

Well-Site Geologists

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2812 1 St Avenue North, Suite 430
Billings, MT 59101

Well Name and Company

Well Name: Meagher 14-1H

KGH Operating Company
2812 1st Avenue North
Billings, MT 59101

Well Information

Field: North Gilsonite
Region: Rio Blanco County, Colorado
Coordinates: 47° 41' 47.856 N 103° 43' 54.468 W
Location: 1630' FNL, 2700' FWL Section 14, T 1S, R 104 W
State: Colorado/Rio Blanco
API Index: 05-103-11955
Rig Operator: Aztec Drilling Rig # 920
Rig Supervisor: Tim McDonald
Directional Company: Halliburton
KGH Operating Company Geologist: Thomas Hauptman

Ground Elevation(ft): 6554.0 KB Elevation(ft): 6568.6
Spud Date: 7/3/2013
Drilling Concluded: 7/15/2013

Legend

Scale 1:480 (1" = 40')

Laterals

Well Plan:

Rotate Survey pt. Slide
From: 813.0 To: 9755.0

Lithology

	Anhydrite
	Lower Bakken Shale
	Breccia
	Carbonaceous Shale
	Cement
	Hot Marker 1
	Upper Bakken Shale
	Coal
	Conglomerate
	Dolomite
	Fault or Fracture
	Glauconite
	Gypsum
	Limestone
	Middle Bakken Packstone
	Middle Bakken Dol
	Salt
	Sandstone
	Shale
	Cool Marker 1

Graph #1 Data

ROP (min/ft)

Gamma (API)

Graph #2 Data

C1 (PPM)

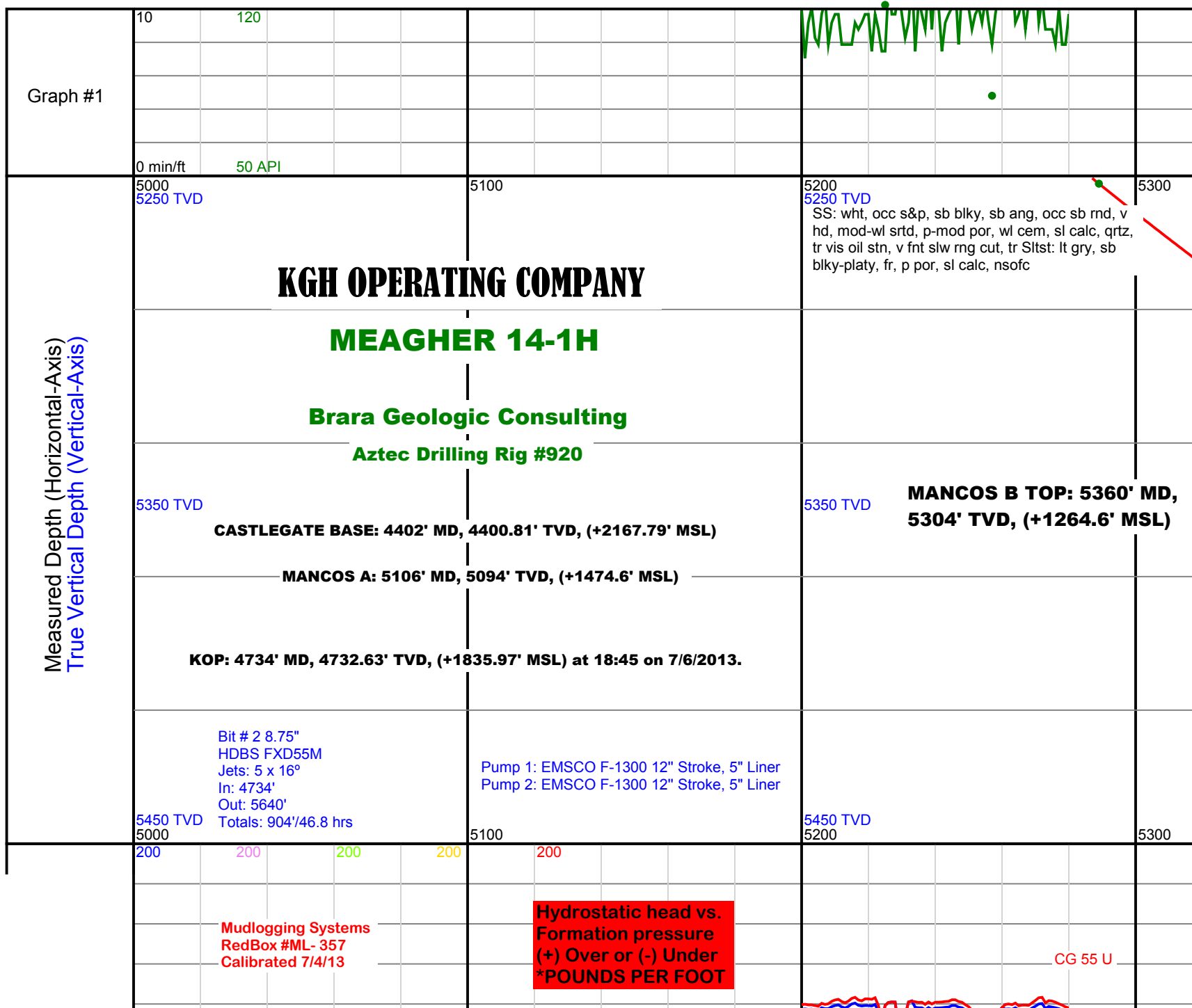
C2 (PPM)

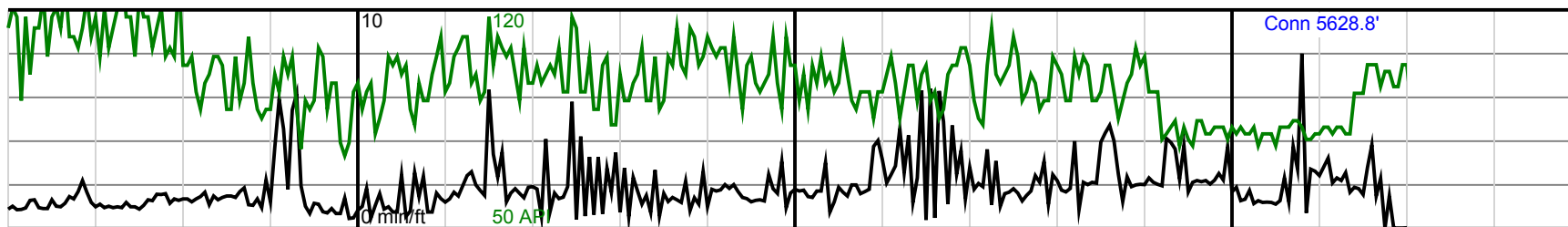
C3 (PPM)

C4 (PPM)

Log Images

	Bit Trip
	Midnight
	Carbide Drop
	Gas Show
	Oil Show
	Casing Shoe
	Fracture
	Tight Connection
	Carbonaceous
	Glauconite
	Kaolinite
	Pyrite
	Fossil
	Connection





5400
SS: wht, clr grs, gry, s&p, vf-f gr, sb blkky-sb plty, sft frm, mod srtd, p-fr por, sl calc, tr glauc, tr carb incl, slw fnt rng cut, tr oil stn, Slst: dk gy, gy, sb blkky, sb plty, frm, sl brit, tr sdy, n por, sl calc, nsofc

5500
SS: wht, clr grs, s&p, f gr, blkky-sb plty, sft frm, mod srtd, p-fr por, sl calc, tr glauc, tr carb incl, slw fnt rng cut, tr oil stn, Decr Slst: dk gy, gy, sb blkky, sb plty, frm, sl brit, bcmg incr sdy, n por, sl calc, nsofc, Tr Sh

5600
5250 TVD
SS: wht-lt gy, clr grs, occ s&p, sb blkky sb rnd, frm, mod srtd, mod wl srtd, fr cem, sl calc, tr glauc, sl oil stn, mod fs tr Slst: gry-dk gy, sb blkky-platy, p por, sh

Meagher 11-13 Gamma
KB: 6466

Bit # 3 6.125"
Ulterra U513M
JETS: 5x12
In: 5640'
Out: 9755'
Totals: 3213/59.2 hrs

**Landed Curve at 23:15 on 7/8/2013 at 5640' MD,
5389.88' TVD, (+1178.72° MSL), 91.52° INC, 74.63 AZI.
Landing Point Location: 4664.06' FNL & 3234.25' FWL
Sec. 14, T 1 S, R 104 W**

7" Intermediate Casing run and set at 5640'

MD 5512.0'
TVD 5380.3'
INC 74.22°
AZ 74.76°
VS 0'
DLS 19.7°/100'
NS 0' North
EW 412' East

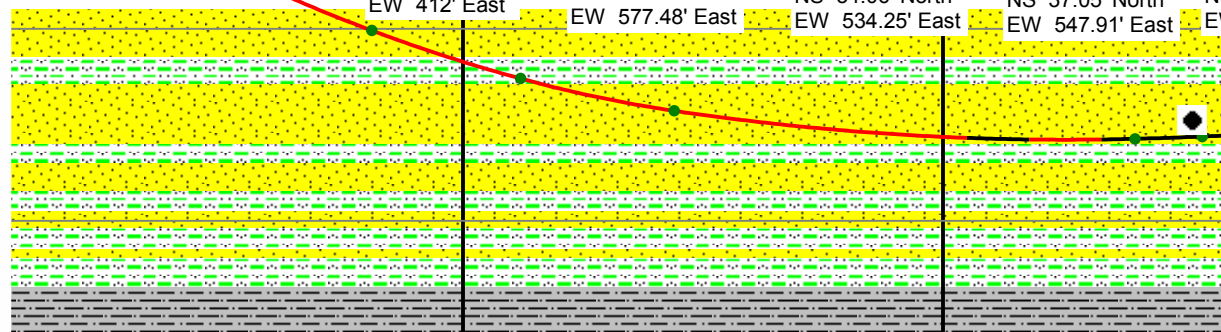
MD 5544'
TVD 5387.05'
INC 81.52°
AZ 74.63°
VS -8.7'
DLS 22.82°/100'
NS 41.92' North
EW 577.48' East

MD 5640'
TVD 5392.88'
INC 91.5°
AZ 74.63°
VS -34.1'
DLS 10.40°/100'
NS 34.06' North
EW 534.25' East

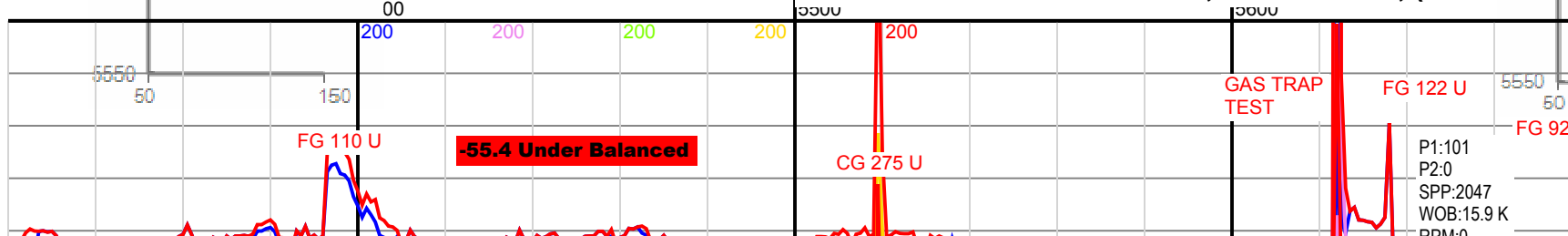
MD 5654'
TVD 5392.40'
INC 92.43°
AZ 80.70°
VS -37.05'
DLS 43.84°/100'
NS 37.05' North
EW 547.91' East

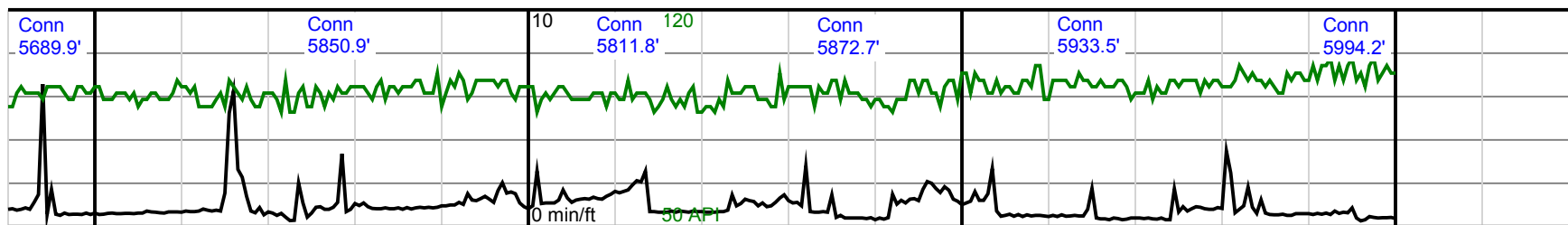
MD 5654'
TVD 5392.40'
INC 92.43°
AZ 80.70°
VS -37.05'
DLS 43.84°/100'
NS 37.05' North
EW 547.91' East

Meagher 11-13 Gamma
KB: 6466



TURBIDE ZONE TOP: 5502' MD, 5378.06' TVD, (+119°)





5700

5800

5900

6000

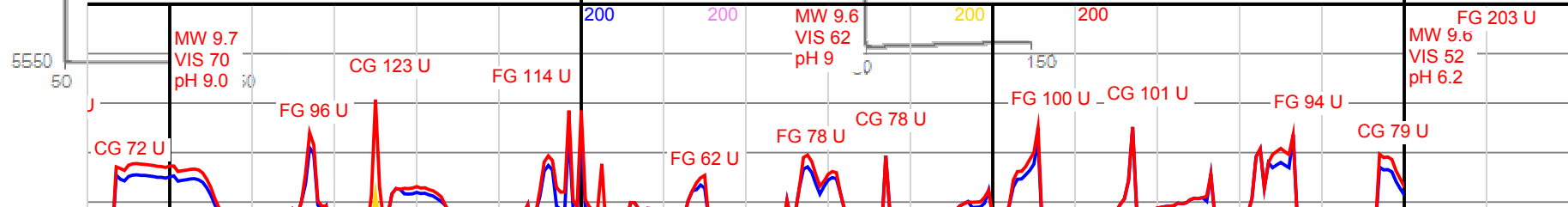
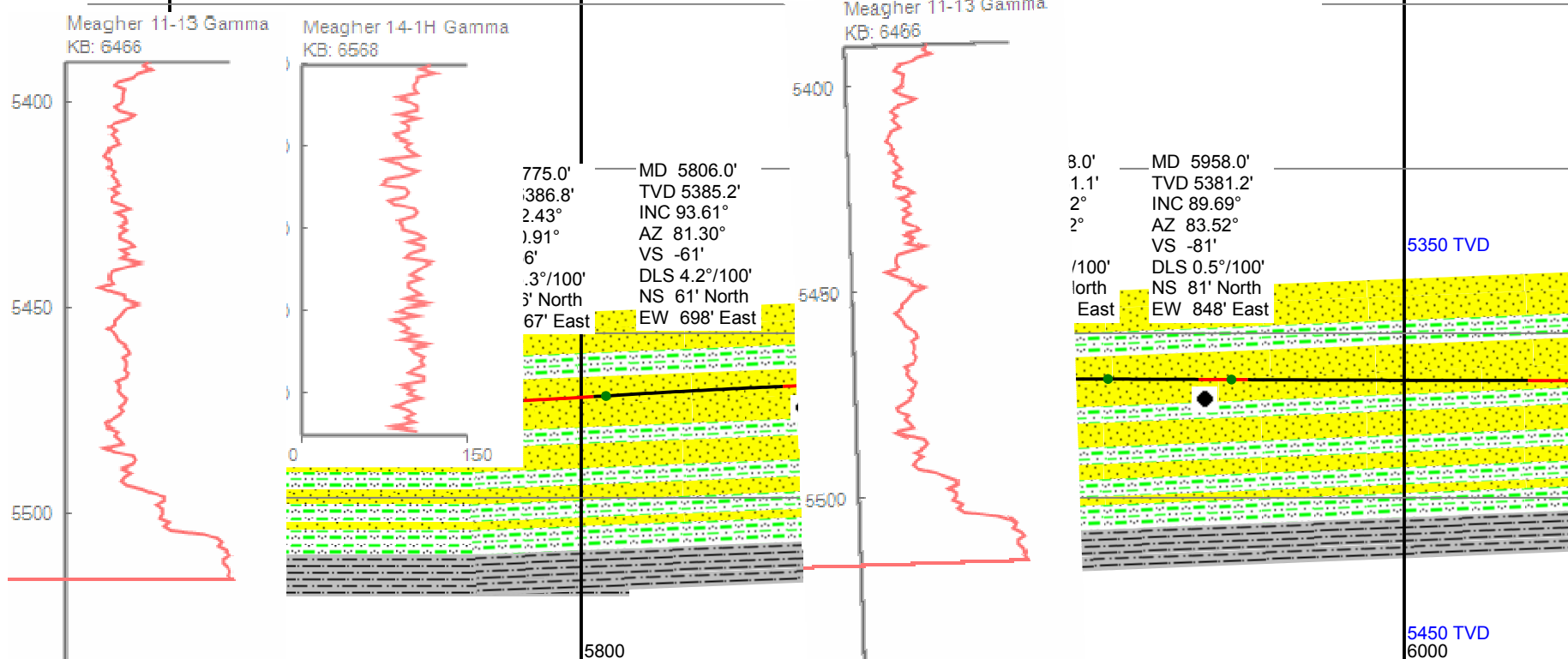
5250 TVD

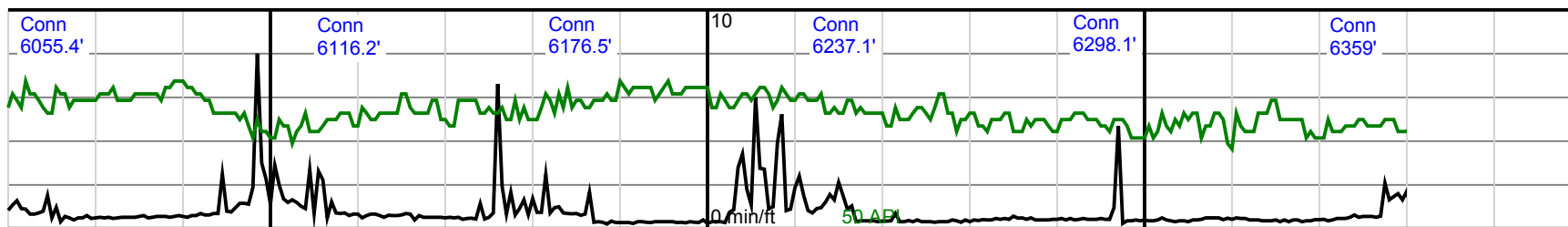
SS: lt gy-wht, occ clr grs, occ s&p, sb blk, sb ang-sb rnd, frm-hrd, mod srted, mod wl srted, fr por, wl cem, sl calc, tr glauc, sl oil stn, mod fst rng cut, tr Siltst: gry-dk gy, sb blk-platy, f por, sl calc, Tr sh

SS: lt gry, clr grn, occ s&p, f gr, sb blk, sb ang- sb rnd, frm, mod srted, fr por, wl cem, mod calc, sl oil stn, onrg fluor, mod-fst rng cut, tr Siltst: gry- drk gry, sb blk-platy, sl calc, p por, nsofc

SS: wht, occ s&p, f gr, sb blk, sb rnd-sb ang,frm, mod srted, f por, wl cem, mod calc, dull yel- lt onrg fluor, lt brn oil stn, intbdd siltst, tr Siltst: gry-dk gry, sb blk-platy, sft, n-sl calc,

SS: lt gry blk, sb a srted, f po glauc, bl onrg fluo blk-platy





lt wht, occ s&p, f gr, sb ang-sb rnd, mod fr, mod r, mod-wl cem, sl calc, tr je-yel ring cut, mod yel- r tr Sltsn: gry-drk gry, sb /, sft, sl calc

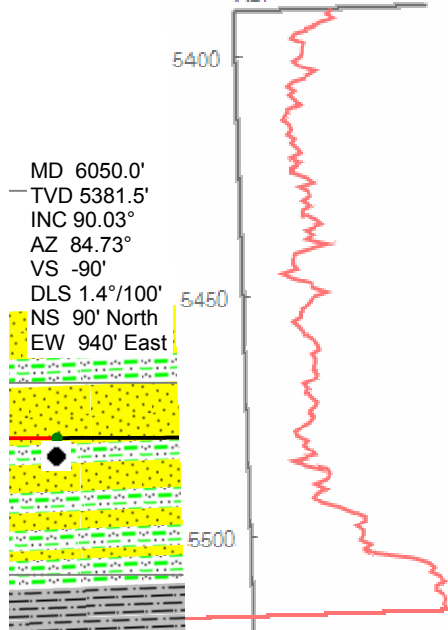
SS: lt gry-wht, occ s&p, f gr, sb blkly-blky, sb ang-rnd, mod fr, mod srtd, f por, mod-wl cem, sl calc, tr glauc, incr blue-yel ring cut, mod yel-orng fluor tr Sltsn: gry-drk y, sft, sl calc

SS: lt gry-wht, occ s&p, f gr, sb blkly-blky, sb ang-sb rnd, mod fr, mod srtd, f por, mod-wl cem, sl calc, tr glauc, incr blue-yel ring cut, com yel-orng fluor tr Sl platy, sft, sl calc

SS: lt gry-orm wht, s&p, f gr, sb blkly-blky, sb ang-sb rnd, mod fr, mod srtd, f por, mod-wl cem, sl calc, glauc, com blue-yel ring cut, com fluor Sltsn: gry-drk gry, sb blkly-platy, :

Meagher 11-13 Gamma
KB: 6466

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KB: 6466

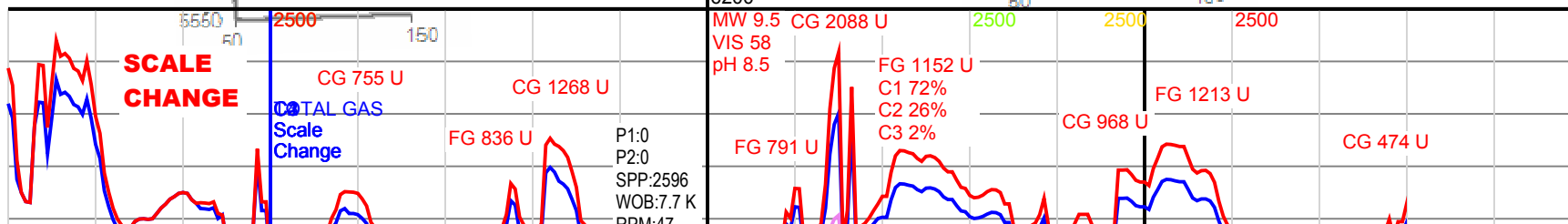


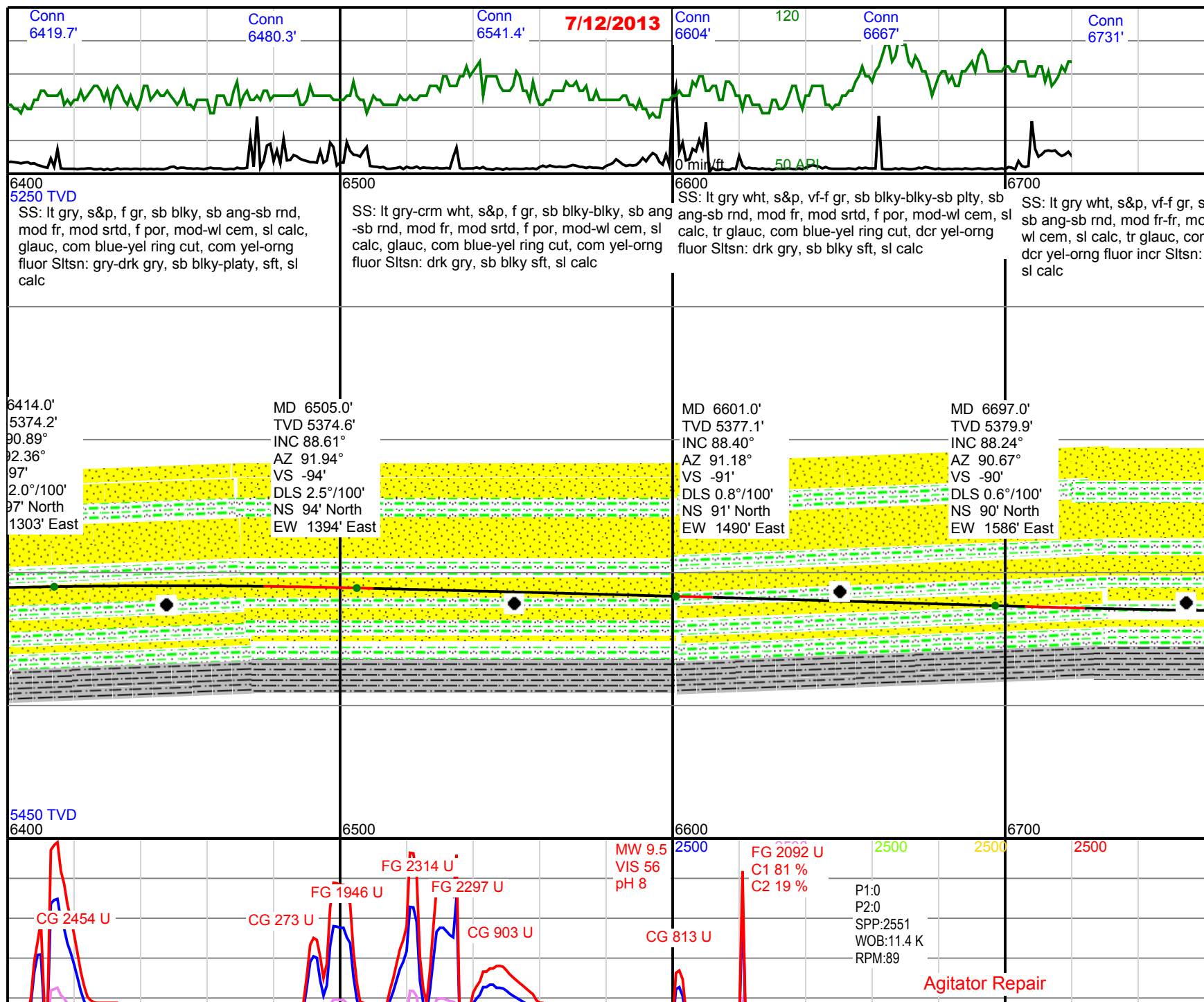
apparent dip: 90.7°

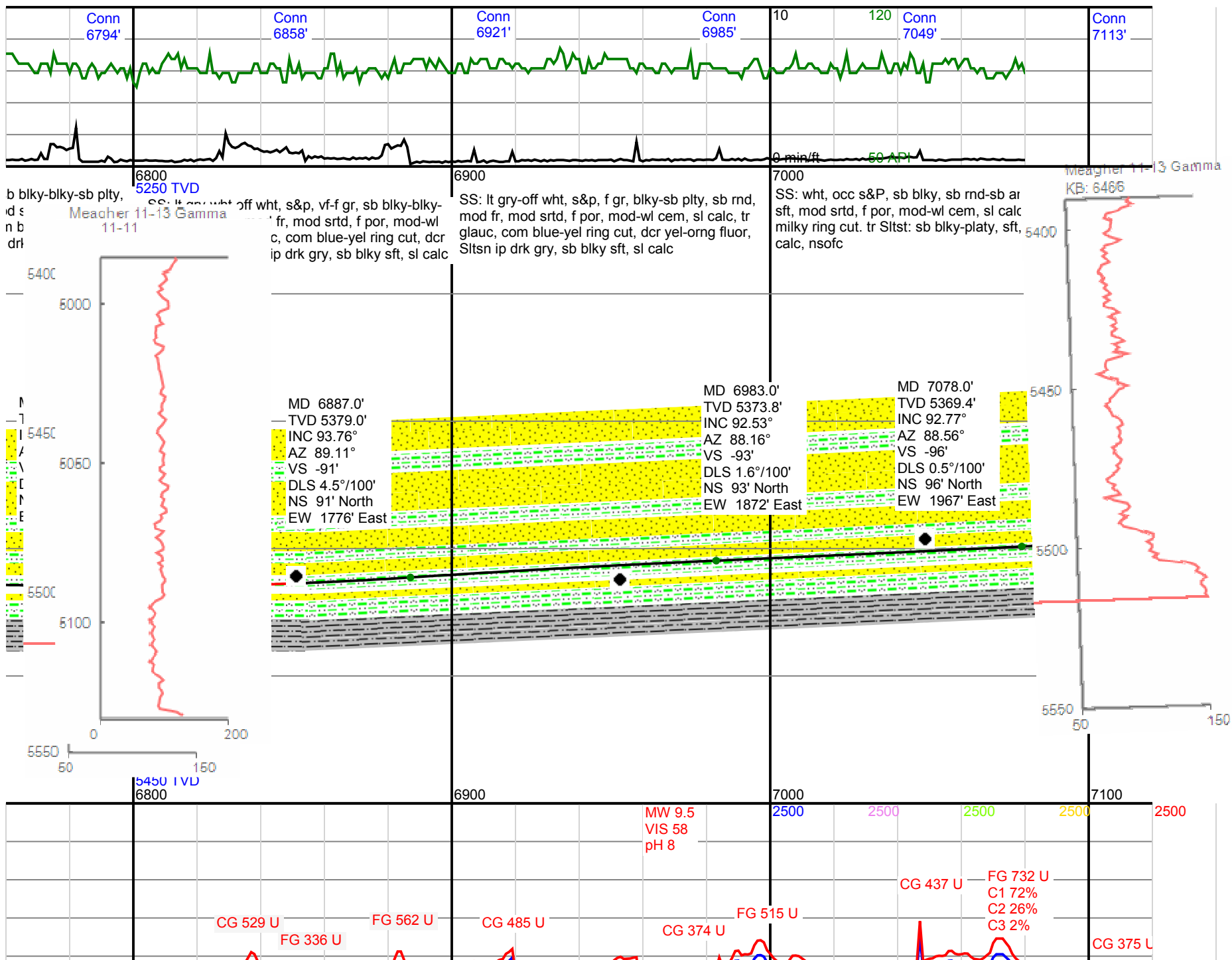
MD 6232.0'
TVD 5378.7'
INC 91.05°
AZ 90.07°
VS -101'
DLS 4.5°/100'
NS 101° North
EW 1122' East

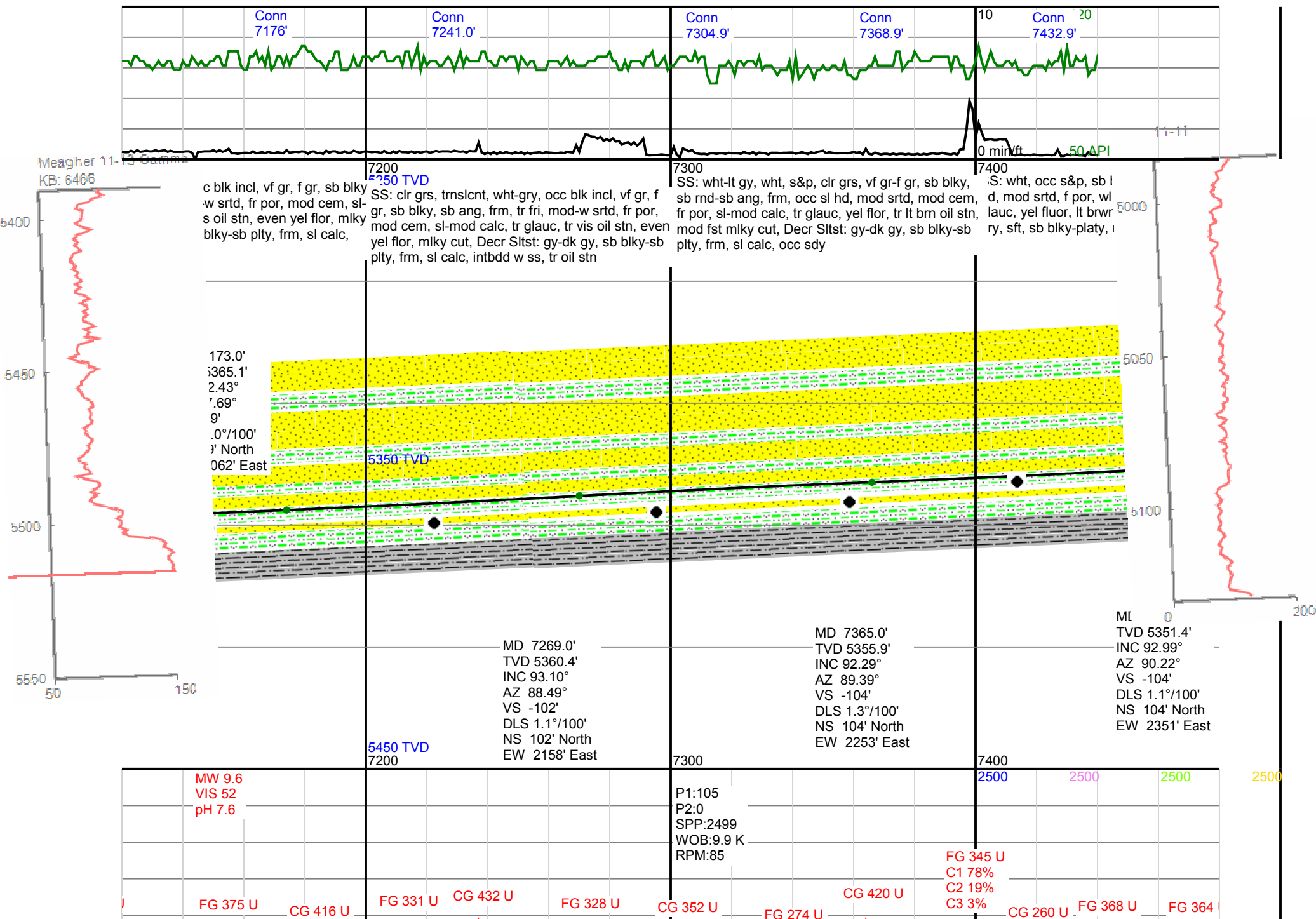
MD 6232.0'
TVD 5378.7'
INC 91.05°
AZ 90.07°
VS -101'
DLS 4.5°/100'
NS 101° North
EW 1122' East

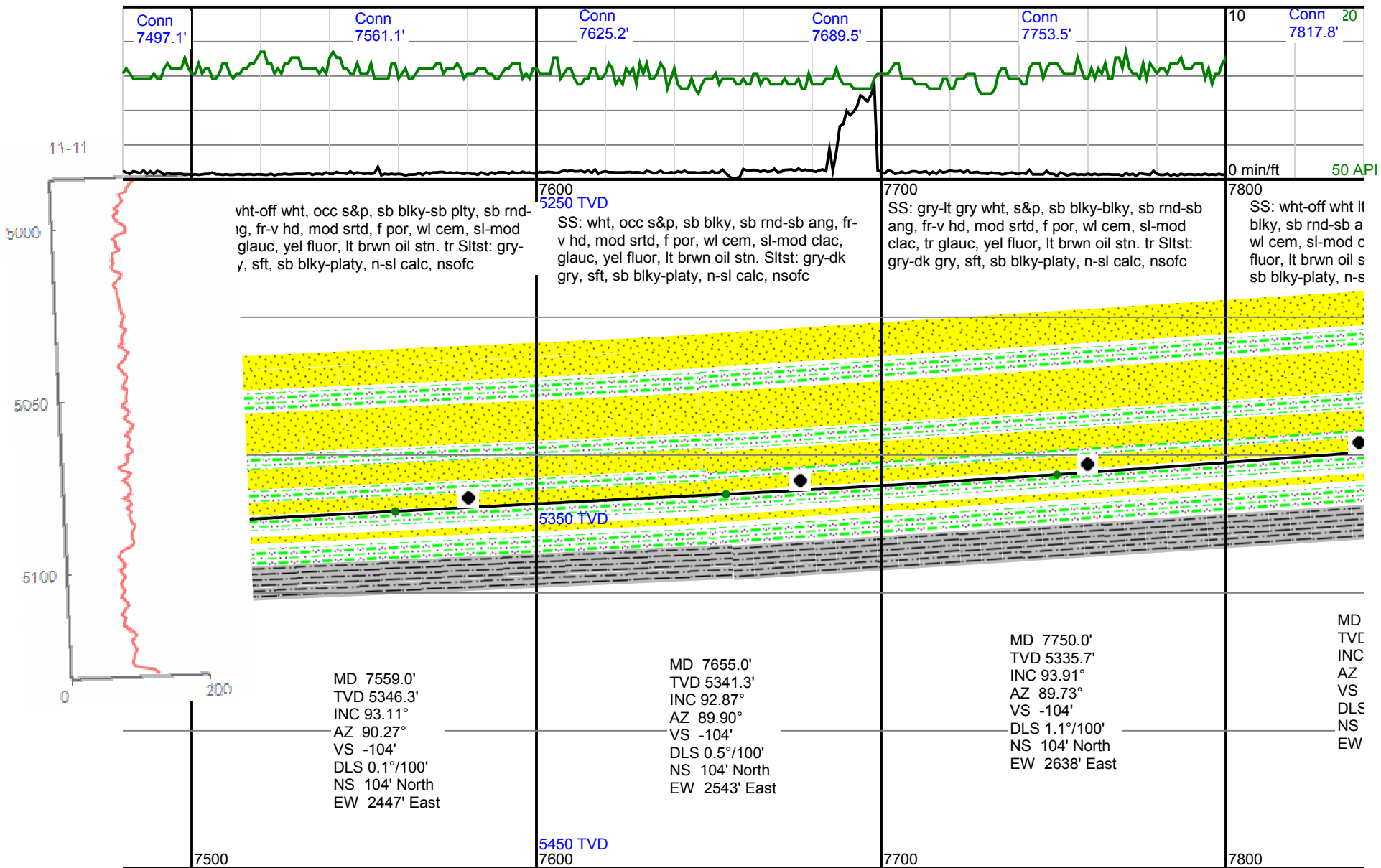
MD 6359.0'
TVD 5381.5'
INC 90.03°
AZ 84.73°
VS -90'
DLS 1.4°/100'
NS 90° North
EW 940' East











MW 9.7
VIS 55
pH 7.5

P1:0
P2:99
SPP:2476
WOB:10 K
RPM:66

CG 1473 U

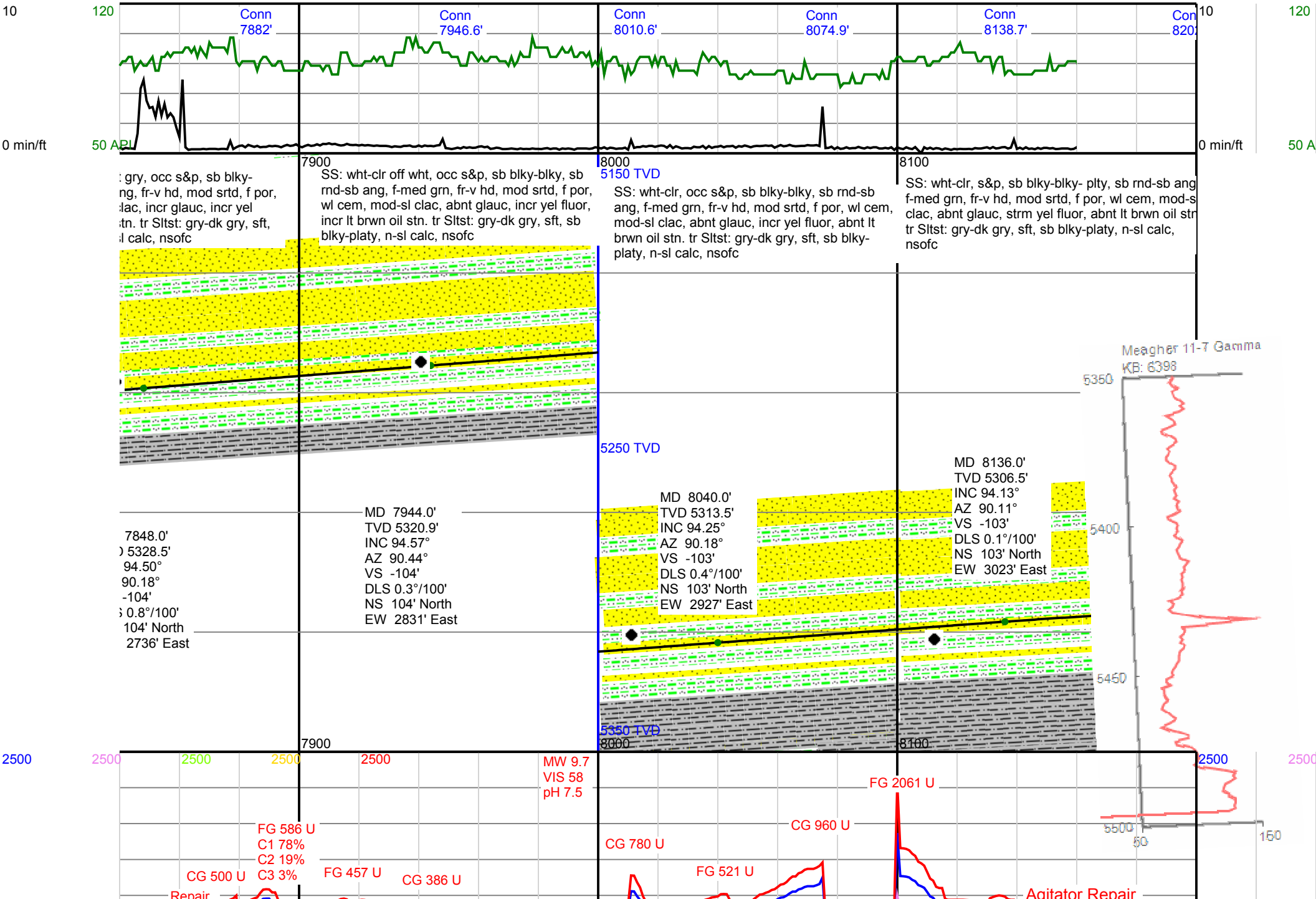
CG 469 U

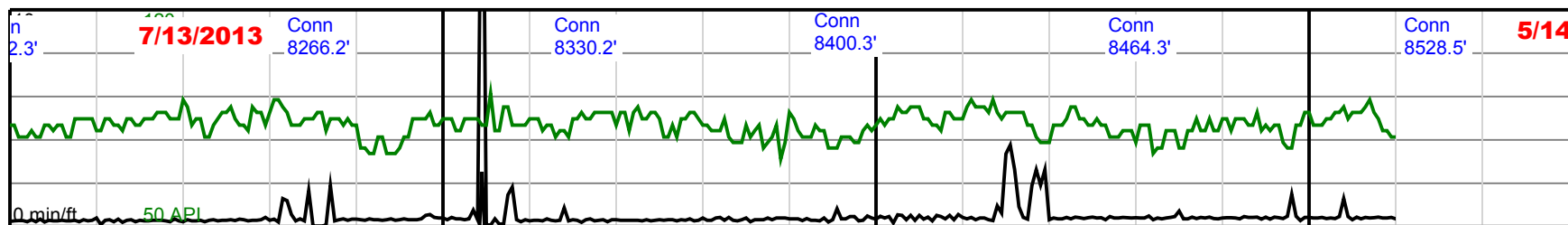
CG 466 U

CG 264 U

CG 491 U

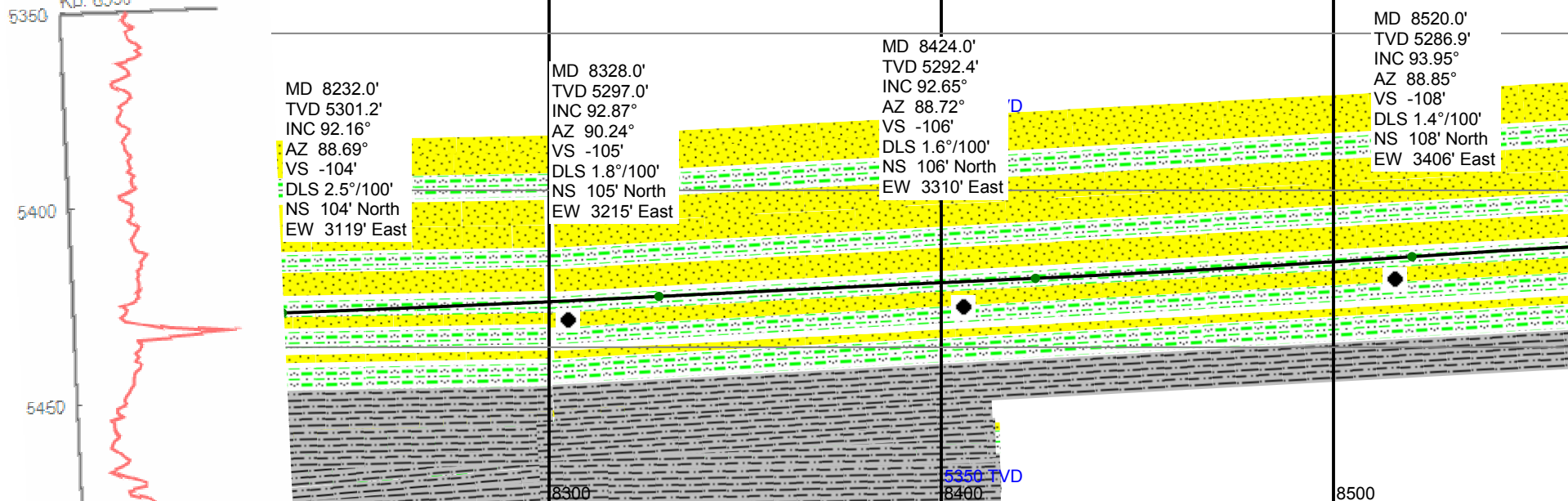
2500



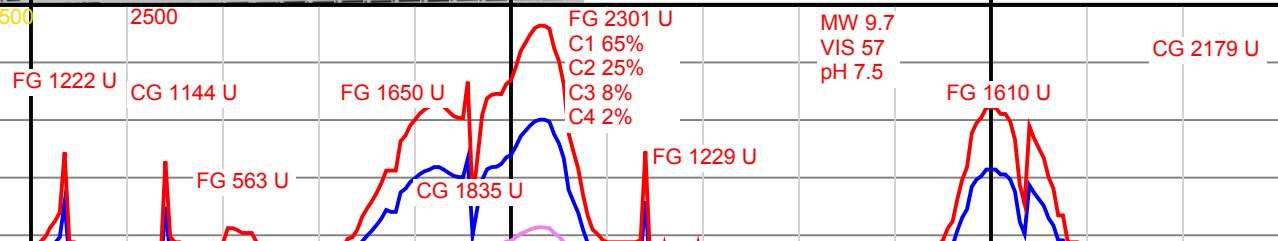


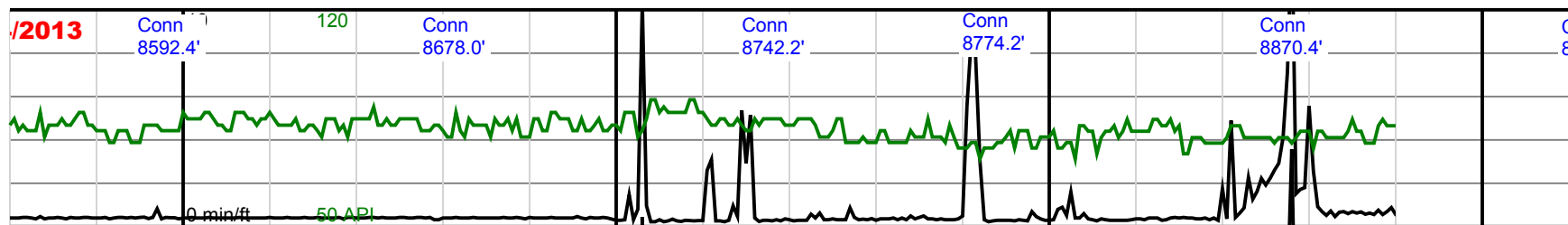
8200 5150 TVD SS: wht-clr, occ s&p, sb blkly-blky, sb rnd-sb ang, med grn, fr-v hd, mod srtd, f por, wl cem, mod-sl clac, abnt glauc, incr yel fluor, abnt lt brwn oil stn. tr Sltst: med gry-dk gry, sft, sb blkly-platy, n-sl calc, nsofc	8300 SS: wht-clr, occ s&p, sb blkly-blky, sb rnd-sb ang, f-med grn, fr-v hd, mod srtd, f por, wl cem, mod-sl clac, glauc, incr yel fluor, cons lt brwn oil stn. tr Sltst: gry-dk gry, sft, sb blkly-platy, n-sl calc, nsofc	8400 5150 TVD SS: wht-clr, occ s&p, sb blkly, sb rnd-sb ang, f-med grn, fr-v hd, mod srtd, f por, wl cem, mod-sl clac, glauc, incr yel fluor, cons lt brwn oil stn. tr Sltst: dk gry, sft, sb blkly-platy, n-sl calc, nsofc	8500 SS: wht-clr, occ s&p, f-r rnd-sb ang, fr occ sft, f p wl cem, sl calc, yel fluor, glauc, tr Sltst: gry-dk gry n-sl calc, nsofc, oil ove
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Meagher 11-7 Gamma KB: 6398



P1:0
P2:93
SPP:2858
WOB:16.7 K
RPM:33





red grn, sb blk, sb
or, mod srt, mod-
lt blu ring cut, tr
sft, sb blk-platy,
r the shakers

8600

SS: wht-clr, occ s&p, f-med grn, sb blk, sb rnd-
sb ang, frm, mod-wl srt, f por, mod cem, mod-wl
cem, sl-mod calc, tr glauc, sl fluor, lt blue ring
cut, tr Sltst: gry-drk gry, sft, n calc

8700

SS: wht-clr, occ s&p, f-med grn, sb blk, sb rnd-
sb ang, frm, mod-wl srt, f por, mod cem, occ wl
cem, sl-mod calc, tr glauc, sl fluor, lt blue ring
cut, Decr Sltst: gry-drk gry, sft, n calc

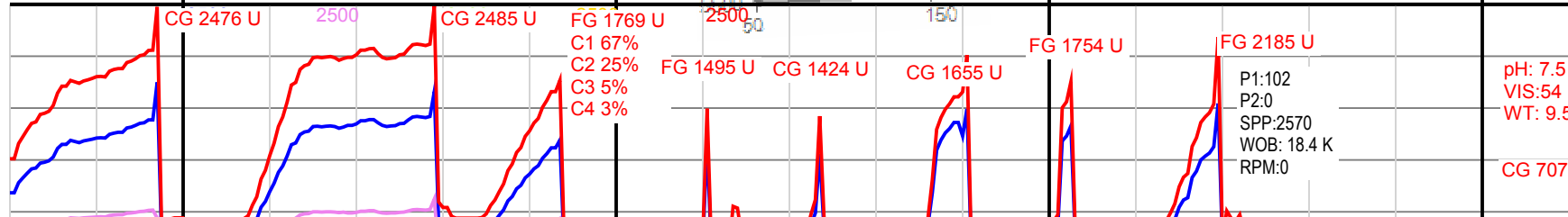
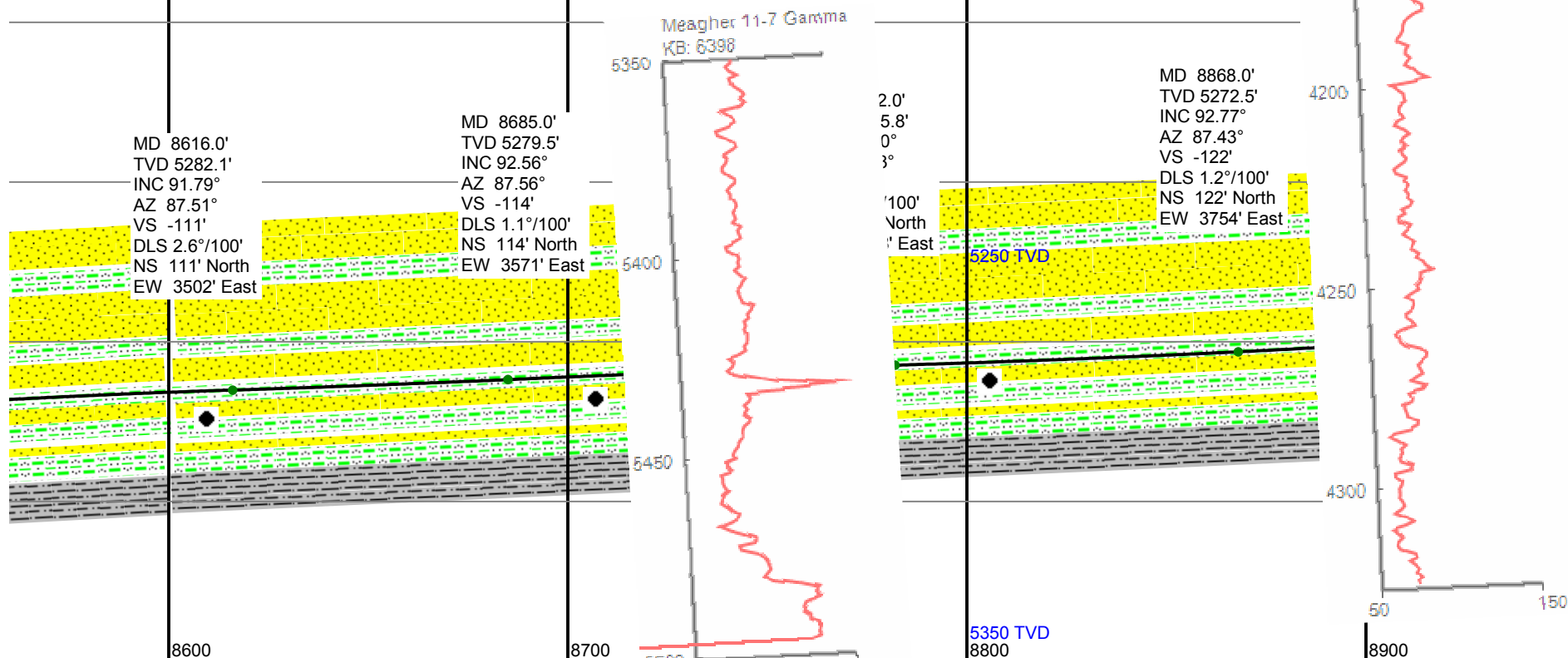
8800

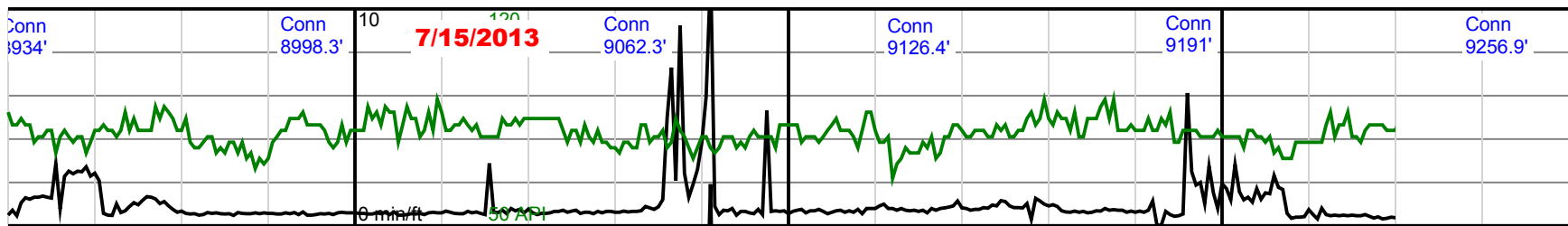
5150 TVD
SS: wht-clr, occ s&p, f-med grn, sb blk, sb rnd-sb
ang, frm, mod-wl srt, f por, mod cem, occ wl
cem, sl-mod calc, tr glauc, sl fluor, lt blue
tr Sltst: gry-drk gry, sft, n calc

8900

SS: wht-c
sb rnd-sb
occ wl ce

13-9





lr, trnsclnt, occ s&p, f-med grn, sb blk, ang, frm, mod-wl srtd, f por, mod cem, m sl-mod calc, tr glauc, sl fluor, lt blue gry, sft, n calc

9000
SS: wht-clr, occ s&p, f-med grn, sb blk, sb rnd-sb ang, frm, mod-wl srtd, f por, mod cem, occ wl cem, sl-mod calc, tr glauc, sl fluor, lt blue ring cut, tr Siltst: gry-drk gry, sft, n calc

9100
SS: wht-clr, occ s&p, f-med grn, occ vf grn, tr slty, sb blk, sb rnd-sb ang, frm, mod-wl srtd, f por, mod cem, occ wl cem, sl-mod calc, tr glauc, sl fluor, lt blue ring cut, tr Siltst: gry-drk gry, sft, n calc

9200
5150 TVD
SS: wht-clr, occ s&p, f-med grn, sb blk, sb ang, frm, mod-wl srtd, f por, mod cer cem, sl-mod calc, tr glauc, tr fspr, sl fluc ring cut, tr Siltst: gry-drk gry, sft, n calc

