

LITHOLOGY STRIP LOG

WellSight Systems

Scale 1:240 (5"=100') Imperial

Measured Depth Log

Well Name: HIGH SIERRA WATER SERVICES SWD C-4A

Location: Sec. 26, T6N, R65W, Weld County, Colorado

License Number: API No. 05-123-35841

Region: DJ Basin

Spud Date: 11/15/12

Drilling Completed: 12/8/12

Surface Coordinates: 1040' FSL, 1924' FEL (SWSE)

Bottom Hole 1250' FNL, 1405' FEL (SENW Sec. 35)

Coordinates:

Ground Elevation (ft): 4682'

K.B. Elevation (ft): 4705'

Logged Interval (ft): 7550'

To: 10,420' DTTotal Depth (ft): 10,818' LTD

Formation: Niobrara - Fountain

Type of Drilling Fluid: Chemical-Gel

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.co

OPERATOR

Company: High Sierra Water Services, LLC

Address: 8207 W. 20th Street - Suite B
Greeley, CO 80634
USA

GEOLOGIST

Name: Louise M. Kiteley PG-1715

Company: Professional Geologist (WY)

Address: 5221 WCR 16 3/4, Longmont, CO 80504, Ph: 303-263-5122, Email:
l.kiteley@gmail.com

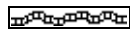
Comments

- 1) Mud data in Geologic Descriptions Track, Format: mw-vis-f-pH-chlor-%solids.
- 2) Open hole logs by PIONEER (PSI) to INTERMED CSG PT @ 9072' (DTD 9063', LTD 9058') GR, DCAL, SP, RLL3, RILM, RILD, DPOR, CNPOR) & SWS (DTD10,420'; LTD 10,424') (GR, HCAL, SP, AHT10, AHT30, AHT90, DPHZ, NPOR, PEFZ). Hole deepened to 10,818' (NOT LOGGED FROM 10,424' TO DTD 10,818'),
- 3) Vertical Injection Well, ROP shifted 14' up above intermediate casing pt, and 4' up below casing pt, on depth with open hole logs, which is on depth with this striplog.
- 4) Contractor: Precision Drilling Rig #706.

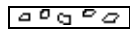
ROCK TYPES



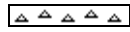
Anhy



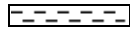
Bent



Brec



Cht



Clyst



Coal



Congl



Dol



Gyp



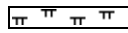
Igne



Lmst



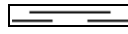
Meta



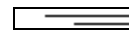
Mrlst



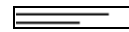
Salt



Shale



Shcol



Shgy



Sltst



Ss



Till

ACCESSORIES

MINERAL

Anhy
 Arggrn
 Arg
 Bent
 Bit
 Brecfrag
 Calc
 Carb
 Chtdk
 Chtlt
 Dol
 Feldspar
 Ferrpel
 Ferr
 Glau
 Gyp
 Hvymin
 Kaol
 Marl

Minxl
 Nodule
 Phos
 Pyr
 Salt
 Sandy
 Silt
 Sil
 Sulphur
 Tuff

FOSSIL

Algae
 Amph
 Belm
 Bioclst
 Brach
 Bryozoa
 Cephal
 Coral

Crin
 Echin
 Fish
 Foram
 Fossil
 Gastro
 Oolite
 Ostra
 Pelec
 Pellet
 Pisolite
 Plant
 Strom

STRINGER

Anhy
 Arg
 Bent
 Coal
 Dol

Gyp
 Ls
 Mrst
 Sltstrg
 Ssstrg

TEXTURE

Boundst
 Chalky
 Cryxln
 Earthy
 Finexln
 Grainst
 Lithogr
 Microxln
 Mudst
 Packst
 Wackest

OTHER SYMBOLS

POROSITY TYPE

Earthy
 Fenest
 Fracture
 Inter
 Moldic
 Organic
 Pinpoint
 Vuggy

SORTING

Well
 Moderate
 Poor

ROUNDING

Rounded
 Subrnd
 Subang

Angular

OIL SHOWS

Even
 Spotted
 Ques
 Dead

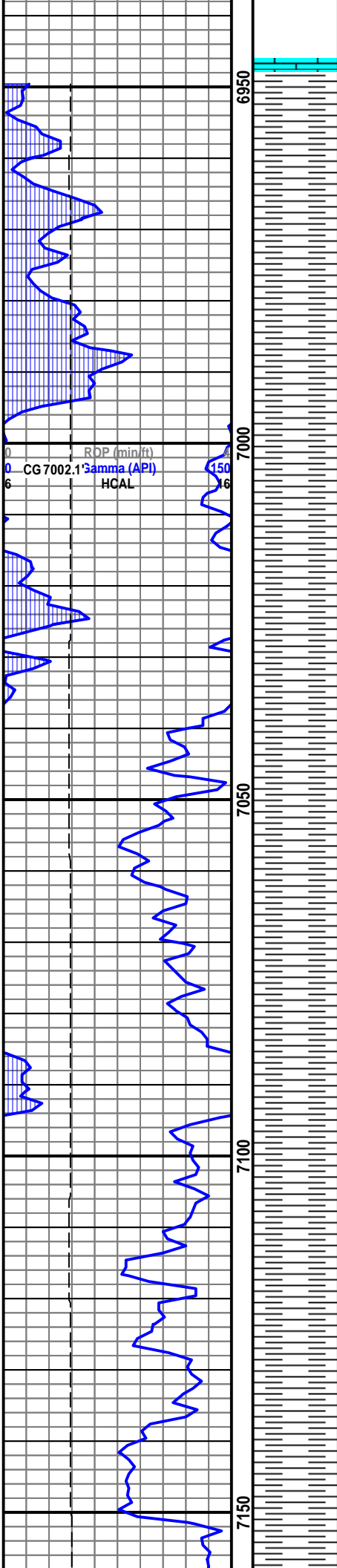
INTERVALS

Core
 Dst

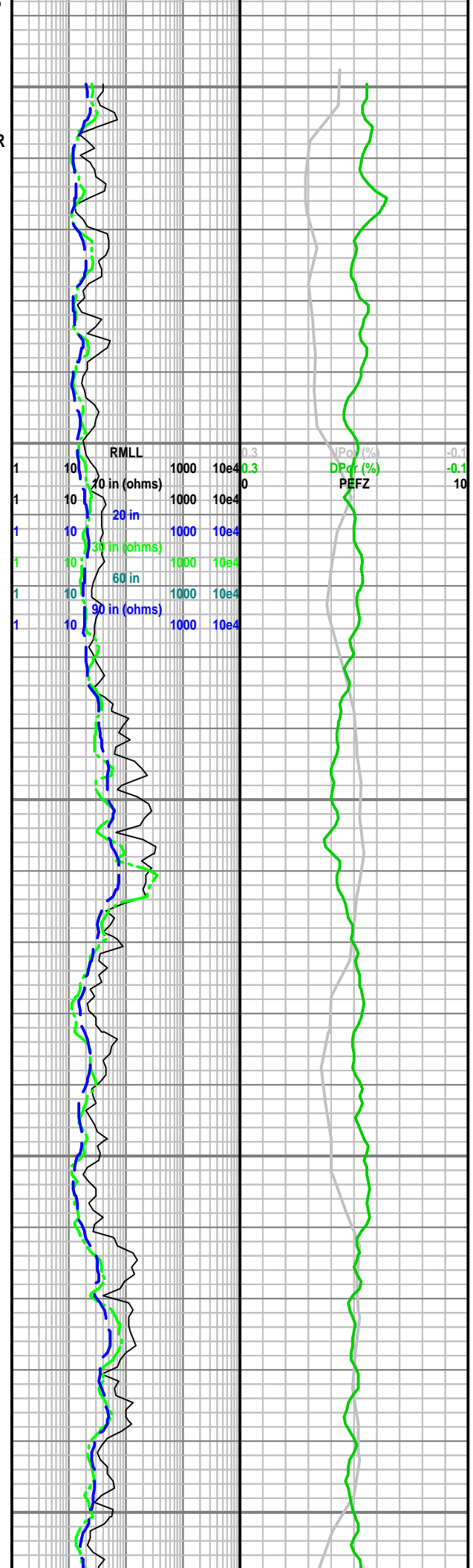
EVENTS

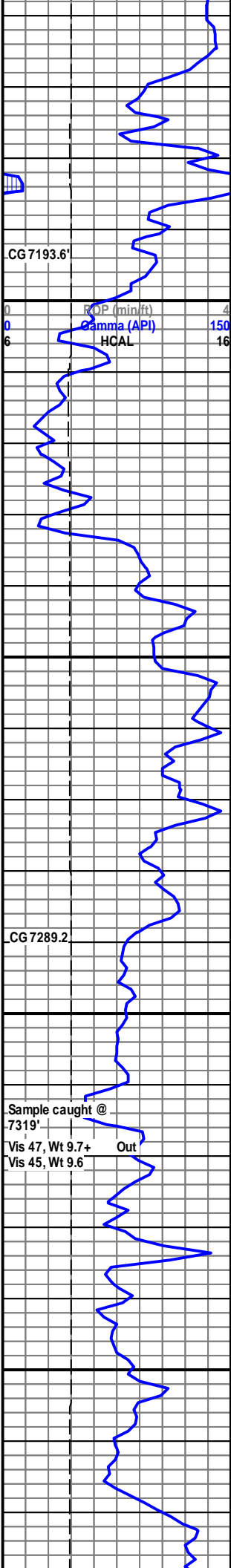
Rft
 Sidewall

| Curve Track 1 | | | Depth | Lithology | Oil Shows | Geological Descriptions | Resistivity | | | | Porosity | | | |
|---------------------|--------------|------|-------|-----------|-----------|---|-------------|--------------|-------|--------------|----------|--------------|----------|----------|
| ROP (min/ft) | Gamma (API) | HCAL | | | | | RMLL | 10 in (ohms) | 20 in | 30 in (ohms) | 60 in | 90 in (ohms) | NPor (%) | DPor (%) |
| 0 | ROP (min/ft) | 4 | 6900 | | | Began drilling in Pierre Shale on 11/15/12. Catching 10' samples from "X" bentonite thro Entrada, and 20' samples from base of Entrada to TD. | 1 | 10 | 1000 | 10e4 | 0.3 | NPor (%) | -0.1 | |
| 0 | Gamma (API) | 150 | | | | | 1 | 10 | 1000 | 10e4 | 0.3 | DPor (%) | -0.1 | |
| 6 | HCAL | 16 | | | | | | | | | | PEFZ | 10 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Niobrara Top ~6904' | | | | | | Geologist on location 11/24/12. Began logging at 7550' in the Mowry Sh. No log with detailed sample descriptions from Niobrara thro Greenhorn Sh; Geologist not on duty. Top of Niobrara to Ft. Hays Ls approximately 300' thick. | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |



Bit #5: Smith MDS 1516 JF 9429. In 7000', out 8831'. Tot drld 1,162 in 58 hrs. Bit #6: Smith MDS1516 JF 9429. Drld ? in 11.5 hrs. Bit #7: Smith SD1513 JG2277. Out 9780'. Tot drld 717'. Bit #8: Smith SD 1513 JG4539. In 9780', out 10430'. Tot drld 426' in 31 hrs. Bit # 9: HUGHES RR 42069. In 10430, out 10818'. Tot drld 397' in 31 hrs.



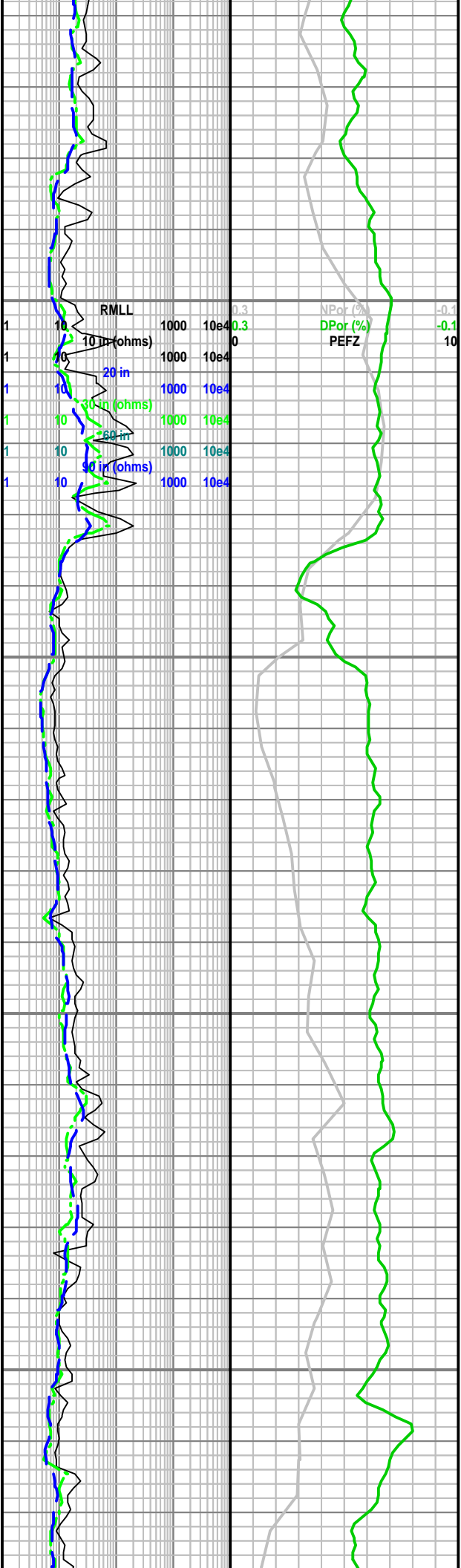


Ft. Hays @ 7200'

Codell Ss @ 7234'

Carlile Sh @ 7250'

Mud report @ 7283': 9.60, 51. 6.0, 9.0,
1,900, 6.7



CG 7385.0

RDP (min/ft)
Gamma (API)
HCAL

SURVEY@7433' INC
16.6, AZM 165.1 (11.5'
FROM LINE)

Midnigt 11/24/12 @
7529.7'
CG 7575.9

VIS 52, WT 9.7: OUT VIS

7400

7450

7500

7550

Greenhorn @ 7422'

"X" bentonite @ 7534'

<BEGIN MESOZOIC DETAILS HERE>

<Begin sample analysis @ 7550>

(Catching 10' samples)

SH, dkbrn-brngy, plty-sbblky, m firm-sli
sft, calc

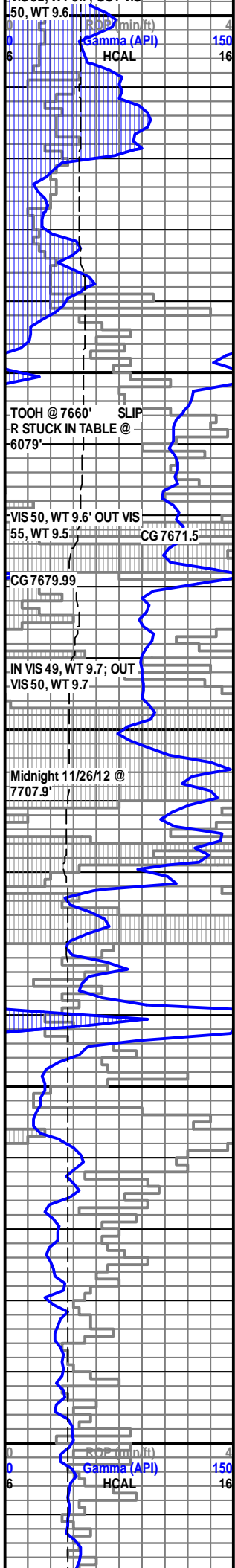
SH, mbrngy-dkgy, plty, v sft, mod calc;
tr BENT, wht

RMLL
10 in (ohms)
20 in
30 in (ohms)
60 in
90 in (ohms)

1000 10e4
1000 10e4
1000 10e4
1000 10e4
1000 10e4

NPor (%)
DPor (%)
PEF2

0.3
0
0.3
-0.1
10



SH, dkgy-brngy, blk, firm-hard; BENT, wht; calc

SH, dkgy, blk-sbply, firm-sli brit, tr BENT, wht; calc

SH, mbrngy-dkgy, blk-sbply, firm, v sli calc

SH, mbrn-dkgy, blk-sbply, sft sli slty; tr BENT, wht; v sli calc

SH, dkgy, pty-sbfis, sft-sli brit, sli calc; rr BENT, wht

SLST, lt tan, intrbdd w/SS, clr-wht-s & p, lvf-uvfg, wrd-wsrt, qtz ovgrth, cl fl; SH, dkgy, pty, sft-brit, aa; tr pyr; tr BENT, wht, sli calc; abnd pale-bri yell min flor; calc

SH, dkgy, pty-fis, sft, aa, sli calc

Mud report @ 7669': 9.7, 50, 5.8, 9, 1,900, 7.0

SLST, lt tan, intrbdd w/SS, clr-wht, s & p, lvf-uvfg, rd, rd-wsrt; SH, dkgy, pty, sft; abnd pale-bri yell min flor; calc

J Siltstone @ 7698'
SLST, lt tan, intrbdd SH, dkgy, pty, sft, aa, pale-bri yell min flor thro; calc; tr BENT, wht; tr INOC shell frag; sli calc

SH, dkgy, pty-sbblky, sft; sli calc-non-calc; BENT, wht, thro
SH, dkgy-ltgy, pty, sft; tr BENT, wht

J Sandstone @ 7722'
SH, dkgy-blk, v sandy, sli firm-hd-brit, non-calc; tr SS mxd w/sh; BENT, wht-yell min flor incrsd

SH, sandy, firm-hd-brit, non-calc

SS, lt-dk orng stn, fg, m-wsrt; BENT, wht, yell min flor

SS, f-mg, rd, msrt, lse fri, mxd evenly w/SH, dkgy, sbblky-pty-fis

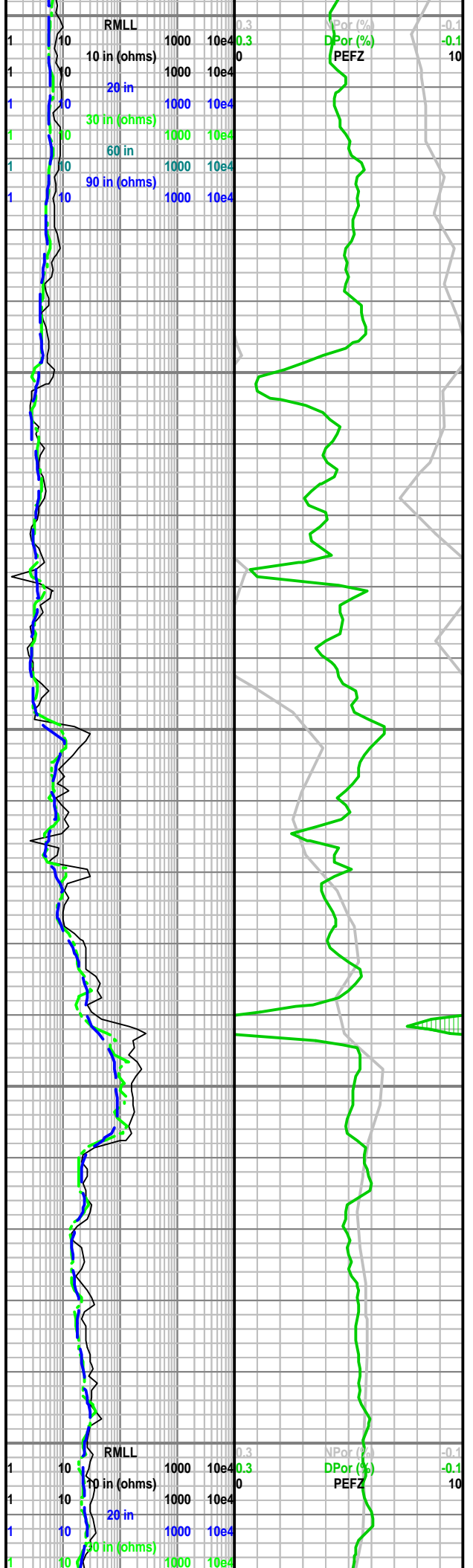
Ss, clr trns, lf-lmg, m-wsrt, sbrd-wrd, lse fri; intrbdd COAL, blk, vit, woody texture; tr BENT, wht; exc por

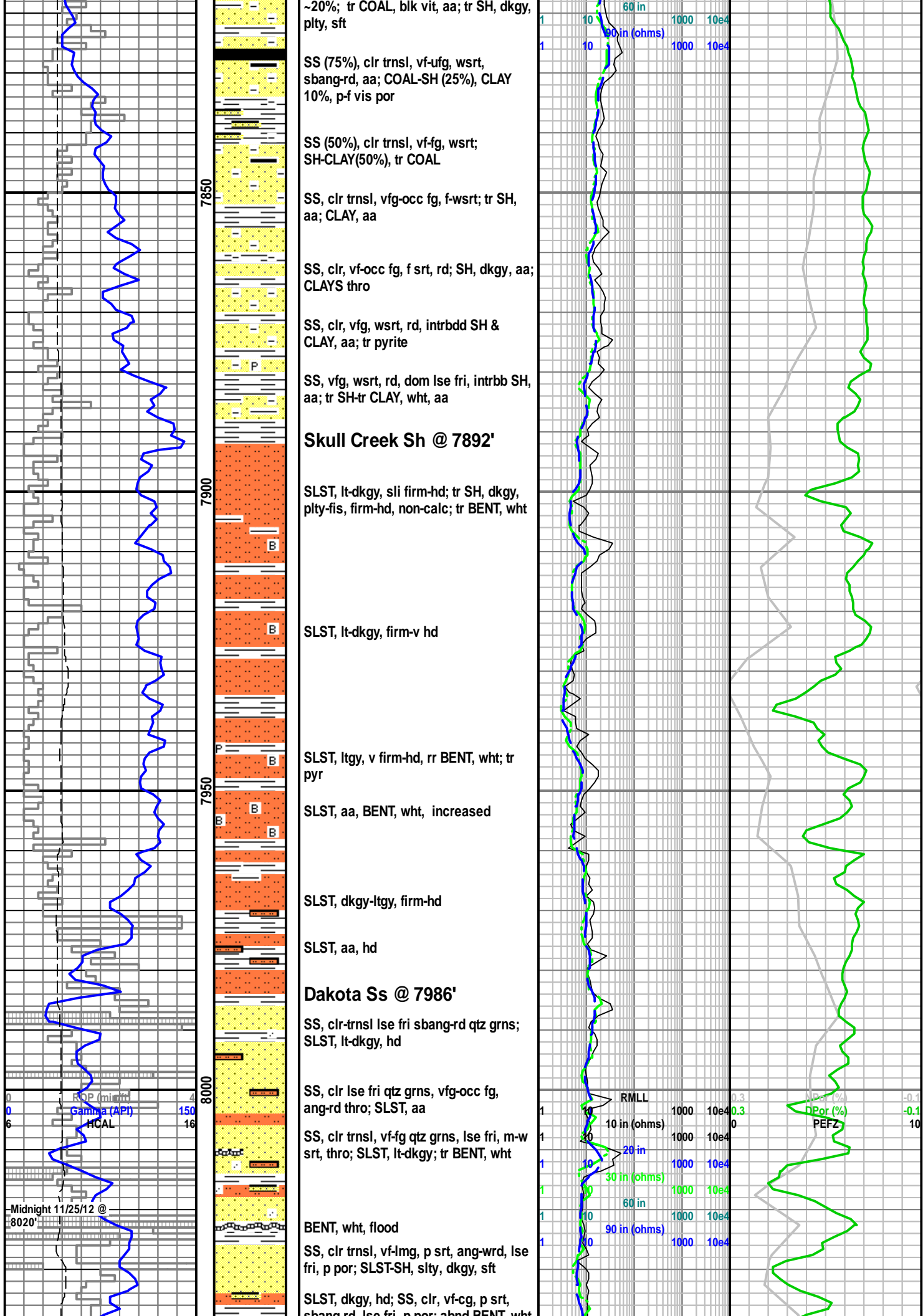
SS, clr-trns, f-mg, m-wsrt, sbrd-wrd, consol-lse fri; tr BENT, wht; exc por

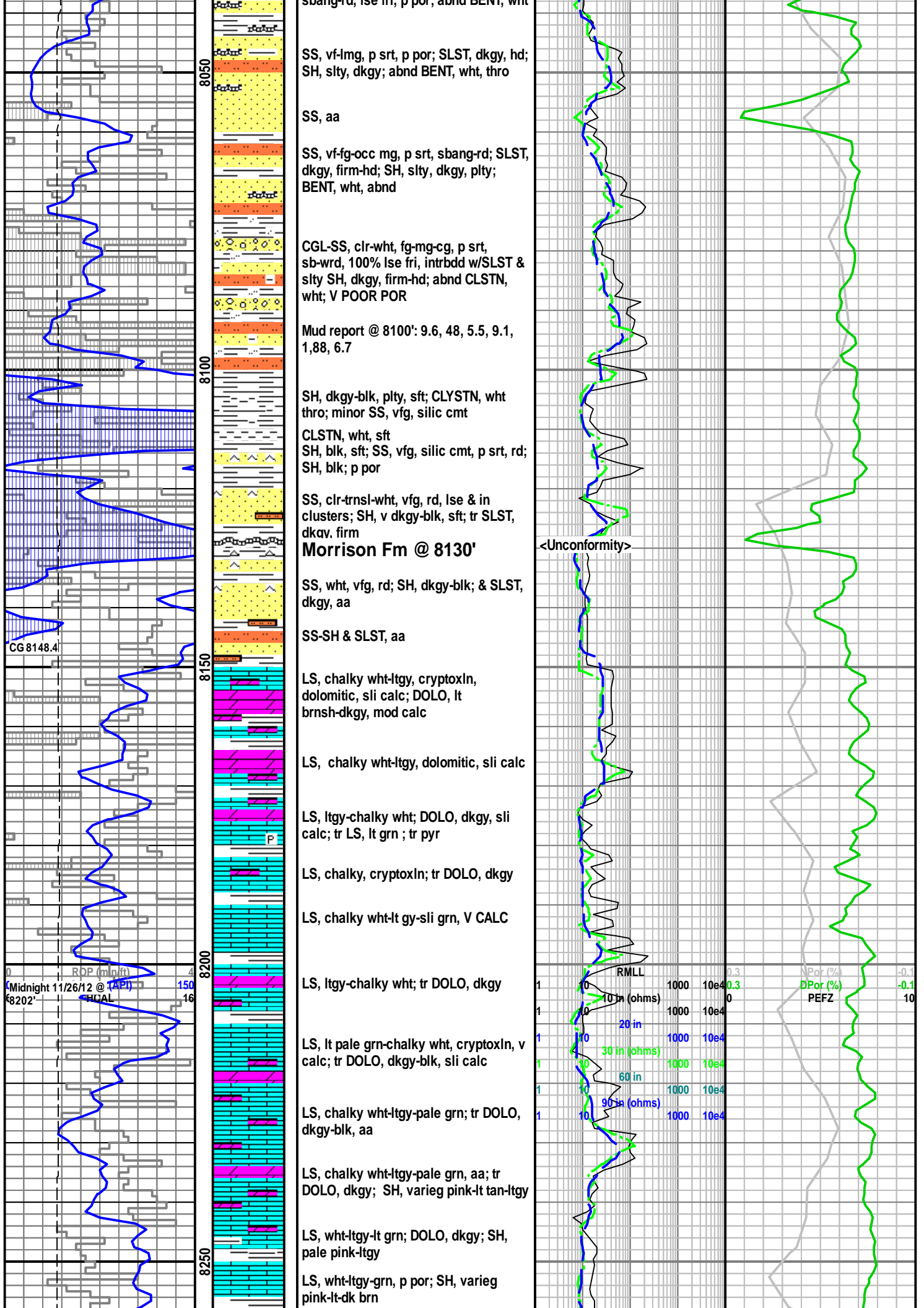
SS, clr, fg-mg, wsrt, sbrd-wrd, consol w/sm cly fl; tr BENT, wht; por est 12-15%; NSCF

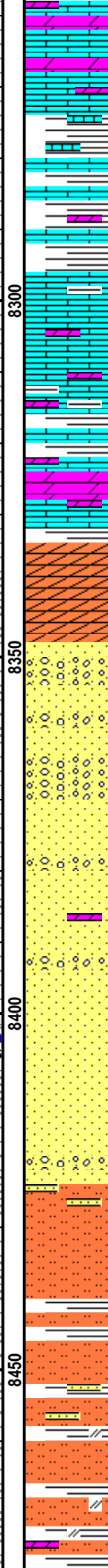
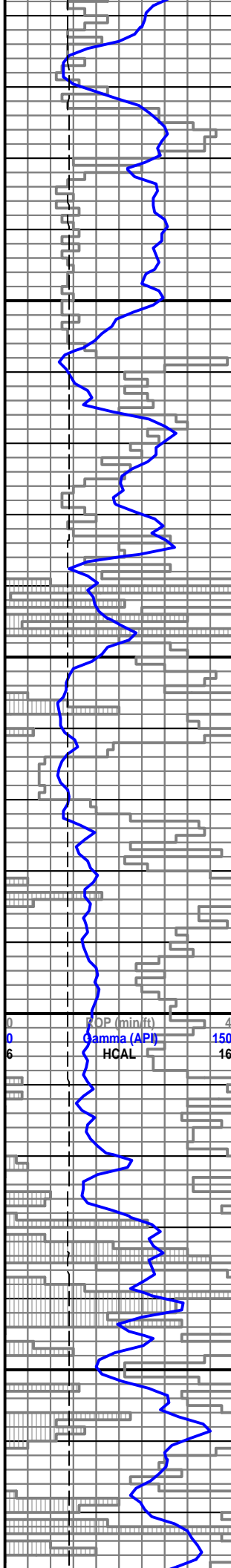
SS(60%), clr, dom mg, f srt, sbang-wrd, consol-lse fri, good vis por ~8-12%; COAL, (40%), vit, blk

SS, clr trns, vf-ufg, wsrt, rd-wrd, sli firm-lse fri; f vis por; abnd wht CLAY









LS, chalky wht mottled ltgy; DOLO, dkgy, aa

LS, chalky wht-ltgy w/tr lt grn, cryptoxln, aa

SH, brick red, sft-mushy, v calc; tr LS, wht mottled ltgy, firm, cryptoxln, p por

SH, brick red-dk red, sft, V CALC; intrbdd LS, aa, & DOLO, dkgy, aa

LS (80%) wht, cryptoxln, firm-hd, non-porous; SH (20%), brick red, mod sft

LS (90%), wht, cryptoxln, firm-hd, no vis por; SH (10%), brick red, mod sft; tr DOLO, dkgy

LS, wht-lt grn; SH, brick red-dk-lt brn, firm-hd; DOLO, dkgy

SH, brick red; LS & DOLO, aa

LS, chalky wht-ltgy, cryptoxln, sli firm-hd, no por

LS, chalky, cryptoxln; DOLO, dkgy, ~ equaly thro with LS

ANHYD, wht; tr LS, chalky, aa; tr DOLO, dkgy

ANHYD, wht; tr LS, ltgy; tr DOLO, dkgy, aa

Entrada Ss @ 8348'

SS, clr trnsl, fg-mg, lse fri; tr DOLO/LS/ANHYD

SS, clr trnsl, vfg-cg, p srt, sbang-wrd, lse fri, exc vis por

SS, clr trnsl, f-cg, p srt, ang-wrd; exc vis por

SS, clr trnsl, vf-ufg, f srt, wrd, lse fri; tr DOLO; exc vis por

SS, lt-med dk salmon, lvfg, w srt, sbang-rd; SS, clr trnsl, f-cg, p srt, wrd, lse fri grns thro; exc vis por

SS, lt-med dk salmon pink, vf-fg, m-wsrt, sbrd-rd; tr clr-frstd, f-cg, sbrd-wrd, lse fri; exc por

SS, lt-med dk salmon pink, clr-frstd, vfg-cg, p srt, sbrd-wrd, consol-lse fri

Top of Permian (Lykins Fm) @ 8423'

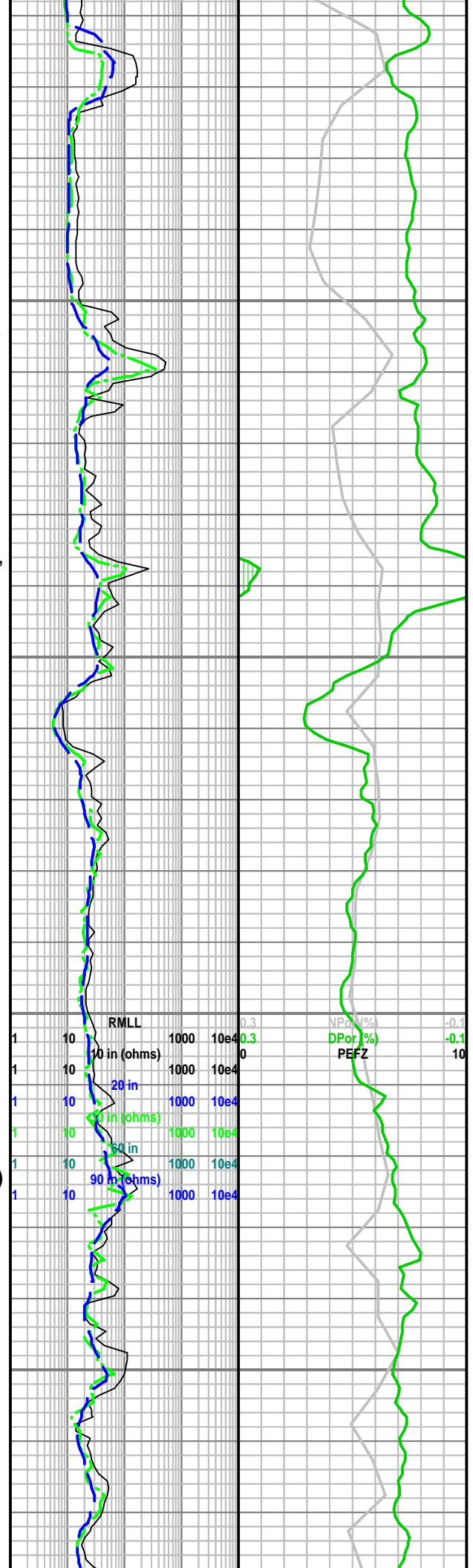
(Catching 20' samples)

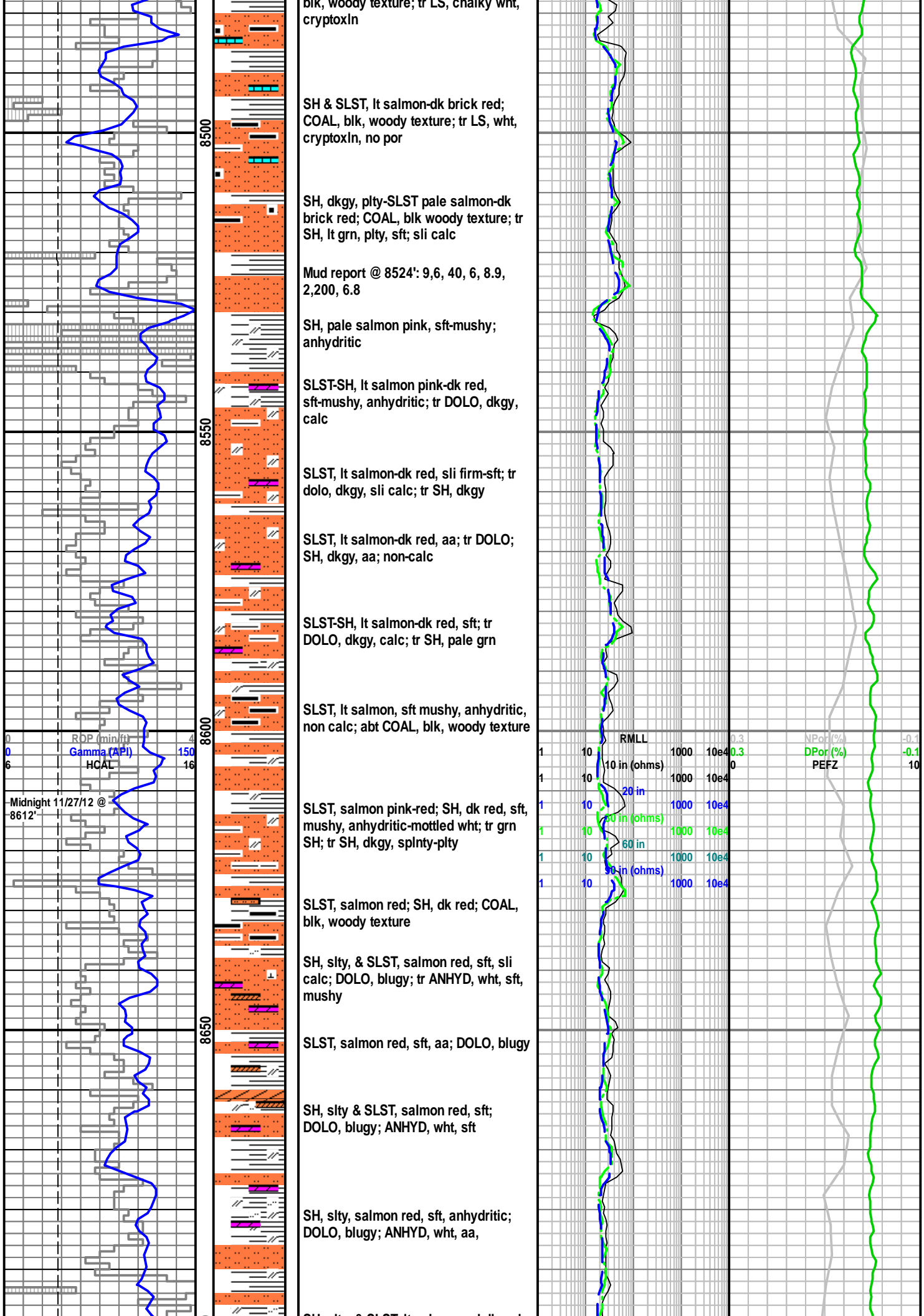
SLST, red; tr SS, lt salmon pink, vfg

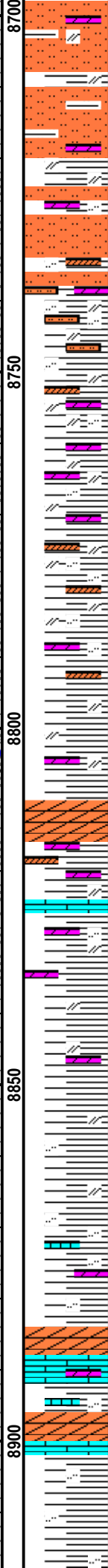
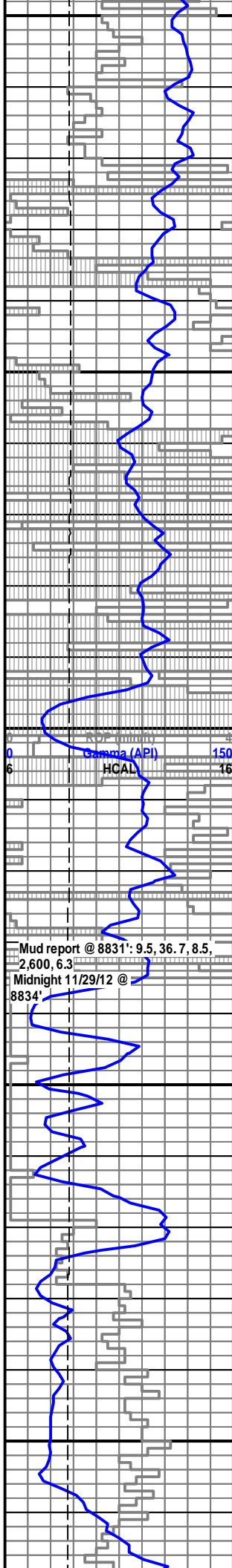
SLST, red, intrbdd SH, dk red, sft

SLST, lt salmon-brick red; SH, dkgy-red, plty-fis, sli anhydritic; tr DOL, dkgy, sli-v calc

SLST&SH, lt salmon-brick red; COAL, sli anhydritic; tr DOLO, dkgy, sli-v calc







SH, slty, & SLST, lt salmon red-dk red; tr DOLO, dkblugy; sli calc thro

SLST-SH, slty, salmon red-dk red, anhydritic; tr DOLO, dkblugy, sft, sli calc

SH, slty, SLST, red-salmon red; tr ANHYD, wht, sft; DOLO, aa; tr SH, lt grn, calc

SH, slty, lt salmon red, sft, anhydritic; tr ANHYD, wht; DOLO, dkblugy

SH, lt salmon red, v sft, anhydritic; DOLO, dkgy, aa

SH, slty, lt salmon red, v sft, anhydritic; DOLO, dkgy, sli calc; tr ANHYD, wht, sft

Minnekahta Shale @ 8794'

SH (50%), lt salmon-patchy lt grn, sft ; SH(50%), dk brn-blk, plty, firm-brit; tr DOLO, dkblugy; tr SH, lt grn, splnty, sft; tr ANHYD, wht

Mud report @ 8822': 9.6, 50, 5.8, 9, 2,500, 6.9

SH (50%), dkgy, firm, w/ tr DOLO, dk blugy; ANHYD (50%), wht, v sft-mushy

SH, slty, brick red; LS, WHT, dolomitic; ANHYD, wht,

SH, dkgy, firm & DOLO, dk blugy; SH, lt salmon red, sft, mushy, anhydritic; tr SH, pale grn , aa

SH, dkgy, firm, plty; SH, lt salmon-red, sft; tr SH, pale grn; tr DOLO, dkblugy, sli calc

SH, salmon red; SH, dkgy, plty, firm, aa (? smpl qual)

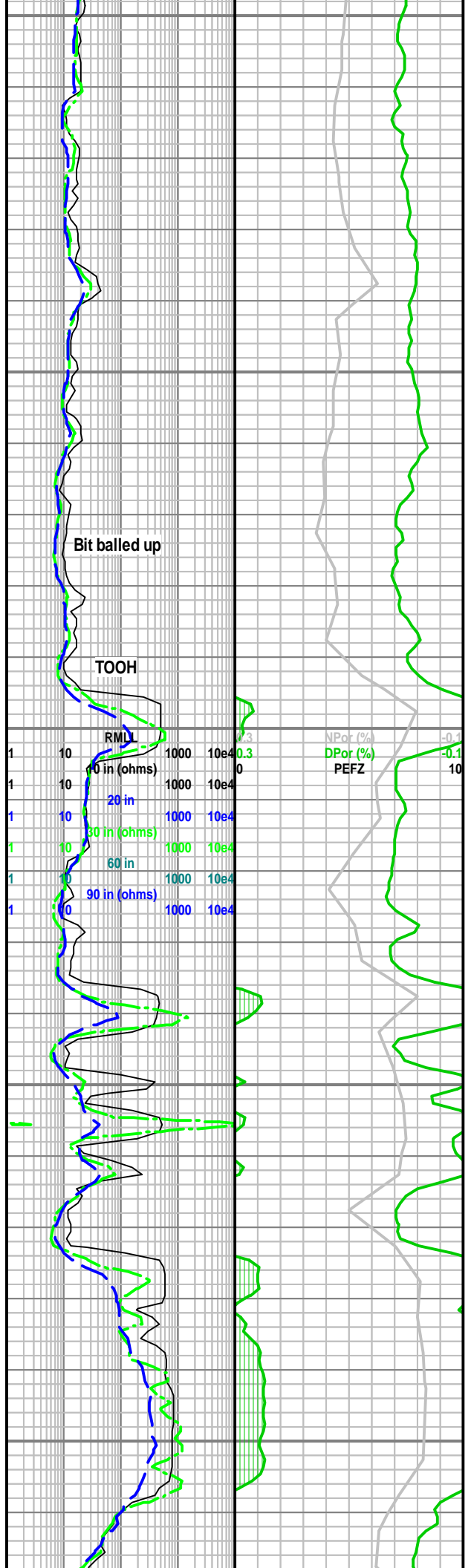
SH, salmon red, sft, & dkgy, plty, firm, aa
(Circulate & catch 10' samples)

SH, salmon red, sft; LS, wht-dkgy; DOLO, dkblugy; tr SH, lt grn

SH, slty, brick red; LS, wht, sli dolomitic; ANHYD, wht, sft; DOLO, dkblugy, aa

SH (75%), slty, lt salmon pink-red, blkgy-plty, sft, tr SH, lt grn; DOLO, dkgy-dkblugy; ANHYD, wht, sft-mushy, sli calc

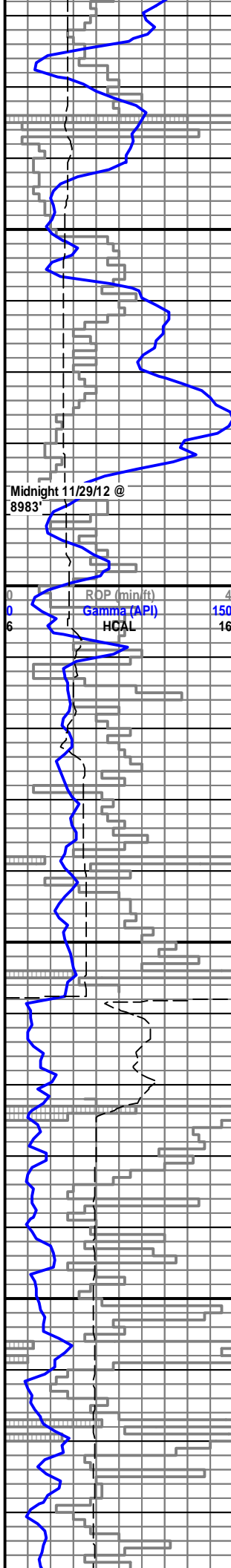
ANHYD, wht, sft-mushy; tr SH, lt



Bit balled up

TOOH

| | RML | NPor (%) | DPor (%) | PEFZ |
|---|-----|----------|----------|------|
| 1 | 10 | 1000 | 10e4 | 0.3 |
| 1 | 10 | 1000 | 10e4 | 0 |
| 1 | 10 | 1000 | 10e4 | 0.3 |
| 1 | 10 | 1000 | 10e4 | 0 |
| 1 | 10 | 1000 | 10e4 | 0.3 |
| 1 | 10 | 1000 | 10e4 | 0 |
| 1 | 10 | 1000 | 10e4 | 0.3 |
| 1 | 10 | 1000 | 10e4 | 0 |
| 1 | 10 | 1000 | 10e4 | 0.3 |
| 1 | 10 | 1000 | 10e4 | 0 |



salmon pink-red, sft, tr DOLO, aa
ANHYD (80%), wht; SH, slty, salmon
pink-red & DOLO, dkgy-dkblugy (20%)

ANHYD (90%), wht, sft-mushy; SH,
DOLO, aa (10%)

Forelle @ 8942'

SH, silty, lt salmon pink-pale pink, sft;
ANHYD, wht, sft-mushy
(Circulate-continue to catch 10'
samples)

SH, slty, lt = pale salmon pink

ANHYD, wht, & SH, slty, pale pink mxd
~50/50%

ANHYD, wht mxd ~50/50 w/SH, lt
salmon

Blaine Anhydrite @ 8982'

ANHYD (90%); SH (10%), lt salmon-dk
red, sft-splnty

SH, lt-med red, rounded cly pebbles &
anhydrite inclusions at top; ANHYD,
wht, bedded thro

Anhyd, wht (50%); SH (50%), m dk
salmon red, plty, sli firm-brit

Anhyd, wht; SH, lt salmon red, sndy,
vf-lfg; tr DOLO. dkblugy

Anhyd, wht; SH, lt-mdk salmon red, sft,
v sndy, vf-lfg, rd, aa

SH, dk red, sndy, vf-lfg, rd

Anhyd, wht

Lyons Ss @ 9050'

SS, clr trns, f-cg, p srt, dom
sbrd-wrd-occ ang, lse fri; tr SH, m-dk
salmon, sndy, aa

SS, clr trns, fg-cg, p srt, dom cg,
ang-wrd, frstd grns, lse; tr SH, m
salmon, sndy, aa

DTD 9063', LTD 9058'

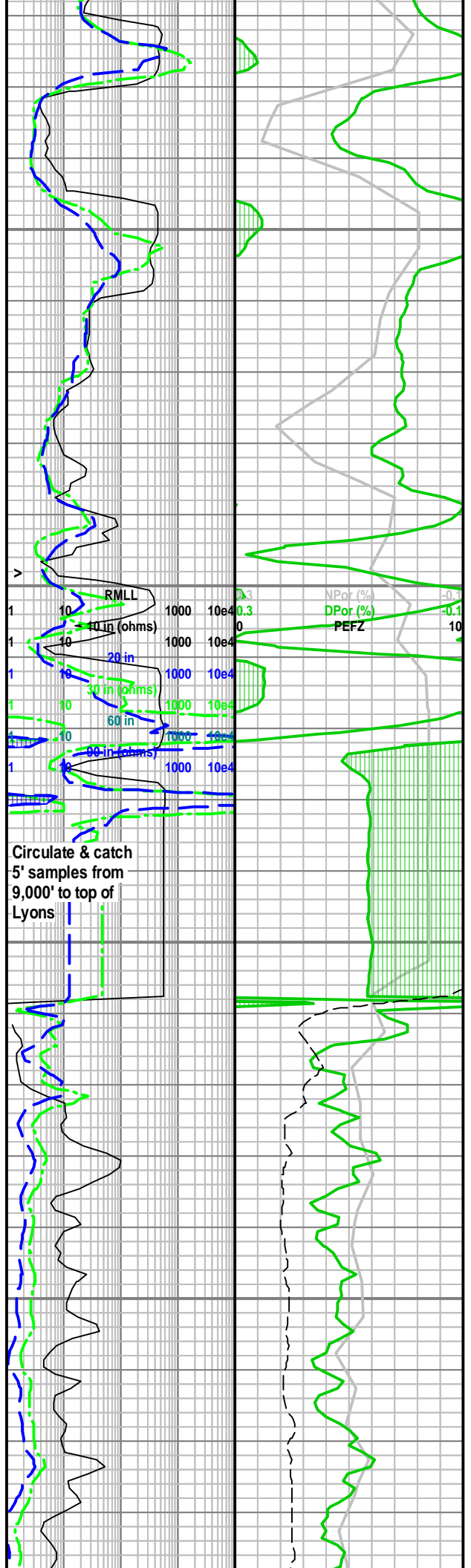
Casing pt 9072'

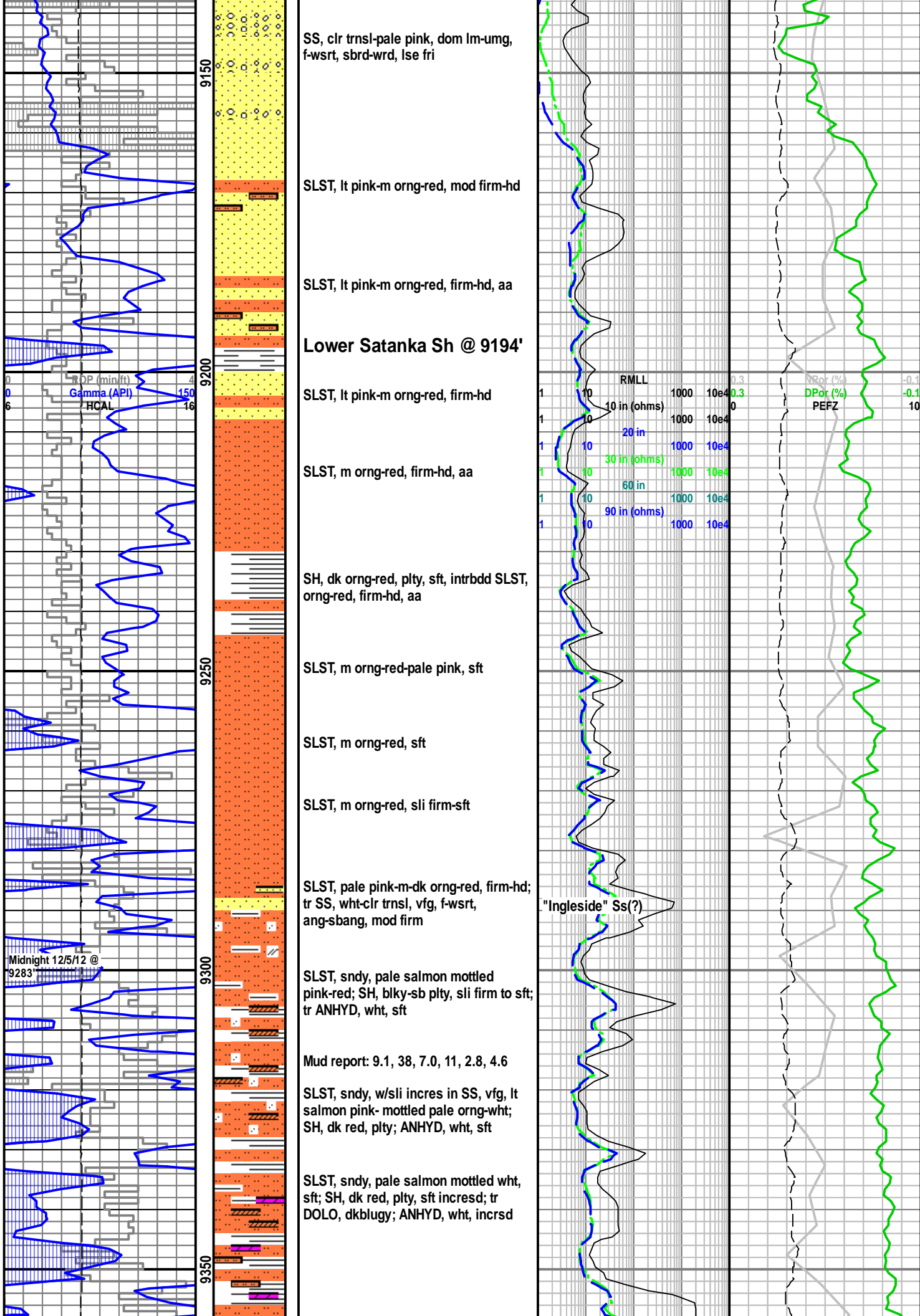
Ran intermediate casing
11/30~11/4/12

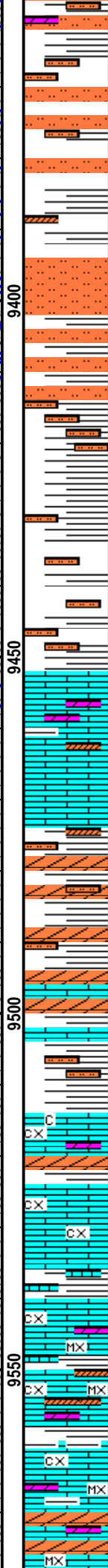
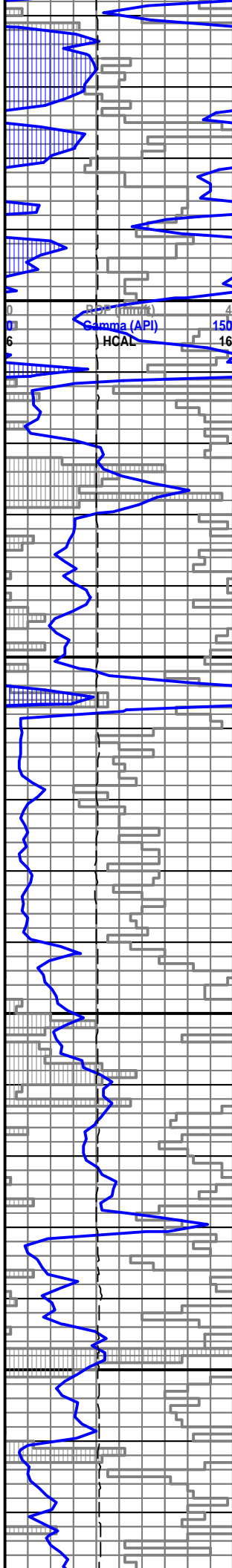
Mud report @ 9063': 9.6, 62, 7, 10,
2,600, 6.7

SS, clr trns, pale pink, lf-cg, p srt,
ang-wrd, lse fri aa

SS, clr trns, frstd-pale pink, f-cg, f srt,
lse fri







SH (70-80%), dk red, plty, sft; SLST (20-30%), aa; tr ANHYD, wht, sft; tr DOLO, dkblugy

Note: Missing samples 9350-9440'. Assume SH/SLST, ANHYD, DOLO (check pE crv for lithology)

Wolf Camp @ 9410'

SH & SLST or LS?

Amazon @ 9458'

LS, wht-to pale purp-gy, cryptoxln, v calc, no vis por; DOLO, dkblugy-lt grn-gy, calc; tr SS, clr, rd, mg, lse; tr SLST/SH, aa; tr ANHYD, wht, sft, aa

SH, plty, & SLST (60%), dk red-lt salmon, sft; ANHYD (40%), wht, v sft; DOLO, dkgy-blk; tr SS, clr trns-l-wht, lfg, sbang-rd;

LS (50%), chalky wht-lt pink-gy, cryptoxln, no por; ANHYD (50%), wht, sft; tr DOLO, blk; SH & SLST, aa

SH-SLST, aa

Mud report @ 9512': 9.10, 38, 6.6, 10, 2,400, 4.7

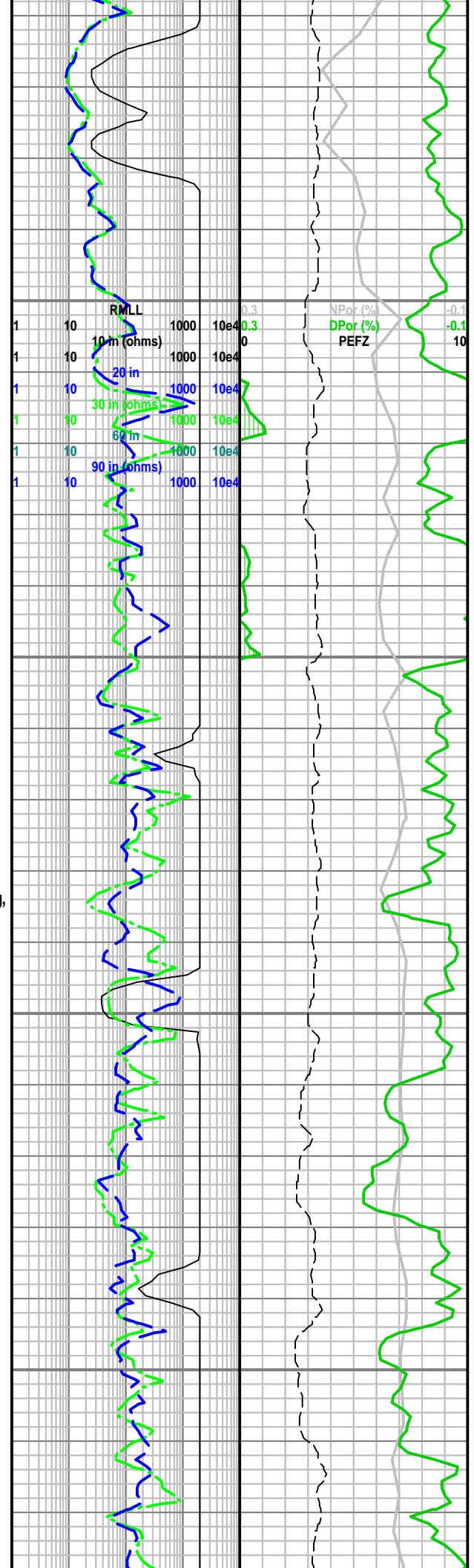
LS (90%), chalky wht-lt pinksh-gy, cryptoxln, lo por; ANHYD (10%), wht, sft; tr DOLO, blk

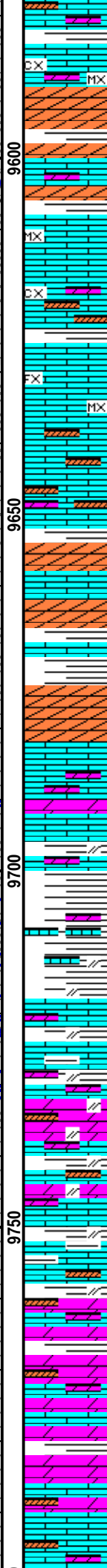
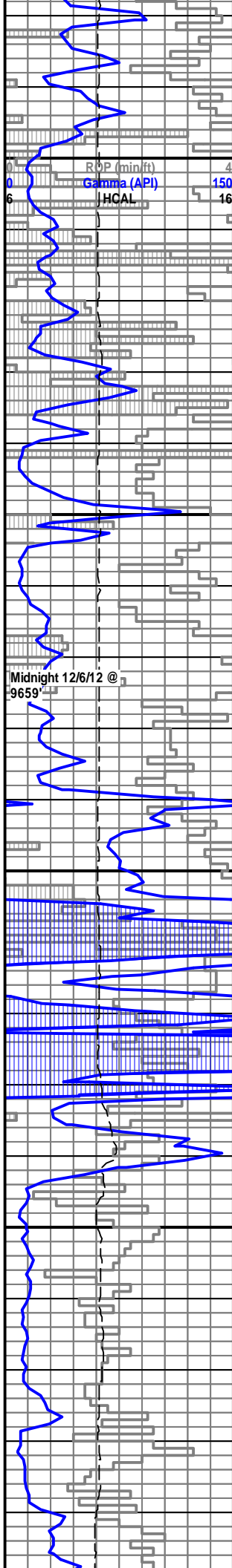
Council Grove @ 9530'

LS, chalky wht-lt pinksh-gy, cryptoxln; SH, dk red

LS (95%), chalky wht-lt pink-orn-g-red mottld, cryptoxln-microxln; ANHYD, wht, sft (5%); SH, dk red; tr DOLO, lt grnsh-blk; f-exc por thro

LS (75%), wht-pale pink-orn-g-red, crypto-microxln (reacts strongly to HCl); ANHYD, wht (25%) tr DOLO, blk





LS (50%), chalky wht-pink to orng-red, crypto-microxln, hd-tite; ANHYD, wht, sft (50%); SH, dk red, sft; tr DOLO, blk

LS, chalky wht-lt pink-pale orng-red; micro-cryptoxln; SH, dk red; DOLO, blk; tr ANHYD, wht sft; good vis por

LS, wht-pale pink, sucrosic, finely xln w/r LS, wht mottled orng-red, microxln; f vis por

LS (50%), wht-pale pink, hd-tite, no vis por; ANHYD (50%), wht, sft, tr DOLO, dkblugy,

ANHYD, wht, sft (60%); LS, wht-pale pink (40%)

LS, wht-pale pink, aa

ANHYD, wht, sft, aa

LS (20%), clr-wht-pale pink, dolomitic; DOLO, blk, increasd; good vis por

Admire @ 9690'

"Red Shale Marker" @ 9700'

SH (70%), sli slty, dk red, plty

Mud report: 9.1, 38, 6.6, 10.8, 2.4, 4.7

SH, salmon pink-red, sft, anhydritic; LS, wht, cryptoxln; ANHYD, wht, sft, aa

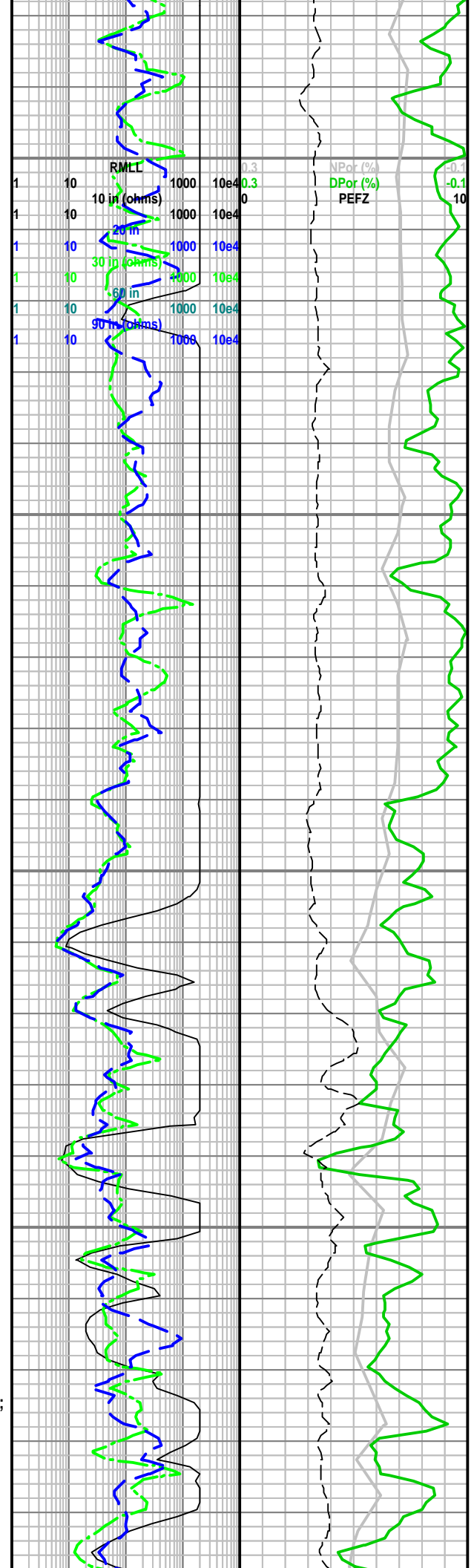
VIRGIL @ 9730'

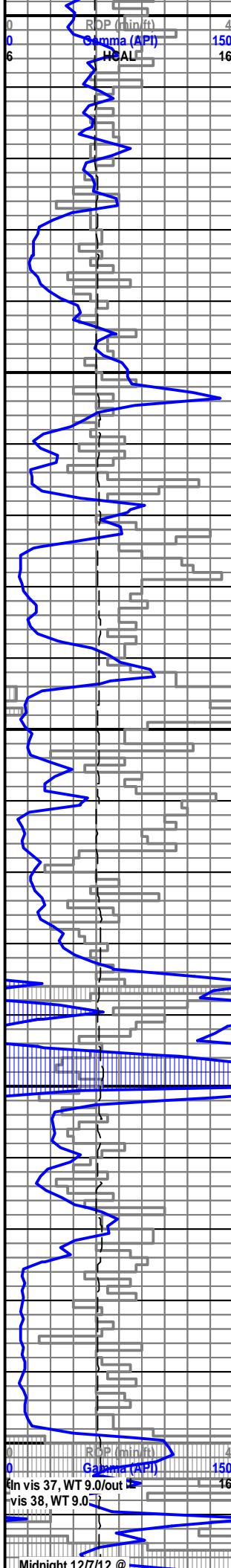
LS (60%), dolomitic (slo reaction to HCl), microxln, good-exc vis por; intrbdd SH (40%), salmon red, sft, anhydritic; tr DOLO; tr ANHYD

LS, chalky wht-clr, tr intrbdd ANHYD, wht, sft; SH, salmon red, sft anhydritic

LS, dolomitic, clr-wht-lt pink; tr ANHYD; tr SH, salmon red

LS (90%), dolomitic, clr-wht-lt pink, cryptoxln, no vis por; ANHYD (10%), wht, sft, mushy





ANYD(50%), wht, sft; LS (50%), chalky wht-lt pink, (slo-fast react HCl), no vis por; tr DOLO, v dkgy; tr SH, salmon red-dk red, sli anhydritic

ANHYD, wht, sft; tr LS, chalky wht; tr SH, dk salmon red

ANHYD (80%), wht; LS (20%), pale pink, crypto-micrxln; SH, salmon red; tr DOLO, blk; f-good vis por

LS (50%), pale pink, dolomitic, microxln; ANHYD (50%), wht, sft, exc vis por; tr DOLO, blk

LS, detrital, wht-pale pink, mxd equally w/SH, salmon red, ANHYD, wht, & DOLO, exc vis por

LS (90-95%), wht-pale pink, crypto-ip microxln, exc vis por; ANHYD (5-10%), wht, sft

LS, detrital, wht-pale pink, mxd equally w/SH, salmon red & ANHYD, wht

Missouri Ls @ 9948'

LS, wht-orng-red, cryptoxln-ip microxln, f vis por; SH, dk red, plty, hd; ANHYD, wht, sft, mushy

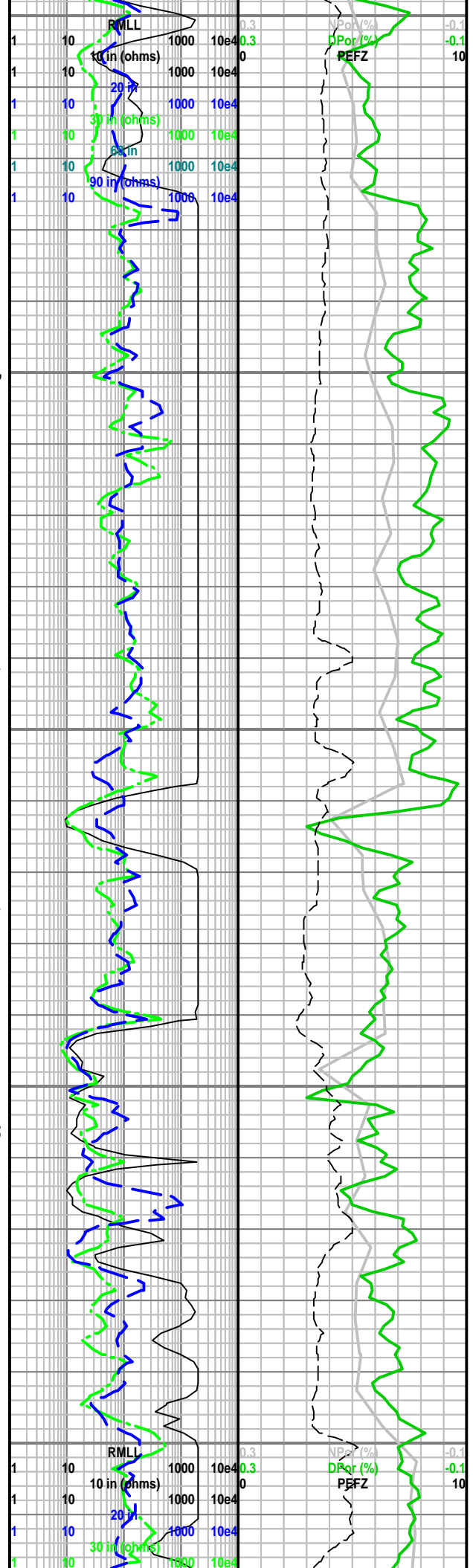
LS, wht-clr, cryptoxln, ang, v firm-hd, v calc no vis por

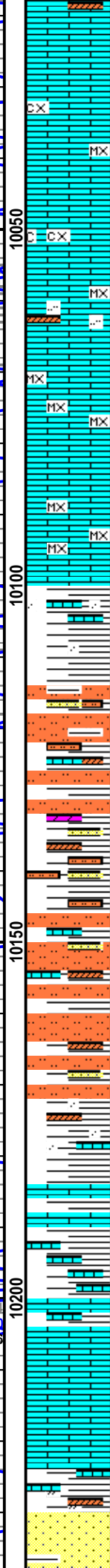
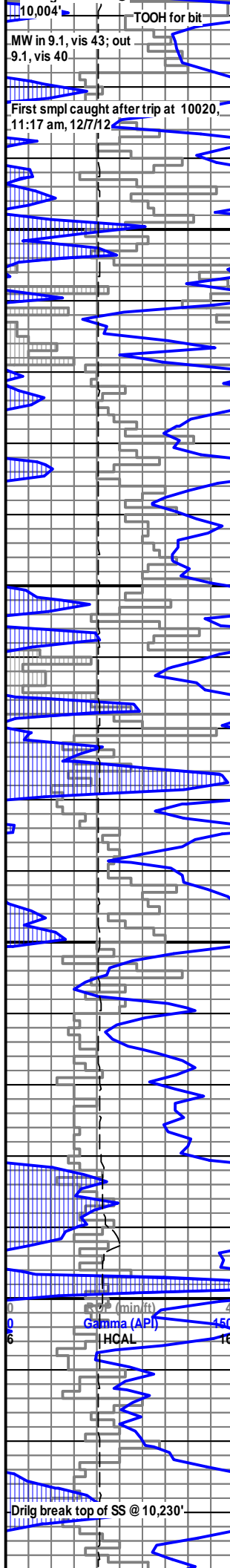
LS, wht-clr-lt pink, stnd orng red, cryptoxln, v calc; tr ANHYD, wht, v sft-mushy

Mud report @ 9978': 9.0, 37, 7.2, 9.8, 2,400, 4.3

LS, chalky wht-lt pink, cryptoxln, v calc, no vis por; tr ANHYD, wht, sft-mushy

(Bit quit drlg at 10.004')





LS, wht to clr, cryptoxln; LS, wht-orng
red stained, ip detrital-broken frags,
microxln, calc; vis por

LS, chalky wht-clr, cryptoxln-ip
microxln; LS, dk red-purple-orng-pink,
detrital-fragmental, calc; tr SH, dk
red-orng, slty, plty, sli calc; tr ANHYD,
wht

LS, chalky wht-lt salmon
pink-reddish-orng, vfg-microxln, v calc,
exc vis por

LS, wht, chalky-lt salmon
pink-red-orng, vfg-microxln, v calc; exc
vis por; tr lse grns clr-frstd qtz SS, cg,
sbang, sli-non-calc

Fountain Fm @ 10,100'

SLST & SH, slty, dk red-m orng, abund muscovite mica; LS/ SS intrbdd thro, mod firm-hd, non-calc; tr ANHYD

SLST & SH, slty, dk red-salmon
red-pink-m orng; abnd muscovite mica;
tr LS/SS thro; tr DOLO, blk; tr ANHYD;
non calc

SLST & SH, slty, dk red-salmon pink,
abnd muscovite mica, aa; LS/SS, aa, tr
ANHYD, aa; non-calc

SLST & SH, slty, dk red-salmon
pink-red, abund muscovite mica
w/LS/SS thro, aa; ANHYD, aa

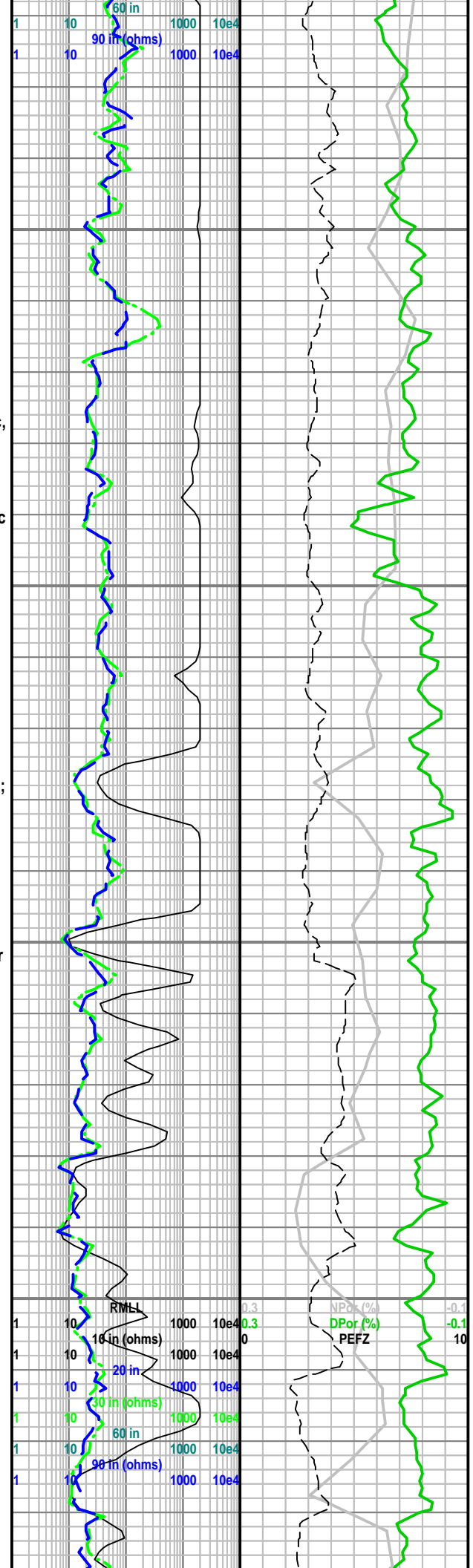
Mud report @ 10,189': 9.0, 37, 7.4, 9.4, 2,400, 4.3

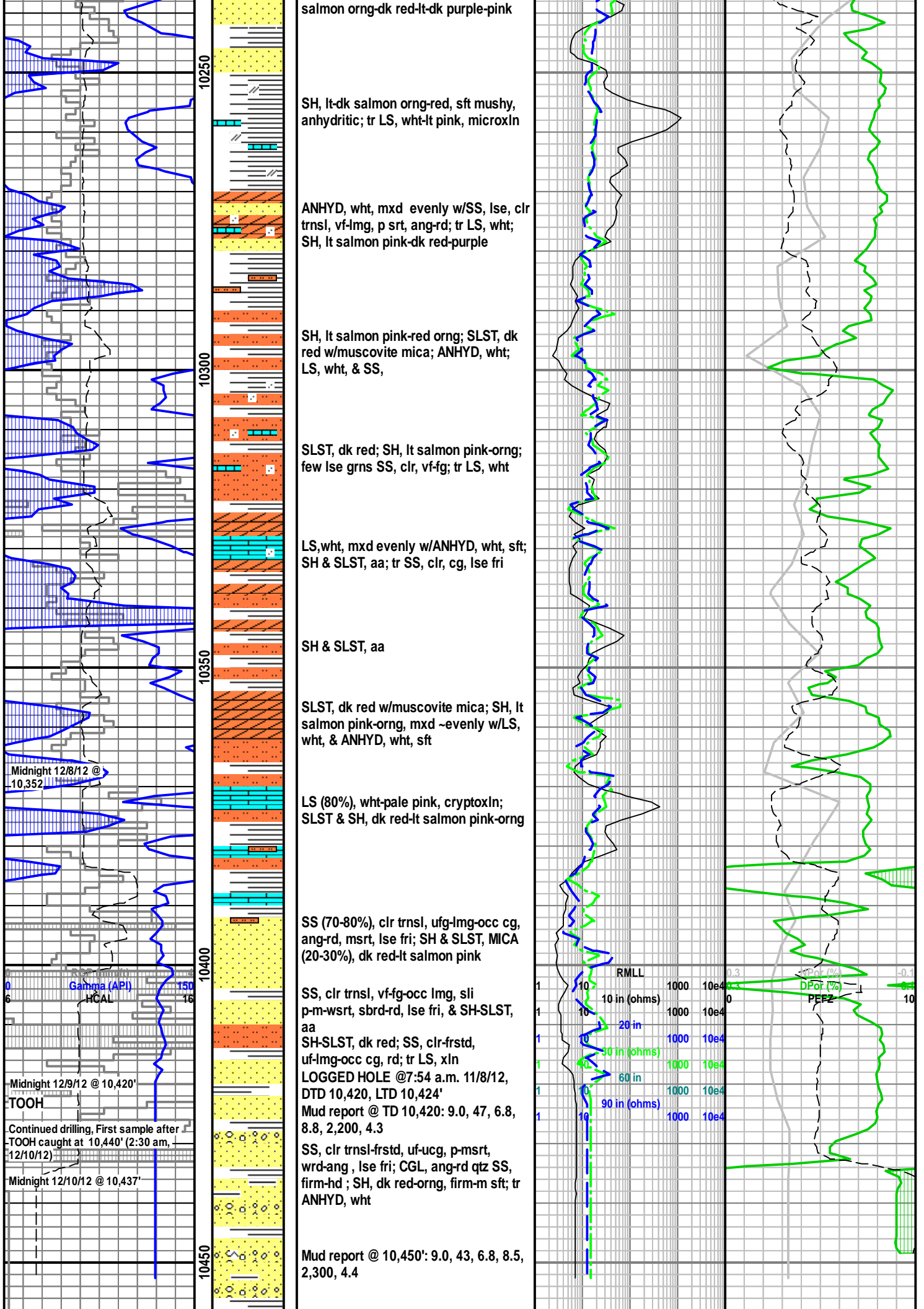
LS, wht, v calc; SH, aa

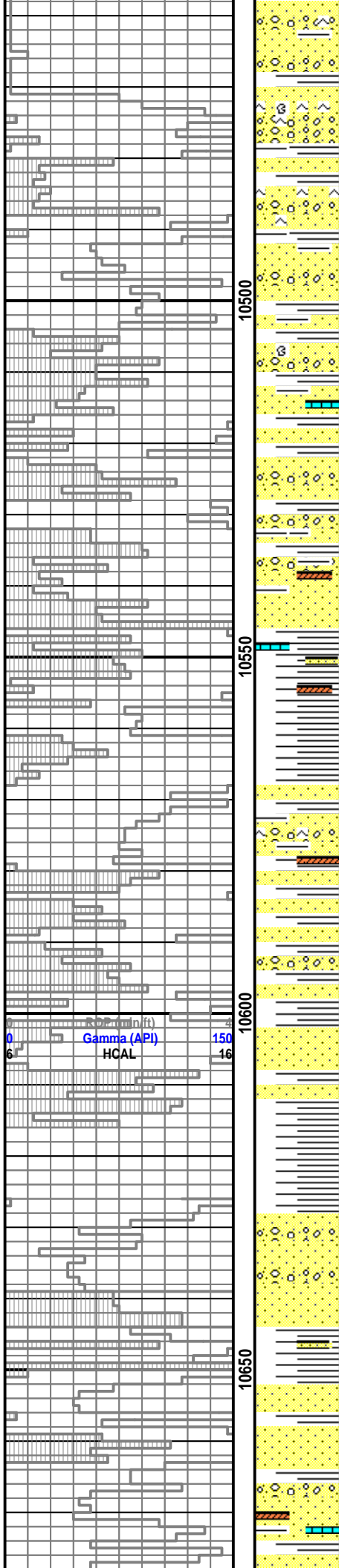
LS, wht; SH, aa

SH, lt salmon red-dk red-dk purple, sft, anhydritic; LS, wht-pale pink; tr ANHYD, wht, sft

SS, clr-trnsl, uvf-fg, wsrt, sbrd-wrd, sli
firm-mod sft-lse fri; SH, varieg lt







SS, clr trns-l-wht-frst-d, uf-ucg, msrt, wrd-ang, lse fri; CGL, arkosic, qtz SS, silic cmt; SH, dk red-brn-red, dom sft; tr ANHYD, wht

SS, clr trns-l-wht, lm-vcg, msrt, rd-sbrd-ang, arkosic, lse fri; CGL, lm-lcg, m-wsrt, w cmt-d, ang-wrd; SH, salmon orng-red-dk red, pty, mica (muscovite), med firm-sft; tr ANHYD

SS, clr-trns-l-wht, uvf-ucg-occ vcg, psrt; tr LS, calc, cryptoxln; SH, m orng-red-dk red; pty-blky, firm-sft, w/mica

SS & SH ~50/50: SS, clr trns-l-wht, vf-fg-occ cg, p-msrt, rd, lse fri; SH, lt salmon pink-dk red, mica, aa; tr CGL, lmg-occ lcg, aa; tr ANHYD, wht

SH (90-95%), lt salmon pink-lt-dk orng-red-med-lt purple-pale grn; tr SS (5%), clr cg qtz, ang-rd; tr LS, wht, hd, cryptoxln; tr ANHYD, wht

SS & SH (50/50); SS clr trns-l, uf-cg, ang-sbang; CGL, c-vcg, silic; SH, lt salmon pink-dk red-purple, pty, firm-brit; tr ANHYD

Mud report @ 10,589': 9.0, 41,6,9.5, 2,200, 4.3

SS/SH (50/50), aa; SS, clr trns-l, uf-cg; f vis por

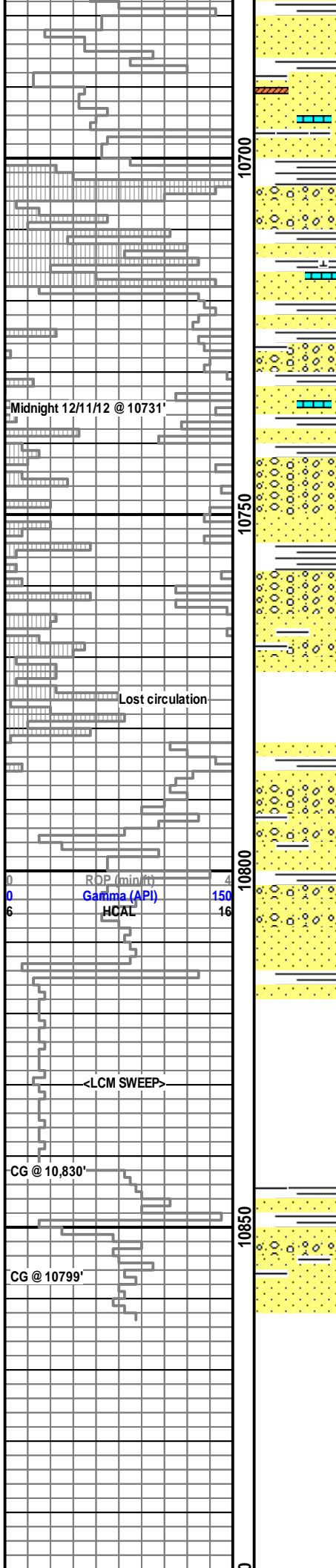
SH, salmon pink-dk red, sli firm-brit, aa

SS, clr trns-l, vf-mg-cg, sbang-rd; tr CGL, aa; SH, salmon pink-red, pty, sli firm-brittle; good vis por

SH (~80%), salmon pink-orng-red, pty-sft; SS (~10-20%) clr trns-l, vf-occ cg, p srt, sbang-sbrd, lse fri; non-calc; p vis por

SS, clr trns-l mcg-occ vcg, m-wsrt, ang-wrd, lse fri; SH, salmon pink-red, aa; tr LS, wht; tr ANHYD; good vis por, est 12-15%

| RMLL | | | | 0.3 | NPor (%) | -0.1 |
|------|----|--------------|------|------|----------|------|
| 1 | 10 | 1000 | 10e4 | 0.3 | DPor (%) | -0.1 |
| 1 | 10 | 10 in (ohms) | 1000 | 0 | PEFZ | 10 |
| 1 | 10 | 20 in | 1000 | 10e4 | | |
| 1 | 10 | 30 in (ohms) | 1000 | 10e4 | | |
| 1 | 10 | 60 in | 1000 | 10e4 | | |
| 1 | 10 | 90 in (ohms) | 1000 | 10e4 | | |
| 1 | 10 | | 1000 | 10e4 | | |



SS, clr trnsI-wht, fg- mg, sbrd-rd, lse fri;
SH, salmon pink-orng red, mica;
plty-sbfis, tr LS, orng-wht; tr ANHYD,
wht, sft; est por 12-15%

SS-SH ~50/50, clr trnsI-wht, m-crs-occ
vcrs, sbrd-rd; SH, salmon pink, sft; tr
LS orng-wht, v calc; est por~15%

SS, wht-clr, c-vcg, mod wrd-sbang; SH,
salmon red-pink, sft; tr LS, orng-wht,
est por to 30%

SS (75-80%), clr-trnsI-wht, ufg-uvcg,
m-wsrt, ang-sbrd-rd, lse fri; SH (~20%),
lt salmon pink-red, sm mica, sft; exc
vis por, aa

Mud report @ 10,751': 9.0, 42, 6.4, 9.5,
2,200, 4.4

SS (~80-90%), clr-trnsI-wht-pale pink,
uf- cg, lse fri, SH (~10%), exc vis por
~30%

SS(~90-95%), clr trnsI, f-um-lcg, lse fri,
non-calc; SH (~5%), tr LS, lt pink, calc;
tr ANHYD, wht; exc vis por ~30%

SS, clr trnsI, uf-cg-occ vcg, ang-wrd,
lse fri; SH, lt salmon pink-orng-red
bkly-sft, sli calc; tr ANHYD; exc vis por,
est ~30%

DTD 10,818' (Note: not E-logged below
10,450' to DTD)

No cores or tests. Ran 7"
intermediate casing to 9072' (csg pt); 4
1/2" 11.6 slotted liner from 9072' to
DTD 10,818'. Completed as a water
injection well 12/21/12.

Thank you for the opportunity to
serve as the Wellsite Geologist on this
well.

Best regards,

3:15-3:30 a.m.: LOST CIRC @
10,768 in very crs-grnd lse
fri SS

| RMLL | | | | 0.3 | NPor (%) | -0.1 |
|------|----|--------------|------|------|----------|------|
| 1 | 10 | 1000 | 10e4 | 0.3 | DPor (%) | -0.1 |
| 1 | 10 | 10 in (ohms) | 1000 | 0 | PEFZ | 10 |
| 1 | 10 | 20 in | 1000 | 10e4 | | |
| 1 | 10 | 30 in (ohms) | 1000 | 10e4 | | |
| 1 | 10 | 60 in | 1000 | 10e4 | | |
| 1 | 10 | 90 in (ohms) | 1000 | 10e4 | | |

15:27 a.m : LOST
CIRCULATION
10,799'-10,830' -working
to get circulation back.

| | | | | |
|--|--|--|--|--|
| | | Louise M. Kiteley PG-1715 Professional Geologist (WY) | | |
| | | <FORMATION TOPS> | | |
| | | J Slst 7698 | | |
| | | JSs 7722 | | |
| | | Skull Creek Sh 7892 | | |
| | | Dakota Ss 7986 | | |
| | | Morrison Fm 8130 | | |
| | | Entrada Ss 8348 | | |
| | | Top of Permian(Lykins Fm) 8423 | | |
| | | Minnekahta Sh 8794 | | |
| | | Forelle 8942 | | |
| | | Blaine Anhydrite 8982 | | |
| | | Lyons Ss 9050 | | |
| | | Lower Satanka Sh 9194 | | |
| | | Wolf Camp 9410 | | |
| | | Amazon 9458 | | |
| | | Council Grove 9530 | | |
| | | Admire 9690 | | |
| | | "Red Shale Marker" 9700 | | |
| | | Virgil 9730 | | |
| | | Missouri Ls 9948 | | |
| | | Fountain Fm 10,100 | | |