



EMPIRICA
The Surface Logging Company

Scale: 5" / 100'
Measured Depth Log

Well Name Ranch Water Valley #13

Location Sec. 4, T5N-R67W

State Colorado

Country USA

API Number 0512336426

County Weld

Rig Number Cade 24

Field Wattenberg

Spud Date 3/19/2013

Drilling Completed 4/2/2013

Surface Coordinates 460' FEL 1320' FSL, Sec. 4, T5N-R67W, Weld Co. Colorado

Bottom Hole Coordinates Bottom Hole Location:

1,515.81' N, 4,505.23' W FROM SURFACE
LOCATION OR 1320' FSL, 460' FWL,
NENE Sec. 4, T5N., R67W.
Weld Co. Colorado

Ground Elevation 4,775

K.B. Elevation 4,792.5

Logged Interval 6,636 **To** 11,483

Total Depth 11,483

Formation Shannon-Codell (Target)

Type of Drilling Fluid Fresh Water

Company Tektok Energy

Address 640 Plaza Drive,
Highlands Ranch

Name Dan Scott / Dom
Company Empirica

PO Box 6005
Edmond, OK 730
405-340-5545

Cores
Equipment
Comments

2 Man
Start L
OBM s
Releas

Operator

Suite 290
1, CO 80129

Geologist

inic Pitre

083-6005

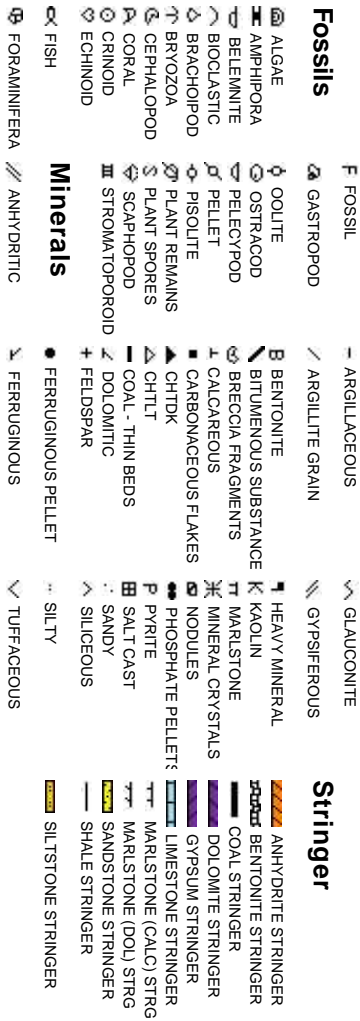
Other

Logging Service
Logging Date:3/22/2013
Start date:N/A
ed Logging Date: 4/2/2013

Rock Types



Accessories

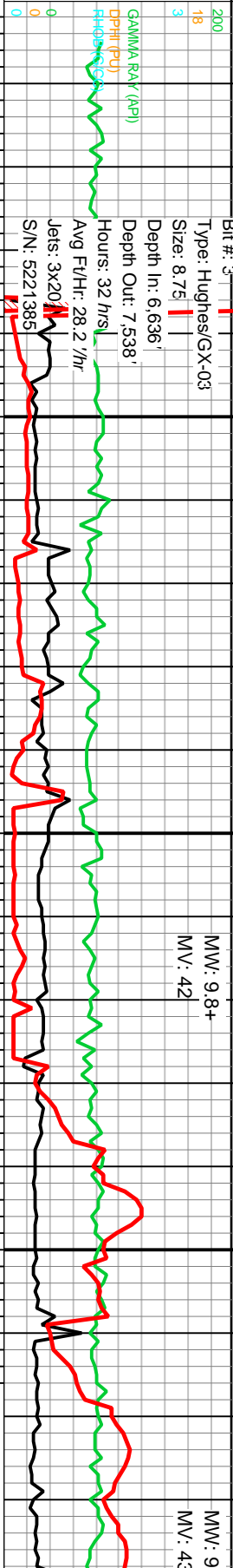


Oil



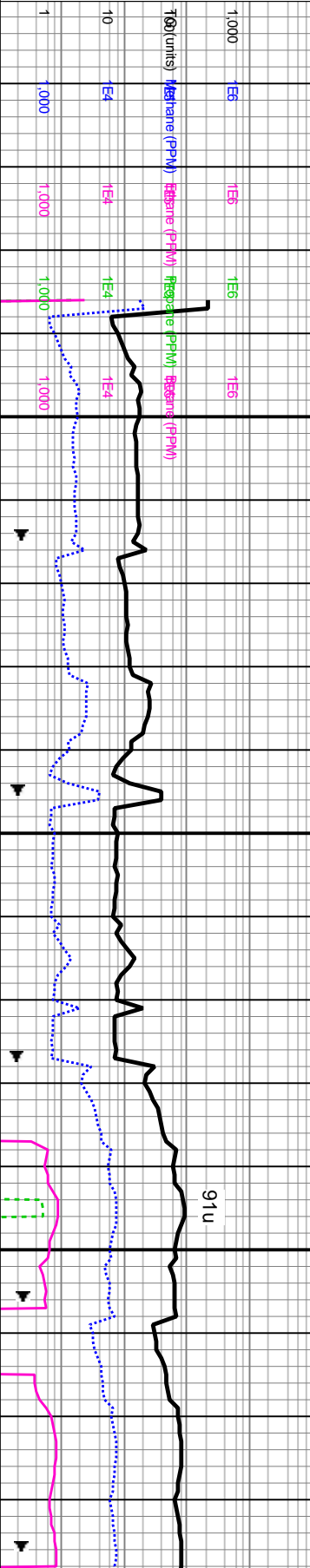
Other Symbols

Show		MOLDIC		DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
		ORGANIC		FAULT		WIRELINE TESTED - RT		FX FINELYXLN
		PINPOINT		FORMATION TOP				GS GRAINSTONE
		VUGGY		GAS SHOW				L LITHOGRAPHIC
Engineering		NORMAL FAULT				ANGULAR		MX MICROXLN
		OIL SHOW				ROUNDED		MS MUDSTONE
		OVERTURNED STRATA				SUBANG		PS PACKSTONE
		REVERSE FAULT				SUBRND		WS WACKESTONE
Positivity		BIT						
		Casing Shoe						
		CONNECTION (LEFT)						
		CONNECTION (RIGHT)						
Textures		CONNECTION GAS				BOUNDSTONE		M MODERATE
		SLIDE				CHALKY		P POOR
		SURVEY				CRYPTOXLN		W WELL
		TRIP GAS						
Sorting		CORE - LOST						
		CORE - RECOVERED						

6.650

6.650 6.700

6,750



6400

6620-6650 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr
dissm pyr, pos yel diff cut

6650-6680 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr
dissm pyr, pos yel diff cut

6680-6710 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr

6710-6740 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr

6740-6770 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr
dissm pyr, pos yel diff cut

6770-6800 SLTY SH:
med gy-dk gy, sft-frm,
occ sl hd, sb ang-sb
biky- pily, v arg, no calc, tr
dissm pyr, pos yel diff cut

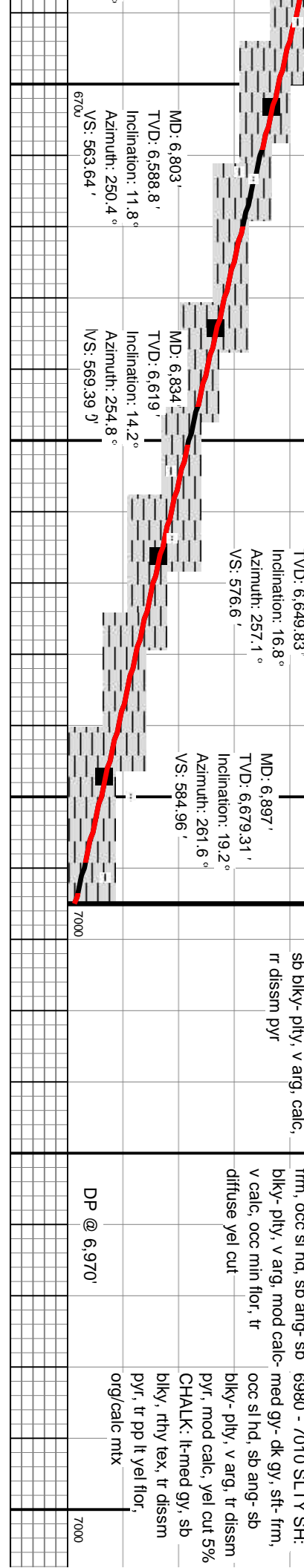
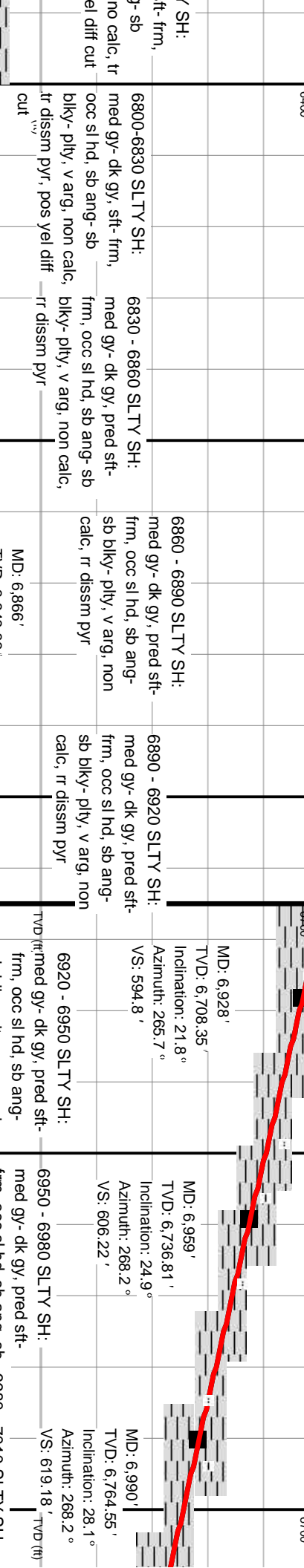
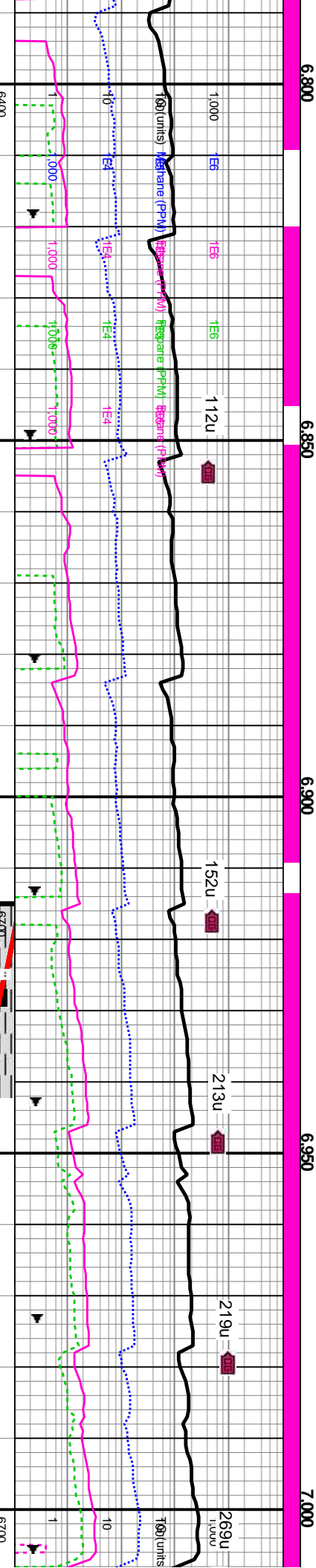
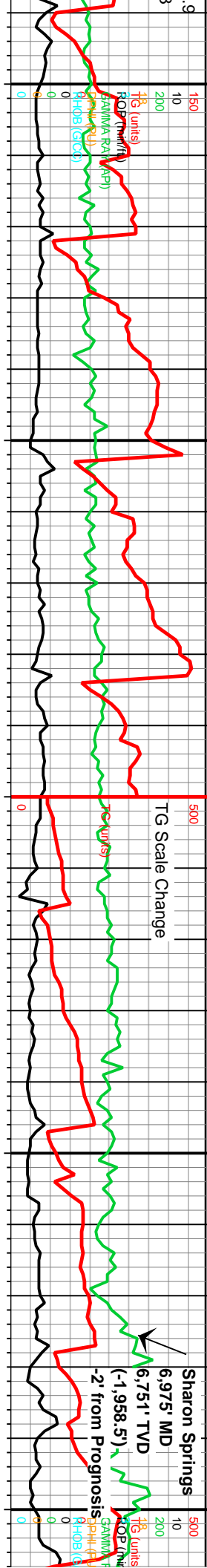
TVD (Tf)

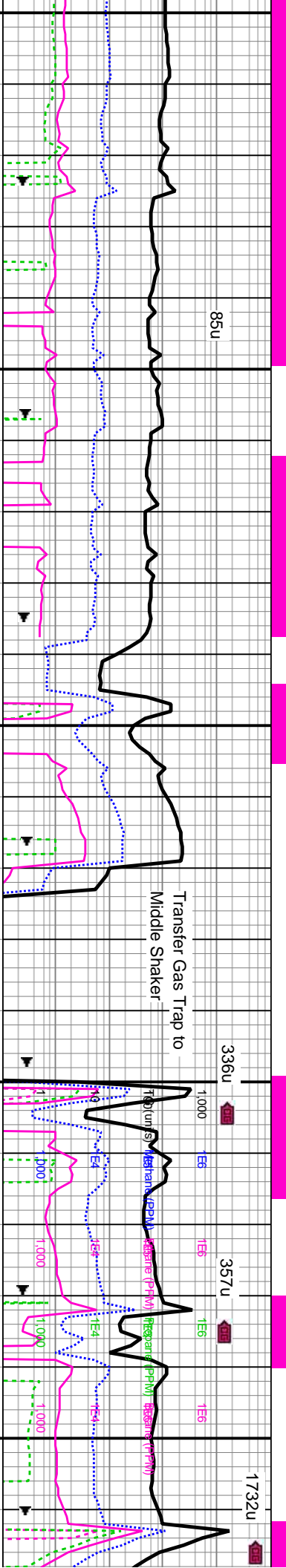
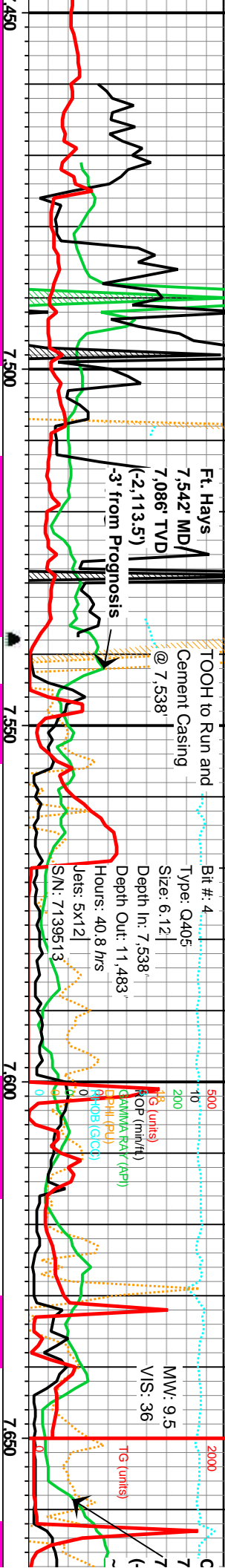
Inclination: 0.7°	Inclination: 0.5°	Inclination: 1.4°	Inclination: 4°	Inclination: 6.9°
Azimuth: 123.1°	Azimuth: 147.9°	Azimuth: 232.1°	Azimuth: 243.7°	Azimuth: 247.8°
VS: 552.75'	VS: 552.48'	VS: 552.59'	VS: 553.53'	VS: 555.7'
TVD: 6,405.85'	TVD: 6,434.85'	TVD: 6,466.85'	TVD: 6,496.81'	TVD: 6,527.67'
				TVD: 6,558.34'
				Inclination: 9.6°
				Azimuth: 249.9
				VS: 559.13'

[illegible]

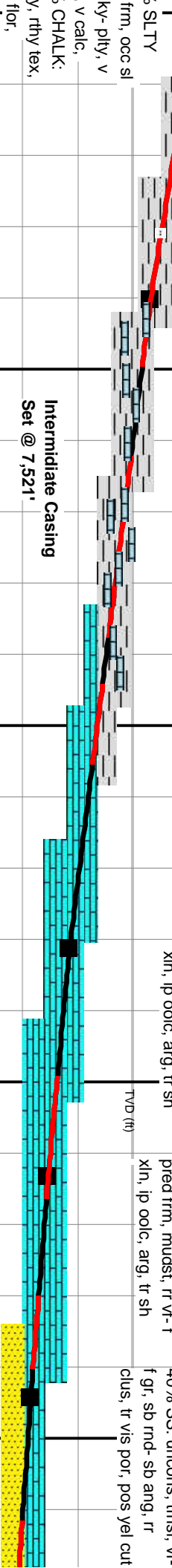
MW: 9
MV: 43

MW: 9
MV: 43

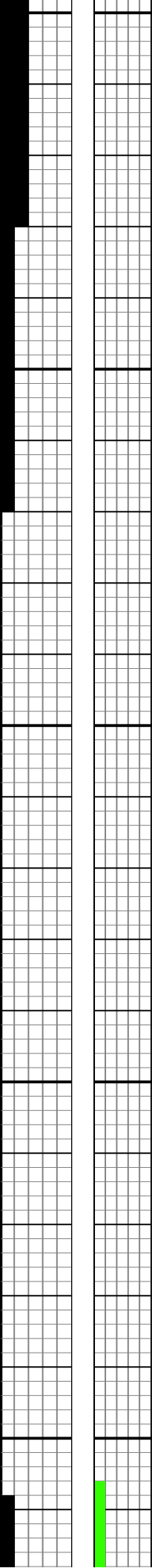


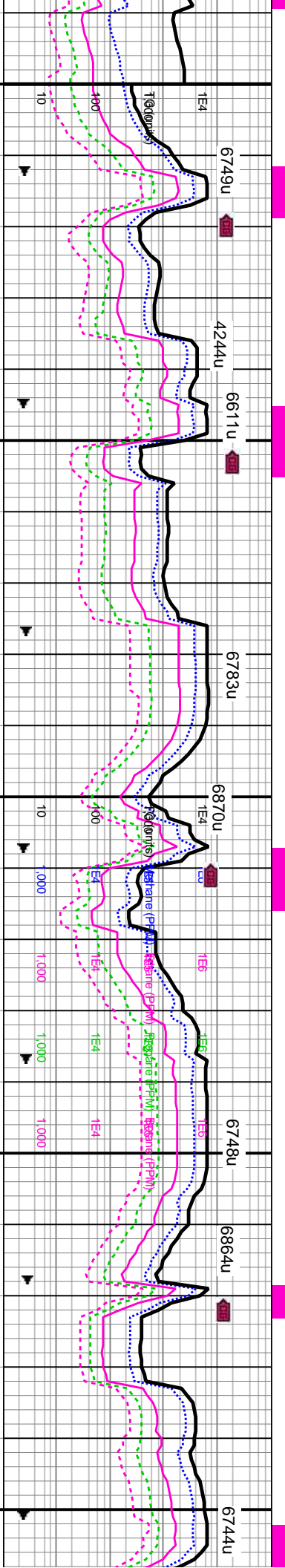


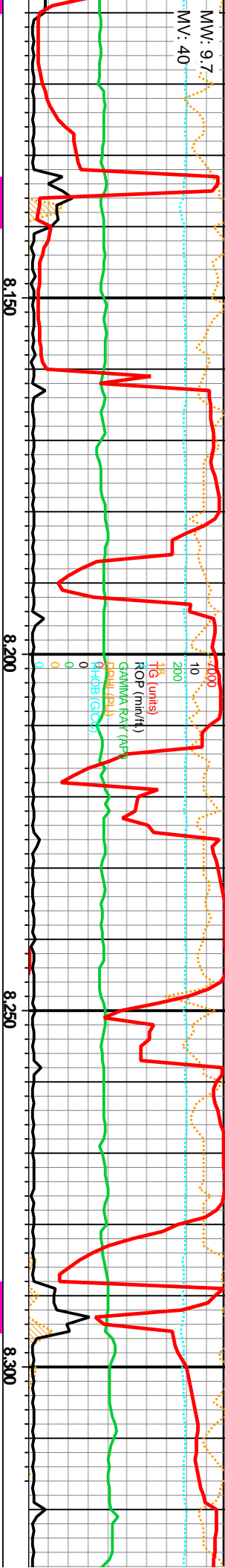
7460 - 7490 90% SLTY	7490 - 7520 60% LS: wh-	7520 - 7550 90% LS:	7550 - 7580 LS: wh- bf,	7580 - 7610 LS: wh- bf,	7610 - 7640 LS: wh- bf,	7640-7670 60% LS: wh-
SH: med gy, sft- frm, occ sl hd, sb ang- sb blk- ply, v arg, tr diss pyr, v calc, mrlly, tr bent 10% CHALK: lt-med gy, sb blk, rthy tex, tr diss pyr, lt bl flor, org/calc mx, tr LS mrlly	bf, ip lt gy, sb blk- sb ply, pred frm, mudst, ip vf- f xln, pred arg 40% SLTY SH: med- dk gy, sft- frm, ip hd, sb ang- sb blk- ply, v arg, tr diss pyr- drsy pyr, mod- v calc, intbdd chk, mrlly	wh- bf, ip lt gy, sb blk- sb ply, pred frm, mudst, ip vf- f xln 10% SLTY SH: med- dk gy, sft- frm, ip hd, sb ang- sb blk- ply, v arg, tr dissm pyr, mod- v calc, intbdd chk, mrlly	ip lt gy, sb blk- sb ply, pred frm, mudst, rr vf- f xln, ip oolc, arg, tr sh	ip lt gy, sb blk- sb ply, pred frm, mudst, rr vf- f xln, ip oolc, arg, tr sh	ip lt gy, sb blk- sb ply, pred frm, mudst, rr vf- f xln, ip oolc, arg, tr sh	bf, ip lt gy, sb blk- sb ply, pred frm, mudst, ip vf- f xln, occ cpxl, ip arg, rr py 40% SS: uncon, tmsl, vf- f gr, sb rnd- sb ang, rr clus, tr vis por, pos yel cut



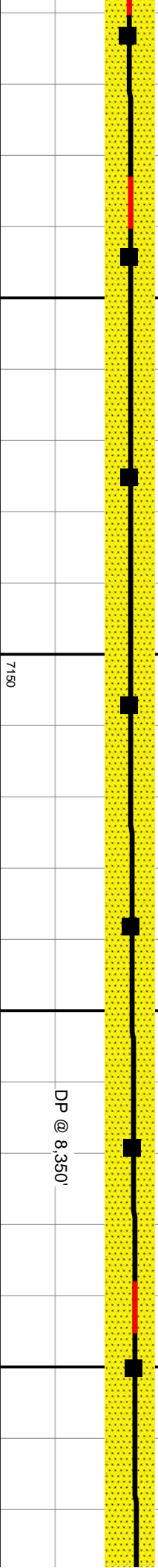
MD: 7,459' TVD: 7,060.58' Inclination: 70.3° Azimuth: 270.1° VS: 951.71'	MD: 7,490' TVD: 7,070.23' Inclination: 73.4° Azimuth: 270.4° VS: 979.66'	MD: 7,581' TVD: 7,092.16' Inclination: 78.7° Azimuth: 272.21° VS: 1,063.94'	MD: 7,613' TVD: 7,097.95' Inclination: 80.46° Azimuth: 273.52° VS: 1,094.23'	MD: 7,644' TVD: 7,102.69' Inclination: 81.95° Azimuth: 274.69° VS: 1,123.86'
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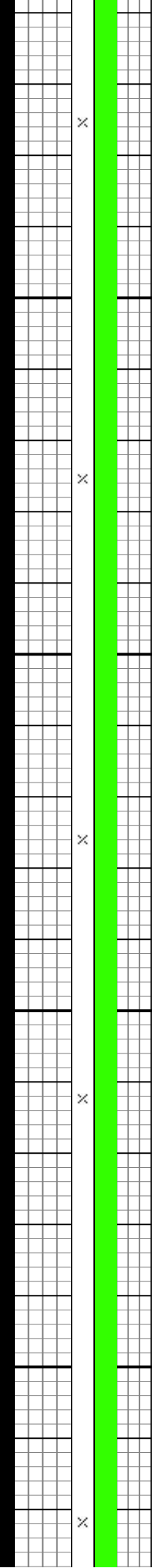


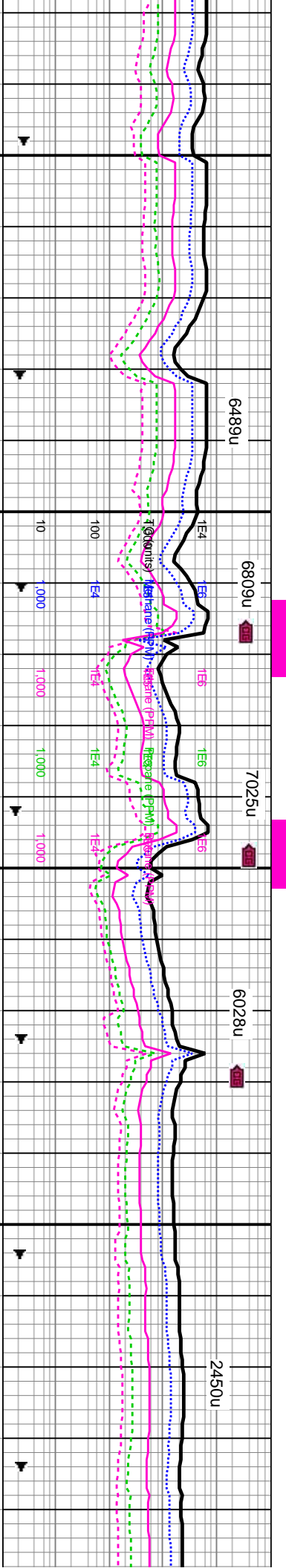
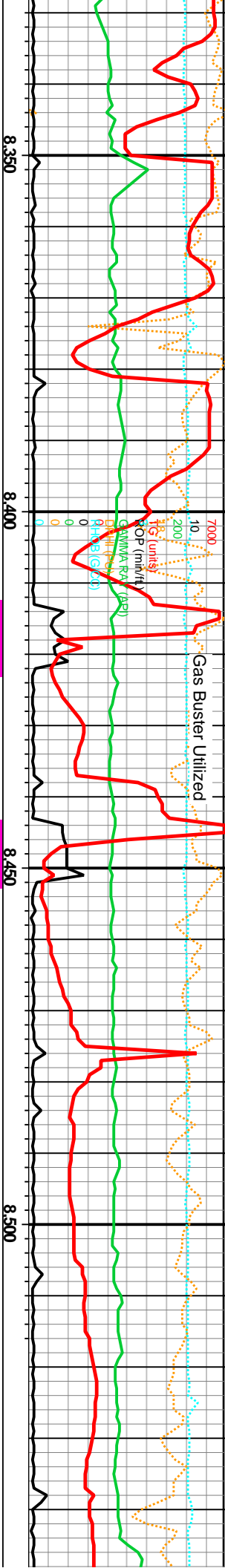


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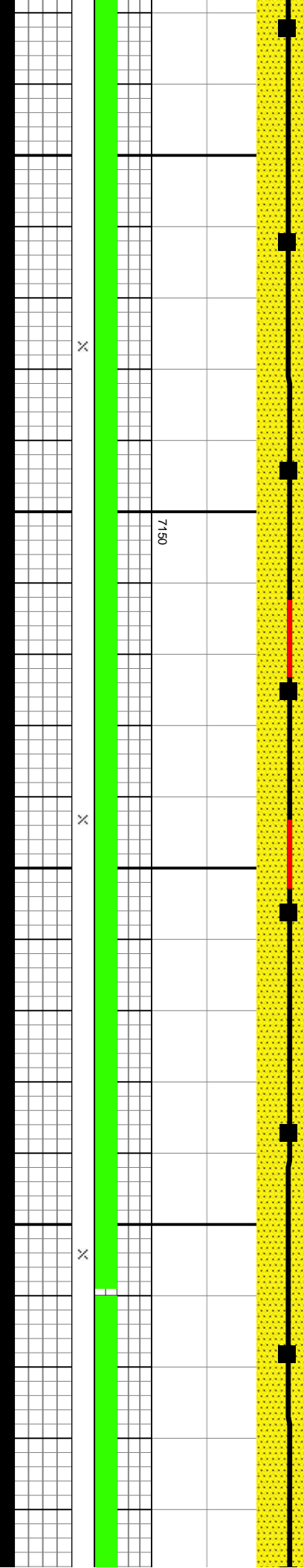


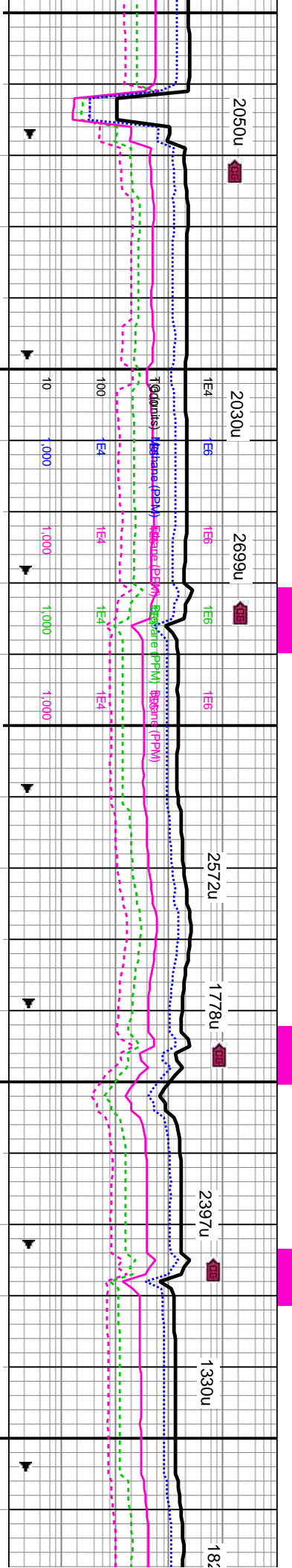
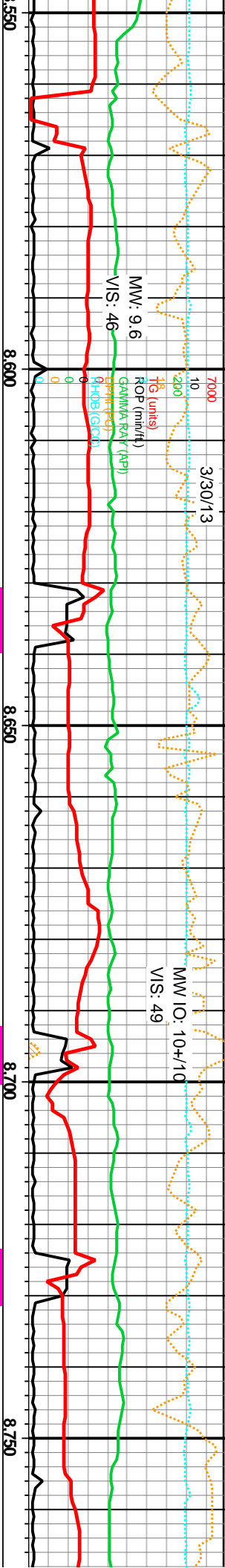
DP @ 8,350'





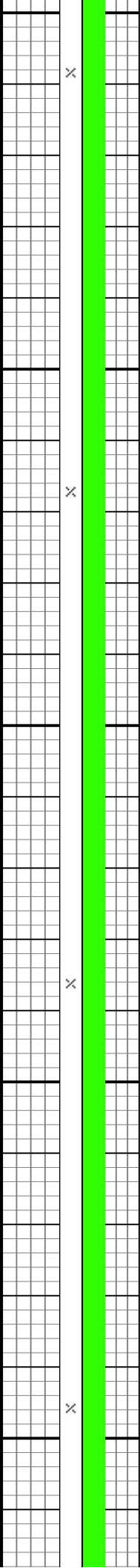
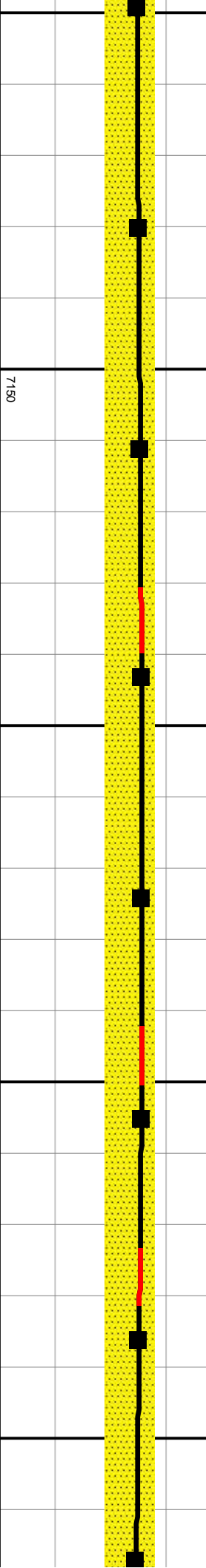
MD: 8,332' TVD: 7,113.2' Inclination: 90.31° Azimuth: 268.16° VS: 1,775.65'	MD: 8,362' TVD: 7,113.03' Inclination: 90.31° Azimuth: 267.46° VS: 1,803.69'	MD: 8,394' TVD: 7,112.79' Inclination: 90.57° Azimuth: 267.37° VS: 1,833.52'	MD: 8,425' TVD: 7,112.6' Inclination: 90.13° Azimuth: 267.72° VS: 1,862.44'	MD: 8,456' TVD: 7,112.69' Inclination: 89.52° Azimuth: 268.78° VS: 1,891.5'	MD: 8,487' TVD: 7,112.88' Inclination: 89.78° Azimuth: 268.95° VS: 1,920.67'	MD: 8,518' TVD: 7,112.93' Inclination: 90.04° Azimuth: 268.95° VS: 1,949.86'
8330 - 8360 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb rnd- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mt, ip calc mtx, tr pyr, tr visible por, pos v frnt bl diffuse cut	8360 - 8390 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb rnd- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mt, ip calc mtx, tr pyr, tr visible por, pos v frnt bl diffuse cut	8390 - 8420 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb md- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mt, tr pyr, tr visible por, pos v frnt bl diffuse cut	8420 - 8450 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb rnd- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mt, tr pyr, tr visible por, pos v frnt bl diffuse cut	8450 - 8480 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb md- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mt, tr pyr, tr visible por, pos v frnt bl diffuse cut	8480 - 8510 SS: pred tnsl, ip gy, rr tmsl yel, pred vf- f gr, sb md- sb ang, ip ang, pred uncons, ip fri clus, mod srt, sl arg mt, ip calc mtx, tr pyr, tr visible por, pos v frnt bl diffuse cut	8510 - 8540 SS: pred tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mt, ip calc mt, tr pyr, tr visible por, frnt bl diffuse cut

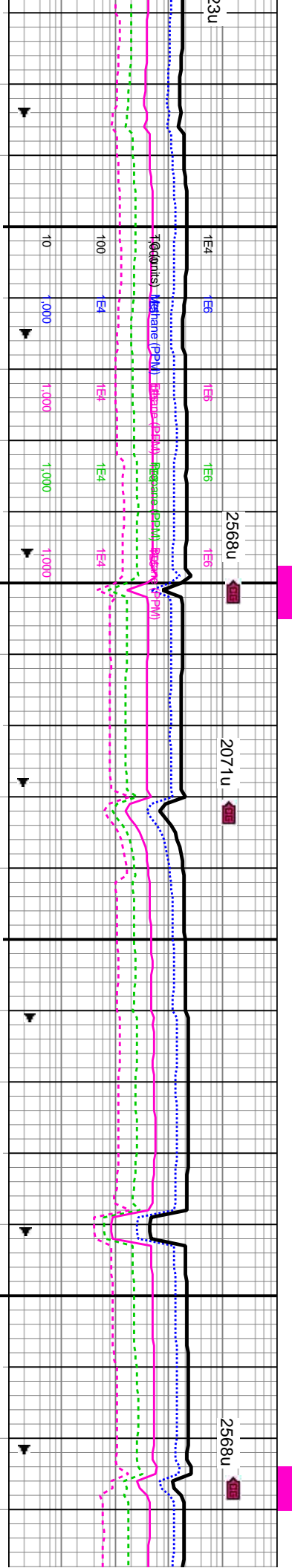
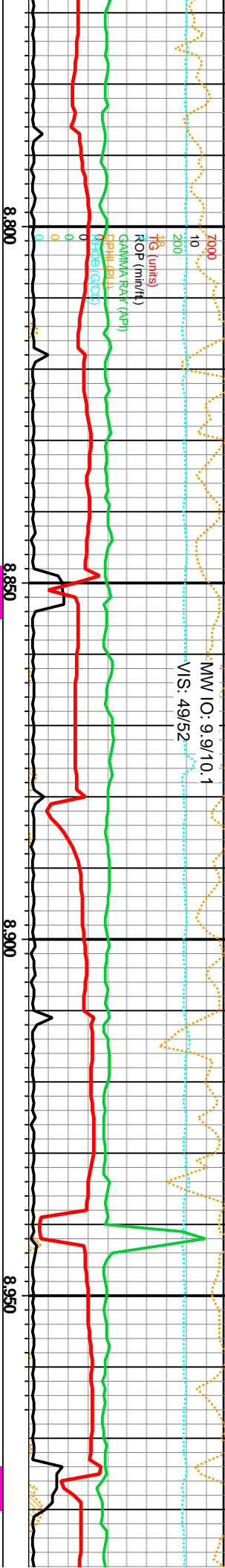




MD: 8,549' TVD: 7,112.79' Inclination: 90.48° Azimuth: 268.87° VS: 1,979.04'	MD: 8,580' TVD: 7,112.46' Inclination: 90.75° Azimuth: 268.78° VS: 2,008.21'	MD: 8,611' TVD: 7,111.96' Inclination: 91.1° Azimuth: 268.52° VS: 2,037.34'	MD: 8,643' TVD: 7,111.61' Inclination: 90.13° Azimuth: 268.69° VS: 2,067.4'	MD: 8,674' TVD: 7,111.52' Inclination: 90.22° Azimuth: 268.69° VS: 2,096.54'	MD: 8,705' TVD: 7,111.64' Inclination: 89.34° Azimuth: 268.69° VS: 2,125.68'	MD: 8,736' TVD: 7,112.23' Inclination: 88.46° Azimuth: 269.04° VS: 2,154.85'
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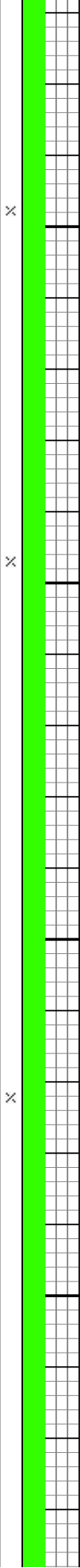
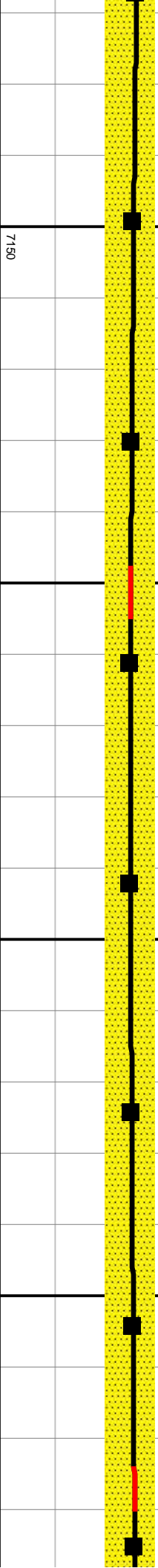
8570 SS:pred lt gy- gy, pred vf- f u f gr, sb md- sb ang, pred ip fri clus, mod srt, si arg mt, ip calc mtx, tr pyr, tr visible por, fnt bl cut	8570 - 8600 SS:pred tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mtx, tr pyr, tr visible por, fnt bl diffuse cut	8600 - 8630 SS:pred tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mt, tr pyr, tr visible por, fnt bl diffuse cut	8630 - 8660 SS:pred tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mt, tr pyr, tr visible por, fnt bl diffuse cut	8660 - 8690 SS:pred tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mt, tr pyr, tr visible por, fnt bl diffuse cut	8690 - 8720 SS: tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mt, tr pyr, tr vis por, fnt bl diffuse cut	8720 - 8750 SS:pred tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, si arg mt, ip calc mt, tr pyr, tr vis por, fnt bl diffuse cut	8750 - 8780 SS: tns, ip lt gy- gy, pred vf- f gr, occ u f gr, sb ang, occ ang, pr uncons, ip fri clu srt, si arg mt, ip tr pyr, tr vis por, diffuse cut
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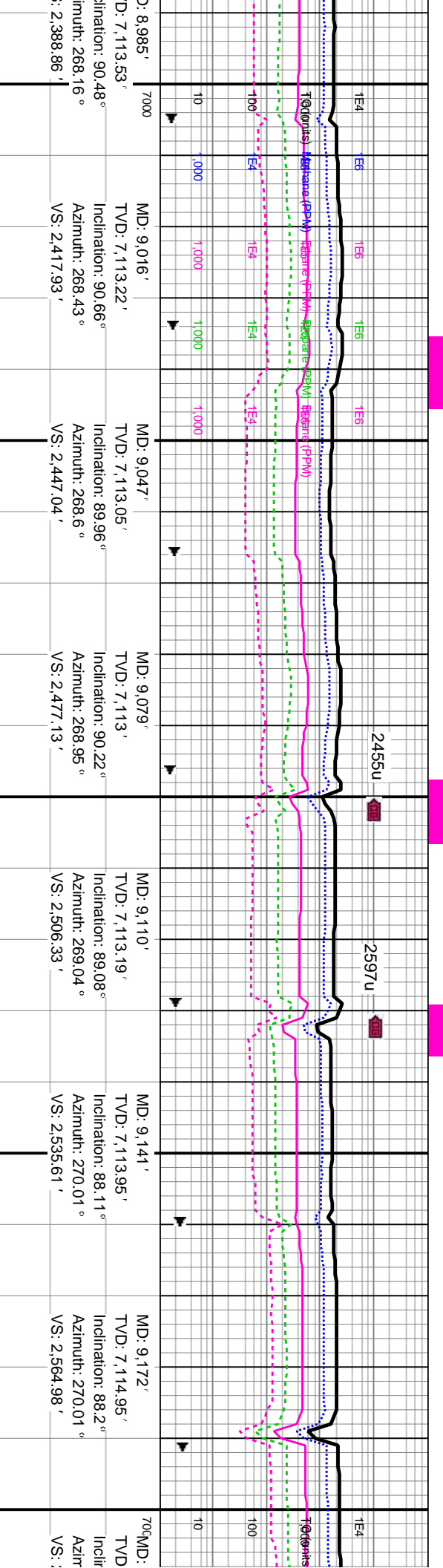
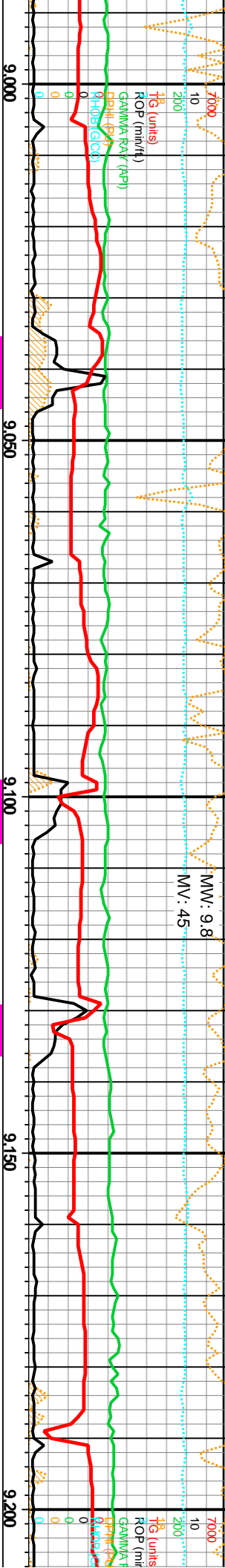




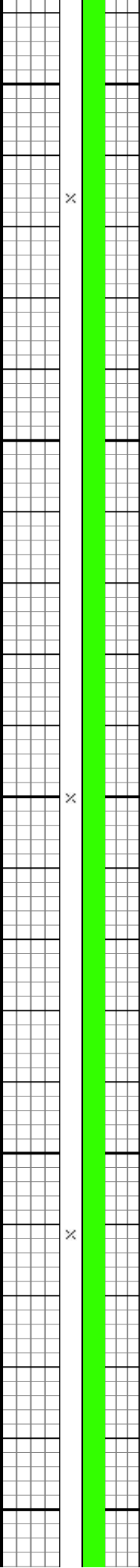
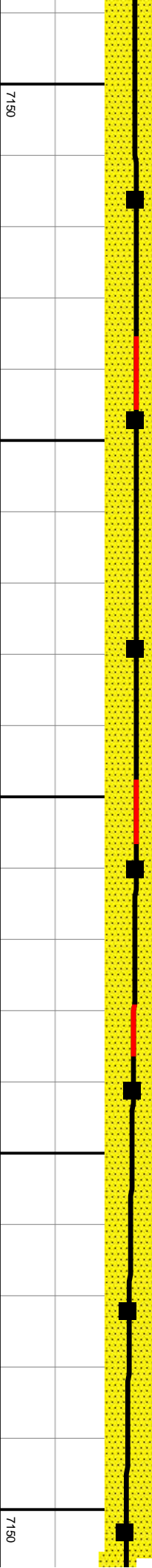
MD: 8,767'	MD: 8,799'	MD: 8,830'	MD: 8,861'	MD: 8,892'	MD: 8,924'	MD: 8,954'
TVD: 7,113.04'	TVD: 7,113.78'	TVD: 7,114.33'	TVD: 7,114.62'	TVD: 7,114.62'	TVD: 7,114.37'	TVD: 7,113.93'
Inclination: 88.55°	Inclination: 88.81°	Inclination: 89.16°	Inclination: 89.78°	Inclination: 90.22°	Inclination: 90.66°	Inclination: 91.01°
Azimuth: 269.13°	Azimuth: 268.69°	Azimuth: 268.34°	Azimuth: 268.6°	Azimuth: 268.52°	Azimuth: 268.78°	Azimuth: 268.69°
VS: 2,184.06'	VS: 2,214.17'	VS: 2,243.28'	VS: 2,272.37'	VS: 2,301.49'	VS: 2,331.57'	VS: 2,359.77'

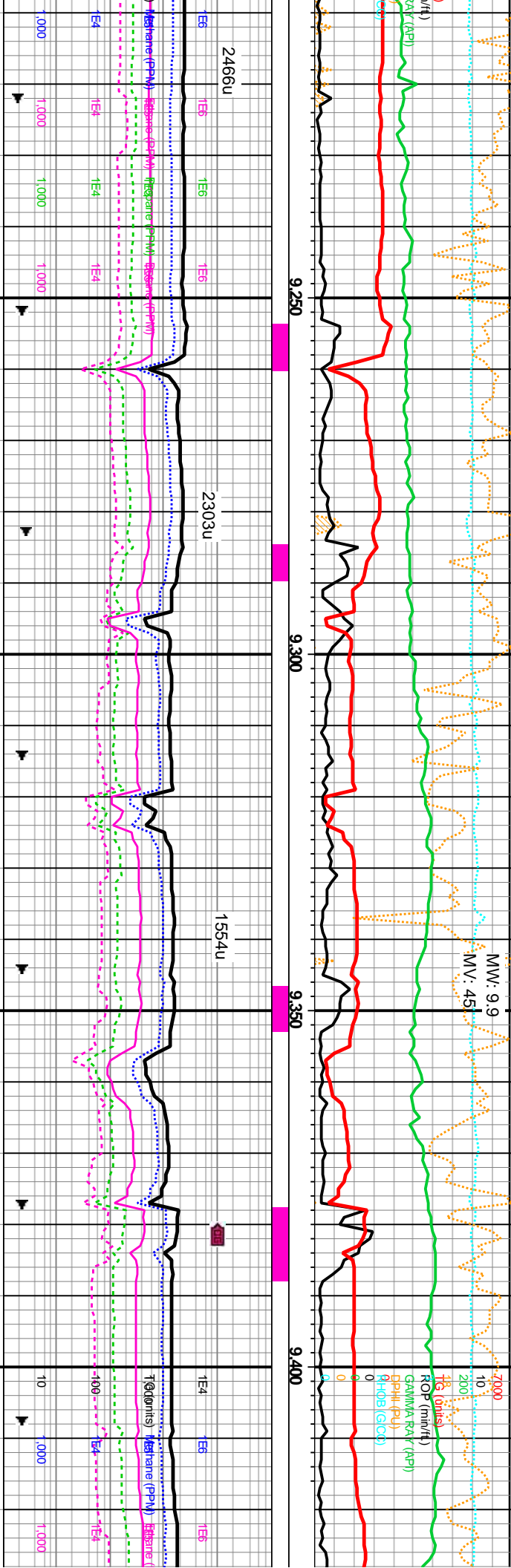
pred	8780 - 8810 SS:pred	8810 - 8840 SS:pred	8840 - 8870 SS:pred	8870 - 8900 SS:pred	8900 - 8930 SS:pred	8930 - 8960 SS:pred	8960 - 8990 SS:pred
pred vf- f	trns1, ip lt gy- gy, pred	trns1, ip lt gy- gy, pred vf- f	trns1, ip lt gy- gy, pred vf- f	trns1, ip lt gy- gy, pred vf- f	trns1, ip lt gy- gy, pred vf- f	trns1, ip lt gy- gy, pred vf- f	trns1, ip lt gy- gy, pred vf- f
rnd- sb	vf- f gr, occ u f gr, sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	f gr, occ u f gr, sb rnd- sb	f gr, occ u f gr, sb rnd- sb	f gr, occ u f gr, sb rnd- sb	f gr, occ u f gr, sb rnd- sb
mod	rnd- sb ang, occ ang,	ang, occ ang, pred	ang, occ ang, pred	sb ang, occ ang, pred	sb ang, occ ang, pred	sb ang, occ ang, pred	sb ang, occ ang, pred
calc mix,	pred uncons, ip fri clus,	uncons, ip fri clus, mod	uncons, ip fri clus, mod	uncons, ip fri clus, mod	uncons, ip fri clus, mod	uncons, ip fri clus, mod	uncons, ip fri clus, mod
frt bl	mod srt, sl arg mtz, ip	srt, sl arg mtz, ip calc	srt, sl arg mtz, ip calc	srt, sl arg mtz, ip calc	srt, sl arg mtz, ip calc	srt, sl arg mtz, ip calc	srt, sl arg mtz, ip calc
	calc mtz, tr pyr, tr vis- (tt)	mtz, tr pyr, tr vis por, frnt bl	tr pyr, tr vis por, frnt bl	diffuse cut	diffuse cut	diffuse cut	diffuse cut
	por, frnt bl diffuse cut						





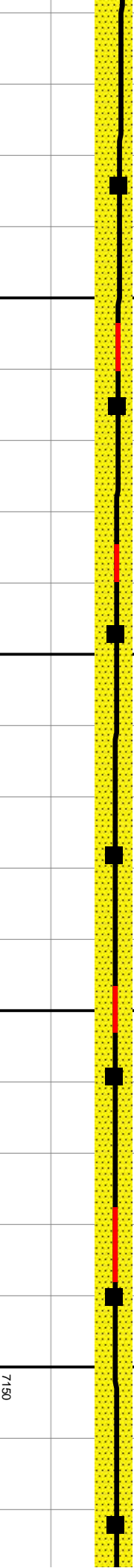
8990 - 9020 SS:pred	9020 - 9050 SS:pred	9050 - 9080 SS:pred	9080 - 9110 SS:pred	9110 - 9140 SS:pred	9140 - 9170 SS:pred lt	9170 - 9200 SS:pred lt	9200 -
tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	tnsl, ip lt gy- gy, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, sl arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	gy- gy, tnsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, v arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffuse cut	gy- gy, tnsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, v arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffu	gy- gy, tnsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, pred uncons, ip fri clus, mod srt, v arg mtx, ip calc mtx, tr pyr, tr vis por, fnt bl diffu

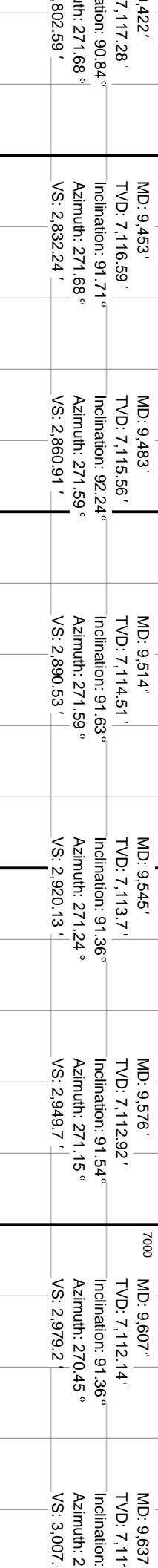




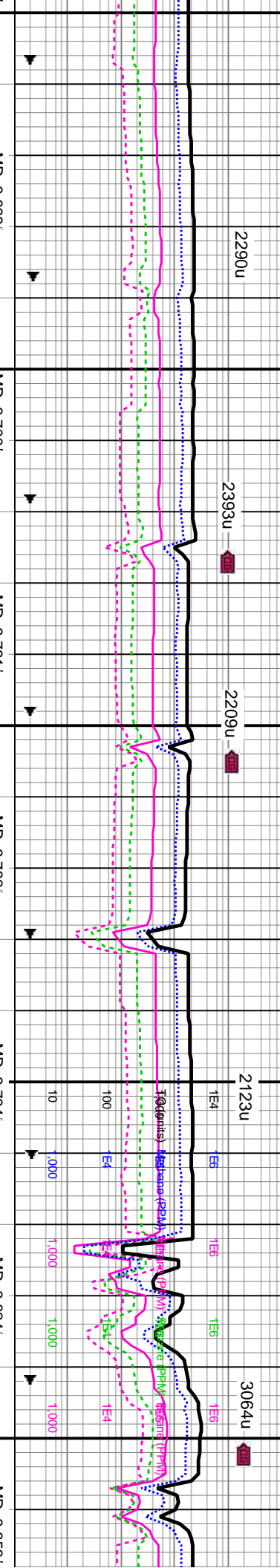
9,203'	MD: 9,234'	MD: 9,265'	MD: 9,297'	MD: 9,328'	MD: 9,359'	MD: 9,390'	MD: 9,400'
7,115.83'	TVD: 7,116.5'	TVD: 7,116.97'	TVD: 7,117.39'	TVD: 7,117.68'	TVD: 7,117.8'	TVD: 7,117.68'	TVD: 7,117.68'
Inclination: 88.55°	Inclination: 88.99°	Inclination: 89.25°	Inclination: 89.25°	Inclination: 89.69°	Inclination: 89.87°	Inclination: 90.57°	Inclination: 90.57°
Azimuth: 269.48°	Azimuth: 270.01°	Azimuth: 269.92°	Azimuth: 270.45°	Azimuth: 270.98°	Azimuth: 271.15°	Azimuth: 271.15°	Azimuth: 271.15°
VS: 2,594.29'	VS: 2,623.62'	VS: 2,652.99'	VS: 2,683.34'	VS: 2,712.83'	VS: 2,742.39'	VS: 2,771.99'	VS: 2,771.99'

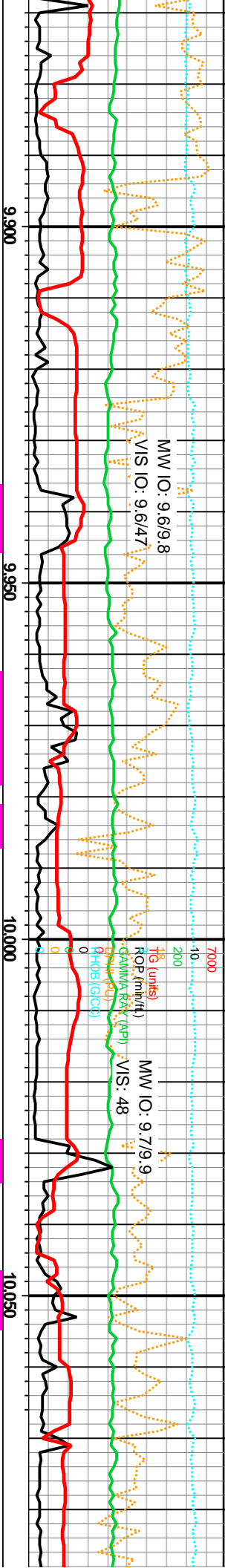
9230 SS:pred lt	9230 - 9260 SS:pred lt	9260 - 9290 SS:pred lt	9290 - 9320 SS:pred lt	9320 - 9350 SS:pred lt	9350 - 9380 SS:pred lt	9380 - 9410 SS:pred lt	9410 - 9440 SS:pred lt
gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f	gy- gy, trns l ip, pred vf- f
gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb	gr, occ u f gr, sb rnd- sb
ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred
clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod	clus, ip fri clus, mod
srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc	srt, v arg mtx, ip calc
mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt	mtx, tr pyr, tr vis por, fnt
bl diffuse cut	bl diffuse cut	bl diffuse cut	bl diffuse cut	bl diffuse cut	bl diffuse cut	bl diffuse cut	bl diffuse cut





7150





9.900

9.950

10.000

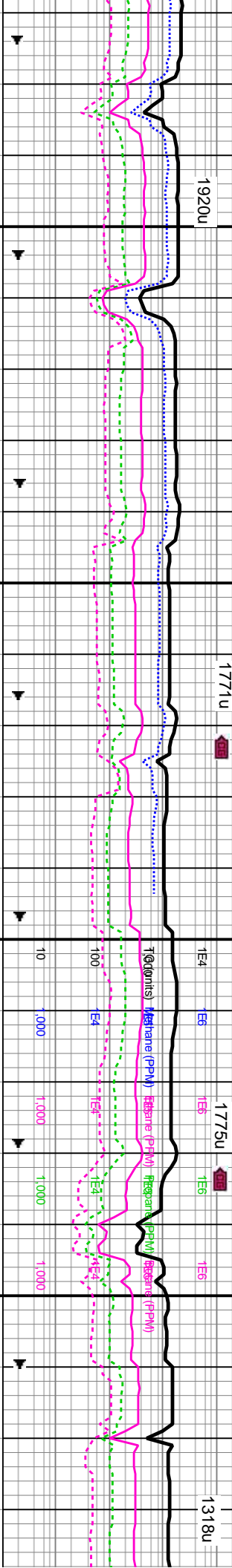
10.050

3/31/13

1771u

1775u

1318u

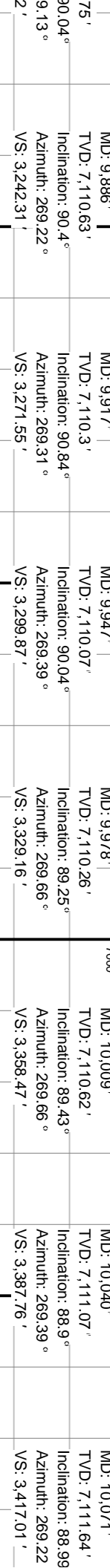


1920u

1771u

1775u

1318u



MD: 9.886'

MD: 9.917'

MD: 9.947'

MD: 9.978'

MD: 10.009'

MD: 10.040'

MD: 10.071'

TVD: 7.110.63'

TVD: 7.110.3'

TVD: 7.110.07'

TVD: 7.110.26'

TVD: 7.110.62'

TVD: 7.111.07'

TVD: 7.111.64'

Inclination: 90.04°

Inclination: 90.84°

Inclination: 90.04°

Inclination: 89.25°

Inclination: 89.43°

Inclination: 88.9°

Inclination: 88.99°

Azimuth: 269.22°

Azimuth: 269.31°

Azimuth: 269.39°

Azimuth: 269.66°

Azimuth: 269.66°

Azimuth: 269.39°

Azimuth: 269.22°

VS: 3.242.31'

VS: 3.271.55'

VS: 3.299.87'

VS: 3.329.16'

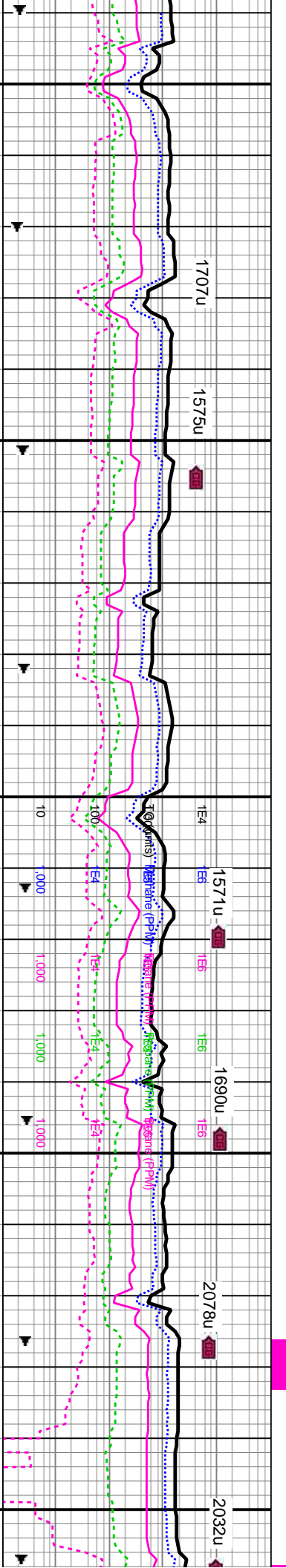
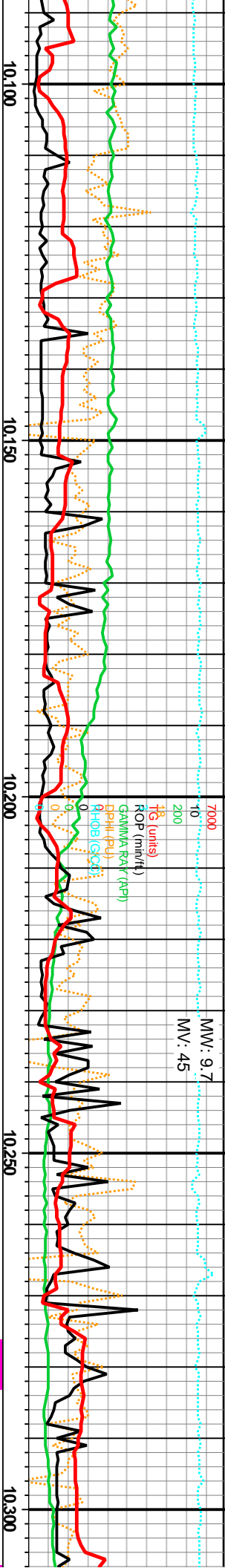
VS: 3.358.47'

VS: 3.387.76'

VS: 3.417.01'

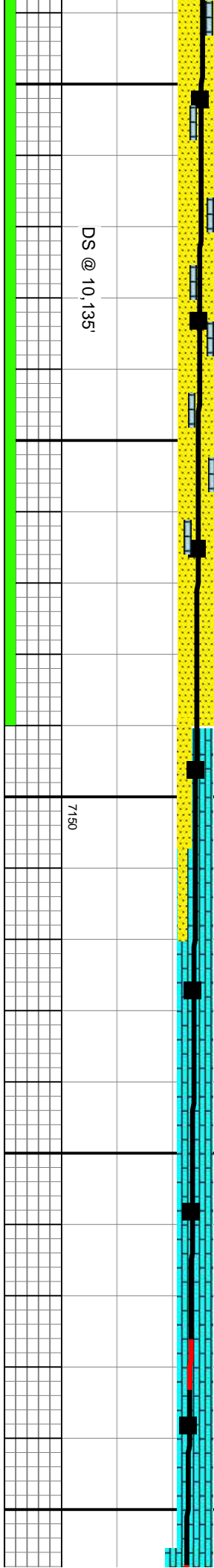
9890 SS:pred It	9890 - 9920 SS:pred It	9950 - 9980 SS:pred It	9980 - 10010 SS:pred It	10010 - 10040 SS:pred It	10040 - 10070 SS:pred It	10070 - 10100 S
tnsl ip, pred vf- f	gy- gy, tns ip, pred vf- f	gy- gy, tns ip, pred vf- f	gy- gy, tns ip, pred vf- f	gy- gy, tns ip, pred vf- f	gy- gy, tns ip, pred vf- f	gy- gy, tns ip, p
u f gr, sb md- sb	gr, occ u f gr, sb md- sb	gr, occ u f gr, sb md- sb	gr, occ u f gr, sb md- sb	gr, occ u f gr, sb md- sb	gr, occ u f gr, sb md- sb	gr, occ u f gr, sb
ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred	ang, occ ang, pred
, occ fri clus, mod	uncons, occ fri clus, mod	uncons, occ fri clus, mod	uncons, occ fri clus, mod	uncons, occ fri clus, mod	uncons, occ fri clus, mod	uncons, occ fri cl
mtx, ip calc mtx, r	srt, arg mtx, ip calc mtx, r	srt, arg mtx, ip calc mtx, r	srt, arg mtx, ip calc mtx, r	srt, arg mtx, ip calc mtx, r	srt, arg mtx, ip calc	srt, arg mtx, ip c
is por, fnt bl diffuse	pyr, tr vis por, fnt bl	pyr, tr vis por, fnt bl	pyr, tr vis por, fnt bl	pyr, tr vis por, fnt bl	pyr, tr vis por, fnt	pyr, tr vis por, fnt
	diffuse cut	diffuse cut	diffuse cut	diffuse cut	diffuse cut	cut, v rr wh oolc

7150

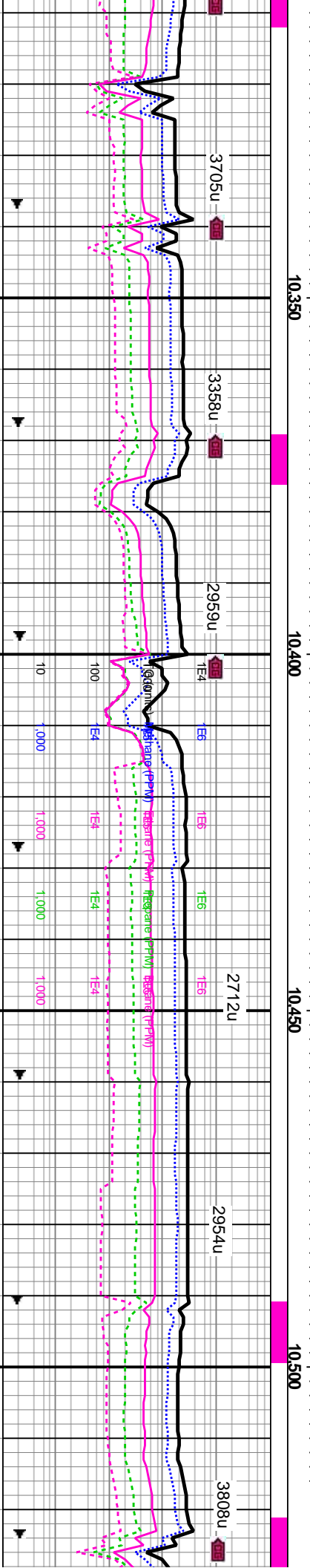
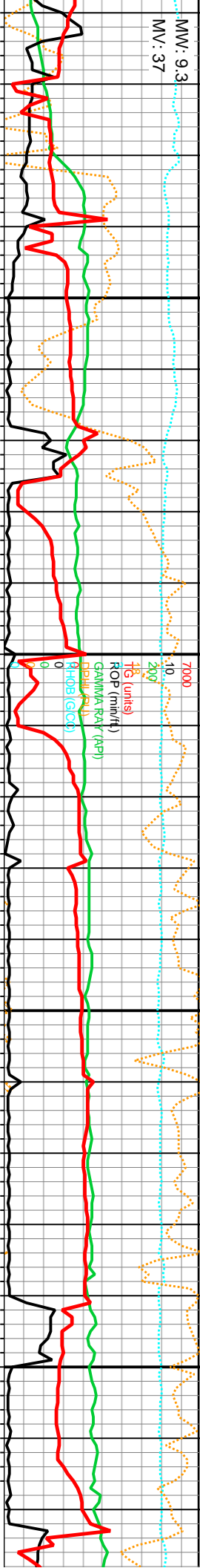


MD: 10,102' TVD: 7,112.16' Inclination: 89.08° Azimuth: 268.87° VS: 3,446.21'	MD: 10,133' TVD: 7,112.68' Inclination: 88.99° Azimuth: 268.16° VS: 3,475.32'	MD: 10,165' TVD: 7,113.2' Inclination: 89.16° Azimuth: 267.9° VS: 3,505.27'	MD: 10,196' TVD: 7,113.65' Inclination: 89.16° Azimuth: 267.81° VS: 3,534.25'	MD: 10,227' TVD: 7,114.16' Inclination: 88.99° Azimuth: 267.99° VS: 3,563.24'	MD: 10,258' TVD: 7,114.66' Inclination: 89.16° Azimuth: 267.64° VS: 3,592.21'	MD: 10,288' TVD: 7,115.44' Inclination: 87.85° Azimuth: 268.08° VS: 3,620.25'
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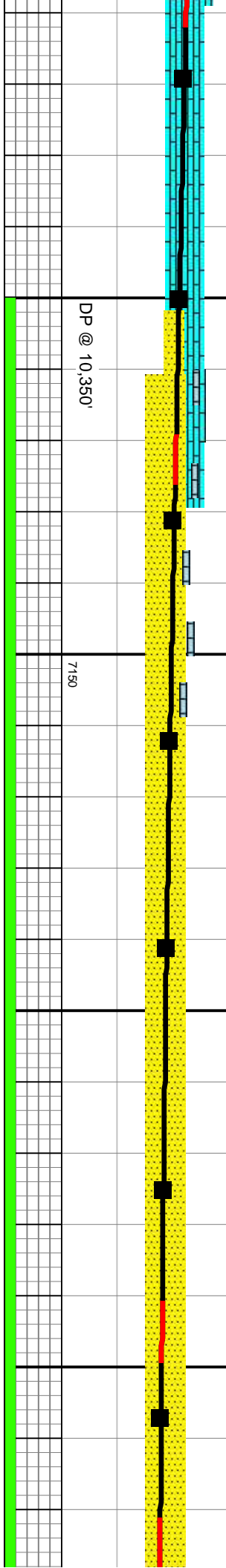
10100 - 10130 SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, abnt sparry cal, tr vis por, fnt bl diffuse cut	10130 - 10160 SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, abnt sparry cal, tr vis por, fnt bl diffuse cut	10160 - 10190 SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, abnt sparry cal, tr vis por, fnt bl diffuse cut	10190 - 10220 90% LS: mudst, wh- lt gy vf-microxin, frm-hd, dns, rthy tex, tr ool, tr nodr pyr 10% SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10220 - 10250 90% LS: mudst, wh- lt gy vf-microxin, frm-hd, dns, rthy tex, tr ool, tr nodr pyr 10% SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10250 - 10280 90% LS: mudst, wh- lt gy vf-microxin, frm-hd, dns, rthy tex, tr ool, tr nodr pyr 10% SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10280 - 10310 90% LS: mudst, wh- lt gy vf-microxin, frm-hd, dns, rthy tex, tr ool, tr nodr pyr 10% SS:pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred uncons, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut
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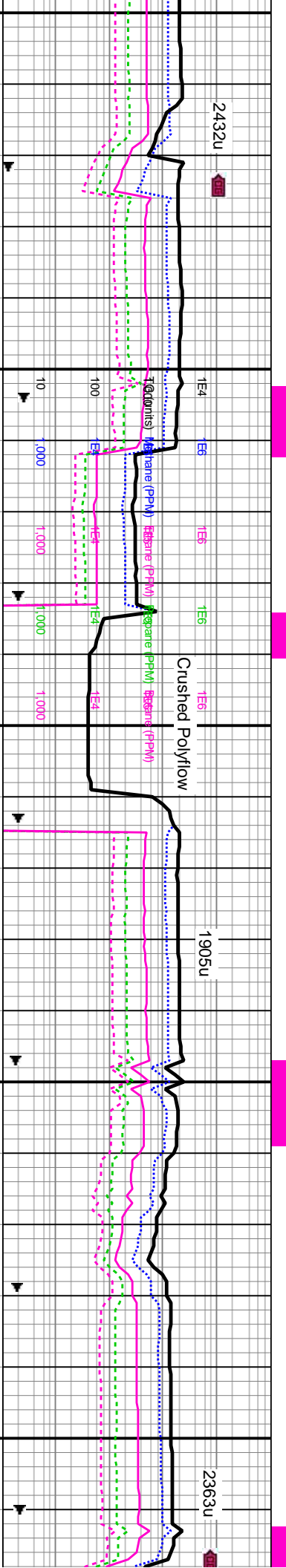
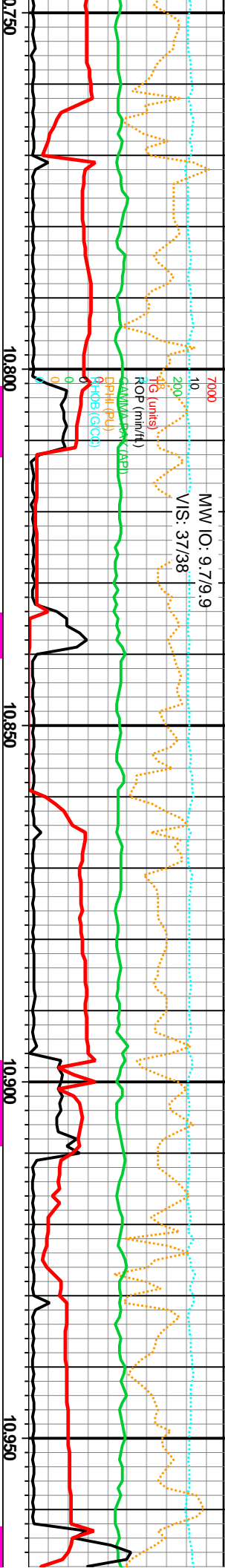


DS @ 10,135'	7150
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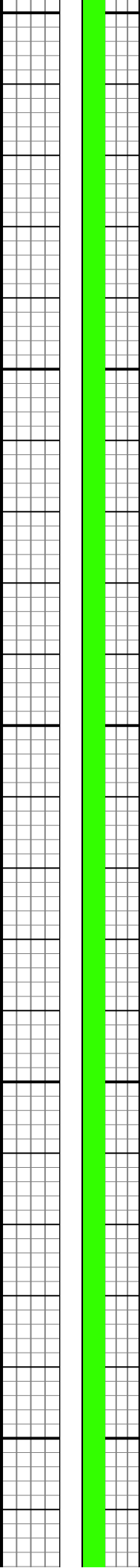
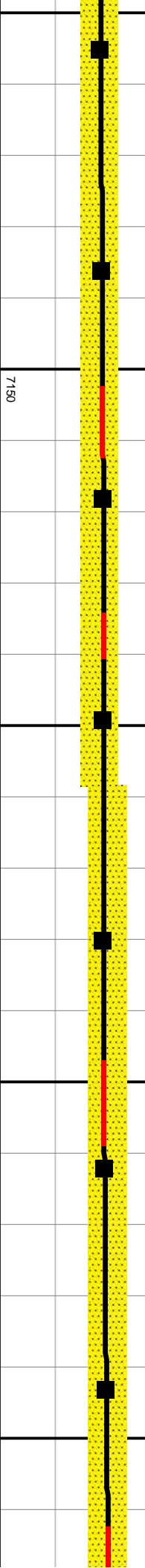
MD: 10,319' TVD: 7,116.77' Inclination: 87.23° Azimuth: 268.69° VS: 3,649.31'	MD: 10,350' TVD: 7,118.24' Inclination: 87.32° Azimuth: 268.6° VS: 3,678.41'	MD: 10,381' TVD: 7,119.57' Inclination: 87.76° Azimuth: 268.34° VS: 3,707.48'	MD: 10,412' TVD: 7,120.74' Inclination: 87.93° Azimuth: 268.25° VS: 3,736.53'	MD: 10,441' TVD: 7,121.68' Inclination: 88.37° Azimuth: 267.99° VS: 3,763.68'	MD: 10,475' TVD: 7,122.54' Inclination: 88.72° Azimuth: 268.08° VS: 3,795.5'	MD: 10,507' TVD: 7,123.13' Inclination: 89.16° Azimuth: 268.78° VS: 3,825.52'
10310 - 10340 90% LS: mudst, wh-it gy vf-microxln, frm-hd, dns, rthy tex, tr ool, tr nodr pyr 10% SS;pred lt gy- gy, tnsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred unconc, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10340 - 10370 70% SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred unconc, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut 30% LS: mudst, wh-it gy vf-microxln, frm-hd, dns, rthy tex, tr oolc	10370 - 10400 90% SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred unconc, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut 10% LS: mudst, wh-it gy vf-microxln, frm-hd, dns, rthy tex, tr oolc	10400 - 10430 90% SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred unconc, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut 10% LS: mudst, wh-it gy vf-microxln, frm-hd, dns, rthy tex, tr oolc	10430 - 10460 SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred unconc, occ fri clus, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut, tr LS	10460 - 10490 SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred cls, ip unconc, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut, tr LS	10490 - 10520 SS;pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb md- sb ang, occ ang, pred cls, ip unconc, mod srt, arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut, tr LS

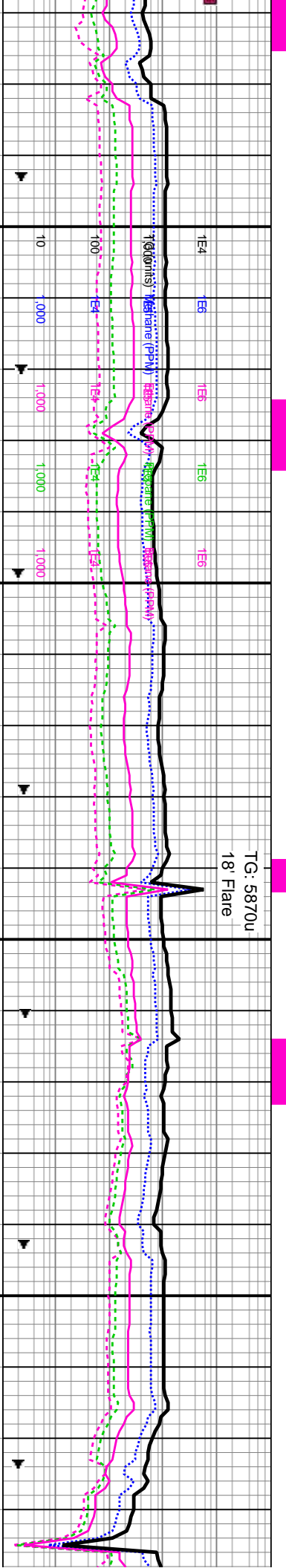
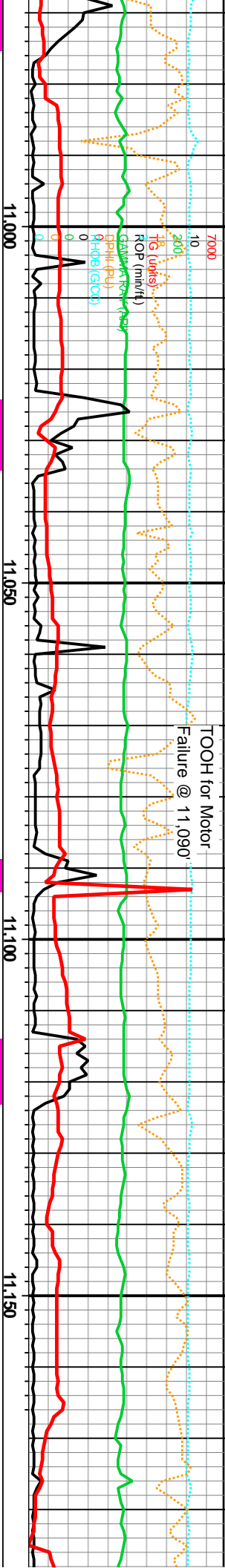




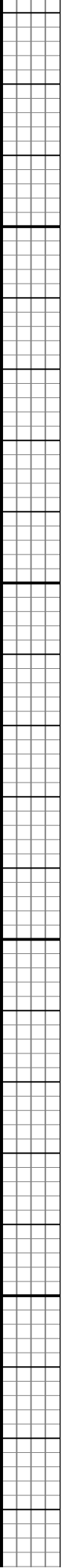
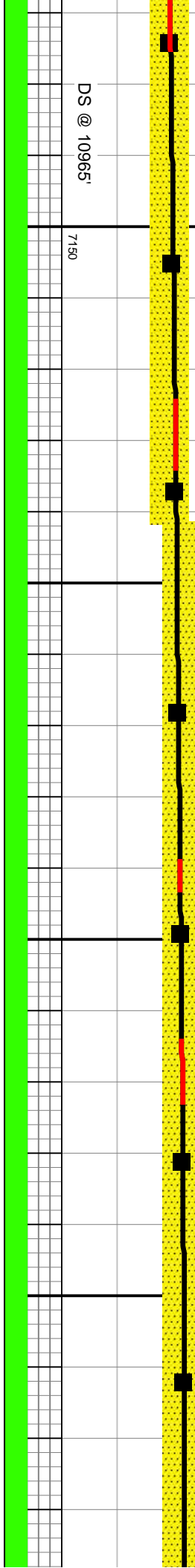
MD: 10,755' TVD: 7,122.81' Inclination: 90.66° Azimuth: 268.69° VS: 4,059.7'	MD: 10,786' TVD: 7,122.39' Inclination: 90.92° Azimuth: 268.43° VS: 4,088.82'	MD: 10,818' TVD: 7,122.12' Inclination: 90.04° Azimuth: 268.87° VS: 4,118.89'	MD: 10,849' TVD: 7,122.12' Inclination: 89.96° Azimuth: 269.31° VS: 4,148.1'	MD: 10,880' TVD: 7,122.04' Inclination: 90.31° Azimuth: 269.39° VS: 4,177.36'	MD: 10,912' TVD: 7,121.77' Inclination: 90.66° Azimuth: 269.83° VS: 4,207.62'	MD: 10,943' TVD: 7,121.32' Inclination: 91.01° Azimuth: 269.74° VS: 4,236.95'
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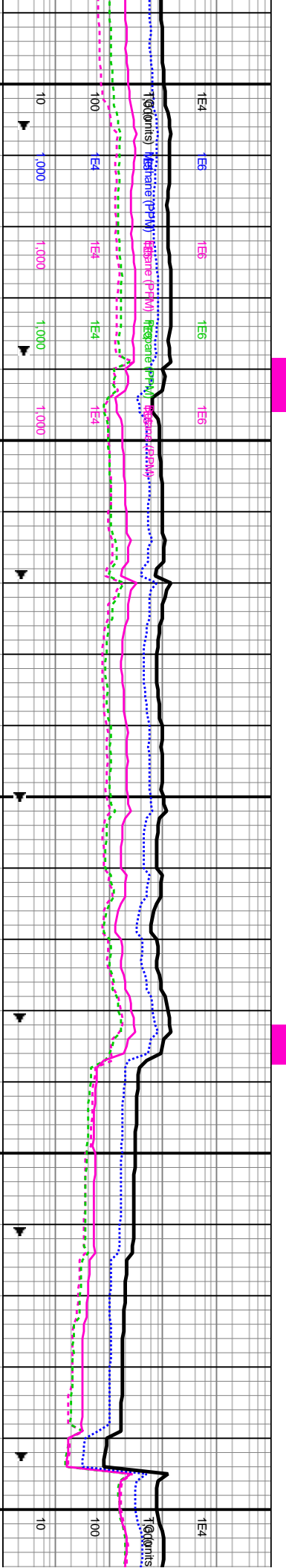
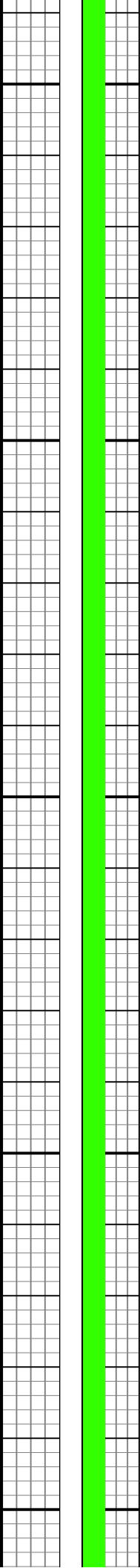
SS: pred pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- j, pred mod srt, uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10760 - 10790 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred cls, ip uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10790 - 10820 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, pred cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10820 - 10850 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10850 - 10880 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10880 - 10910 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10910 - 10940 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	10940 - 10970 SS: pred lt gy- gy, trnsi ip, pred vf- f gr, occ u f gr, sb rmd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut
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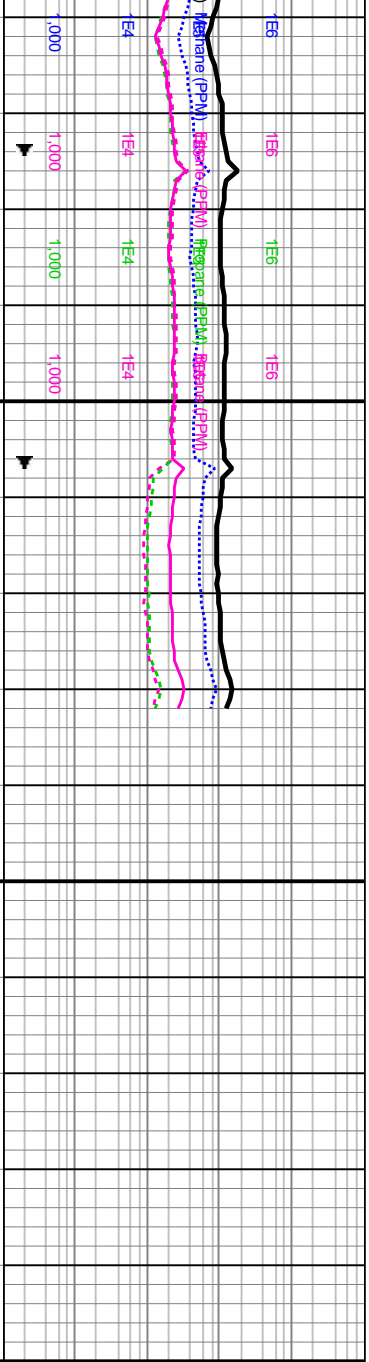
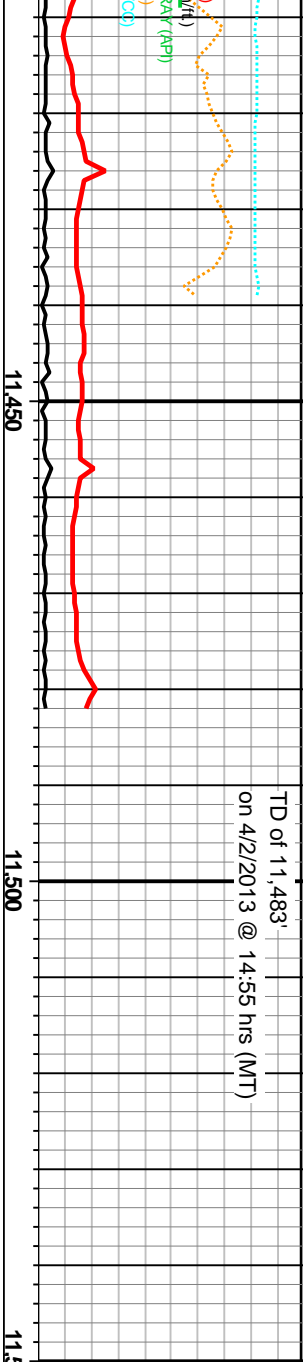




MD: 10,974' TVD: 7,120.66' Inclination: 91.45° Azimuth: 270.27° VS: 4,266.32'	7000 MD: 11,005' TVD: 7,119.85' Inclination: 91.54° Azimuth: 270.18° VS: 4,296.73'	MD: 11,037' TVD: 7,119.14' Inclination: 91.01° Azimuth: 270.36° VS: 4,326.09'	MD: 11,068' TVD: 7,118.54' Inclination: 91.19° Azimuth: 270.45° VS: 4,355.53'	MD: 11,099' TVD: 7,117.85' Inclination: 91.36° Azimuth: 270.62° VS: 4,384.99'	MD: 11,131' TVD: 7,117.26' Inclination: 90.75° Azimuth: 271.59° VS: 4,415.5'	MD: 11,162' TVD: 7,116.95' Inclination: 90.4° Azimuth: 271.77° VS: 4,445.15'
10970 - 11000 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11000 - 11030 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11030 - 11060 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11060 - 11090 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, ip arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11090 - 11120 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, v arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11120 - 11150 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, v arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut	11150 - 11180 SS: pred lt gy- gy, tmsl ip, pred vf- f gr, occ u f gr, sb rnd- sb ang, occ ang, ip cls, pred uncons, mod srt, v arg mtx, ip calc mtx, rr pyr, tr vis por, fnt bl diffuse cut



[illegible]



SS: pred		11420 - 11450 SS: pred	11450 - 11483 SS: pred	<div>Projection to TD</div> <div>MD: 11,483'</div> <div>TVD: 7,114.76'</div> <div>Inclination: 90.48°</div> <div>Azimuth: 272.82°</div> <div>VS: 4,753.4'</div>	<div>Bottom Hole Location:</div> <div>1,515.81' N, 4,505.23' W FROM SURFACE</div> <div>LOCATION OR 1320' FSL, 460' FWL,</div> <div>NENE Sec. 4, T5N., R67W,</div> <div>Weld Co. Colorado</div>
, pred vf-		lt gy- gy, trnsi ip, pred vf-	lt gy- gy, trnsi ip, pred vf-		
sb rnd- sb		f gr, occ u f gr, sb rnd- sb	f gr, occ u f gr, sb rnd- sb		
cls,		ang, occ ang, ip cls,	ang, occ ang, ip cls,		
mod srt, v		pred uncon, mod srt, v	pred uncon, mod srt, v		
mtx, rr		arg mtx, ip calc mtx, rr	arg mtx, ip calc mtx, rr		
it bl		pyr, tr vis por, fnt bl	pyr, tr vis por, fnt bl		
		diffuse cut	diffuse cut		

