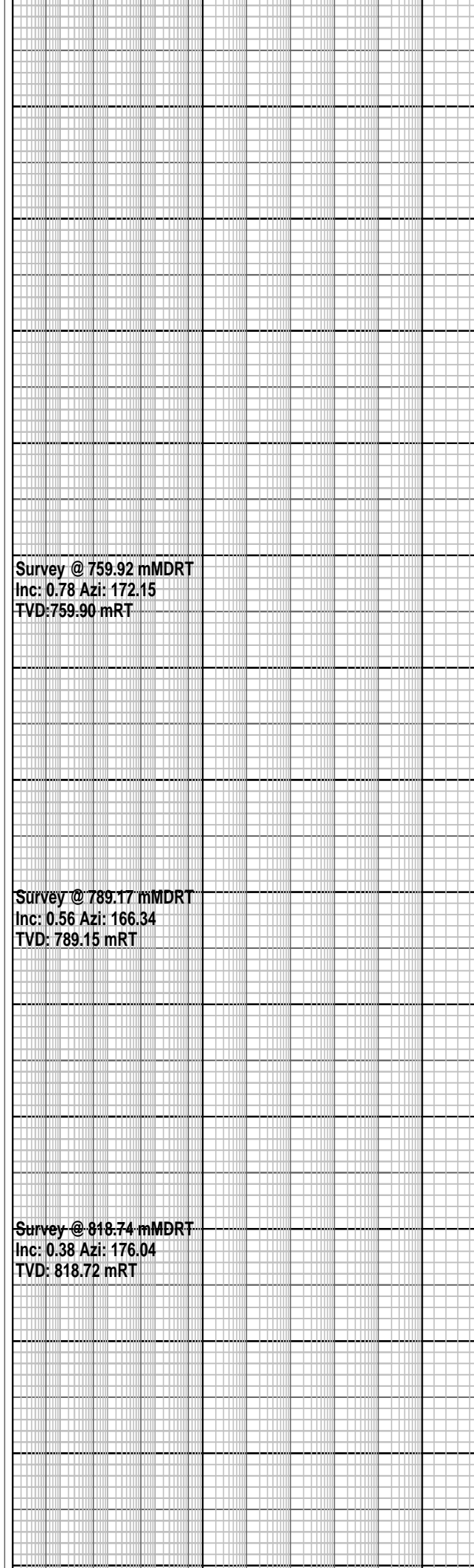
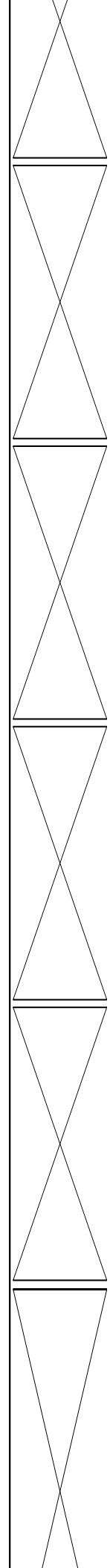
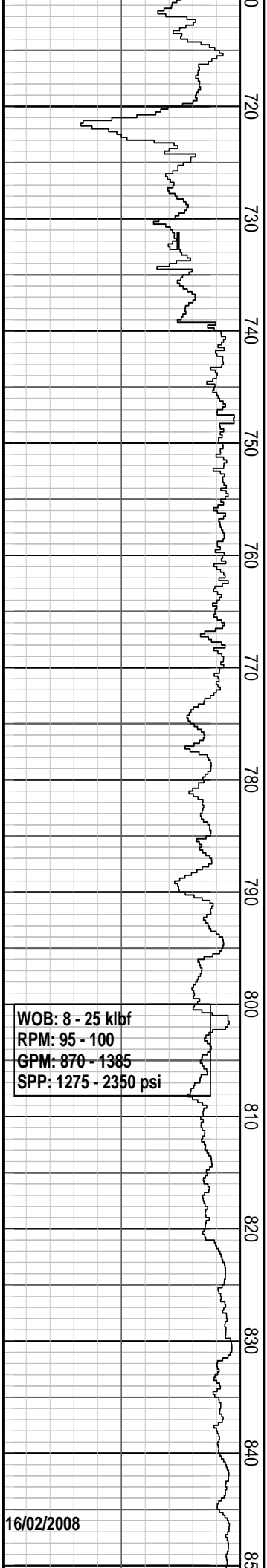
Drill with sea water and hi-vis pills, returns to sea bed from 66.0 m to 862.0 mMDRT

MW: 1.06 sg FV: 120
PV: 6 YP: 88
Gel: 65/80/90 pH: 9.2



Drill with sea water and hi-vis pills, returns to sea bed from 66.0 m to 862.0 mMDRT

Survey @ 700.75 mMDRT
Inc: 0.84 Azi: 171.77
TVD: 700.75 mRT



Drill with sea water and hi-vis pills, returns to sea bed from 66.0 m to 862.0 mMDRT

MW: 1.06 sg FV: 120
PV: 6 YP: 88
Gel: 65/80/90 pH:9.2

Survey @ 759.92 mMDRT
Inc: 0.78 Azi: 172.15
TVD: 759.90 mRT

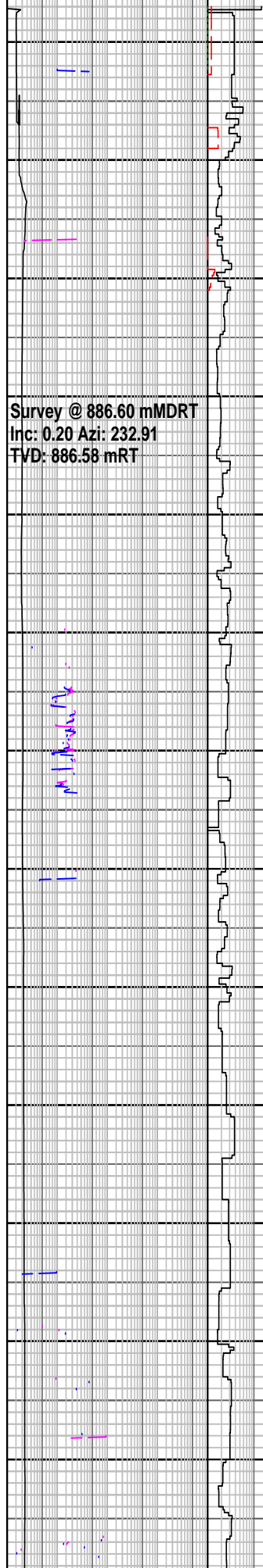
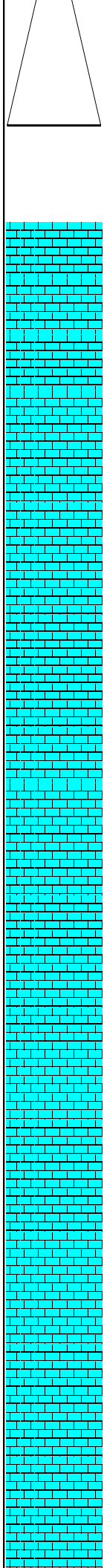
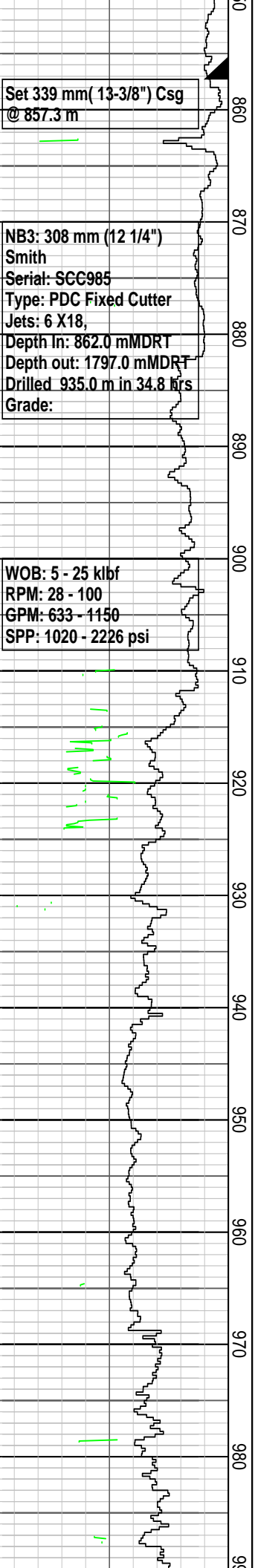
Survey @ 789.17 mMDRT
Inc: 0.56 Azi: 166.34
TVD: 789.15 mRT

Survey @ 818.74 mMDRT
Inc: 0.38 Azi: 176.04
TVD: 818.72 mRT

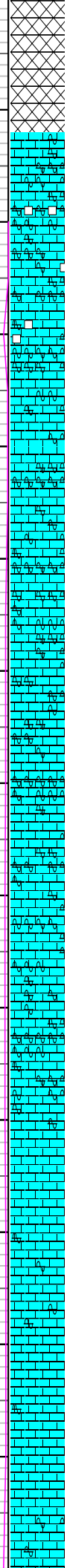
Set 339 mm (13-3/8") Csg
@ 857.3 m

NB3: 308 mm (12 1/4")
Smith
Serial: SGC985
Type: PDC Fixed Cutter
Jets: 6 X18,
Depth In: 862.0 mMDRT
Depth out: 1797.0 mMDRT
Drilled 935.0 m in 34.8 hrs
Grade:

WOB: 5 - 25 klf
RPM: 28 - 100
GPM: 633 - 1150
SPP: 1020 - 2226 psi



Survey @ 886.60 mMDRT
Inc: 0.20 Azi: 232.91
TVD: 886.58 mRT



406 mm (16") Section TD @
862.0 mMDRT on 17/02/08
FIT: EMW = 1.91 sg @ 925 psi

MW: 1.15 sg FV: 90
PV: 18 YP: 24
Gel: 9/11/14 pH: 9.6

CALCARENITE: off wh, lt-med gy, lt brn i/p, aren, abd microfos, com v crs arg qtz gr w/ Fe strgr, com pl gy slty mtx, tr nod pyr, mod hd aggs, tr vis por, tr min flour

CALCILUTITE: lt med gy, off wh-pl gy, tr dk gy, arg, tr microxln, mnr microfos, sft-disp, mod hd i/p

CALCISILTITE: gy, med dk gy i/p, com arg & grd to CLCLT, mnr vf glauc, sbbkly-blky

CALCILUTITE: lt med gy, off wh-pl gy, tr dk gy, arg, tr microxln, mnr microfos, sft-disp, mod hd i/p

CALCARENITE: off wh, lt-med gy, lt brn i/p, aren, abd microfos, com v crs arg qtz gr w/ Fe strgr, com slty mtx, tr nod pyr, mod hd aggs, tr vis por, tr min flour

CALCISILTITE: gy, med dk gy i/p, com arg & grd to CLCLT, mnr vf glauc, sbbkly-blky, com abd microfos

CALCILUTITE: lt-med gy, off wh-pl gy, tr dk gy, arg, tr micrxln, mnr microfos, sft-disp, mod hd i/p

CALCARENITE: off wh, lt-med gy, lt brn i/p, aren, abd microfoss, com v crs arg qtz grs w/ Fe strgr, com slty mtx, tr nod pyr, mod hd aggs, tr vis por, tr min flour

CALCISILTITE: gy, med dk gy i/p, com arg & grd to CLCLT, mnr vf glauc, sbbkly-blky

CALCILUTITE: lt med gy, off wh-pl gy, tr dk gy, arg, tr microxln, mnr microfos, sft-disp, mod hd i/p

WOB: 8 - 33 klbf
RPM: 33 - 55
GPM: 630 - 1135
SPP: 2000 - 3170 psi

WOB: 20 - 33 klbf
RPM: 50 - 53
GPM: 1000 - 1150
SPP: 2120 - 3350 psi

90
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130

Survey @ 1034.55
mMDRT
Inc: 0.55 Azi: 198.33
TVD: 1034.52 mRT

CALCISILTITE: gy, med dk gy
i/p, com arg & grd to CLCLT,
mnr vf glauc, sbbky-blky,
com abd microfos

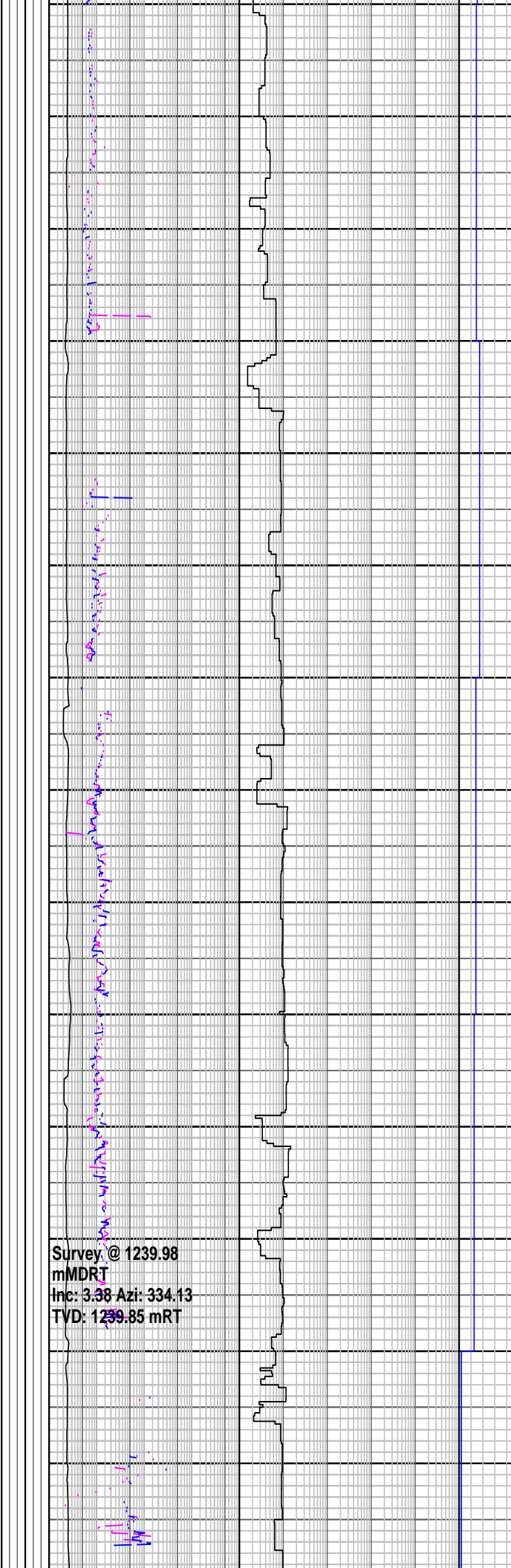
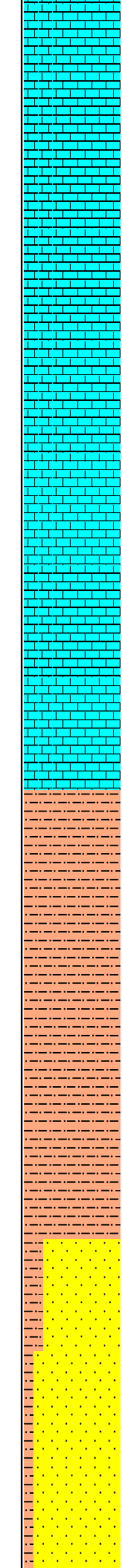
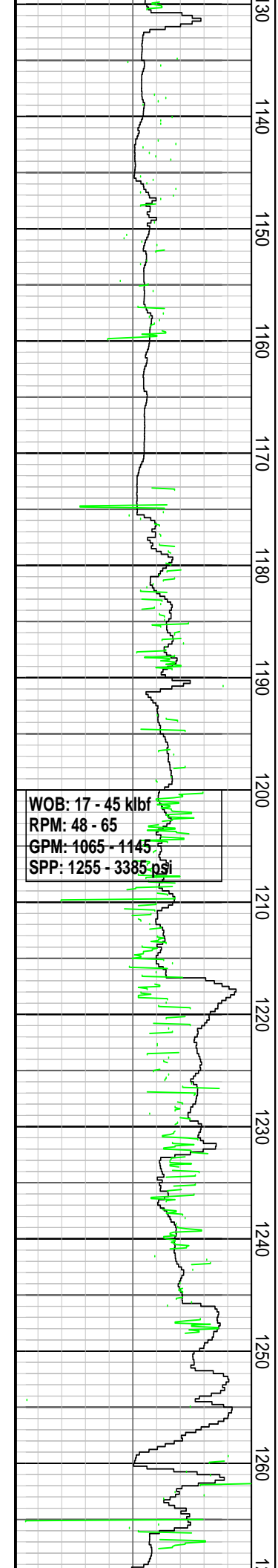
CALCILUTITE: lt med gy, off
wh-pl gy, tr dk gy, arg, tr
microxln, mnr microfos,
sft-disp, mod hd i/p

CALCISILTITE: gy, med dk gy
i/p, com arg & grdng to
CLCLT, mnr vf glauc,
sbbky-blky, com abdt
microfos

CALCILUTITE: lt med gy, off
wh-pl gy, tr dk gy, arg, tr
microxln, mnr microfos,
sft-disp, mod hd i/p

CALCISILTITE: gy, med dk gy
i/p, com arg & grdng to
CLCLT, mnr vf glauc,
sbbky-blky, com abdt
microfos

CALCILUTITE: lt med gy, off
wh-pl gy, tr dk gy, arg, tr
microxln, mnr microfos,
sft-disp, mod hd i/p



CALCISILTITE: gy, med dk gy i/p, com arg & grdng to CLCLT, mnv vf glauc, sbbkly-blky, com abdt microfos

 CALCISILTITE: It med gy, off wh-pl gy, tr dk gy, arg, tr microxln, mnv microfos, sft-disp, mod hd i/p

 CALCISILTITE: gy, med dk gy i/p, com arg & grdng to CLCLT, mnv vf glauc, sbbkly-blky, com abdt micr foss

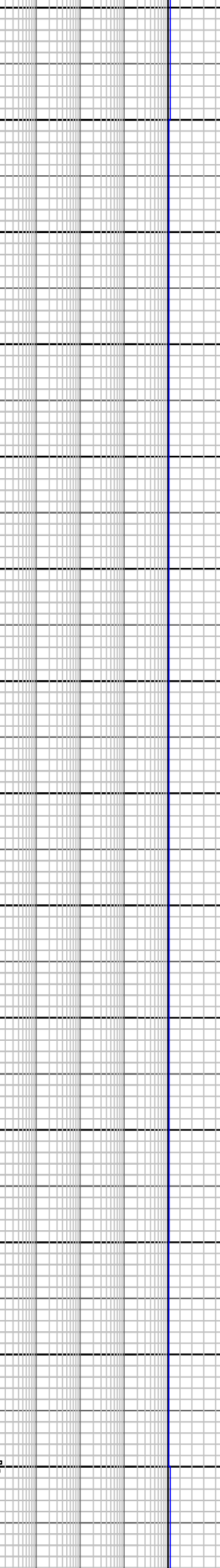
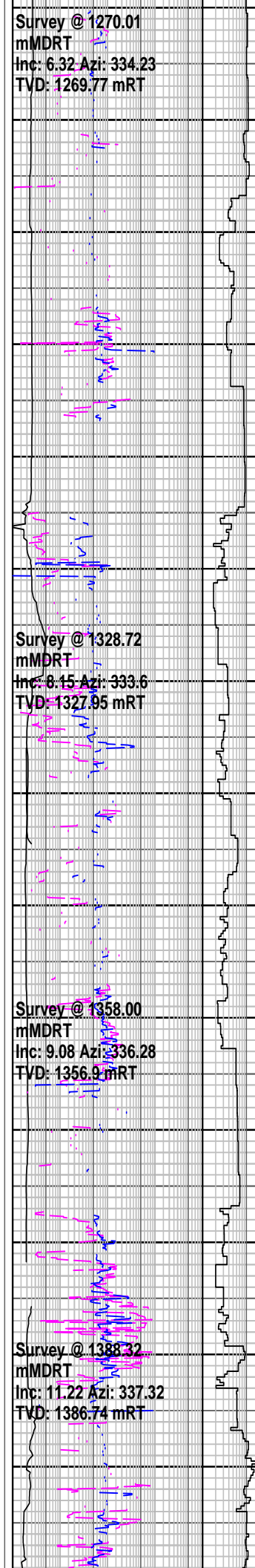
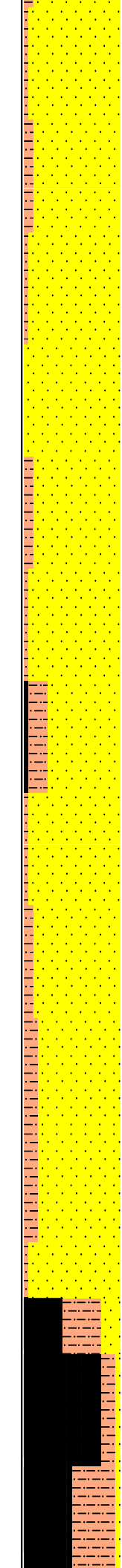
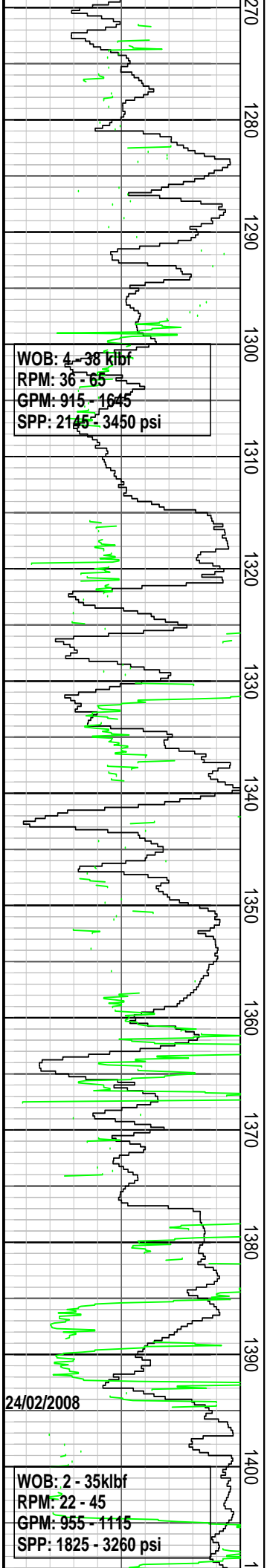
 CALCISILTITE: It med gy, off wh-pl gy, tr dk gy, arg, tr microxln, mnv microfos, sft-disp, mod hd i/p

 CALCAREOUS SILTSTONE: pl-med gy, v arg & com grdng to CALC CLYST, min calc frag, frm-mod hd, sbbkly-blky

 CALCAREOUS SILTSTONE: pl-med gy, v arg & com grdng to CALC CLYST, min calc frag, frm-mod hd, sbbkly-blky

 MW: 1.15 sg FV: 74
 PV: 13 YP: 29
 Gel: 11/14/16 pH: 9.4

 CALCAREOUS SANDSTONE: pl brn, lt gy brn, trnsl i/p, vf-crs, dom vf-f, pr-mod srt, sbang-sbrnd, loc ang crs grs, com strng calc cmt, com pl gy arg mtx & loc grd-aren sltst, com carb spk, loc com v f glauc, min dissem & nod pyr, gen lse grs, v hd agg, pr vis por.



CALCAREOUS SANDSTONE:
 med gy, occ off wh-pl grn,
 vf-crs, dom med, pr srt,
 ang-sbrndd, min mod strgr,
 calc cmt, loc com lt brn-gy
 arg mtx, com-abd, dissem
 pyr, com glauc, gen lse gr, v
 hd aggs, pr-fr vis por, fr-gd
 inf por

SANDSTONE: clr-trnsl, pl
 brn, f-crs, pr srt, ang-sbrndd,
 tr wk calc cmt, loc med brn,
 arg mtx, com Fe strgr, com
 carb frags, occ nod pyr, gen
 lse gr, gd vis and inf por, no
 flour

SILTSTONE: lt med gy, lt
 brnsh gy, arg & loc grd to
 CLYST, occ liths & carb
 spks, tr nod pyr, tr mic, mnr
 calc mtx, frm-hd, sbfiss-blky

SANDSTONE: clr-trnsl,
 pl-med brn gy, vf-crs, pr srt,
 ang-sbang, mnr wk calc cmt,
 com lt brnsh gy arg mtx w/ f
 gr & grd to aren SLTST, com
 carb spks, lse, mod hd aggs,
 pr vis por

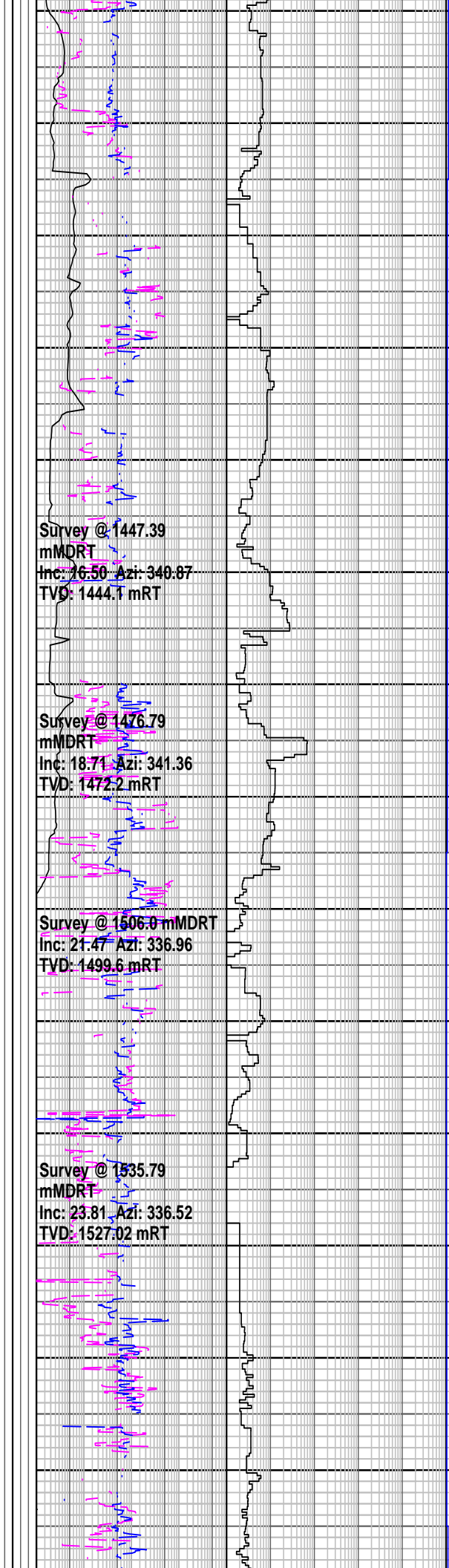
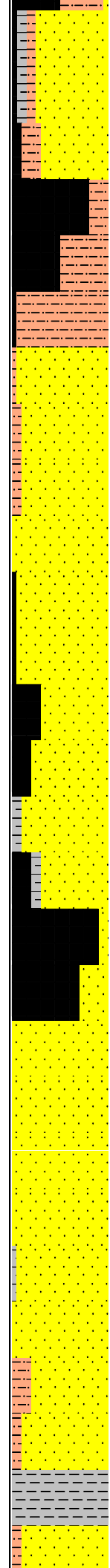
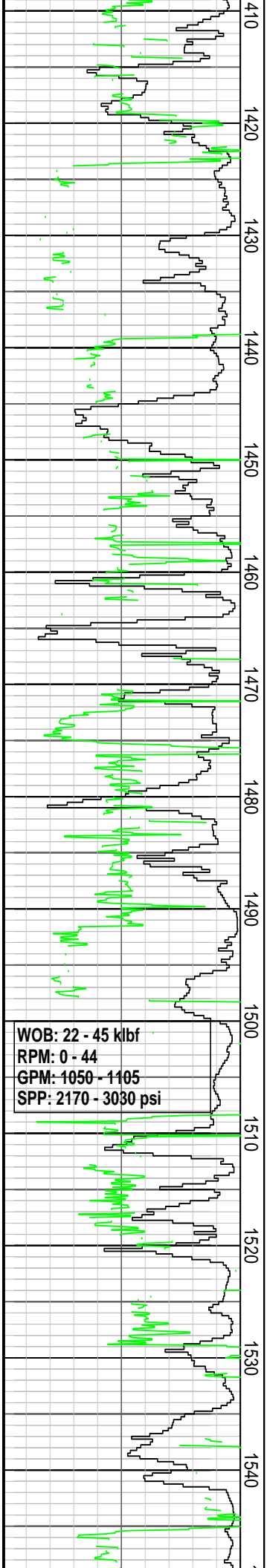
SILTSTONE: med gy-dk gy, lt
 gy i/p, arg, com carb mat, lse
 aren & grd to vf SST, mnr mic
 flks, mod hd-hd,
 sbblky-sbfiss, com-abd carb
 mat

SANDSTONE: clr-trnsl,
 pl-med brn gy, vf-crs, pr srt,
 ang-sbang, mnr wk calc cmt,
 com lt brnsh gy arg mtx w/ f
 gr & grd to aren SLTST, com
 carb spks, lse, mod hd aggs,
 pr vis por

COAL: dk gy-blk, sbvit-vit,
 com slty lams & grd to CARB
 SLTST, frm-mod hd,
 sbfiss-sbblky

SILTSTONE: med-dk gy, lt gy
 i/p, arg, com carb mat, lse
 aren & grd to vf SST, mnr mic
 flks, mod hd-hd,
 sbblky-sbfiss, com abd carb
 mat

COAL: dk gy-blk, sbvit-vit,
 com slty lams & grd, CARB



SLTST, frm-mod hd, sbfiss-sbblky

SANDSTONE: lt gy brn, trnsl, f-crs, pr srt, sbang-sbrnd, mnr mod calc cmt, mnr nod pyr, gen lse gr, fr-gd inf por, no flour

COAL: dk gy-blk, sbvit-vit, com sli lam & grd - CARB SLTST, frm-mod hd, sbfiss-sbblky

SILTSTONE: dk brn gy, dk gy, arg, abd carb mat & lam, com grd COAL, hd-v hd, sbfiss

SANDSTONE: clr-trnsl, fros, Fe stn, med-v crs, gen wl srt, ang-sbang, abd clr qtz gr, gd vis por, gd inf por, no flour

COAL: hd, blk, conch frac i/p

SANDSTONE: clr-trnsl, fros, Fe stn, med-v crs, gen wl srt, ang-sbang, abd clr qtz gr, gd vis por, gd inf por, no flour

CLAYSTONE: lt bl gy-m bl gy, frm-mod hd, blk, mod calc

COAL: hd, blk, conch frac i/p

SANDSTONE: clr, trnsp, vf-f, dom f, wl srt, sbang-sbrnd, dom sbang, sph, r nod pyr, no show

CLAYSTONE: lt ol gy-lt brn gy, sft, sbblky, sli calc

SANDSTONE: wh, trnsl, clrless, lse, f-v crs, pred v crs, wl srt, sbrnd-rnd, dom sbrnd, sph, no show

SILTSTONE: dk brn gy, dk gy, arg, abd carb mat & lam, com grd-COAL, hd-v hd, sbfiss

CLAYSTONE: med brn, org brn, v dk brn gy, tr aren i/p, tr calc mtrx, com carb mat, grd

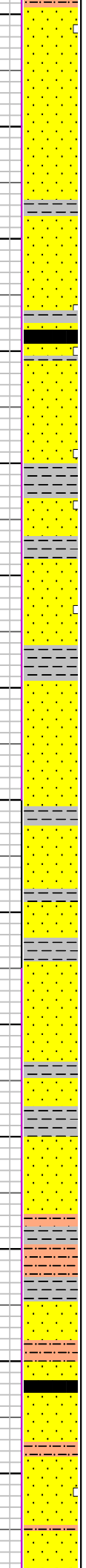
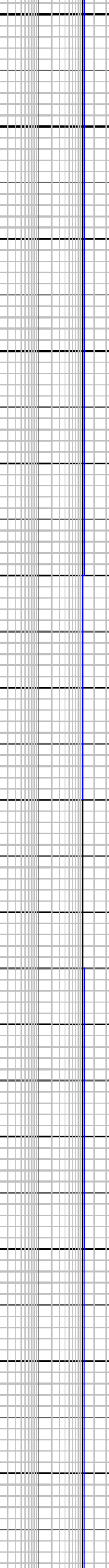
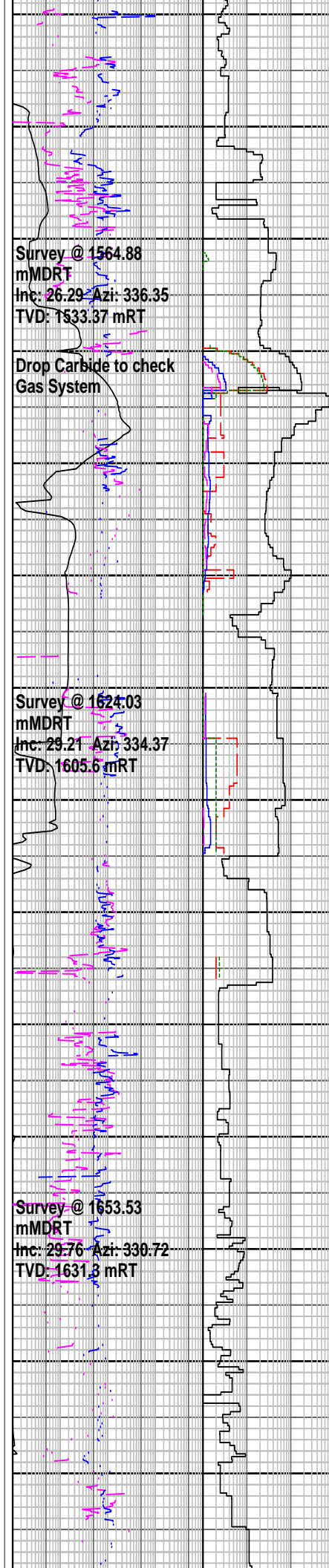
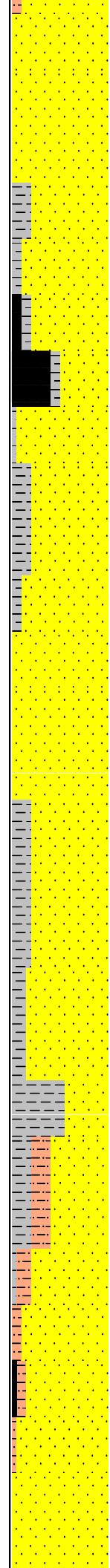
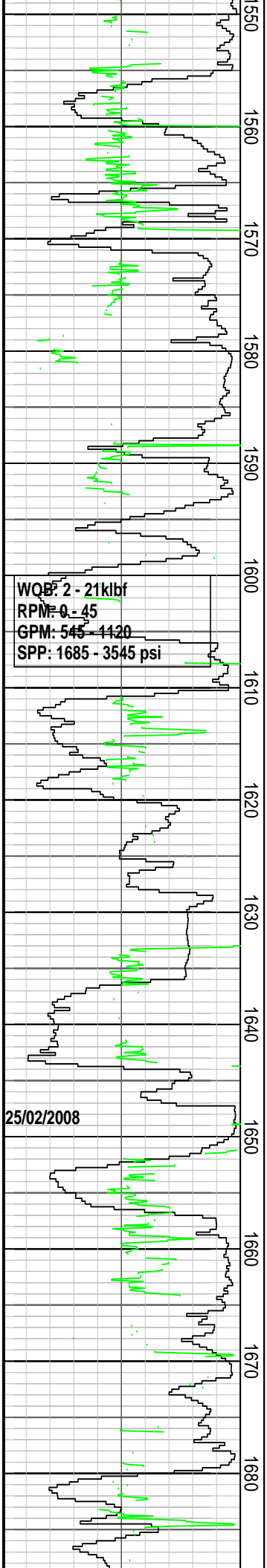
Survey @ 1447.39
mMDRT
Inc: 16.50 Azi: 340.87
TVD: 1444.1 mRT

Survey @ 1476.79
mMDRT
Inc: 18.71 Azi: 341.36
TVD: 1472.2 mRT

Survey @ 1506.0 mMDRT
Inc: 21.47 Azi: 336.96
TVD: 1499.6 mRT

Survey @ 1535.79
mMDRT
Inc: 23.81 Azi: 336.52
TVD: 1527.02 mRT

WOB: 22 - 45 kilbf
RPM: 0 - 44
GPM: 1050 - 1105
SPP: 2170 - 3030 psi



- CARB CLYST, frm-hd, disp, sbbkly, sbfiss i/p

SANDSTONE: trnsl-fros, vf-v crs, gen crs, mod srt, ang-sbang, tr wk calc cmt, mnf off wh-lt brn arg mtx, tr disse pyr, gen lse gr, gd inf por, no flour.

MW: 1.15 sg FV: 63
PV: 20 YP: 25
Gel: 9/14/16 pH: 9.5

COAL: dk gy-blk, sbvit-vit, com sli lam & grd - CARB SLTST, frm-mod hd, conch-sbconch

Carbide Run @ 1589mMDRT
Theo: 5250stks. Act: 6350stks
Hole Washout = 20.9%

SILTSTONE: dk brn gy, dk gy, arg, abd carb mat & lam, com grd - COAL, hd-v hd, sbfiss

CLAYSTONE: off wh-pl brn, tr med gy, tr sli lam, hd-v hd, sbbkly-sbfiss

SANDSTONE: trnsl-fros, f-v crs, pr srt, ang-sbang, gen lse clr grs, gd inf por, no flour

CLAYSTONE: off wh-v pl brn, tr med gy, tr sli lam, tr foss frag, com calc mat, hd-v hd, sbbkly-sbfiss

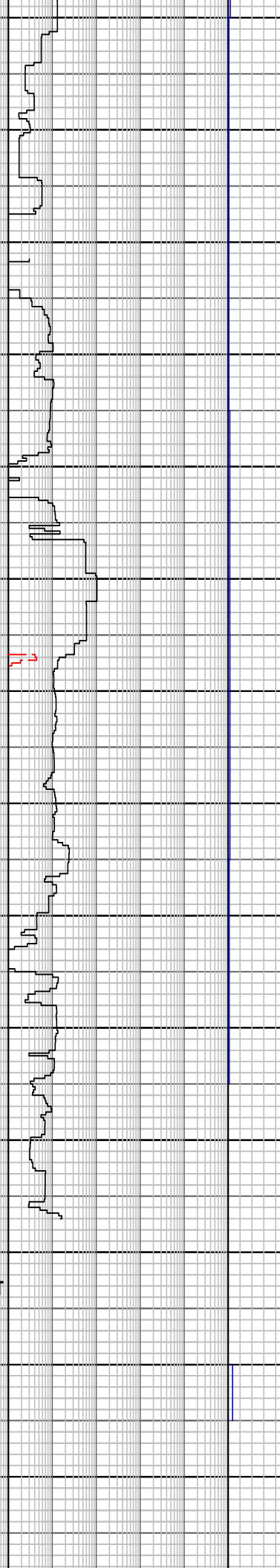
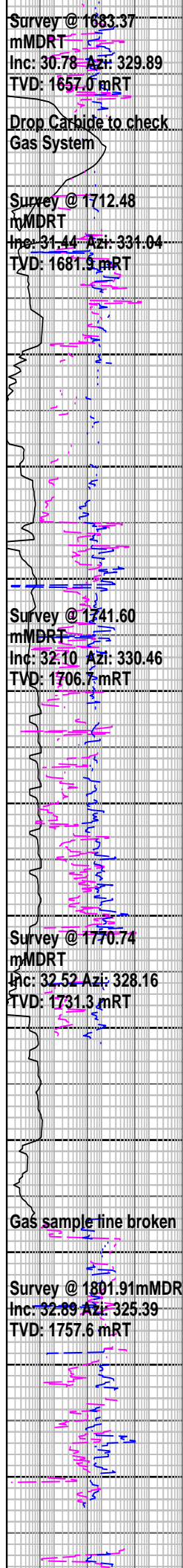
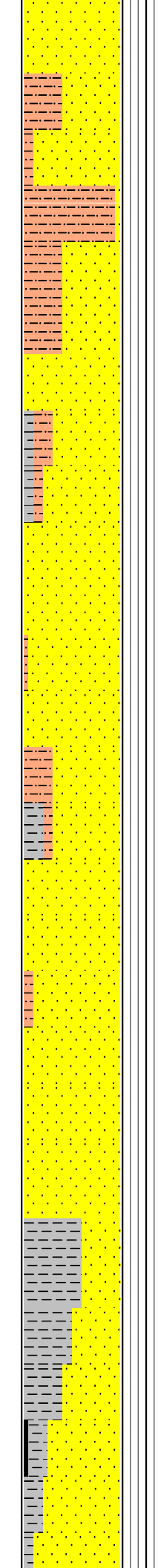
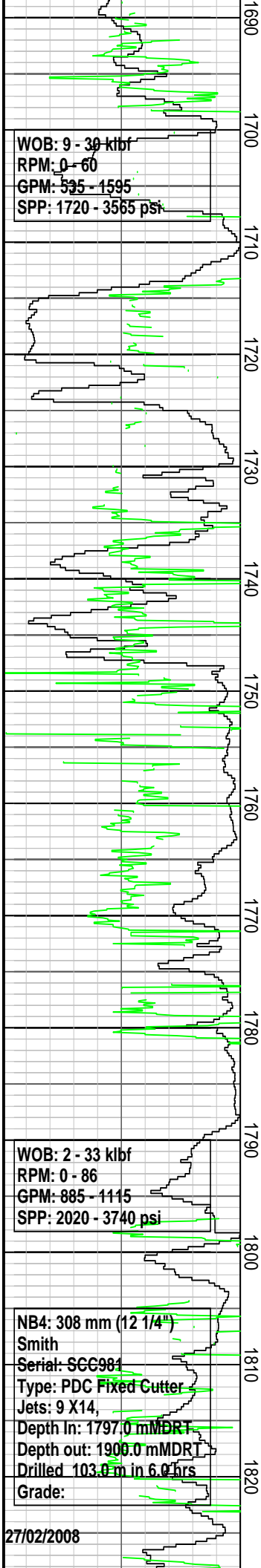
SANDSTONE: pl brn, trnsl-fros, f-v crs, pr srt, ang-sbang, gen lse clr grs, gd inf por, no flour

CLAYSTONE: off wh-v pl brn, tr med gy, tr sli lam, tr foss frag, com calc mat, hd-v hd, sbbkly-sbfiss

SILTSTONE: pl-med gy, med brn gy, mnf arg, grd - CLYST, occ calc mat, mnf carb spk, tr mic, tr lith, hd-v hd, sbfiss-sbbkly

COAL: dk gy-blk, sbvit-vit, com sli lam, grd - CARB SLTST, frm-mod hd, conch-sbconch

SANDSTONE: pl brn, clr-trnsl, fros, vf-v crs, dom f-med, pr srt, sbang-sbrnd, tr wk calc cmt, com pl brn arg mtx, com carb lam, mnf nod



pyr, gen lse, v mod aggs, tr-pr vis por

SILTSTONE: off wh-pl brn, loc pl brn gy, aren, com grd - vf SST, com lith, carb spk, hd-v hd, sbbkly

Carbide Run @ 1707mMDRT
Theo: 6200stks. Act: 7130stks
Hole washout = 15.0%.

SANDSTONE: off wh, wh, trnsl, bimod, f-med, ang-sbang, dom sbang, mod-wl sort, v crs, sbrnd-rnd, v wl srt, r nod pyr, r carb frag, r shl frag

SILTSTONE: med gy-dk gy, grn gy, frm, blk, sbfiss i/p, aren i/p, mod calc

CLAYSTONE: pl bl gy, lt gy, frm-mod hd, blk, sli calc

SANDSTONE: of wh, wh, trnsl, bimod, f-med, ang-sbang, dom sbang, mod-wl srt, v crs, sbrnd-rnd, v wl srt, r nod pyr, r carb frag, r shl frag

CLAYSTONE: pl yel brn-yel gy, sft-frm, dom frm, blk, sub blk pt, non calc

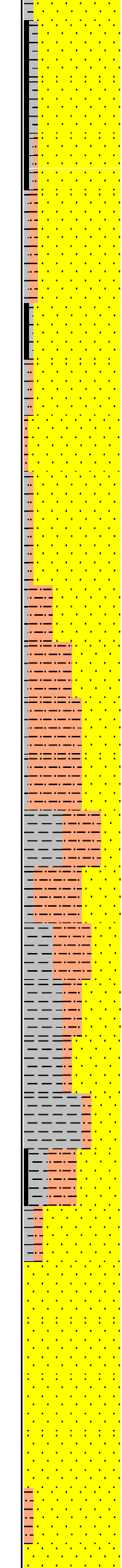
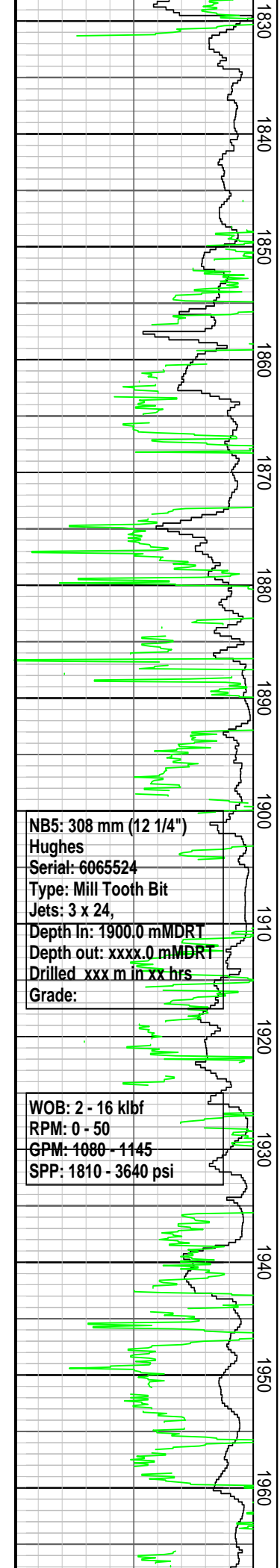
SILTSTONE: med gy-dk gy, grnsh gy, frm, blk, sbfiss i/p, aren i/p, mod calc, r glau, carb mat

SANDSTONE: of wh, wh, trnsl, f-v crs, dom med-v crs, ang-sbrnd, dom sbang, pr srt, r nod pyr, r shl frag, no vis cmt, mod inf por

SILTSTONE: trnsl-clr, fros, f-v crs, dom med crs, pr srt, ang-sbang, com wk calc cmt, lse pl gy-brn atrg mt, occ COAL lam, mnr nod pyr, gen lse gr, tr-gd inf por, no flour

CLAYSTONE: lt bl gy-grn gy, sil, occ microfoss, com mic, loc carb mat, com-abd calc mat, tr nod pyr, hd-v hd, sbbkly-sbfiss

SANDSTONE: off wh-pl brn, trnsl-clr, vf-v crs, pr srt, ang-sbrndd, com mod strngr calc cmt, loc brn arg mt, where f, com rk flour, gen



Survey @ 1831.13
mMDRT
Inc: 34.60 Azi: 326.01
TVD: 1781.9 mRT

Survey @ 1860.48
mMDRT
Inc: 34.24 Azi: 324.51
TVD: 17806.1 mRT

Gas sample line repaired

Survey @ 1890.59
mMDRT
Inc: 34.34 Azi: 324.56
TVD: 1830.85 mRT

Survey @ 1919.28
mMDRT
Inc: 39.56 Azi: 327.67
TVD: 1853.80 mRT

Survey @ 1948.88
mMDRT
Inc: 41.97 Azi: 319.68
TVD: 1876.22 mRT

NB5: 308 mm (12 1/4")
Hughes
Serial: 6065524
Type: Mill Tooth Bit
Jets: 3 x 24,
Depth In: 1900.0 mMDRT
Depth out: xxxx.0 mMDRT
Drilled xxx m in xx hrs
Grade:

WOB: 2 - 16 kbf
RPM: 0 - 50
GPM: 1080 - 1145
SPP: 1810 - 3640 psi

lse, v hd arr with f, pr vis por, no flour

COAL: dk gy-blk, sbvit-vit, com slty lam & grdng to CARB SLTST, frm-mod hd, conch-sbconch

SANDSTONE: pl brn gy, clr-trnsl, fros, vf-v crs, dom f-med, pr srt, sbang-sbrnd, mnw wk calc cmt, com pl brn sli mtx, occ nod pyr, com lse gr, v hd f agg, tr-pr vis por, no flour

SILTSTONE: med brn, med gy, aren & com grd - vf SST, com micmic, com liths & carb spk, hd, sbblky

CLAYSTONE: lt bl gy-grn, sil, tr microfoss, com mic, com calc mat, tr nod pyr, hd-v hd, sbblky-sbflss

MW: 1.15 sg FV: 68
PV: 18 YP: 35
Gel: 13/19/24 pH: 9.0

POOH for change in BHA on 27/02/2008

SANDSTONE: pl brn gy, clr-trnsl, fros, vf-v crs, dom f-med, pr srt, sbang-sbrnd, mnw wk calc cmt, com pl brn mtx, occ nod pyr, com lse gr, v hd f agg, tr-pr vis por, no flour

SILTSTONE: med brn, med gy, aren & com grdng to vf SST, com micmic, com liths & carb spk, hd, sbblky

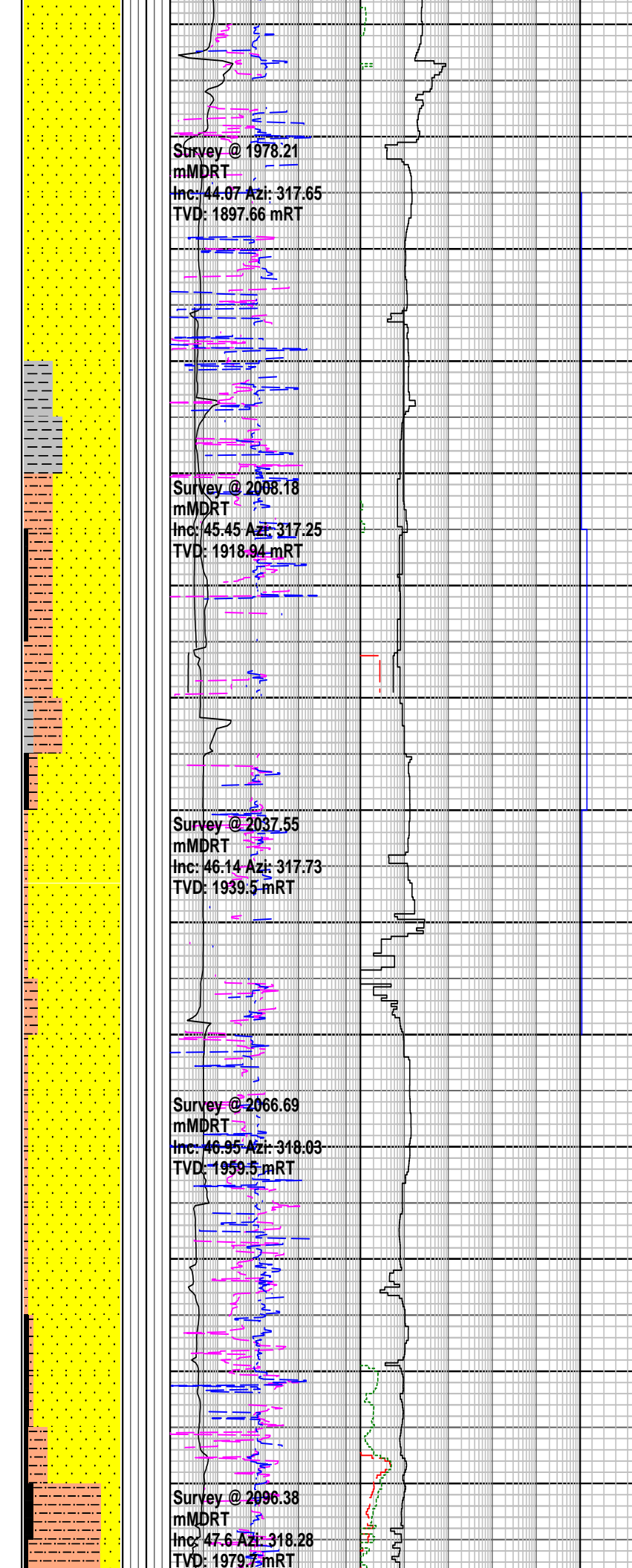
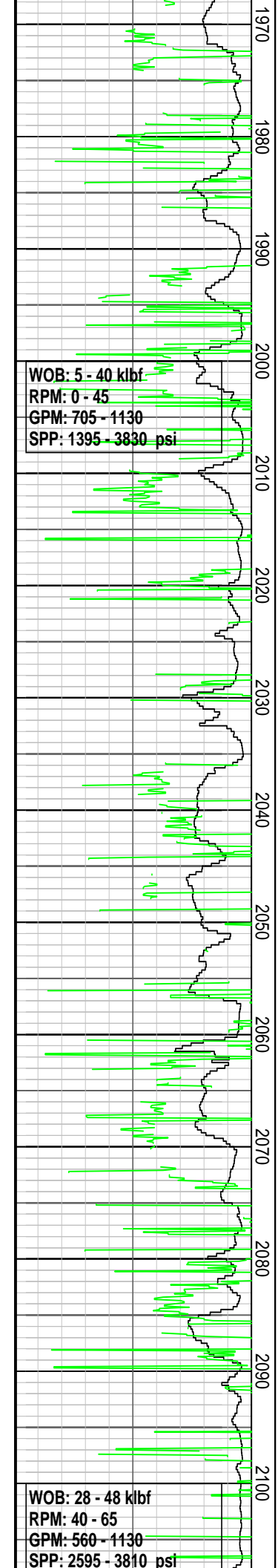
CLAYSTONE: lt bl gy-grn, sil, tr microfoss, com mic, com calc mat, grd-mod calc, tr nod pyr, hd-v hd, sbblky-sbflss

SANDSTONE: off wh-pl brn, trnsl, com lse, incr sil agg, vf-v crs, dom f-m, pr srt, ang-sbrnd, mnw wk calc cmt, com sil cmt, com pl brn sli mtx, dom carb, mnw foram, pr vis por, pr inf por, no flour

COAL: v dk gy-blk, sbblky-blky, crumb, sli lstr.

SILTSTONE: lt brn gy, brn gy, hd-v hd, blky, non calc, vf aren.

SANDSTONE: off wh, trnsl,



lse, vf-v crs, dom med, pr srt, ang-sbrnd, com v lt gy-off wh arg mtx, gd inf por, no fluor.

SANDSTONE: off wh, trns, lse, vf-v crs, dom med, pr srt, ang-sbrnd, com v lt gy-off wh arg mtx, gd inf por, tr agg w/ wh-v lt gy calc arg mat, rr brn mtx lith frag, no fluor

CLAYSTONE: med gy-brn gy, med dk gy, v sft-frm, dom sft, amph-blky, dom sbbkly, disp i/p, non calc, mnr grd-mod SLTST.

SILTSTONE: lt brn gy, brn gy, hd-v hd, blkly, non calc, vf aren.

CLAYSTONE: med gy-brn gy, med dk gy, v sft-frm, dom sft, amph-blky, dom sbbkly, disp i/p, mnr grdng to SLTST.

SANDSTONE: pl gy, off wh, clr-trns, vf-v crs, dom f-med, pr srt, sbang-sbrnd, ang w/ crs, com mod calc cmt, mnr pl gy arg mtx, loc grdng to aren SLTST, mnr carb, disse pyr, gen lse grs, fr-gd inf por, no flour.

SILTSTONE: lt brn gy, brn gy, hd-v hd, blkly, non calc, vf aren.

SANDSTONE: pl gy, off wh, clr-trns, v f-v crs, dom f-med, pr srt, sbang-sbrnd, ang w/ crs, com mod calc cmt, mnr pl gy arg mtx, loc grdng to aren SLTST, mnr carb, disse pyr, gen lse grs, fr-gd inf por, no flour.

COAL: dk gy-blk, sbvit-vit, com slty lam & grdng to CARB SLTST, frm-mod hd, conch-sbconch

SILTSTONE: lt brn gy, med gy, med brn gy, hd-v hd, arg i/p, blkly, mnr calc cmt, gen f aren grd w/ SLT, com carb mat, grdng to CARB SLTST.

SILTSTONE: lt-med gy,

