

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name State Seventy Holes F-J-3HNB

Location NWNW SEC. 3 T4N R62W

State CO

County WELD

Country USA

Rig Number CADE 26

API Number 05-123-38881-00

Region DJ BASIN

Field WATTENBERG

Spud Date 3/31/2014

Drilling Completed 4/5/2014

Surface Coordinates 384' FNL x 635' FWL (LAT: 40.347820,-104.319754)

Bottom Hole Coordinates (Projected) 470' FSL x 1317' FWL (LAT: 40.335421,-104.316335)

Ground Elevation 4533'

K.B. Elevation 4550'

Logged Interval 5800' To 10837'

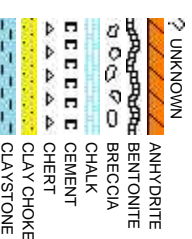
Total Depth 10837'

Formation NIOBRARA, B-CHALK

Type of Drilling Fluid H2O, LSND

Company Bonanza Creek
Address 410 17th Street
Denver, CO 80202

Name Paul McKay
Company Bonanza Creek
Address 410 17th Street
Denver, CO 80202



Operator

Energy Inc.

Suite 1500

202

Geologist

Energy Inc.

Suite 1500

202

Rock Types

| | | |
|----------------------|------------------|-----------------|
| CONGLOMERATE | MARLSTONE | SHALY SANDSTONE |
| DOLomite | METAMORPHIC | SHALY SILTSTONE |
| DOLomitic LIMESTONE | NO SAMPLE | SILTY SHALE |
| GRANITE | SALT | SILTSTONE |
| GYPsum | SANDSTONE | TILL |
| IGNEOUS | SALT-PEPPER SANt | TUFF |
| SIDERITE or LIMONITE | SHALE | WELDED TUFF |
| LIMESTONE | SHALE COLORED | |
| | SHALE GRAY | |

Accessories

| | | | |
|----------------|------------------|--------------------------|--------------------|
| Fossils | GASTROPOD | ARGILLITE GRAIN | HEAVY MINERAL |
| INOCERAMUS | B BENTONITE | K KAOLIN | ANHYDRITE STRINGER |
| ALGAE | O OOLITE | BIT BITUMENOUS SUBSTANCE | COAL STRINGER |
| AMPHIPORA | O OSTRACOD | BRE BRECCIA FRAGMENTS | DOLOMITE STRINGER |
| BELEMNITE | P PELECYPOD | C CALCAREOUS | GYPsum STRINGER |
| BIOCLASTIC | P PELLET | C CARBONACEOUS FLAKES | LIMESTONE STRINGER |
| BRACHIOPOD | P PISOLITE | CHT CHERT | N NODULES |
| BRYOZOA | P PLANT REMAINS | COAL - THIN BEDS | PHOSPHATE PELLETS |
| CEPHALOPOD | S PLANT SPORES | DOLOMITIC | P PYRITE |
| CORAL | S SCAPHOPOD | F FELDSPAR | S SALT CAST |
| CRINOID | S STROMATOPOROID | F FERRUGINOUS PELLET | S SANDY |
| ECHINOID | | F FERRUGINOUS | S SILTY |
| FISH | | G GLAUCONITE | T TUFACEOUS |
| FORAMINIFERA | A ANHYDRITIC | G GYPSIFEROUS | |
| F FOSSIL | A ARGILLACEOUS | | Stringer |

Other Symbols

| | | | | |
|--------------------|-----------------------|-----------------------|------------------------|-----------------|
| Oil Show | P PINPOINT | DST INTERVAL | WIRELINE TESTED - LEFT | E EARTHY |
| V VUGGY | FAULT | WIRELINE TESTED - RT | Fx FINELYXLN | |
| D DEAD | FORMATION TOP | DRILL STEM TEST | GS GRAINSTONE | |
| EVEN | GAS SHOW | OIL SHOW | MN DEPTH | L LITHOGRAPHIC |
| Q QUESTIONABLE | BIT | | | Mx MICROXLN |
| S SPOTTED STAINING | CONNECTION (UP) | | | Rounding |
| | MN DEPTH UP | | | MS MUDSTONE |
| Porosity | CONNECTION (DOWN) | MN DEPTH (DOWN) | A ANGULAR | PS PACKSTONE |
| CONNECTION GAS | NORMAL FAULT | R ROUNDED | | WS WACKESTONE |
| E EARTHY | CONNECTION GAS (LEFT) | O OVERTURNED STRATA | B SUBANG | |
| F FENESTRAL | TRIP GAS | REVERSE FAULT | R SUBRND | |
| F FRACTURE | TRIP GAS (LEFT) | CASING | | Textures |
| INTERCRYSTALLINE | DOWN TIME GAS | SIDEWALL CORE (LEFT) | | M MODERATE |
| INTERCRYSTALLINE | DOWN TIME GAS (LEFT) | SIDEWALL CORE (RIGHT) | P POOR | |
| MOLDIC | CORE - LOST | SLIDE | C CHALKY | W WELL |
| O ORGANIC | CORE - RECOVERED | SURVEY | Cx CRYPTOXLN | |

Slide/Rotate

ROP
ROF
GAMMA

Bit Data
Bit #: 3
Type: HEO4/RMSV
Size: 8 3/4
Depth In: 5,702'
Jets: 3 x 20
S/N: 1389419

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

COLUMBINE LOGGING RIGGED UP ON
4/2/2014 MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0603 BEGAN
ON 4/2/2014, 12:46 MST at 5800' MD

Depth Labels

% Lith

Well Bore
TVD

Oil Show

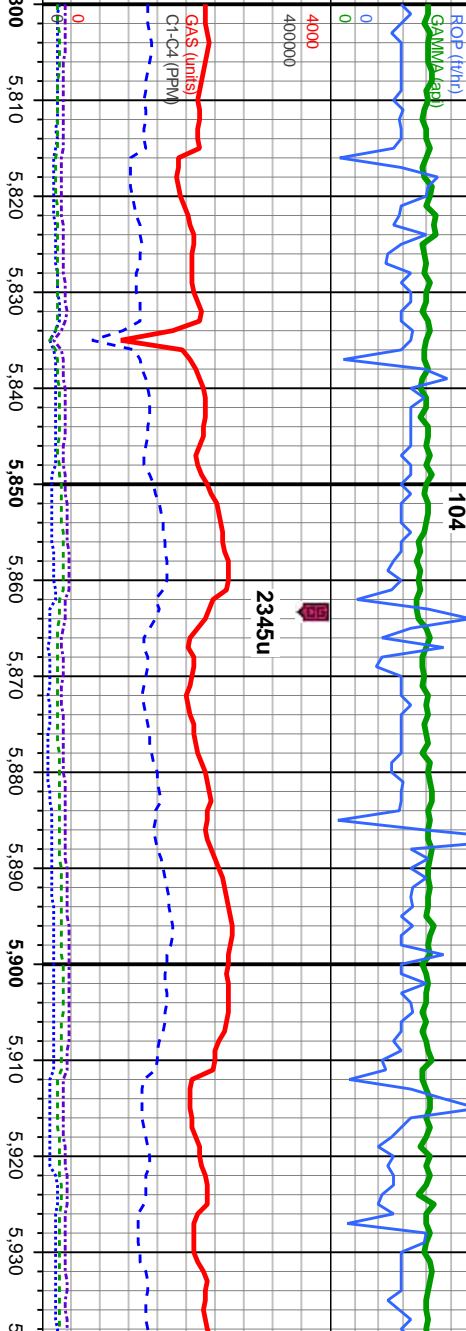
ESTIMATE

Images

VIS 44 WT 9.6

104

2345u



MD: 5,819'
Inclination: 23.56 °
Azimuth: 174.96 °
TVD: 5,711.87'
VS: -174.32'

MD: 5,867'
Inclination: 29.37 °
Azimuth: 176.17 °
TVD: 5,754.82'
VS: -153.12'

MD: 5,913'
Inclination: 33.55 °
Azimuth: 179.02 °
TVD: 5,794.05'
VS: -129.46'

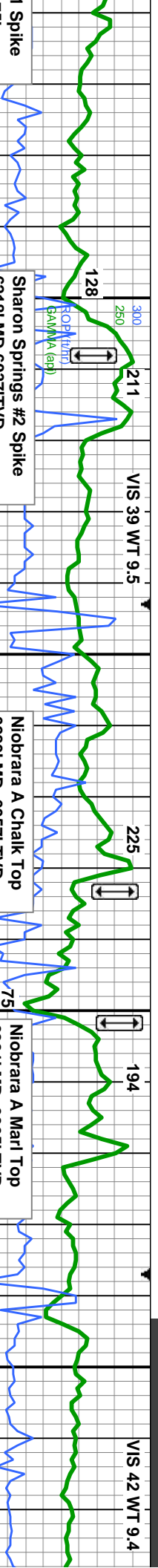
100% SLTY SH: med-dk gy, occ blk, mod
sft - sl firm, sb blkly - blkly, occ pty, rthy - gt,
mtx, silty, sl calc, occ ss

100% SLTY SH: med-dk gy, occ blk, mod
sft - sl firm, sb blkly - blkly, occ pty, rthy - gt,
mtx, silty, sl calc, occ ss

100% SLTY SH: med-dk gy, occ b
firm, sb blkly - blkly, occ pty, rthy -
tr pyr, occ ss



VIS 42 WT 9.4



1 Spike
75'
Sharon Springs #2 Spike
6218' MD 6037' TVD

Niobrara A Chalk Top
6283' MD, 6057' TVD

Niobrara A Marl Top
6301' MD, 6065' TVD

300
250
200
150
100
50
0

4903u

5292u

4/21/14

4/3/14

5700

MD: 6,198'
Inclination: 50.48 °
Azimuth: 180.44 °
TVD: 6,006.58'
VS: 54.43'

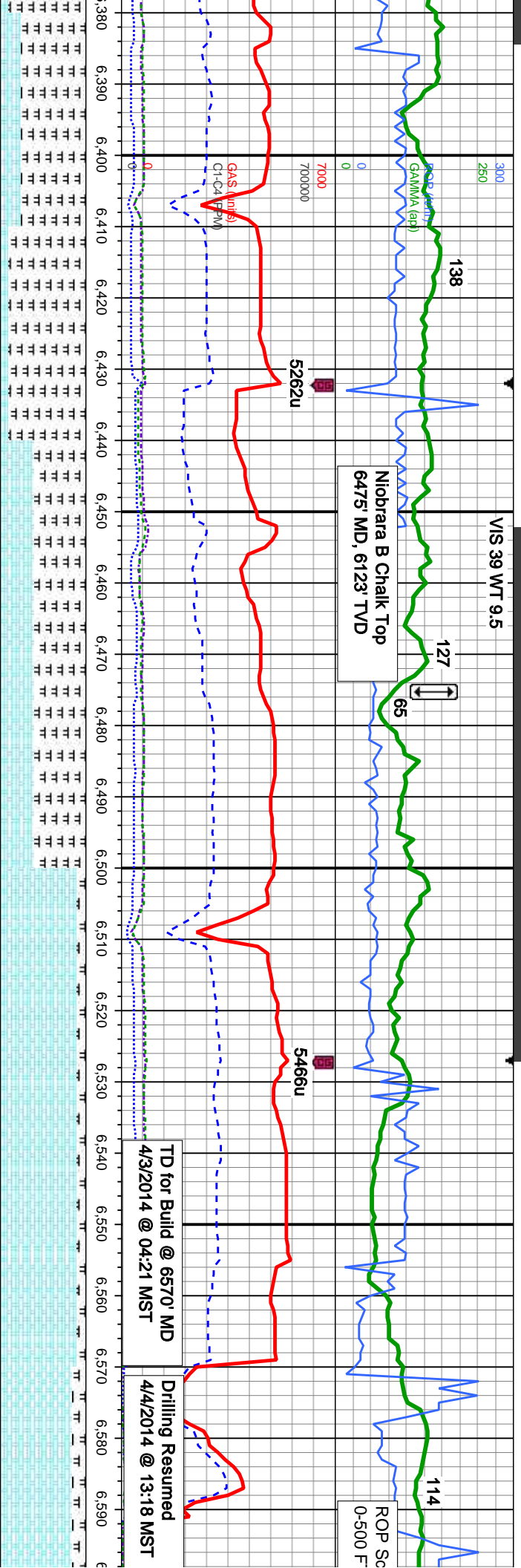
MD: 6,246'
Inclination: 54.11 °
Azimuth: 178.41 °
TVD: 6,035.93'
VS: 91.66'

MD: 6,292'
Inclination: 58.97 °
Azimuth: 174.82 °
TVD: 6,061.29'
VS: 129.6'

MD: 6,340'
Inclination: 66.06 °
Azimuth: 173.27 °
TVD: 6,083.43'
VS: 171.92'

med-dk gy, occ blk, mod sft - sl firm,
occ ply, rthy - gt, mtx; slty, sl calc; 10%
brn - dk gy, occ s&p, vt-ft gr; sb ang -
mod hd - hd, sb blk - blk, mics, sl
il, tr pyr, occ ss, scatt bent, highly con
firm, sb blk - blk, occ ply, rthy - gt, mtx; slty, sl calc
100% SLTY SH: med-dk gy, occ blk, mod sft - sl
firm, sb blk - blk, occ ply, rthy - gt, mtx; slty, sl calc
40-0% SLTY SH: medgy - dkgy, blk, mod sft - firm,
ply - sb blk, sl rthy - gt, mtx; arg - slty, sl calc
40-50% CHK: lt gy, wht-crm, mot, sb ply-blk, sft-
sl firm, rthy-sb wxy, 20-50%: MRLST: med - dk gy,
blk, sb ply - blk, sl firm - mod hd, arg-slt tex, mtx;
calc - scat-tr bent, mod chk flor, fr od, mod strmg
bri bishwn, even sl thn mod yel-amb, mod yel-bm
65-90%: MRLST: blk, dk gy, sb ply - blk, occ ply, sl
frm - hd, arg-slt tex, mtx; calc 35-10% CHK: lt-med
gy, med gy-brn, mot, sb ply-blk, sft - mod hd,
rthy-wxy, tr bent, fr od, slow strmg mod bishwn, even
sl thn mod yel-amb, tr yel-bm sn





MD: 6,388'
 Inclination: 73.03 °
 Azimuth: 173.1 °
 TVD: 6,100.2'
 VS: 216.69'

MD: 6,436'
 Inclination: 73.8 °
 Azimuth: 172.27 °
 TVD: 6,113.9'
 VS: 262.54'

MD: 6,483'
 Inclination: 79.78 °
 Azimuth: 172.49 °
 TVD: 6,124.64'
 VS: 308.15'

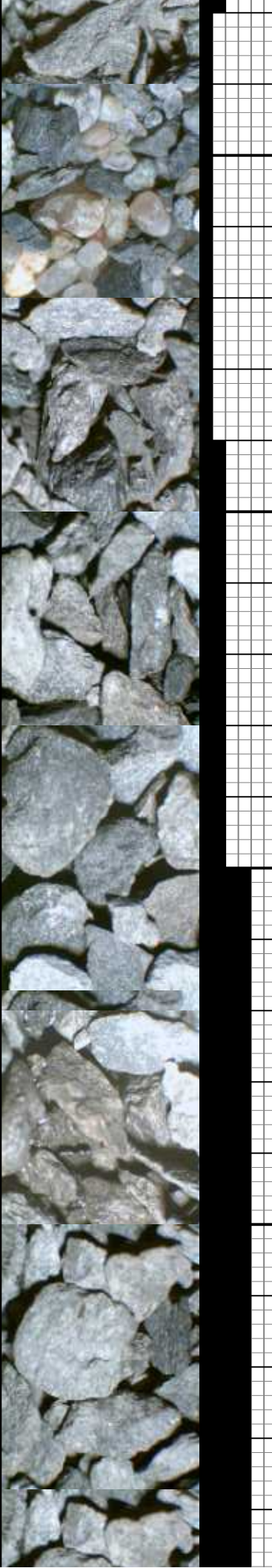
MD: 6,526'
 Inclination: 87.44 °
 Azimuth: 172.59 °
 TVD: 6,129.42'
 VS: 350.72'

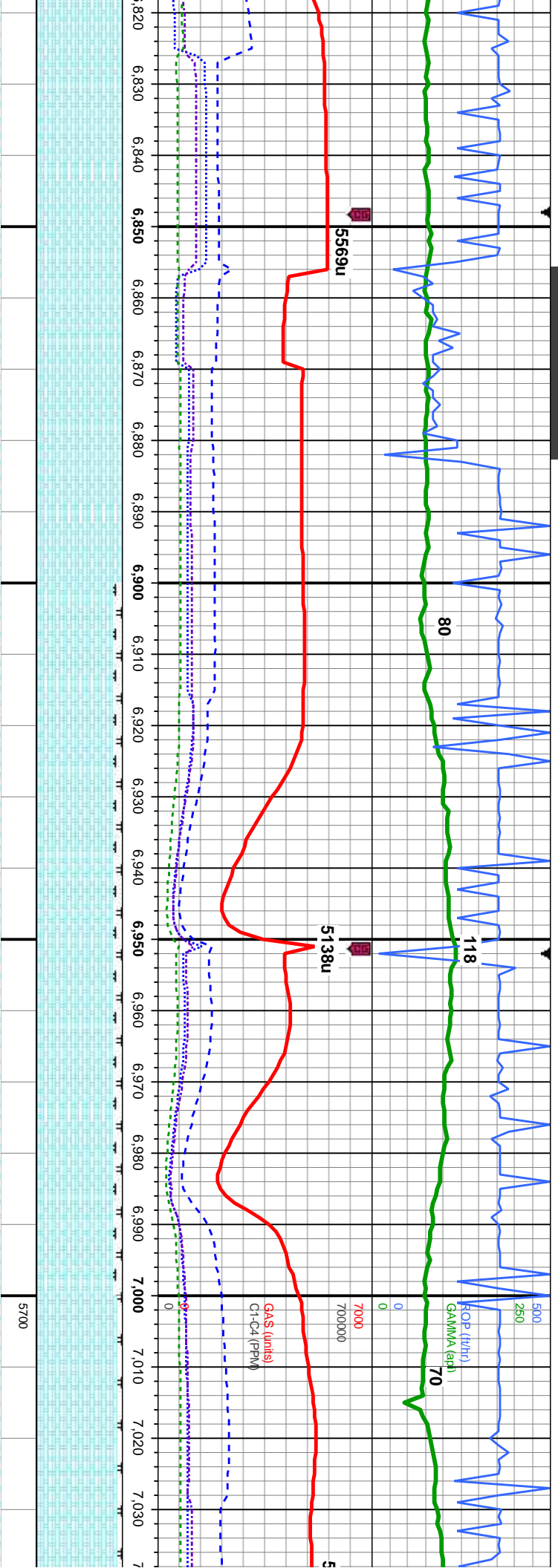
75-90%: MRLST: blk, dk gy, sb ply - blk, occ ply, sl frm - hd, arg-sily tex, mtx: calc 25-10% CHK: lt-med gy, med gy-brn, mot, sb ply-blky, sft - mod hd, rthy-wxy, highly con, slow strng mod blshwh, even sl thn mod yel-amb, sl tr yel-brn stn

60%: MRLST: blk, dk gy, sb ply - blk, occ ply, sl frm - hd, arg-sily tex, mtx: calc 40% CHK: lt-med gy, med gy-brn, mot, sb ply-blky, sft - mod hd, rthy-wxy, mod strng bri blshwh, even sl thn mod yel-amb, mod yel-brn

90% CHK: lt-med gy, med gy-brn, mot, sb ply-blky, sft - mod hd, rthy-wxy, hi: 10%: MRLST: blk, dk gy, sb ply - blk, occ ply, sl frm - hd, arg-sily tex, mtx: g chk flor, fr od, fast bri blshwh strng, some flor, med-thk yel-wh ring, mod stn

85% CHK: lt-med gy rthy, v calc, 15% MRL hd, arg-sily tex, tr sec mod od, fast bri blshwh mod stn



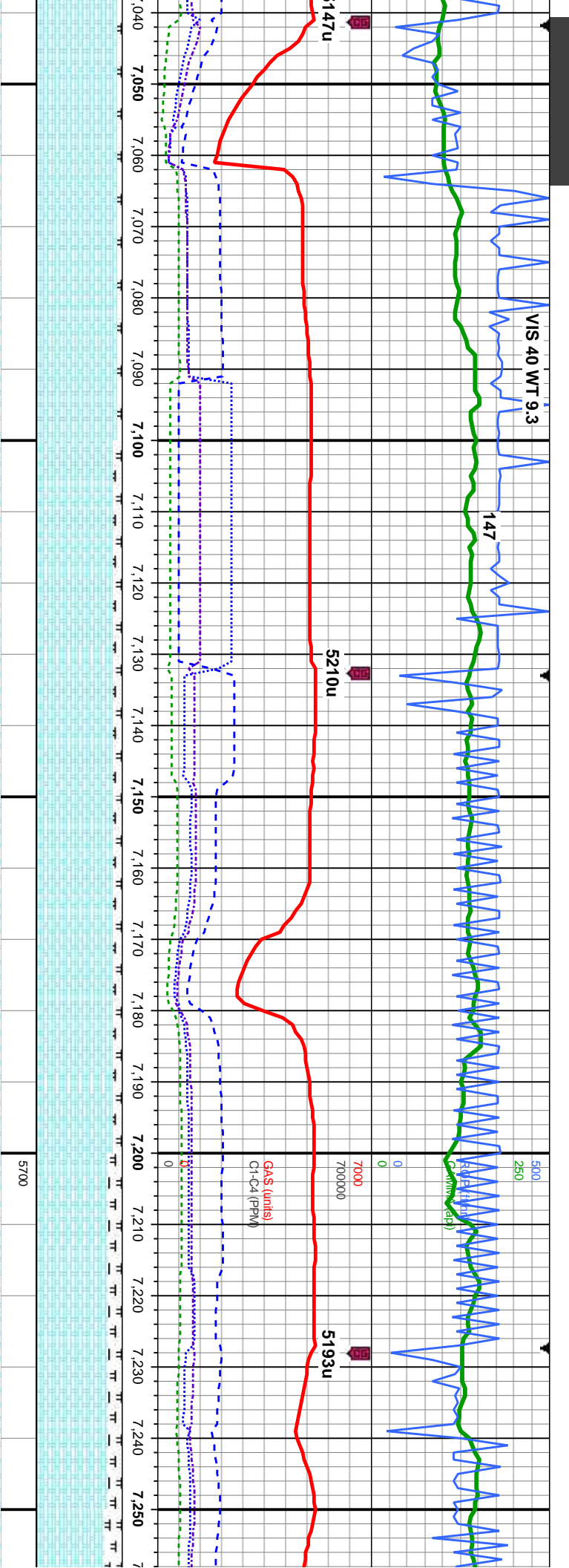


MD: 6,886'
Inclination: 89.41 °
Azimuth: 177.25 °
TVD: 6,130.93'
VS: 707.76'

MD: 6,981'
Inclination: 89.42 °
Azimuth: 176.62 °
TVD: 6,131.9'
VS: 801.63'

| | | | | |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| mod gry, wht-crm, occ dk brn, blk, mod sft-sl frm, rthy, v calc, g chk flor, g od, fst strmg bri bishwh, even | 100% CHK: lt-med gry, wht-crm, occ dk brn, mot, blk-sb blk, mod sft-sl frm, rthy, v calc, g chk flor, g od, fst strmg bri bishwh, even thk mod yel-amb, thk yel-brn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, tr sec cal, some contamination, g chk flor, mod od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, tr sec cal, some contamination, g chk flor, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | TVD (ft) |
| | | | | |



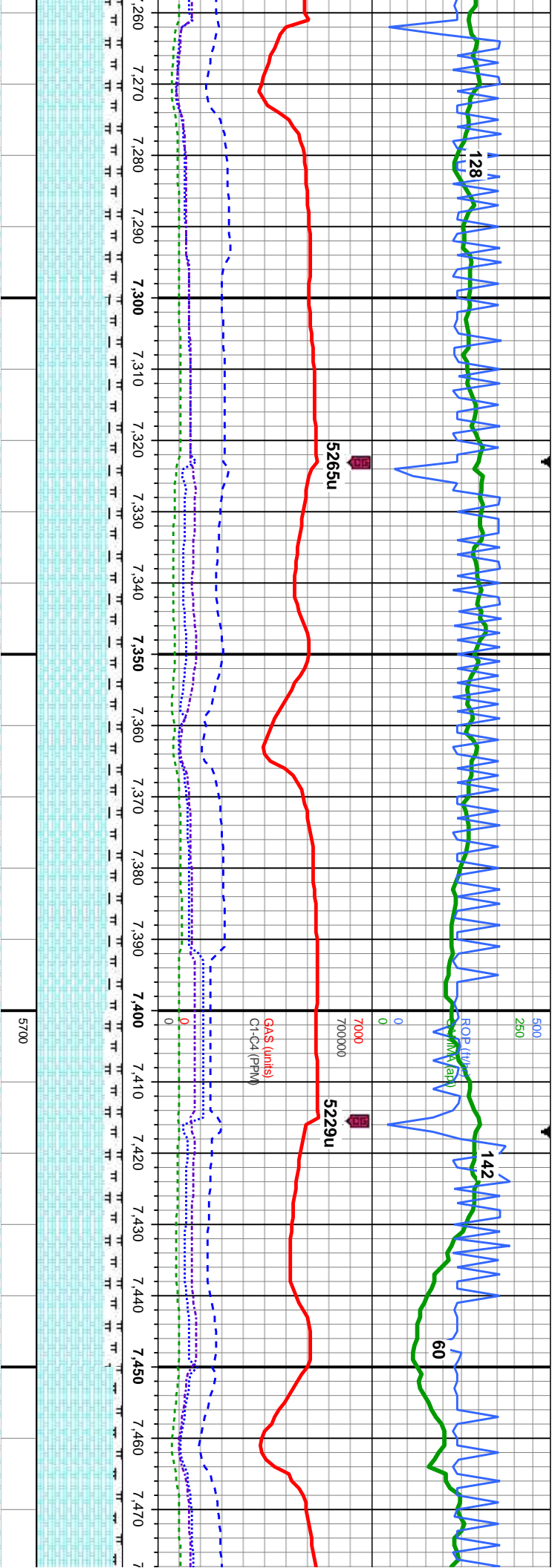


MD: 7,076'
Inclination: 89.35°
Azimuth: 178.38°
TVD: 6,132.92'
VS: 895.34'

MD: 7,171'
Inclination: 90.37°
Azimuth: 178.57°
TVD: 6,133.15'
VS: 988.78'

| | | | | | |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| mot, sb % MRLST: mod hd, fr od, fst amb, | 95% CHK: lt-med gry, occ wht-crm, mot, sb blky, mod sft-sl frm, rthy, v calc, 5% MRLST: dk gy, blk, sb ply - blky, sl frm - mod hd, arg-sily tex, tr sec cal, g chk flr, fr od, fst strmg bri blshwh, even thk mod yel-amb, mod yel-brn stn | 95% CHK: lt-med gry, occ wht-crm, mot, sb blky, mod sft-sl frm, rthy, v calc, 5% MRLST: dk gy, blk, sb ply - blky, sl frm - mod hd, arg-sily tex, tr sec cal, fr od, fst strmg bri blshwh, even thk mod yel-amb, mod yel-brn stn | 95% CHK: lt-med gry, occ wht-crm, mot, sb blky, mod sft-sl frm, rthy, v calc, 5% MRLST: dk gy, blk, sb ply - blky, sl frm - mod hd, arg-sily tex, tr sec cal, fr od, fst strmg bri blshwh, even thk mod yel-amb, mod yel-brn stn | 85% CHK: med gry, occ wht-crm and lt gy, mot, sb blky, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blky, sl frm - mod hd, arg-sily tex, occ imbd cal, g chk flr, fr od, fst strmg bri blshwh, even thk mod yel-amb, mod yel-brn stn | 80% C blky, m dk gy, l arg-sily thk mod |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|

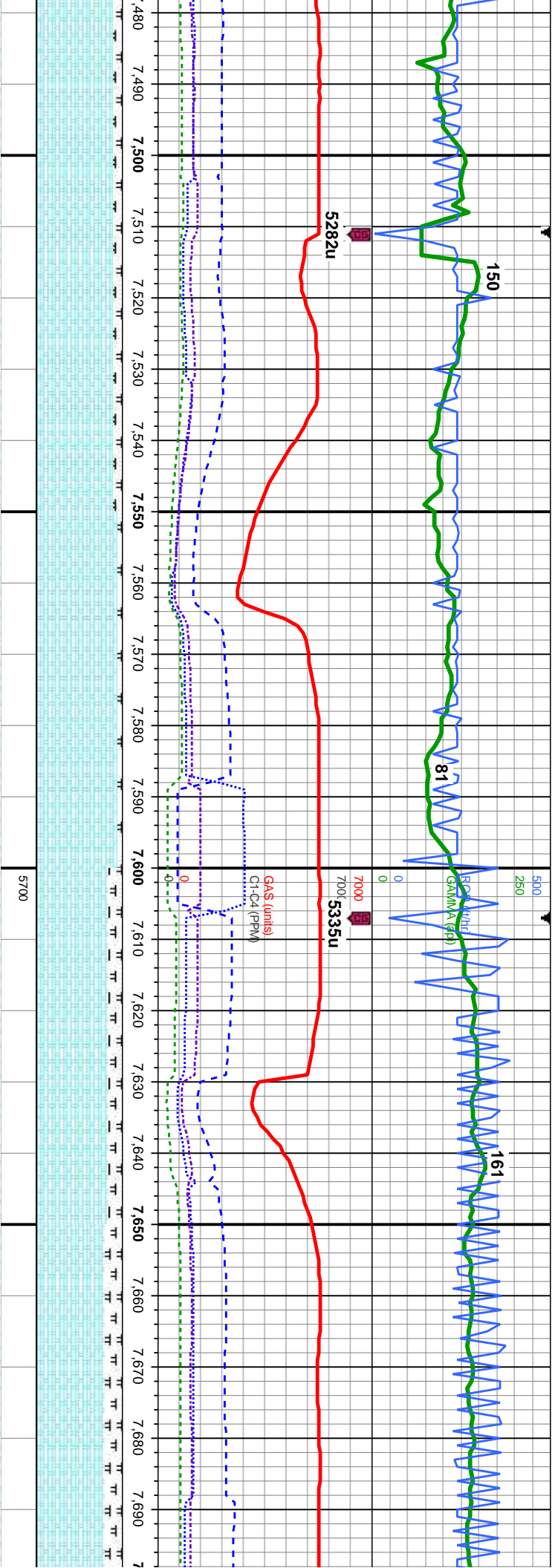




| | |
|-------------------------------------------------------------------------------------------|--|
| MD: 7,266' Inclination: 89.26 ° Azimuth: 178.43 ° VD: 6,133.46' S: 1,082.21' | |
| MD: 7,361' Inclination: 89.84 ° Azimuth: 178.83 ° TVD: 6,134.21' VS: 1,175.6' | |
| MD: 7,456' Inclination: 89.69 ° Azimuth: 178.42 ° TVD: 6,134.6' VS: 1,268.99' | |

| | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 20% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn sin | 85% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn sin | 85% CHK: med gry, occ wht-crm and lt gy, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn sin | 85% CHK: med gry, occ wht-crm and lt gy, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, mod strmg bri bishwh, even sl thn mod yel-amb, mod yel-brn | 90% CHK: lt-med gry, occ blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, arg-sily tex, tr imbd & flor, fr od, mod strmg bri bishwh, even thk mod yel-amb, mod yel-brn |
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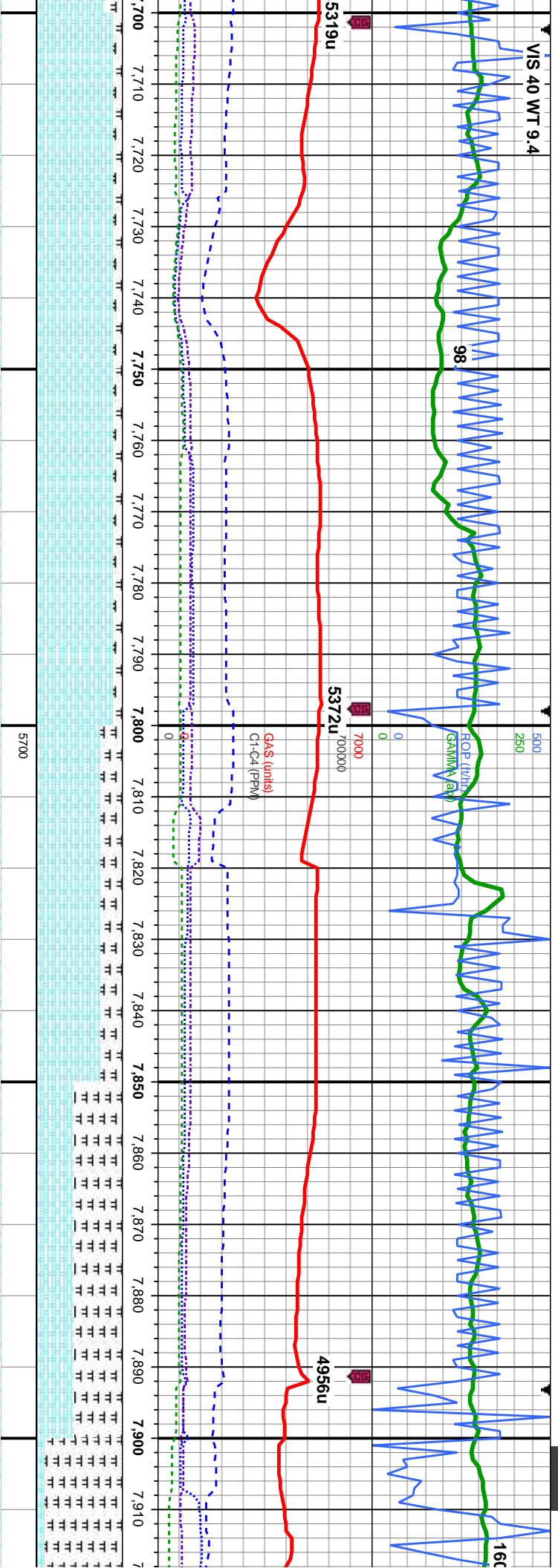


MD: 7,551'
Inclination: 89.63 °
Azimuth: 179.57 °
TVD: 6,135.16'
VS: 1,362.27'

MD: 7,646'
Inclination: 89.69 °
Azimuth: 178.32 °
TVD: 6,135.72'
VS: 1,455.56'

| | | | | |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| wht-crm, mot, sb calc, 10% - blk, sl frm - mod loose cal, mod chk shwh, even sl thn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pty - blk, sl frm - mod hd, arg-sily tex, tr bent, tr imbd cal, fr od, mod strng bri bishwh, even sl thn mod yel-amb, mod yel-bm | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pty - blk, sl frm - mod hd, arg-sily tex, tr imbd cal, g chk flr, fr od, mod strng bri bishwh, even sl thn mod yel-amb, mod yel-bm | 85% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pty - blk, sl frm - mod hd, arg-sily tex, tr imbd & loose cal, tr bent, tr pyr, fr od, slow-mod strng bri bishwh, even thn mod yel-amb, tr yel-bm stn | 80% CHK: med gry, occ wht-crm and lt-gy, mot, sb blk, mod sft-sl frm, rthy, v calc, 20% MRLST: dk gy, blk, sb pty - blk, sl frm - mod hd, arg-sily tex, tr imbd & loose cal, tr pyr, fr od, slow-mod strng bri bishwh, even thn mod yel-amb, tr yel-bm stn |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





MD: 7,741'
Inclination: 91.23 °
Azimuth: 179.43 °
TVD: 6,134.96'
VS: 1,548.88'

MD: 7,837'
Inclination: 90 °
Azimuth: 177.95 °
TVD: 6,133.93'
VS: 1,643.22'

90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, occ imbd & loose cal, g chk flr, fr od, mod strmg bri bishwh, even sl thn mod yel-amb, mod yel-brn stn

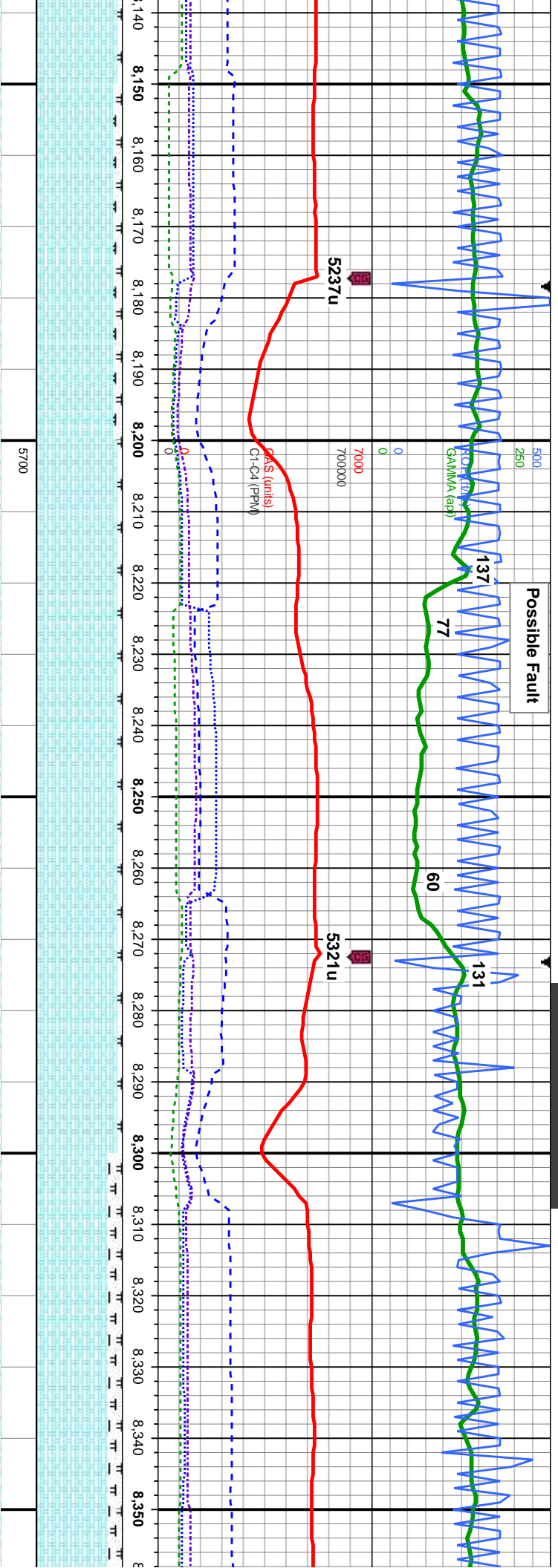
90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, occ imbd & loose cal, g chk flr, fr od, mod strmg bri bishwh, even sl thn mod yel-amb, mod yel-brn stn

75% CHK: med gry, occ wht-crm and lt gy, mot, sb blk, mod sft-sl frm, rthy, v calc, 25% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, occ imbd cal, fr od, slow-mod strmg bri bishwh, even thn mod yel-amb, tr yel-brn stn

60% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, 40% CHK: med gry, occ wht-crm and lt gy, mot, sb blk, mod sft-sl frm, rthy, v calc, occ imbd cal, fr od, slow-mod strmg bri bishwh, even thn mod yel-amb, tr yel-brn stn

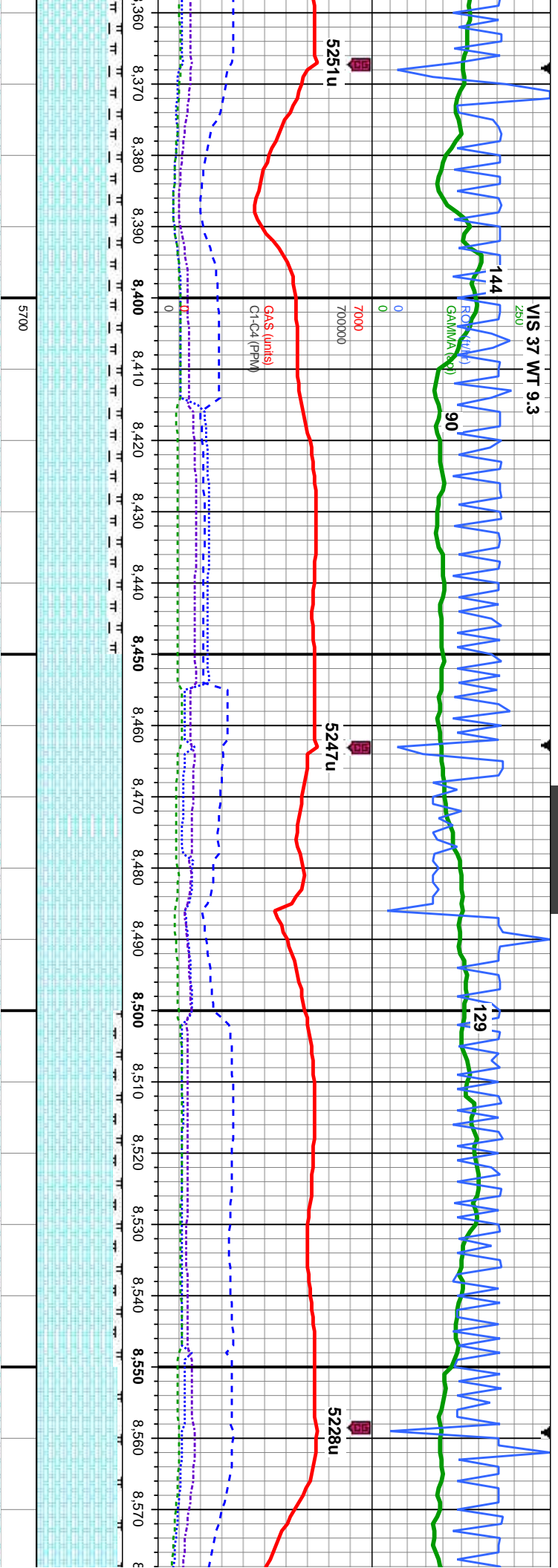
90% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, 40% CHK: med gry, occ wht-crm and lt gy, mot, sb blk, mod sft-sl frm, rthy, v calc, occ imbd cal, fr od, slow-mod strmg bri bishwh, even thn mod yel-amb, tr yel-brn stn





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|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mot, sb % MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, occ fmbd cal, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, occ fmbd cal, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 95% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 5% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, g chk flr, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 95% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 5% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, tr cal frag, v g chk flr, fr od, fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | MD: 8,311' Inclination: 90.37° Azimuth: 175.51° TVD: 6,131.38' VS: 2,110.1' | 85% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, mod strmg bri bishwh, even thn mod yel-amb, mod yel-brn stn | 85% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, mod strmg bri bishwh, even thn mod yel-amb, mod yel-brn stn |
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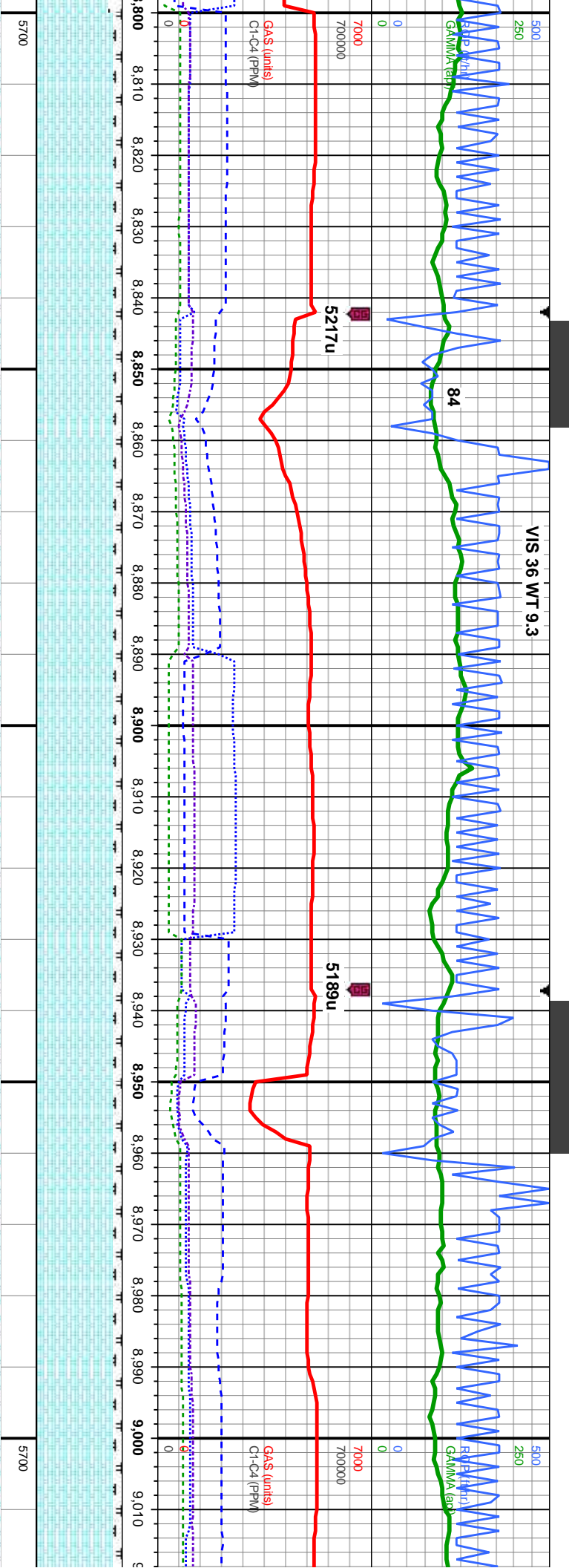


MD: 8,406'
Inclination: 91.05 °
Azimuth: 175.38 °
TVD: 6,130.2'
VS: 2,204.31'

MD: 8,501'
Inclination: 89.78 °
Azimuth: 176.23 °
TVD: 6,129.51'
VS: 2,298.45'

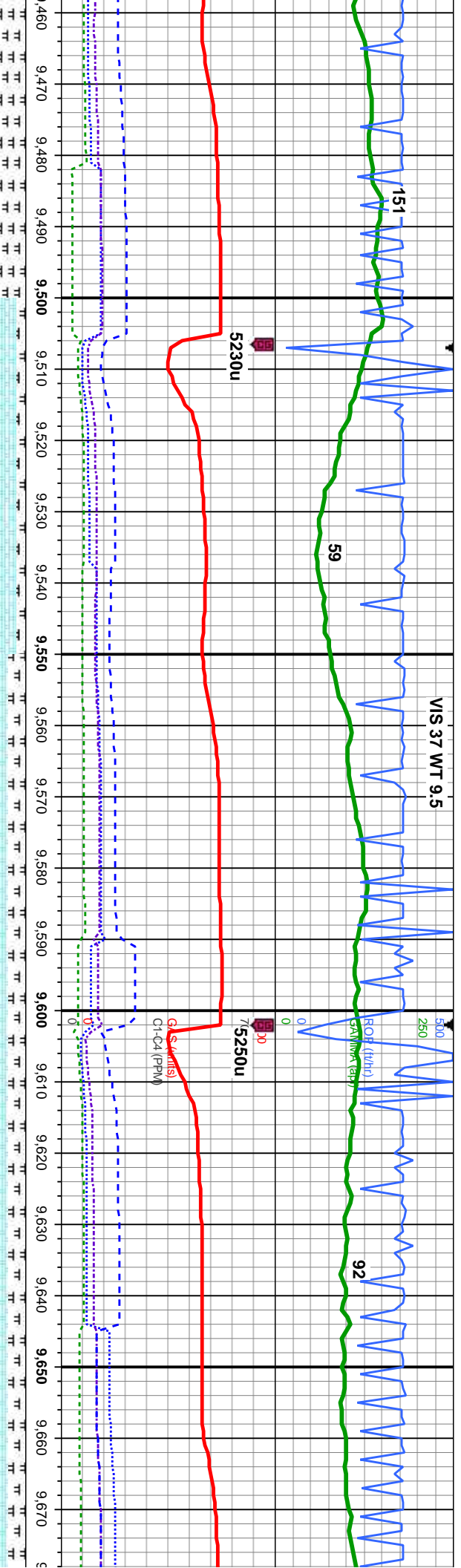
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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CHK: lt-med gry, occ wht-crm, mot, sb mod sft-sl frm, rthy, v calc, 15% MRLST: blk, sb ply - blk, sl frm - mod hd, tex, fr od, mod strmg bri bishwh, n mod yel-amb, mod yel-brn stn | 85% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, fr od, mod-fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 100% CHK: lt-med gry, wht-crm, occ dk brn, mot, blk-y-sb blk, mod sft-sl frm, rthy, v calc, tr imbd cal, g chk flr, g od, mod-fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb ply - blk, sl frm - mod hd, arg-sily tex, mod chk flr, fr od, mod-fst strmg bri bishwh, even thk mod yel-amb, mod yel-brn stn | 95% CHK: lt-med gry, oc blk, mod sft-sl frm, rthy, dk gy, blk, sb ply - blk, arg-sily tex, mod chk flr strmg bri bishwh, even th mod yel-brn stn |
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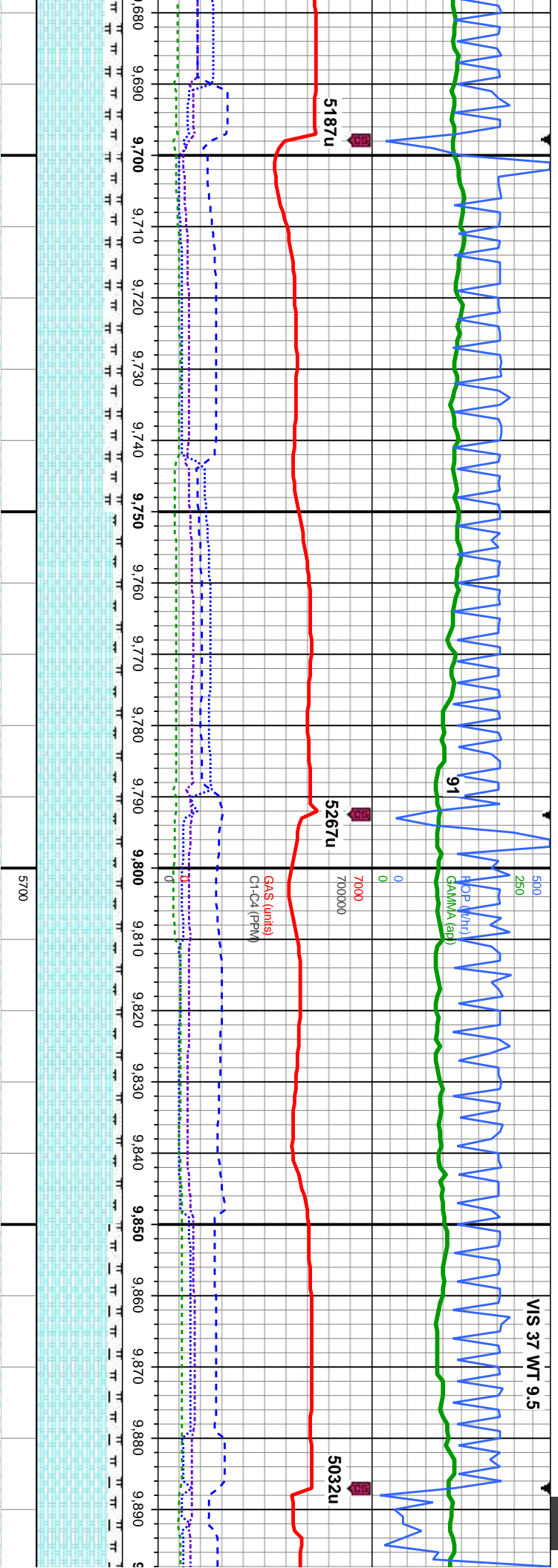
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| MD: 8,880' Inclination: 88.37 ° Azimuth: 177.66 ° TVD: 6,137.4' VS: 2,673.19' | | | |
| 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, tr inoc fos, tr cal, v g chk flor, g od, v fast sting bri whi bl, even mod thk bri wh yel, thk yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, tr inoc fos, tr cal, v g chk flor, g od, v fast sting bri whi bl, even mod thk bri wh yel, thk yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, tr cal, g chk flor, g od, v fast sting bri whi bl, even mod thk bri wh yel, thk yel-brn stn | 90% CHK: lt-med gry, occ wht-crm, mot, sb blk, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk, sl frm - mod hd, arg-sily tex, tr cal, g chk flor, g od, v fast sting bri whi bl, even mod thk bri wh yel, thk yel-brn stn |
| TVD (ft) | | TVD (ft) | |





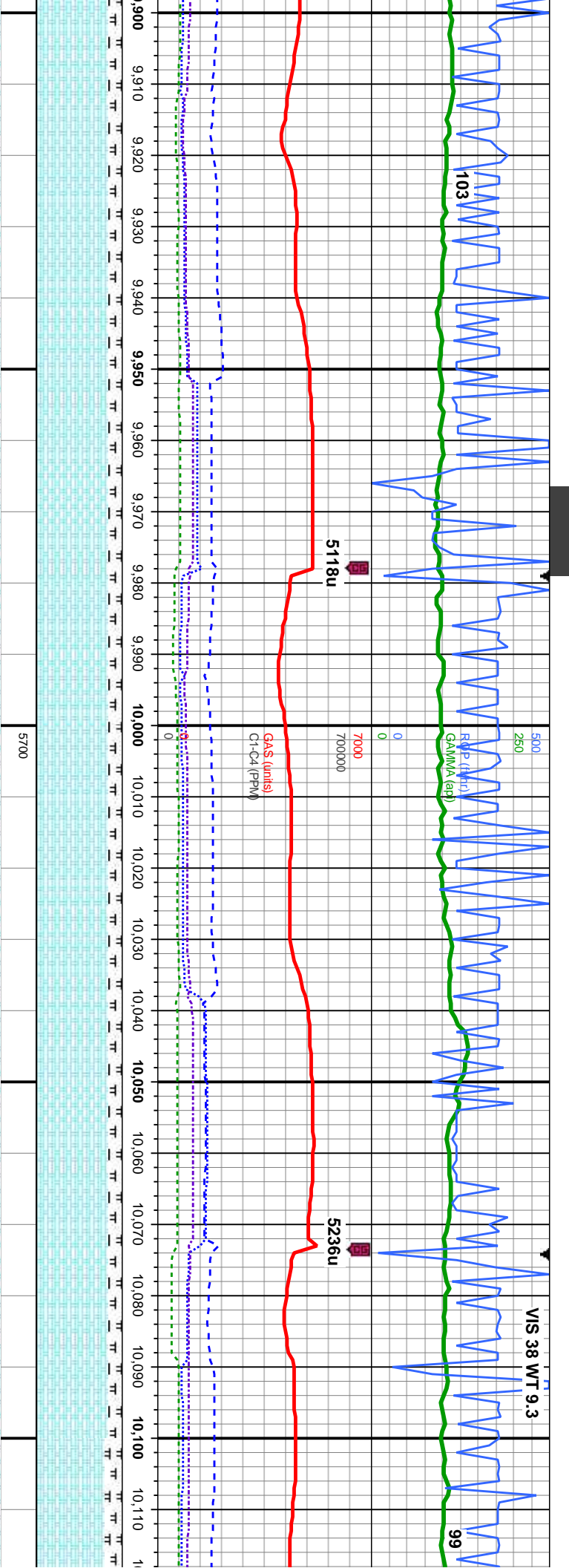
| | | | | |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>85° '</p> | <p>90% CHK: lt-med gry, wht-crm, occ dk gry, mot, sb blk, mod sft-si frm, rthy, v calc, 10% MRLST: dk gy, blk, sb ply - blk, si frm - mod hd, arg-sily tex, some bnnd, tr cal, tr bent, fr od, slow-mod string bri bishwh, even thn dull yel-amb, tr yel-brn stn</p> | <p>80% CHK: med-dk gry, mot, blk, sb blk, occ sb ply, mod sft-si frm, rthy, v calc, 20% MRLST: dk gy, blk, sb ply - blk, si frm - mod hd, arg-sily tex, some bnnd, tr bent, mod od, slow string bri bishwh, even thn dull yel-amb, tr yel-brn stn</p> | <p>80% CHK: med-dk gry, mot, blk, sb blk, occ sb ply, mod sft-si frm, rthy, v calc, 20% MRLST: dk gy, blk, sb ply - blk, si frm - mod hd, arg-sily tex, some bnnd, tr bent, mod od, slow string bri bishwh, even thn dull yel-amb, tr yel-brn stn</p> | <p>80% CHK: med-dk gry, mot, blk, sb blk, occ sb ply, mod sft-si frm, rthy, v calc, 20% MRLST: dk gy, blk, sb ply - blk, si frm - mod hd, arg-sily tex, some bnnd, tr bent, mod od, slow string bri bishwh, even thn dull yel-amb, tr yel-brn stn</p> |
| <p>MD: 9,546' Inclination: 89.66° Azimuth: 176.58° TVD: 6,132.19' VS: 3,329.45'</p> | <p>MD: 9,641' Inclination: 89.57° Azimuth: 176.95° TVD: 6,132.82' VS: 3,423.36'</p> | <p>MD: 9,641' Inclination: 89.57° Azimuth: 176.95° TVD: 6,132.82' VS: 3,423.36'</p> | <p>MD: 9,641' Inclination: 89.57° Azimuth: 176.95° TVD: 6,132.82' VS: 3,423.36'</p> | <p>MD: 9,641' Inclination: 89.57° Azimuth: 176.95° TVD: 6,132.82' VS: 3,423.36'</p> |





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| MD: 9,736' Inclination: 90.46 ° Azimuth: 177.02 ° TVD: 6,132.8' VS: 3,517.21' | | 80% CHK: med-dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-si frm, rthy, v calc, 20% MRLST: dk gy, blk, sb pily - blk-y, si frm - mod hd, arg-sily tex, some brndd, tr bent, mod oc, mod-fast bishwh string, no flor, mod bri yel-brn ring, mod sin | 90% CHK: med-dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-si frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk-y, some brndd, si frm - mod hd, arg-sily tex, tr bent, g od, mod-fast bishwh string, no flor, mod bri yel-brn ring, mod sin | 90% CHK: med-dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-si frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk-y, some brndd, si frm - mod hd, arg-sily tex, tr bent, g od, mod-fast bishwh string, no flor, mod bri yel-brn ring, mod sin | 85% CHK: lt-med gry occ dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-si frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - blk-y si frm - mod hd, arg-sily tex, tr bent, g od, mod-fast bishwh string, no flor, mod bri yel-brn ring, mod sin |
|-------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





MD: 9,926'
Inclination: 90.03 °
Azimuth: 176.18°
TVD: 6,131.27'
VS: 3,705.14'

85% CHK: lt-med gry occ dk gry, mot, biky-sb biky, occ sb pily, mod sft-si frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - biky, si frm - mod hd, arg-sily tex, tr bent, g od, mod-fast bishwh stmg, no flor, mod bri
85% CHK: lt-med gry occ dk gry, mot, biky-sb biky, occ sb pily, mod sft-si frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - biky, si frm - mod hd, arg-sily tex, some cal concs, tr bent, g od, mod-fast bishwh stmg, no flor, mod bri
yel-brn ring, mod sin

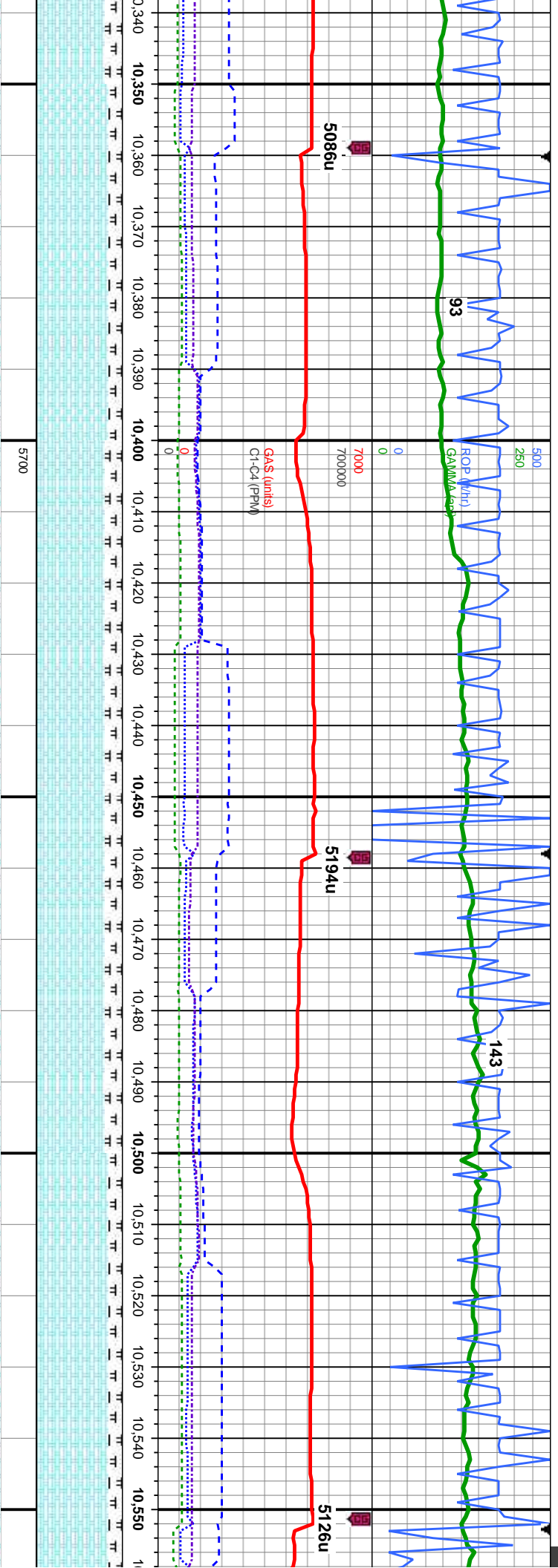
MD: 10,020'
Inclination: 90.34 °
Azimuth: 177.35°
TVD: 6,130.96'
VS: 3,798.06'

85% CHK: lt-med gry occ dk gry, mot, biky-sb biky, occ sb pily, mod sft-si frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - biky, si frm - mod hd, arg-sily tex, some cal concs, tr bent, g od, slow-mod stmg bri bishwh, even thn
85% CHK: lt-med gry occ dk gry, mot, biky-sb biky, occ sb pily, mod sft-si frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - biky, si frm - mod hd, arg-sily tex, some imbd cal, tr pyr, fr od, slow-mod stmg bri bishwh, even thn mod yel-amb, tr yel-brn stn

MD: 10,11
Inclination:
Azimuth: 1
TVD: 6,13
VS: 3,892.

80% CHK: lt-me biky-sb biky, occ v calc, 20% MRI si frm - mod hd, tr pyr, fr od, slow even thn mod yel



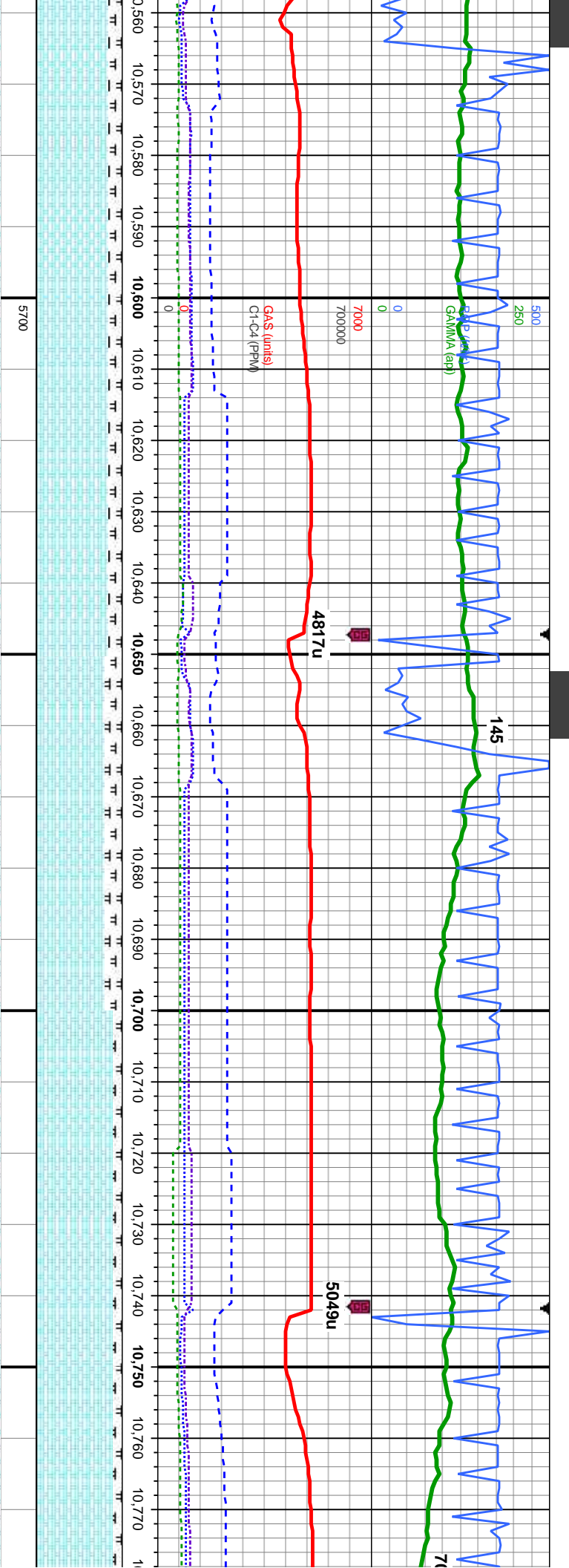


MD: 10,401'
Inclination: 90.06 °
Azimuth: 175.17 °
TVD: 6,129.35'
VS: 4,175.66'

MD: 10,496'
Inclination: 90.37 °
Azimuth: 175.65 °
TVD: 6,128.99'
VS: 4,269.88'

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|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mot, frm, rthy, pply - blkly, d cal, tr n | 85% CHK: med-dk gry, mot, blkly-sb blkly, occ sb pily, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, tr imbd cal, tr inoc fos, tr pyr, fr od, mod-fast bishwh stmg, no flor, mod bri yel-brn ring, mod sin | 80% CHK: med-dk gry, mot, blkly-sb blkly, occ sb pily, mod sft-sl frm, rthy, v calc, 20% MRLST: dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, occ imbd cal, mod od, mod-fast bishwh stmg, no flor, mod bri yel-brn ring, mod sin | 80% CHK: med-dk gry, mot, blkly-sb blkly, occ sb pily, mod sft-sl frm, rthy, v calc, 20% MRLST: dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, occ imbd cal, mod od, mod-fast bishwh stmg, no flor, mod bri yel-brn ring, mod sin | 85% CHK: med-dk gry, mot, blkly-sb blkly, occ sb pily, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, mod od, slow-mod stmg bri bishwh, even thn mod yel-amb, tr yel-brn stn | 85% CHK: med-dk gry, mot, blkly-sb blkly, occ sb pily, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - blkly, sl frm - mod hd, arg-sily tex, mod od, slow-mod stmg bri bishwh, even thn mod yel-amb, tr yel-brn stn |
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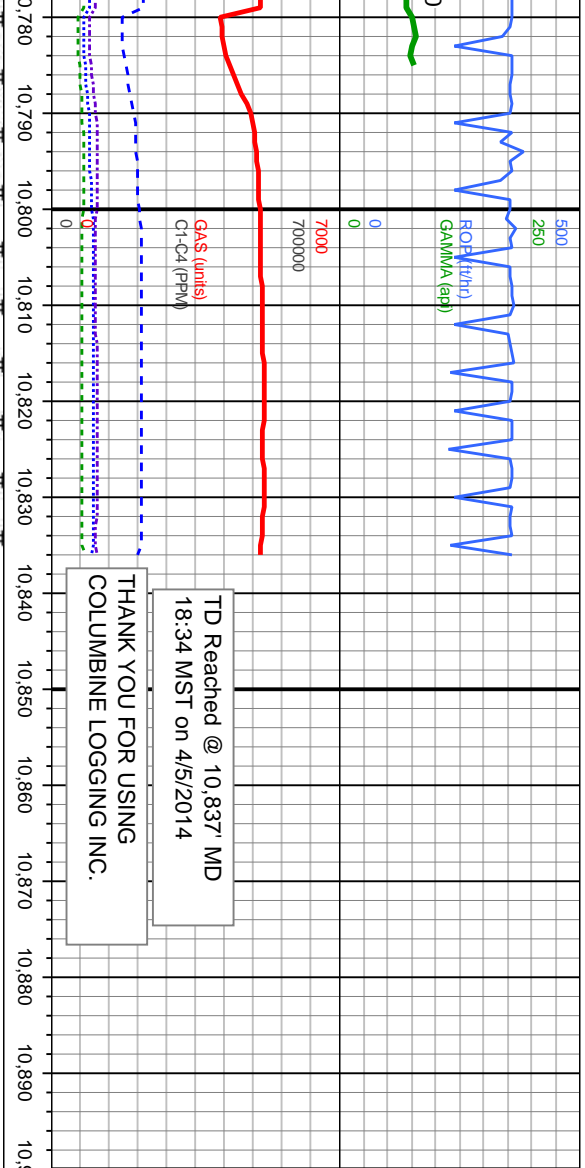
MD: 10,591'
Inclination: 90.52 °
Azimuth: 176.36 °
TVD: 6,128.26'
VS: 4,363.97'

MD: 10,686'
Inclination: 89.04 °
Azimuth: 175.94 °
TVD: 6,128.62'
VS: 4,458.03'

MD: 10,686'
Inclination: 89.04 °
Azimuth: 175.94 °
TVD: 6,128.62'
VS: 4,458.03'

| | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| CHK: med-dk gry, mot, blk-y-sb blk-y, occ mod sft-sl frm, rthy, v calc, 15% : dk gy, blk, sb pily - blk-y, sl frm - mod silty tex, mod od, slow-mod stirm bri even thn mod yel-amb, tr yel-bm sin | 85% CHK: med-dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-sl frm, rthy, v calc, 15% MRLST: dk gy, blk, sb pily - blk-y, sl frm - mod hd, arg-sily tex, mod od, slow-mod stirm bri blshwh, even thn mod yel-amb, tr yel-bm sin | 80% CHK: med-dk gry, mot, blk-y-sb blk-y, occ sb pily, mod sft-sl frm, rthy, v calc, 20% MRLST: dk gy, blk, sb pily - blk-y, sl frm - mod hd, arg-sily tex, mod od, slow-mod stirm bri blshwh, even thn mod yel-amb, tr yel-bm sin | 90% CHK: lt-med gy, occ dk gy, mot, blk-y-sb blk-y, occ sb pily, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, sb pily - blk-y, sl frm - mod hd, arg-sily tex, mod chk flor, g od, mod bri yel-bm ring, mod sin | 90% CHK: lt-med gy, occ blk-y, occ sb pily, mod sft-sl frm, rthy, v calc, 10% MRLST: dk gy, blk, s mod hd, arg-sily tex, mod bri yel-bm ring, mod sin |
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