



# RESERVOIR GROUP

Scale: 5" / 100'  
Measured Depth Log

**Well Name** 70 Ranch 10-4-4L

**Location** 104°25'45.228"W, 40°20'05.172"N

**State** Colorado

**County** Weld

**Country** USA

**Rig Number** Ensign 140

**API Number** 05-123-47592

**AFE #** 101032

**Geographic Region** Rockies

**Field** Wattenburg

**Spud Date** 5/26/2019

**Drilling Completed** 6/20/2019

**Surface Coordinates** 104°25'45.228"W, 40°20'05.172"N

**Bottom Hole Coordinates** 104°25'32.916"W, 40°19'58.440"N

**Ground Elevation** 4,598'

**K.B. Elevation** 4,618.5'

**Logged Interval** 6,000' **To** 16,676'

**Total Depth** 16,676'

**Formation** Codell

**Type of Drilling Fluid** Oil Based Mud

## Operator

**Company** CONFLUENCE DJ LLC

**Address** 621 17th St. STE. 1401  
DENVER, CO. 80293



## Geologist

**Name** Robin Swank

**Company** CONFLUENCE DJ LLC

**Address** 621 17th St. STE. 1401  
DENVER, CO. 80293



Other

**Service Type** Two-Man Logging + ASW  
**Logger(s)** Robert Kelley / Micah Morgan  
**Equipment** ML-570  
**Start Date** 6/17/2019  
**Release Date** TBD  
**Address** Reservoir Group  
6360 W Sam Houston Pkwy N  
Houston, TX 77041  
**Job Number** 2272RK1906

Accesso

- Fossils**

  - F FOSSIL
  - GASTROPOD
  - ALGAE
  - AMPHIPODA
  - BELEMNITE
  - BIOCLASTIC
  - BRACHIOPOD
  - BRYOZOA
  - CEPHALOPOD
  - CORAL
  - CRINOID
  - ECHINOID
  - FISH
  - FORAMINIFERA
- Minerals**

  - ARGILLACEOUS
  - ARGILLITE GRAIN
  - B BENTONITE
  - BITUMENOUS SUBSTANCES
  - BRECCIA FRAGMENTS
  - CALCAREOUS
  - CARBONACEOUS FLAKE
  - CHTDK
  - CHLT
  - COAL - THIN BEDS
  - SCAPHOPOD
  - STROMATOPOROID
  - DOLOMITIC
  - FELDSPAR
  - FERRUGINOUS PELLET
  - FERRUGINOUS

Color Coding

- Oil
  - Note
  - Error
- Condensate
  - Core
  - Water
- Gas
  - Pressure
  - Seal

Rock Types

- UNKNOWN
  - ANHYDRITE
  - GYP SUM
  - SALT
  - CHALK
  - LIMESTONE
- DOLOMITE
  - CHERT
  - COAL
  - MARLSTONE
  - CLAYSTONE
  - SHALE
- SHALE GRAY
  - SHALE COLORED
  - SILTSTONE
  - SANDSTONE
  - CONGLOMERATE
  - BRECCIA
  - TILL
  - BENTONITE
  - TUFF
  - IGNEOUS
  - METAMORPHIC
  - CEMENT

Other Syn


























- Oil Show**

  - ORGANIC
  - PINPOINT
  - DEAD
  - EVEN
  - QUESTIONABLE
  - SPOTTED STAINING
- Engineering**

  - BIT
  - CASING
  - REVERSE FLOW
  - SIDEWALL CORE
  - SIDEWALL CUT
  - SLIDE
  - SURVEY
  - TIP GAS
  - WIRELINE TEST
  - WIRELINE TEST
- Porosity**













  - E EARTHLY
  - F FRACTURE
  - INTERCRYSTALLINE
  - INTEROOLITIC
  - MOLDIC

ries

	GLAUCONITE		
	GYPsIFEROUS		
	HEAVY MINERAL		ANHYDRITE STRINGER
	KAOLIN		BENTONITE STRINGER
	MARLSTONE		COAL STRINGER
	MINERAL CRYSTALS		DOLOMITE STRINGER
	NODULES		GYPsUM STRINGER
	PHOSPHATE PELLETS		LIMESTONE STRINGER
	PYRITE		MARLSTONE (CALC) STRG
	SALT CAST		MARLSTONE (DOL) STRG
	SANDY		SANDSTONE STRINGER
	SILICEOUS		SHALE STRINGER
	SILTY		SILTSTONE STRINGER
	TUFFACEOUS		

Stringer

mbols

ATION TOP		L LITHOGRAPHIC
	<b>Rounding</b>	 MICROXLN
DEPTH	 ANGULAR	 MUDSTONE
ULT	 ROUNDED	 PACKSTONE
	 SUBANG	 WACKESTONE
ED STRATA	 SUBRND	
ULT		
	<b>Textures</b>	
ORE (LEFT)	 MODERATE	
ORE (RIGHT)	 BOUNDSTONE	 POOR
	 CHALKY	 WELL
	 CRYPTOXLN	
	 EARTHY	
ESTED - LEFT	 FINELYXLN	
ESTED - RT	GRAINSTONE	

CONFLUENCE DJ LLC.

70 Ranch West 10-4-4L

Weld Co. CO.

- ROP
- ROP
  - GAMMA
  - WOBX
  - TORQX

All Depths Correspond to Driller's Pipe Tally

SYSTEM CALIBRATED  
1% Methane = 100 units  
100% Methane = 10000 units

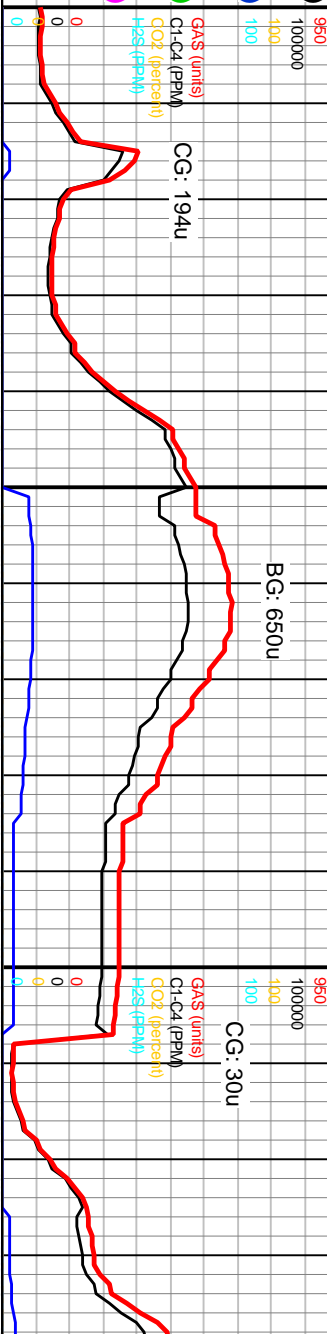
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RPM: 100  
SPM: 202  
PP: 3.171

Depth Labels



Total Gas & Chromatograph

- GAS
- C1
  - C2
  - C3
  - C4
  - CO2
  - H2S



% Lith

CATCHING 30' SAMPLE INTERVAL

Reservoir Group 6360  
W Sam Houston Pkwy N.  
Ste. 100 Houston, TX  
77040 (713) ---  
466-7400Ofc. (713)  
466-7595 Fax  
www.reservoirgroup.com

MD: 5,997'  
Inclination: 12.2°  
Azimuth: 96.24°  
TVD: 5,914.29'  
VS: 132.86'

MD: 6,087'  
Inclination: 14.73°  
Azimuth: 119.72°  
TVD: 6,001.87'  
VS: 141.46'

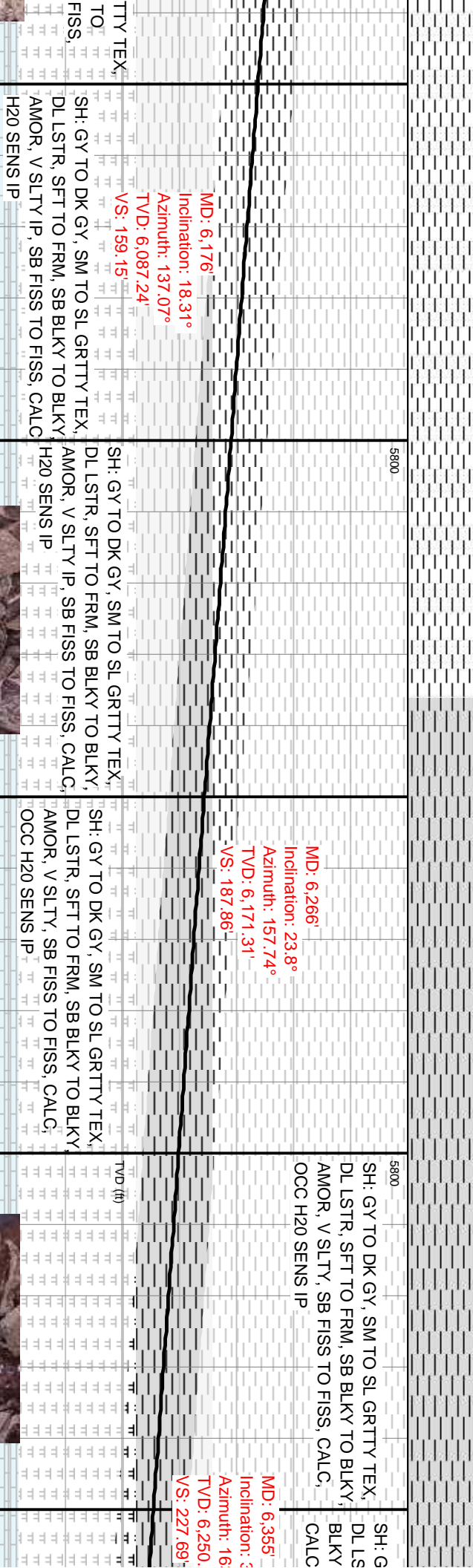
Well Bore  
TVD

KOP @ 5,995'

Bit #: 2  
Type: HCC  
Size: 8 1/2"  
Depth In: 1,582'  
Depth Out: 16,676"  
Hours: 51.6 hrs  
Avg Ft/Hr: 292 '/hr  
Jets: 5 X 15s  
S/N: 5301686

Spud date: 5/26/2019. Two man service  
@6,000' MD on 6/18/2019.  
9 5/8" casing set at 1,542' MD







NIO A  
6,388 MD/6,278.4 TVD

NW I/O  
9.7/50  
9.6+/46

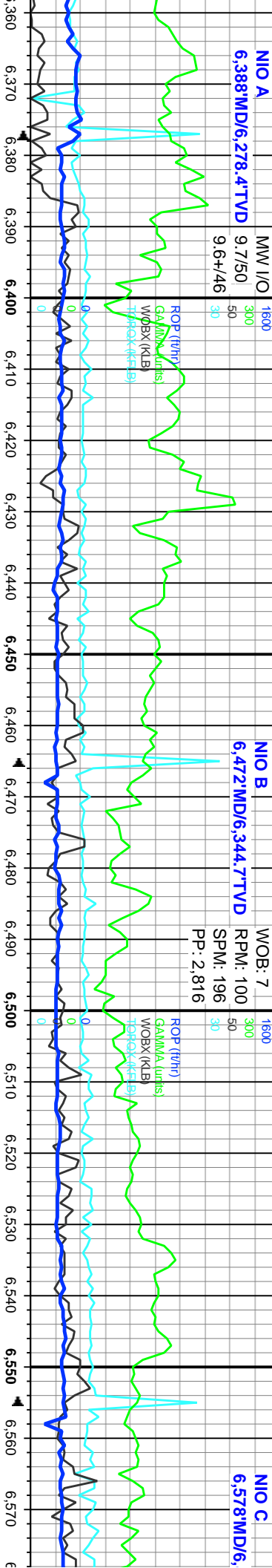
ROP (ft/hr)  
GAMMA (units)  
WOBX (KLB)  
TDRX (K/FE)

NIO B  
6,472 MD/6,344.7 TVD

WOB: 7  
RPM: 100  
SPM: 196  
PP: 2.816

ROP (ft/hr)  
GAMMA (units)  
WOBX (KLB)  
TDRX (K/FE)

NIO C  
6,578 MD/6,



SCALE CHANGE  
CG: 566u  
BG: 1,686u

CG: 1,104u

CG: 1,423u  
BG: 1,423u

CG: 905u

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)

Y TO DK GY, SM TO SL GRITTY TEX,  
SFT TO FRM, SB BLKY TO  
AMOR, V SLTY, SB FISS TO FISS,

5800  
MRLSTN: MDSTN, DK GY TO BLK, GRITTY  
TEX, DL LSTR IP, FRM TO HD IP, SB BLKY  
TO BLKY, AMOR, SB FISS, SLTY, CALC, TR  
CHLK

90% MRLSTN: MDSTN, DK GY TO BLK IP,  
MOTT IP, GRITTY TEX, DL LSTR IP, ARG IP  
FRM TO HD IP, SB BLKY TO BLKY, AMOR,  
SB FISS, SLTY, CALC, CHLKY  
10% CHLK: LT GY TO GY, GRITTY, SB  
BLKY, SLTY, CALC

5800  
100% MRLSTN: MDSTN, DK GY TO BLK IP,  
LT BRN IP, GRITTY TEX, DL LSTR IP, ARG  
IP, FRM TO HD IP, SB BLKY TO BLKY,  
AMOR, SB FISS, SLTY, CALC, CHLKY

90% MRLSTN: MDSTN,  
IP, MOTT IP, GRITTY TE  
ARG IP, FRM TO HD IP  
BLKY, AMOR, SB FISS,  
CHLKY  
10% CHLK: LT GY TO C  
BLKY, SLTY, CALC

11.12°

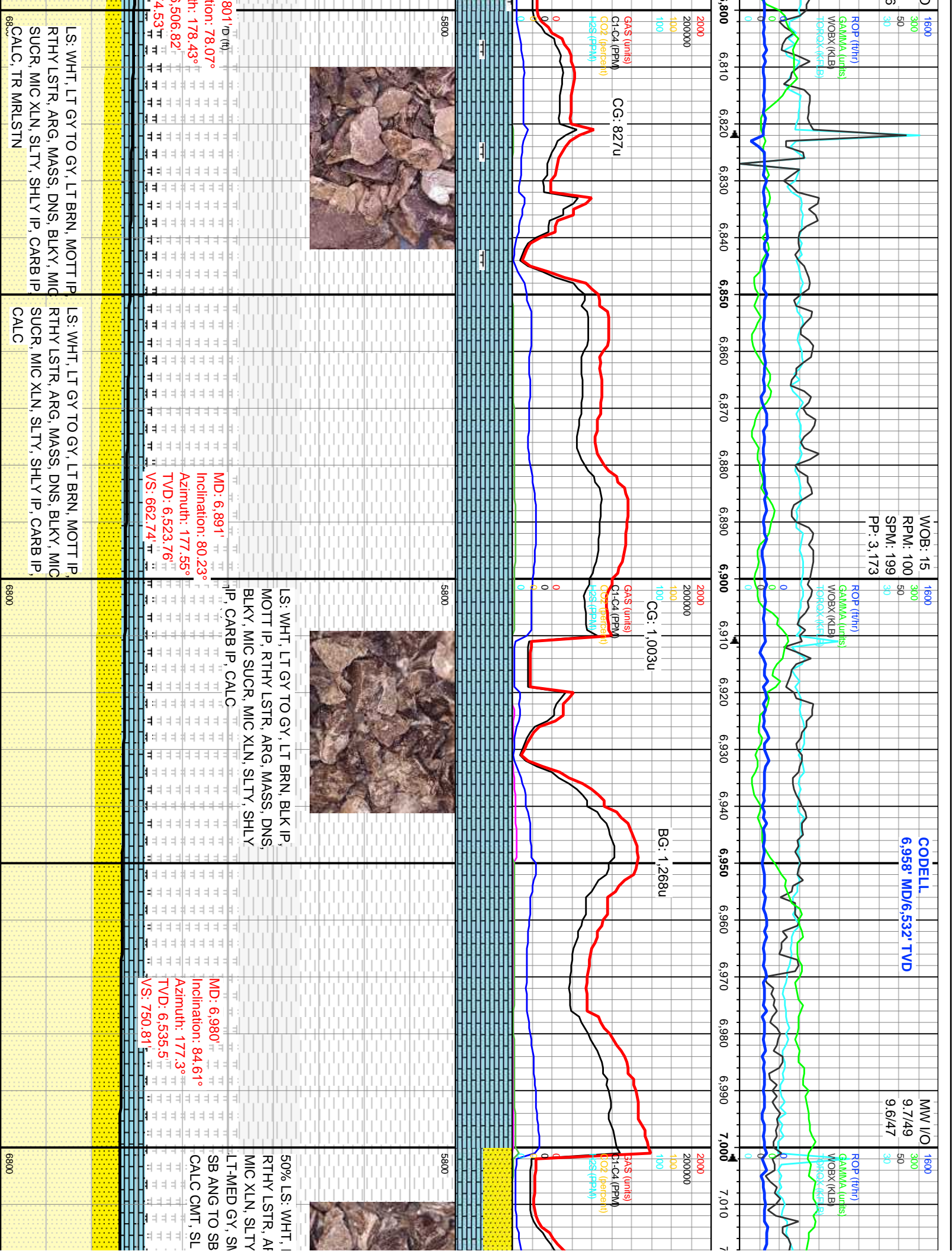
3.1°

MD: 6,444'  
Inclination: 38.65°  
Azimuth: 164.25°  
TVD: 6,323.2'  
VS: 277.69'

MD: 6,533'  
Inclination: 48.35°  
Azimuth: 167.14°  
TVD: 6,387.68'  
VS: 338.19'





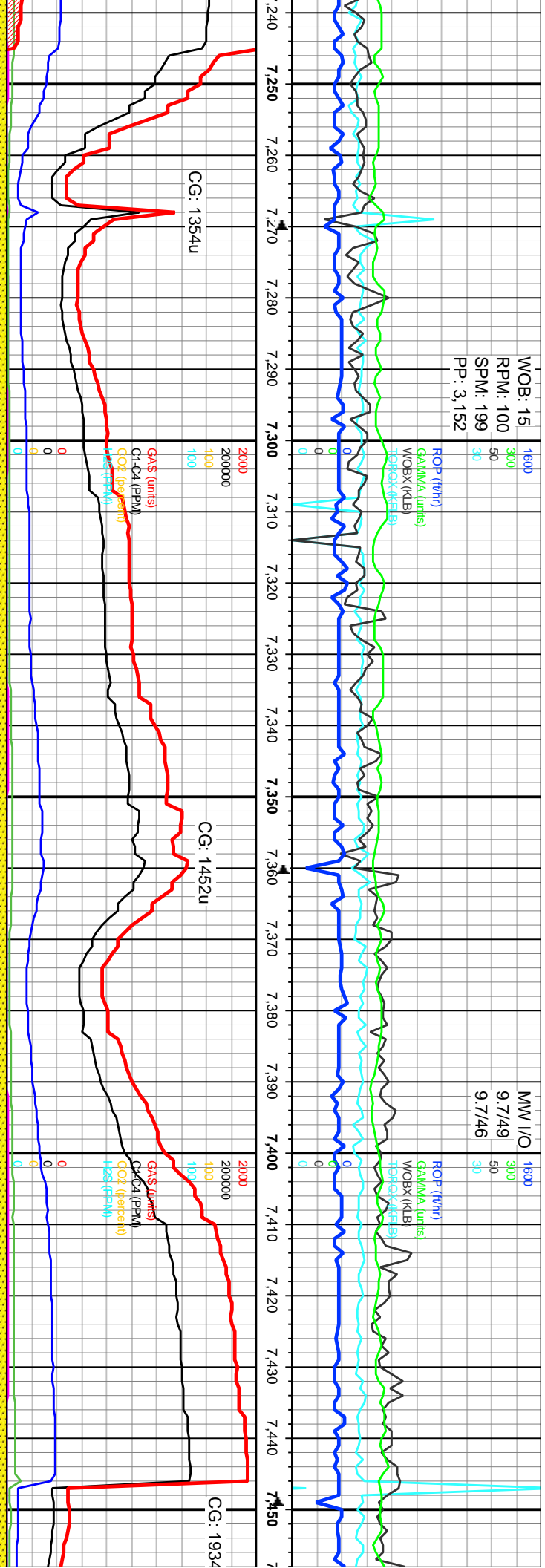






WOB: 15  
RPM: 100  
SPM: 199  
PP: 3.152

NW I/O  
9.7/49  
9.7/46



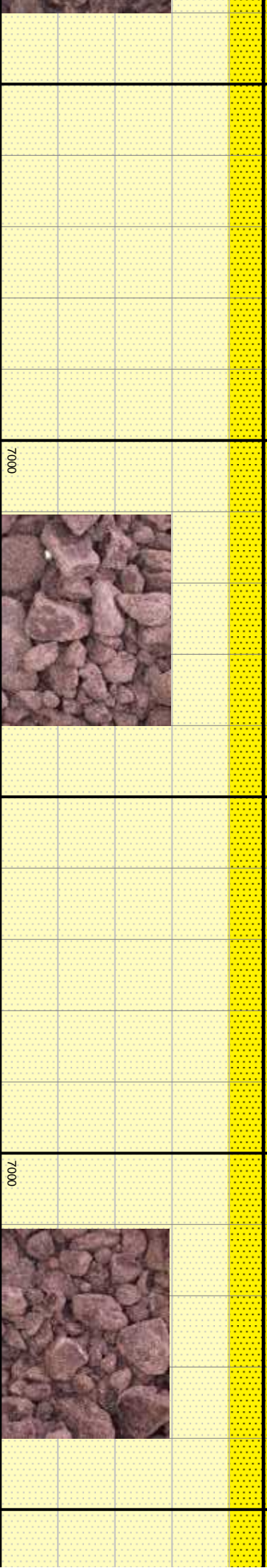
6000  
100% SS, LT-MED GY, FRM TO SL HRD,  
HRD IP, VF GR, SB ANG TO SB RND, W  
SRT, MOD CONS, SL CALC CMT, SL SUC,  
CARB

6000  
100% SS, LT-MED GY, SME DK GY, FRM  
TO SL HRD, HRD IP, VF GR, SB RND, W  
SRT, MOD CONS, SL CALC CMT, SL SUC,  
CARB

MD: 7.248  
Inclination: 90°  
Azimuth: 178.55°  
TVD: 6,540.97  
VS: 1,018.09

MD: 7.337  
Inclination: 89.88°  
Azimuth: 179.31°  
TVD: 6,541.06  
VS: 1,106.81

MD: 7.427  
Inclination: 90.03°  
Azimuth: 179.85°  
TVD: 6,541.13  
VS: 1,196.43



WOB: 19  
RPM: 100  
SPM: 198  
PP: 3,144

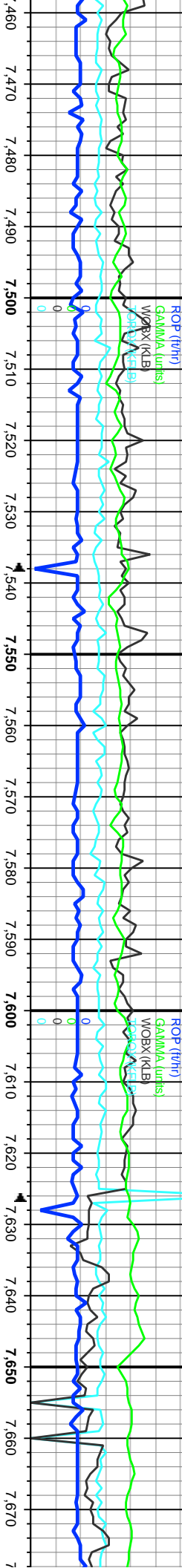
ROP (ft/h)  
GA/MMA (units)  
WOBX (klB)  
TSP (ft/h)

1600  
300  
50  
30

MW I/O  
9.7+/49  
9.7+/46

ROP (ft/h)  
GA/MMA (units)  
WOBX (klB)  
TSP (ft/h)

1600  
300  
50  
30



2000  
1000  
100

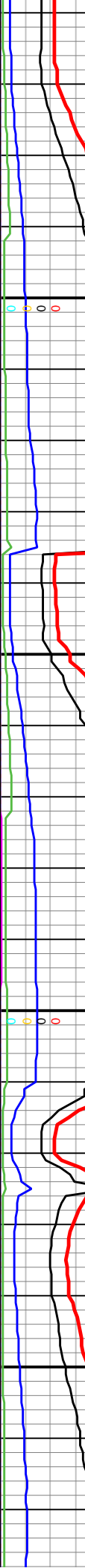
CG: 1662u

2000  
1000  
100

CG: 1199u

GA/S (units)  
CI-C (ft/min)  
CI-O2 (lbperft)  
H2S (ppm)

GA/S (units)  
CI-C (ft/min)  
CI-O2 (lbperft)  
H2S (ppm)



6000  
100% SS: MED GY, SME DK GY, SL HRD,  
HRD IP, VF GR, SB ANG TO SB RND, W  
SRT, MOD CONS, SL CALC CMT, SL SUC,  
CARB

6000  
100% SS: MED TO DK GY, SL HRD, VF  
GR, SME F GR IP, SB ANG TO SB RND, W  
SRT, MOD CONS, CALC CMT, SL SUC,  
CARB, SL SLTY

MD: 7,516'  
Inclination: 90.06°  
Azimuth: 180.63°  
TVD: 6,541.06'  
VS: 1,284.96'

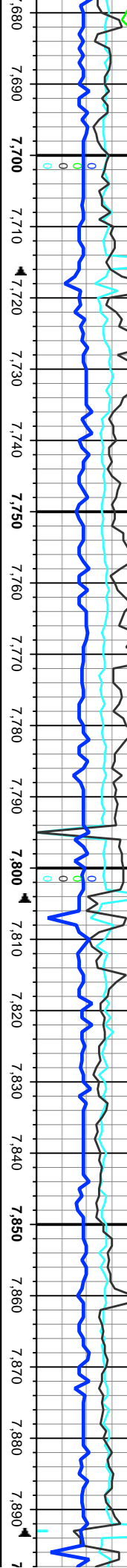
MD: 7,605'  
Inclination: 90.06°  
Azimuth: 180.11°  
TVD: 6,540.97'  
VS: 1,373.47'





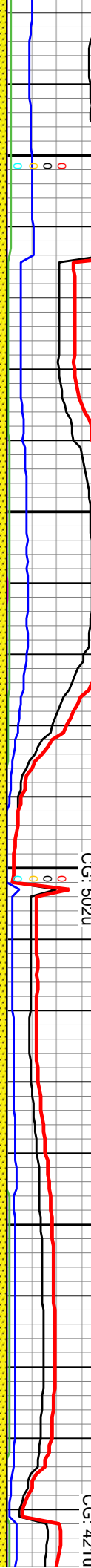
WOB: 14  
RPM: 100  
SPM: 200  
PP: 3.206

ROP (ft/hr)  
GAMMA (units)  
WOBX (KB)  
H2S (PPM)



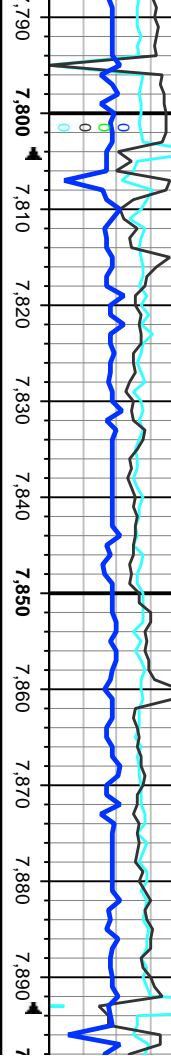
CG: 1071u

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)



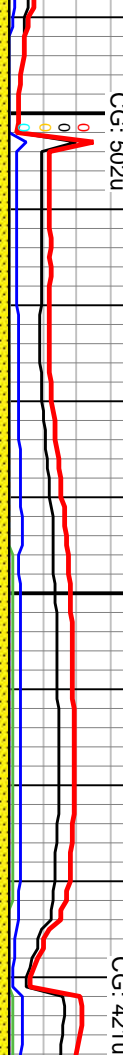
MW I/O  
9.7+/49  
9.7+/46

ROP (ft/hr)  
GAMMA (units)  
WOBX (KB)  
H2S (PPM)



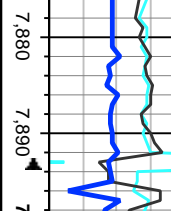
CG: 502u

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)



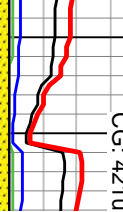
WOB: 17  
RPM: 10  
SPM: 19  
PP: 3.15

ROP (ft/hr)  
GAMMA (units)  
WOBX (KB)  
H2S (PPM)



CG: 421u

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)



100% SS: MED TO DK GY, FRM TO SL  
HRD, VF GR, SB ANG TO SB RND, W SRT,  
MOD TO W CONS, CALC CMT, SL SUC,  
CARB, SL SLTY

MD: 7.695'  
Inclination: 90.18°  
Azimuth: 178.98°  
TVD: 6,540.78"  
VS: 1,463.09'

7,680



100% SS: DK GY, SL HRD, HRD IP, VF  
GR, SB ANG TO SB RND, W SRT, MOD TO  
W CONS, SL CALC CMT, SL SUC, CARB,  
SL SLTY, SL SHY IP

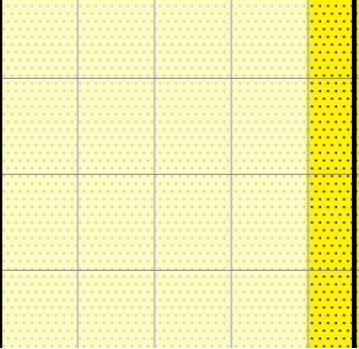
MD: 7.784'  
Inclination: 90.22°  
Azimuth: 177.59°  
TVD: 6,540.47"  
VS: 1,551.88'

7,790

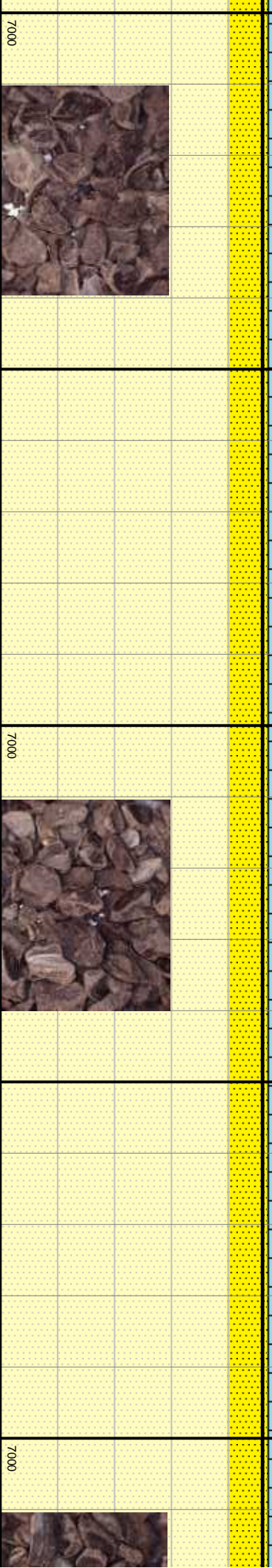
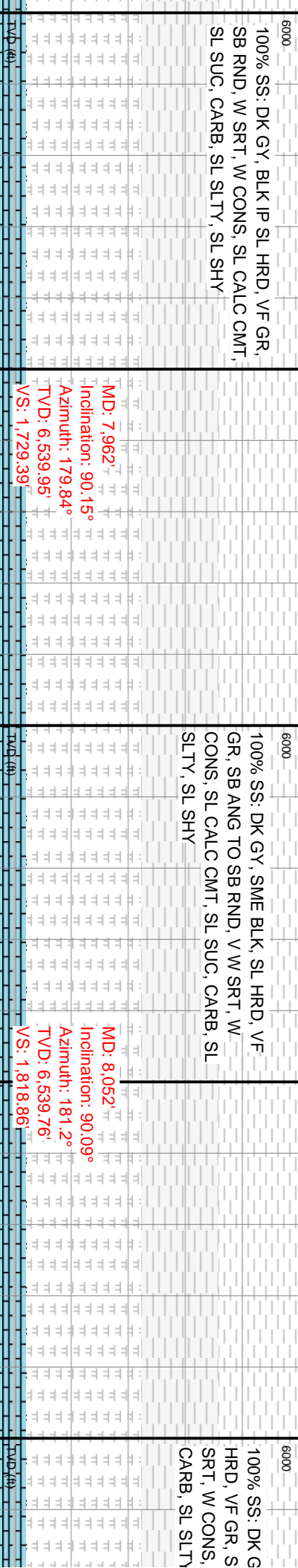
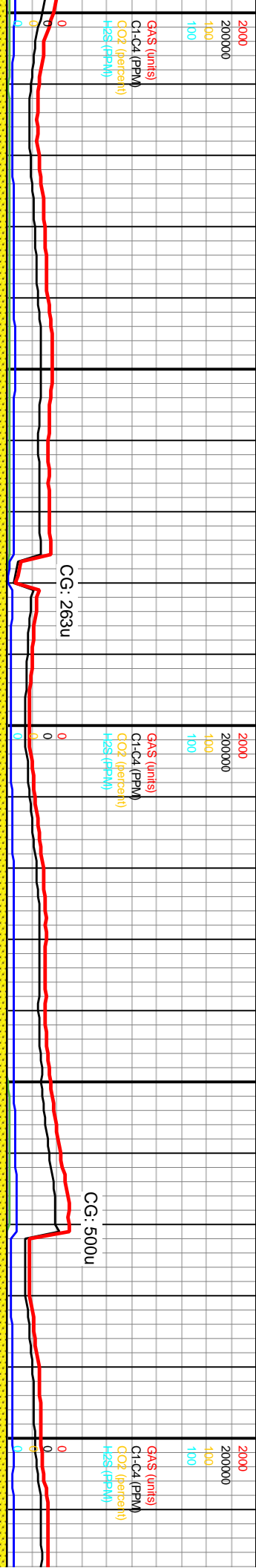
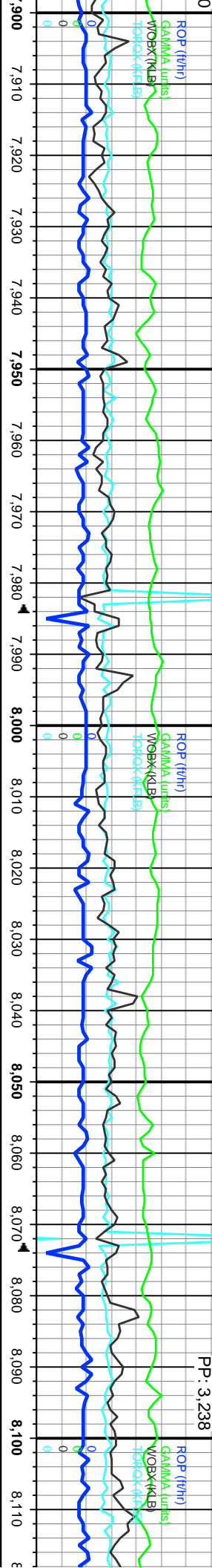
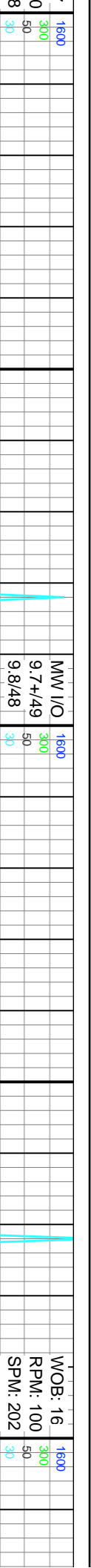


MD: 7.873'  
Inclination: 90.15°  
Azimuth: 178.37°  
TVD: 6,540.18"  
VS: 1,640.7'

7,880







MW I/O  
9.7+49  
9.8/48

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TOPDRY (klb)

WOB: 14  
RPM: 99  
SPM: 202  
PP: 3.300

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TOPDRY (klb)

CG: 1662u

CG: 1451u

CG:

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

Y TO BLK, FRM TO SL  
B ANG TO SB RND, V W  
SL CALC CMT, SL SUC IP,  
SL SHY

100% SS: MED TO DK GY, FRM TO SL  
HRD, VF GR, SB ANG TO SB RND, W SRT,  
MOD CONS, SL CALC CMT, SL SUC,  
CARB, SL SLTY

100% SS: MED TO DK GY, SME E  
FRM TO SL HRD, HRD IP, VF GR  
RND, W SRT, MOD CONS, SL CA  
SL SUC, CARB, SL SLTY

MD: 8.141'  
Inclination: 90.31°  
Azimuth: 180.34°  
TVD: 6,539.45'  
VS: 1,907.3'

MD: 8.230'  
Inclination: 90.22°  
Azimuth: 180.06°  
TVD: 6,539.04'  
VS: 1,995.83'

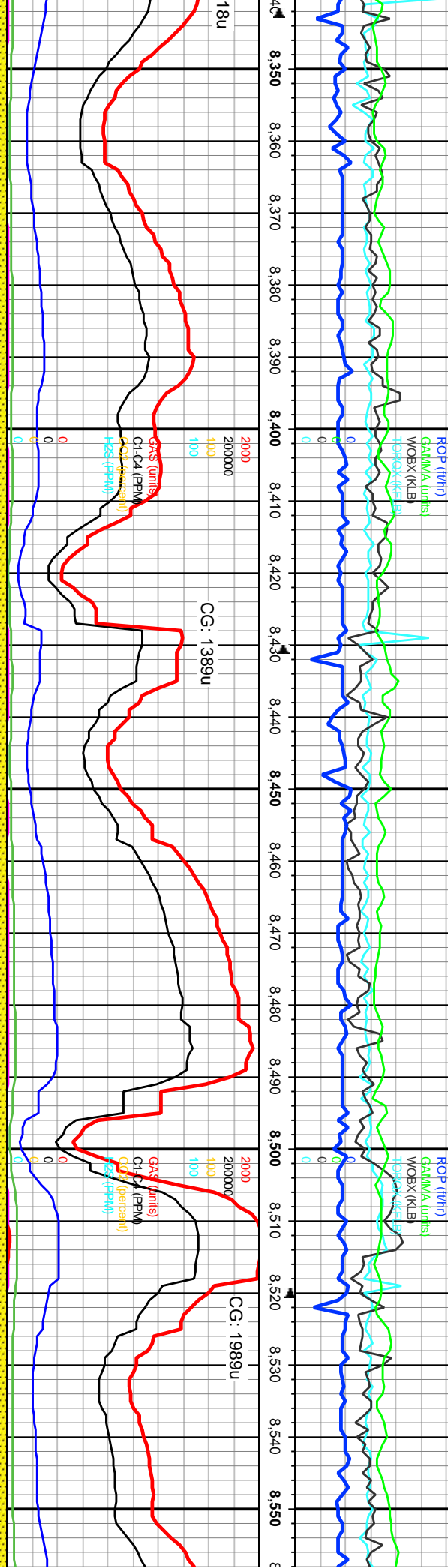
MD: 8.320'  
Inclination: 90.15°  
Azimuth: 179.85°  
TVD: 6,538.75'  
VS: 2,085.4'



DATE/TIME: 6/19/2019 @ 8,340' MD

MW I/O 9.7+50 9.7+46

WOB: 14 RPM: 100 SPM: 199 PP: 3.272



BULK IP, SB LC CMT, 100% SS: MED TO DK GY, FRM TO SL HRD, VF GR, SB ANG TO SB RND, W SRT, MOD CONS, SL CALC CMT, SL SUC, CARB, SL SLTY

100% SS: MED TO DK GY TO BLK, FRM TO SL HRD, VF GR, SB ANG TO SB RND, W SRT, W CONS, SL CALC CMT, SL SUC, CARB, SL SLTY

MD: 8,409' Inclination: 90.03° Azimuth: 179.4° TVD: 6,538.61' VS: 2,174.02'

MD: 8,499' Inclination: 90.28° Azimuth: 179.96° TVD: 6,538.37' VS: 2,263.63'



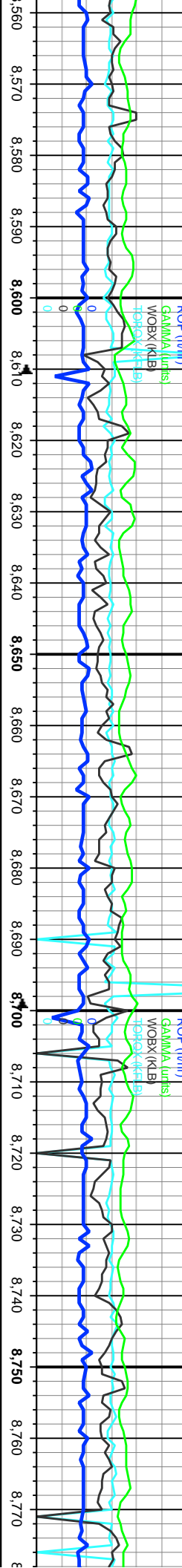


NW I/O  
9.7+/47  
9.7+/46

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TOPOX (klb)

WOB: 11  
RPM: 100  
SPM: 199  
PP: 3.219

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TOPOX (klb)



GAS (units)  
C1-C4 (PPM)  
CO2 (lb/cu ft)  
H2S (PPH)

GAS (units)  
C1-C4 (PPM)  
CO2 (lb/cu ft)  
H2S (PPH)

6000  
100% SS: MED TO DK GY, BLK IP, FRM  
TO SL HRD, VF GR, SB ANG TO SB  
RND, W SRT, MOD TO W CONS, SL  
CALC CMT, SL SUC, CARB, SL SLTY

6000  
100% SS: MED TO DK GY, FRM TO SL  
HRD, VF GR, SB RND, W SRT, MOD TO  
W CONS, SL CALC CMT, SL SUC,  
CARB, SL SLTY

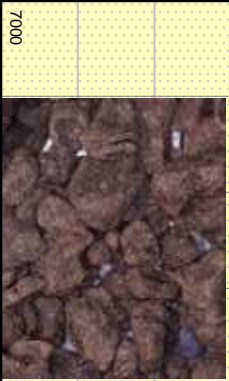
MD: 8,588'  
Inclination: 90.37°  
Azimuth: 180.14°  
TVD: 6,537.86'  
VS: 2,352.19'

MD: 8,678'  
Inclination: 90.31°  
Azimuth: 180.84°  
TVD: 6,537.33'  
VS: 2,441.67'

MD: 8,767'  
Inclination: 90.22°  
Azimuth: 180.5°  
TVD: 6,536.92'  
VS: 2,530.13'

TVD (ft)

TVD (ft)

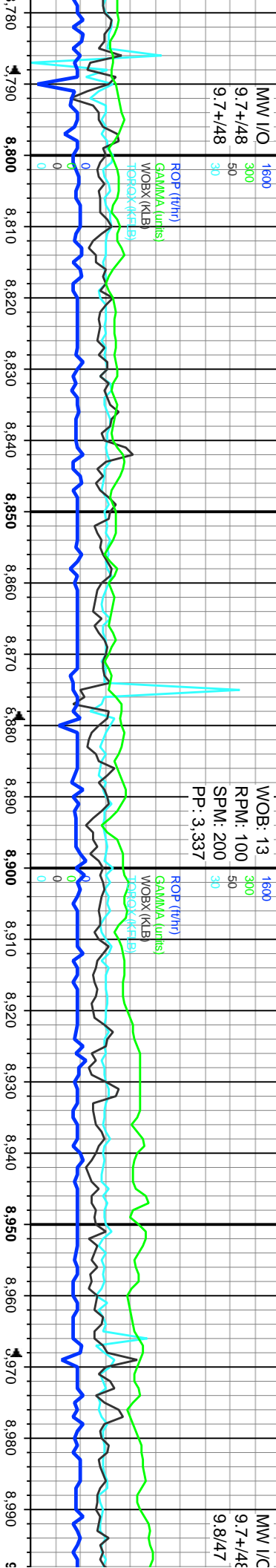




MW I/O  
9.7+/48  
9.7+/48

MW I/C  
9.7+/48  
9.8/47

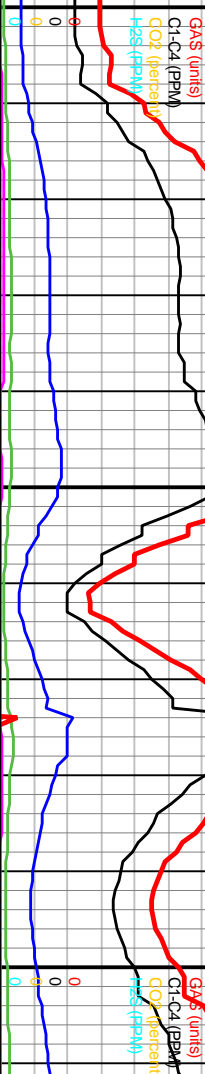
WOB: 13  
RPM: 100  
SPM: 200  
PP: 3.337



CG: 1418u

CG: 1944u

CG: 1193u

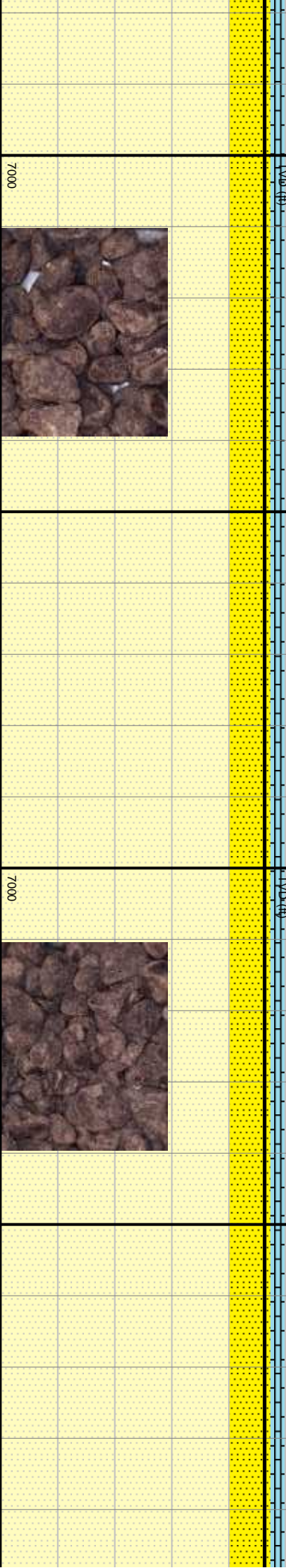


100% SS: MED TO DK GY, SME BLK, SL  
HRD, VF GR, SB ANG TO SB RND, W  
SRT, MOD TO W CONS, CALC CMT, SL  
SUC, CARB, SL SLTY

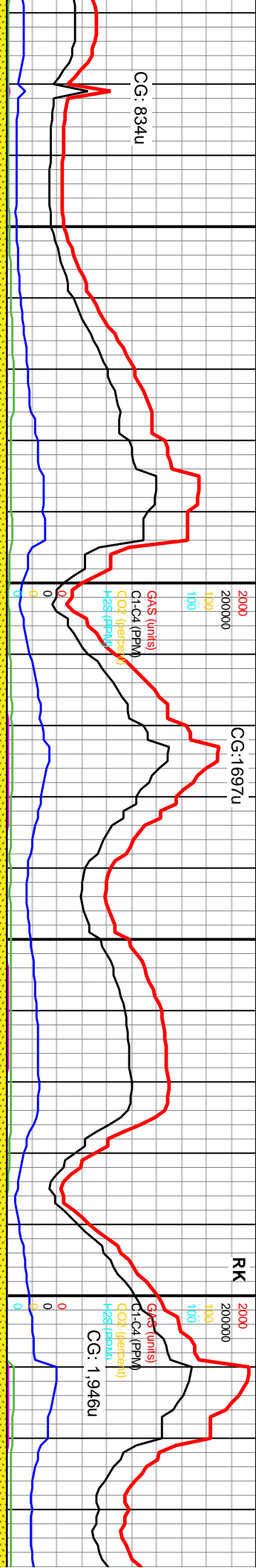
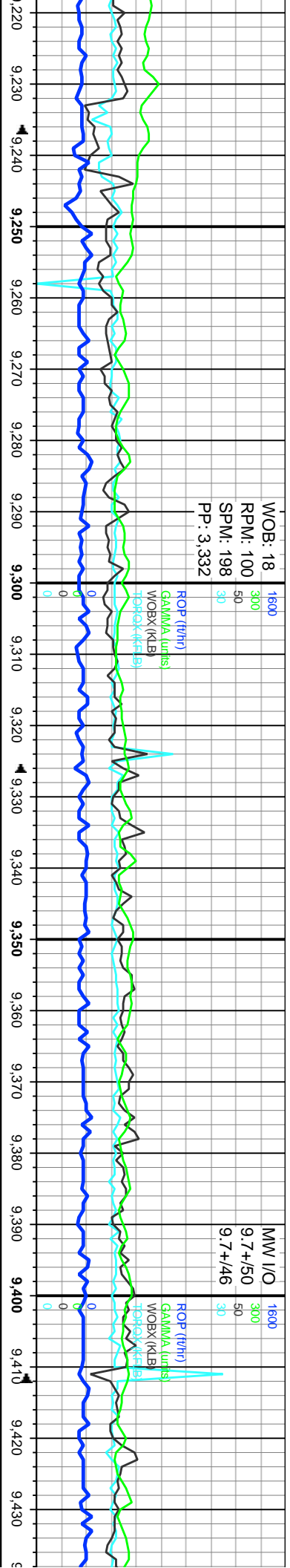
100% SS: MED TO DK GY, BLK IP, FRM  
TO SL HRD, VF GR, SB ANG TO SB  
RND, W SRT, MOD CONS, CALC CMT,  
SL SUC, CARB, SL SLTY, SL SHY IP

MD: 8,855'  
Inclination: 89.91°  
Azimuth: 180.04°  
TVD: 6,536.82'  
VS: 2,617.65'

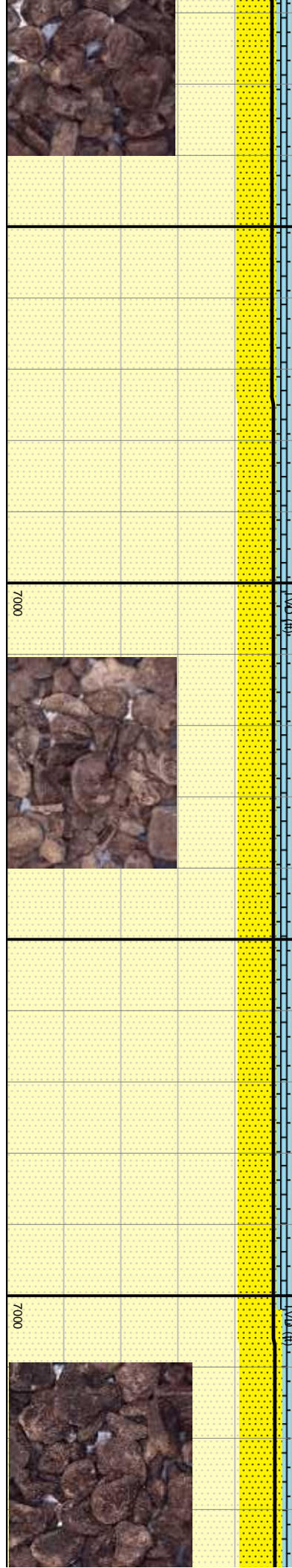
MD: 8,946'  
Inclination: 89.97°  
Azimuth: 179.17°  
TVD: 6,536.91'  
VS: 2,708.27'







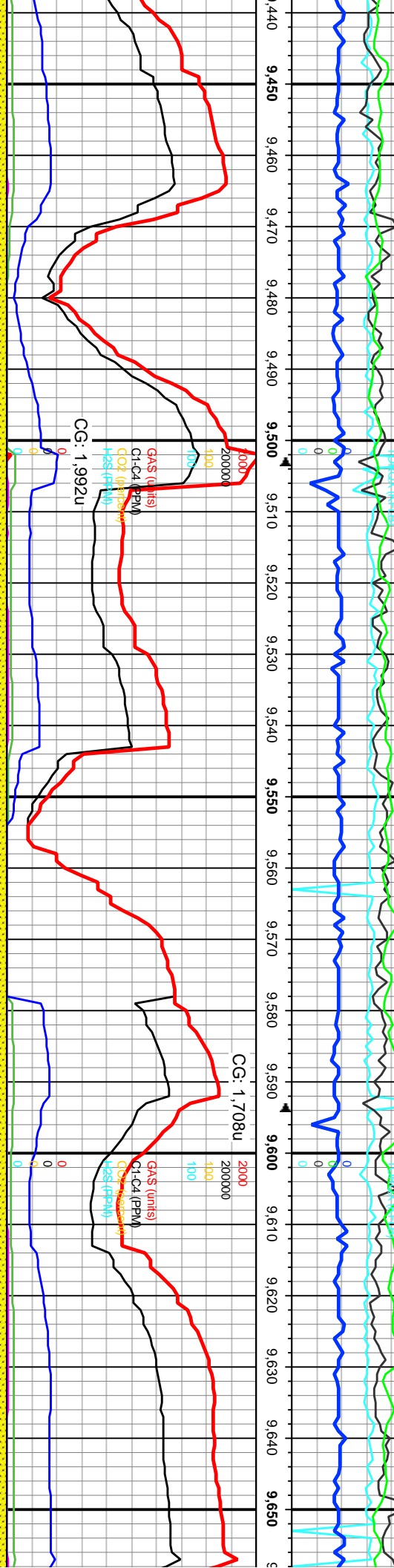
TO DK GY, FRM TO SL B ANG TO SB RND, V W SL CALC CMT, SL SUC IP, , SL SHY		6000	100% SS: MED GY, SL HRD TO HRD IP, VF GR, SB ANG TO SB RND, V W SRT, W CONS, SL CALC CMT, SL SUC IP, CARB, SL SLTY, SL SHY IP	6000	100% SS: GY TO DK GY, FRM TC TO F GR, SB ANG TO SB RND, V CONS, SL CALC CMT, CARB, SL SHY IP, SL H2O SENS IP
MD: 9.303	MD: 9.392				
Inclination: 91.02°	Inclination: 91.2°				
Azimuth: 180.75°	Azimuth: 180.37°				
TVD: 6,533.27'	TVD: 6,531.54'				
VS: 3,063.49'	VS: 3,151.94'				





WOB: 18  
RPM: 100  
SPM: 200  
PP: 3.388

ROP (ft/h)  
GAMMA (units)  
WOBX (KLB)  
TDR (KLB)

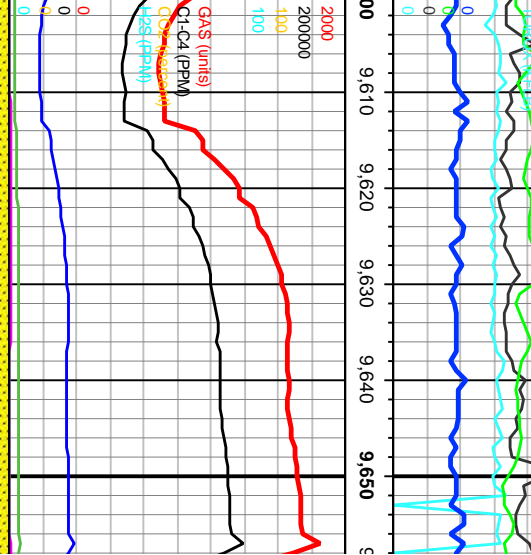


CG: 1.992u

CG: 1.708u

NW I/O  
9.7+/49  
9.7+/47

ROP (ft/h)  
GAMMA (units)  
WOBX (KLB)  
TDR (KLB)



HD IP, VF  
V SRT, W  
SLTY, SL

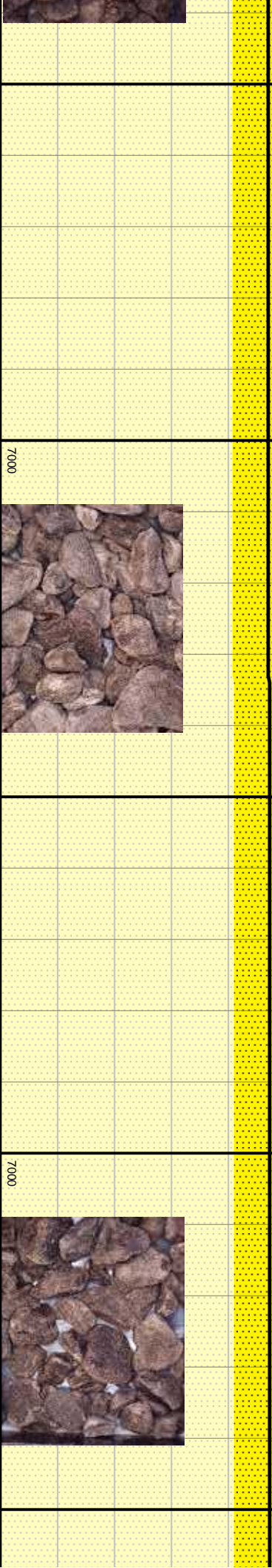
100% SS: GY TO DK GY, FRM TO HD IP,  
VF TO F GR, SB ANG TO SB RND, W  
SRT, W CONS, SL CALC CMT, CARB,  
SL SLTY, SL SHY IP, SL H2O SENS IP

100% SS: GY TO DK GY, FRM TO HD IP,  
VF TO F GR, SB ANG TO SB RND, W  
SRT, W CONS, SL CALC CMT, CARB, SL  
SLTY, SL SHY IP

MD: 9,482'  
Inclination: 91.08°  
Azimuth: 179.9°  
TVD: 6,529.75'  
VS: 3,241.47'

MD: 9,571'  
Inclination: 91.14°  
Azimuth: 179.36°  
TVD: 6,528.03'  
VS: 3,330.07'

TVD (ft)



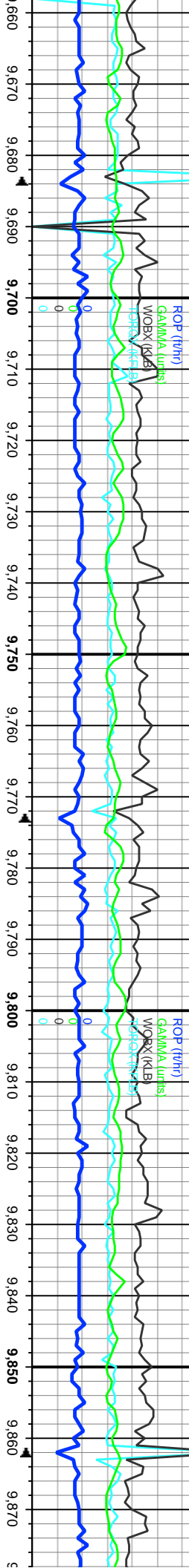


WOB: 16  
RPM: 100  
SPM: 200  
PP: 3.490

MW I/O  
9.8/49  
9.8/47

ROP (ft/h)  
GA/MMA (units)  
WOBX (klB)

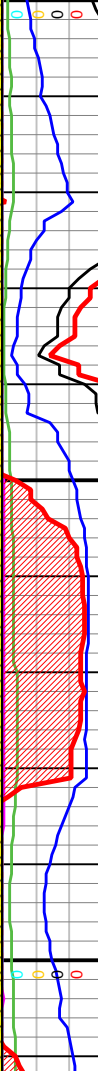
ROP (ft/h)  
GA/MMA (units)  
WOBX (klB)



CG: 2.074u

CG: 2.465u  
BG: 2.492u

CG: 2.493u



6000  
100% SS: GY TO DK GY, FRM TO HD IP, VF  
TO F GR, SB ANG TO SB RND, W SRT, W  
CONS, SL CALC CMT, CARB, SL SLTY, SL  
SHY IP

6000  
100% SS: GY TO DK GY, FRM TO HD IP, VF  
TO F GR, SB ANG TO SB RND, W SRT, W  
CONS, SL CALC CMT, CARB, SLTY, SL  
SHY IP

6661'  
Inclination: 91.02°  
Azimuth: 179.22°  
TVD: 6.526.33'

MD: 9.750'  
Inclination: 89.85°  
Azimuth: 179.09°  
TVD: 6.525.66'  
VS: 3.508.4'

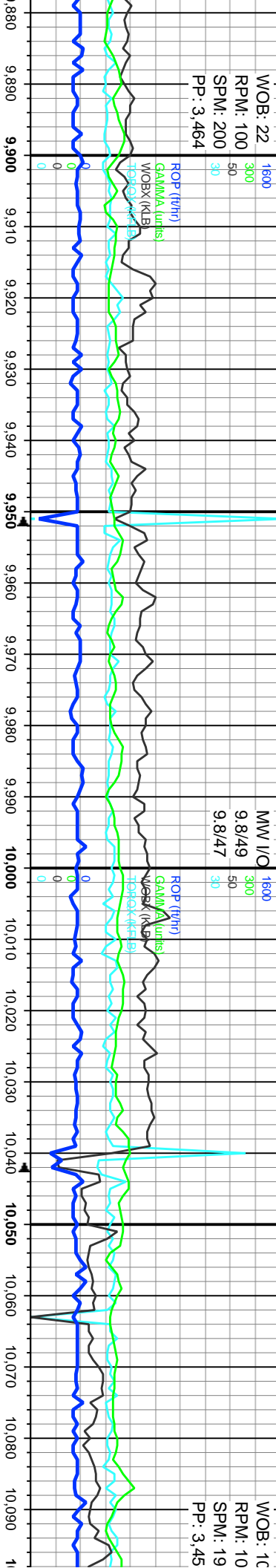
MD: 9.839'  
Inclination: 89.85°  
Azimuth: 179.09°  
TVD: 6.525.89'  
VS: 3.597.09'

TVD (ft)

TVD (ft)



WOB: 22  
RPM: 100  
SPM: 200  
PP: 3.464



MW I/O  
9.8/49  
9.8/47

WOB: 10  
RPM: 10  
SPM: 19  
PP: 3.45

6000  
100% SS: GY TO DK GY, FRM TO HD IP, VF  
TO F GR, SB ANG TO SB RND, W SRT, W  
CONS, SL CALC CMT, CARB, SLTY, SL  
SHY IP

MD: 9,929'  
Inclination: 89.88°  
Azimuth: 177.78°  
TVD: 6,526.1'

VS: 3,686.86'



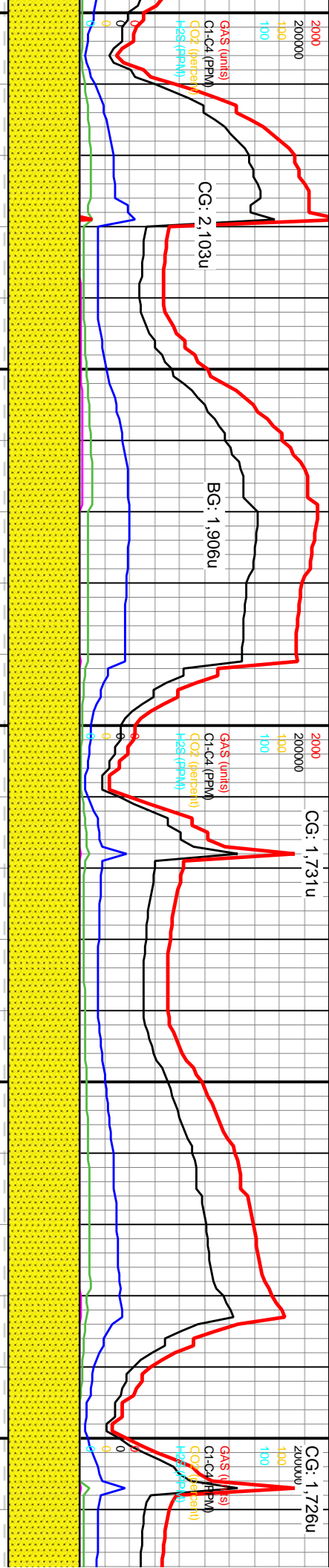
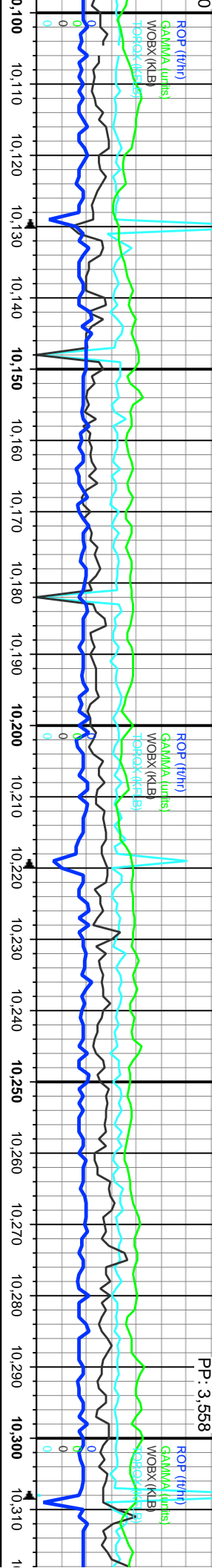
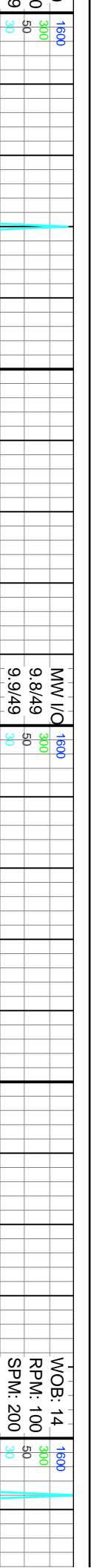
6000  
100% SS: GY TO DK GY, GRITTY TEX, FRM  
TO HD IP, VF TO F GR, SB ANG TO SB  
RND, W SRT, W CONS, SL CALC CMT,  
CARB, SLTY, SL SHY IP

MD: 10,018'  
Inclination: 89.88°  
Azimuth: 177.58°  
TVD: 6,526.29'

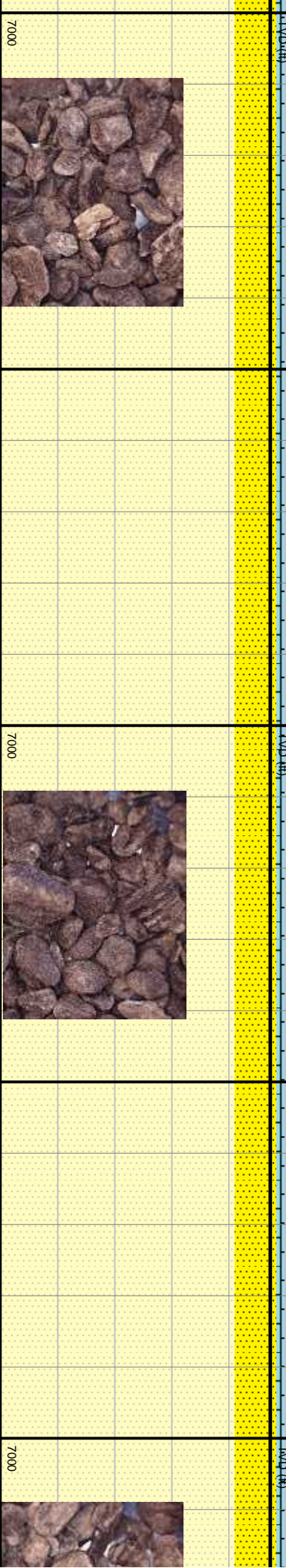
VS: 3,775.71'

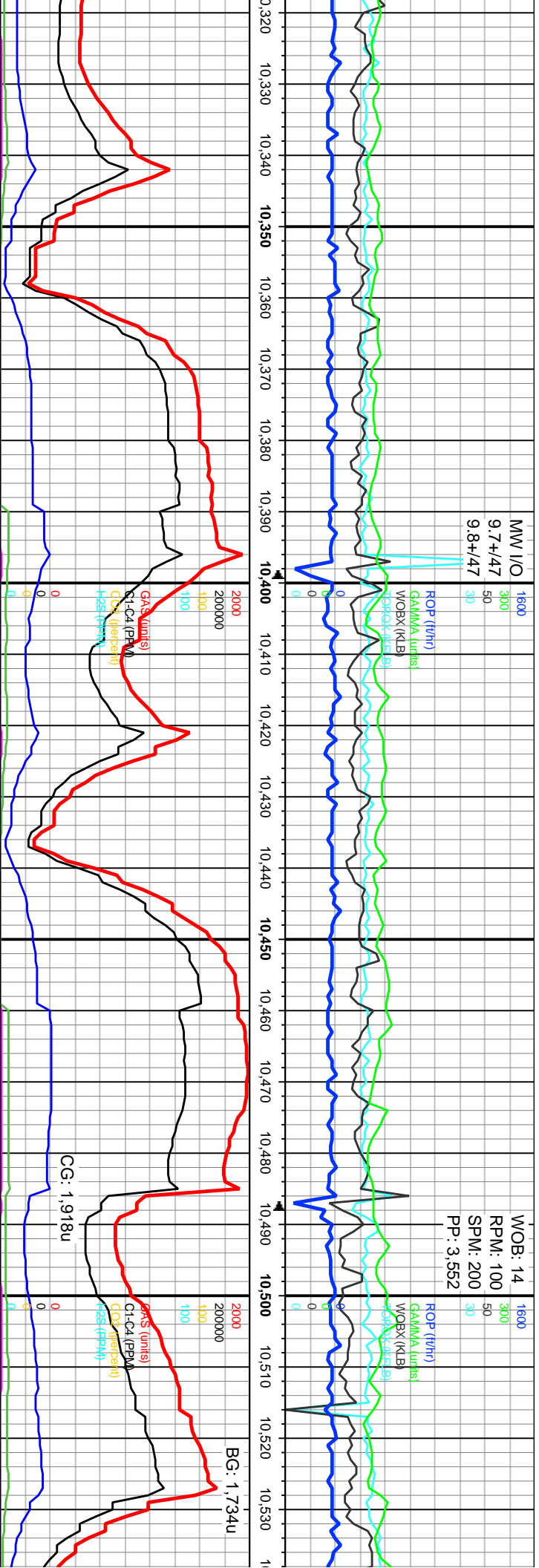






MD: 10.107	MD: 10.197	MD: 10.286
Inclination: 89.78°	Inclination: 89.82°	Inclination: 90°
Azimuth: 177.09°	Azimuth: 176.97°	Azimuth: 176.8°
VD: 6.526.55'	TVD: 6.526.87'	TVD: 6.527.01'
S: 3.864.59'	V/S: 3.954.49'	V/S: 4.043.4'





TO DK GY, GRITTY TEX,  
TO F GR, SB ANG TO SB  
SRT, W CONS, SL CALC  
TY, SL SHY IP

6000  
100% SS: LT GY TO DK GY, GRITTY TEX,  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, FR TO W SRT, W CONS, SL CALC  
CMT, CARB, SLTY, SL SHY IP

6000  
100% SS: LT GY TO DK GY, GRITTY TEX,  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, FR TO W SRT, W CONS, SL CALC  
CMT, CARB, SLTY, SL SHY IP, L

MD: 10,375'  
Inclination: 90.06°  
Azimuth: 177.82°  
TVD: 6,526.96'  
VS: 4,132.28'

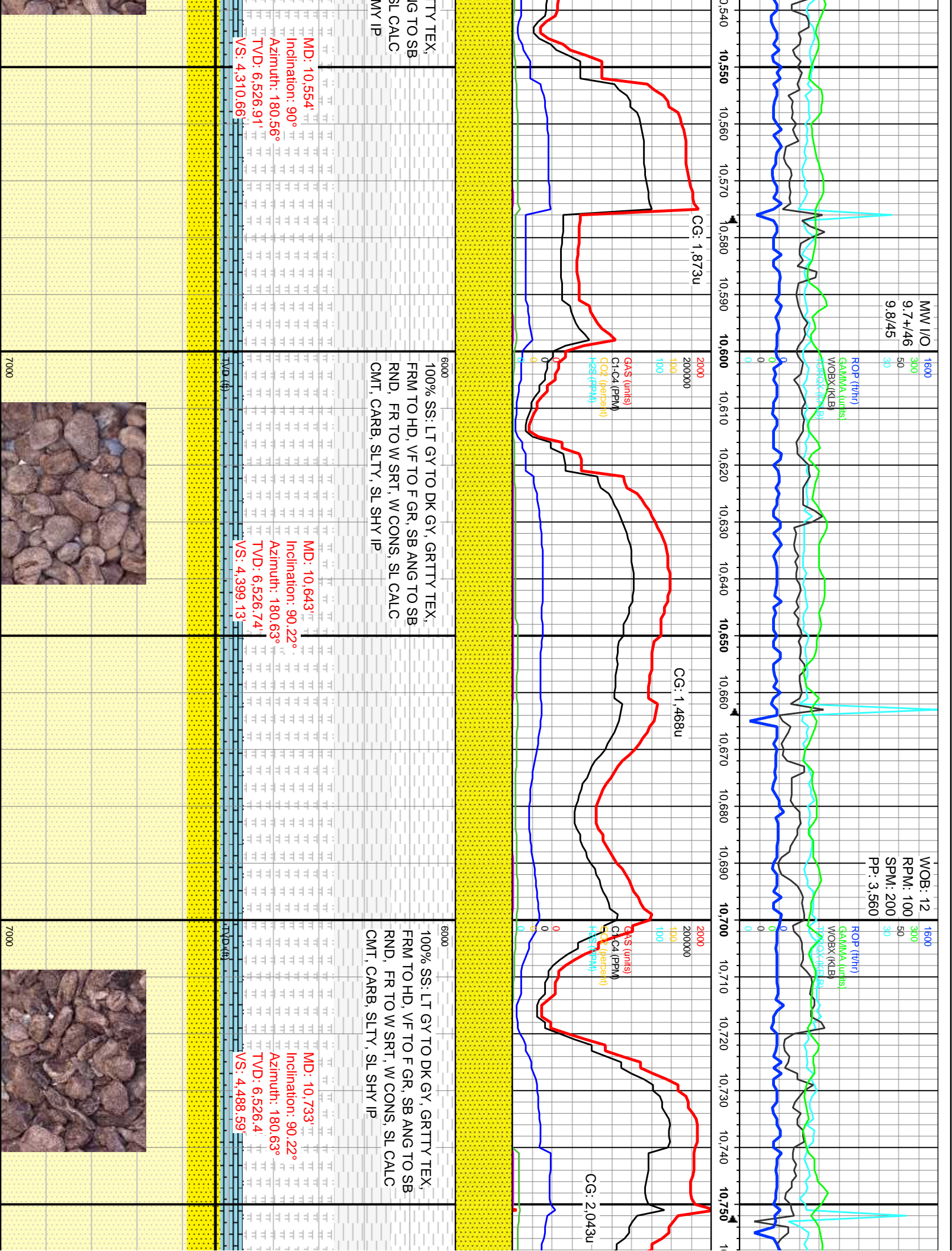
MD: 10,465'  
Inclination: 90°  
Azimuth: 178.88°  
TVD: 6,526.91'  
VS: 4,222.06'

TVD (ft)

TVD (ft)





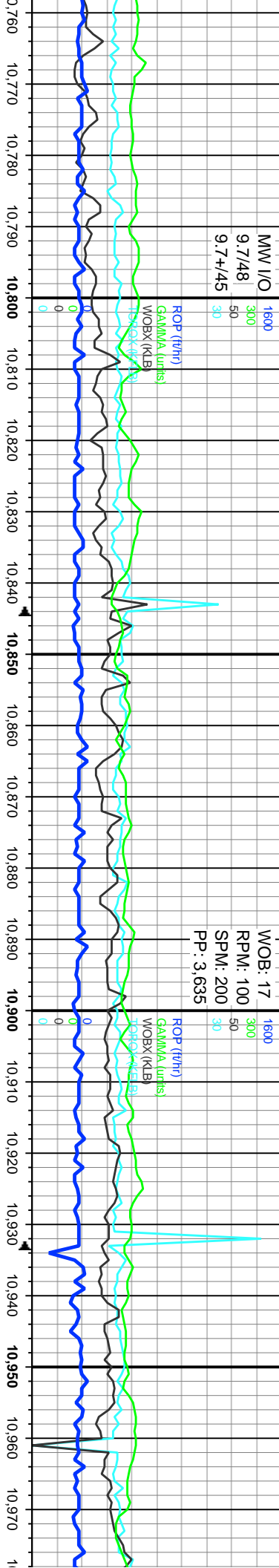


NW I/O  
9.7/48  
9.7+/45

ROP (ft/h)  
GAAMA (units)  
WOBX (klb)  
TSP (ppm)

WOB: 17  
RPM: 100  
SPM: 200  
PP: 3.635

ROP (ft/h)  
GAAMA (units)  
WOBX (klb)  
TSP (ppm)



CG: 1,547u

BG: 1,486u

CG: 1,383u

GAAS (um/s)  
C1-C4 (Ppm)  
C1-C2 (Ppm)  
H2S (Ppm)

GAAS (um/s)  
C1-C4 (Ppm)  
C1-C2 (Ppm)  
H2S (Ppm)

100% SS: LT GY TO DK GY, GRITTY TEX,  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, W SRT, W CONS, CALC CMT, CARB,  
SLTY, SL SHY IP

100% SS: LT GY TO DK GY, GRITTY TEX,  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, W SRT, W CONS, CALC CMT, CARB,  
SLTY, SL SHY IP

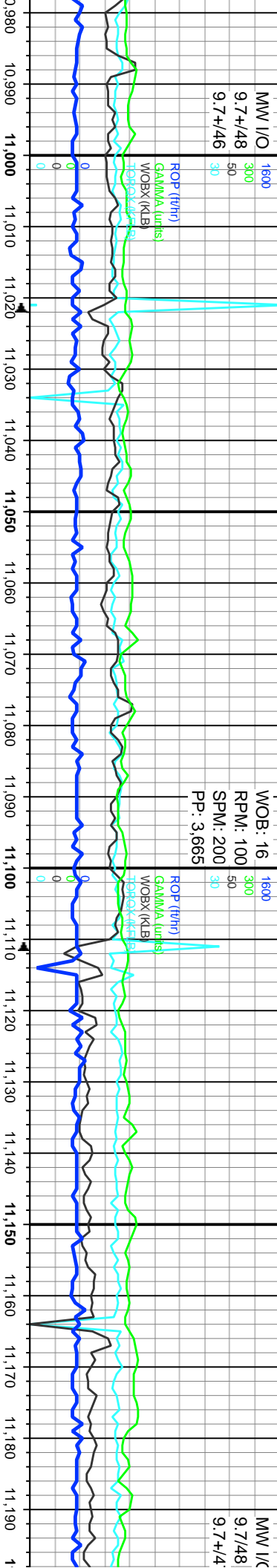
MD: 10.822°  
Inclination: 89.97°  
Azimuth: 183.27°  
TVD: 6,526.25'  
VS: 4,576.8'

MD: 10.912°  
Inclination: 89.97°  
Azimuth: 183.21°  
TVD: 6,526.3'  
VS: 4,665.72'



NW I/O  
9.7+/48  
9.7+/46

ROP (ft/h)  
GAMMA (units)  
WOBX (KLB)  
TOPDRY (KLB)



WOB: 16  
RPM: 100  
SPM: 200  
PP: 3.665

NW I/O  
9.7/48  
9.7+/4

G: 1,153u

CG: 1,389u

BG: 1,211u

CG: 1,294u

CG

GAS (units)  
C1-C4 (PPM)  
CO2 (lb/cu ft)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (lb/cu ft)  
H2S (PPM)

6000  
100% SS: LT GY TO DK GY, GRITTY TEX.  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, FR TO W SRT, W CONS, CALC CMT,  
CARB, SLTY, SL SHY IP

6000  
100% SS: LT GY TO DK GY, GRITTY TEX.  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, FR TO W SRT, W CONS, CALC CMT,  
CARB, SLTY, SL SHY IP

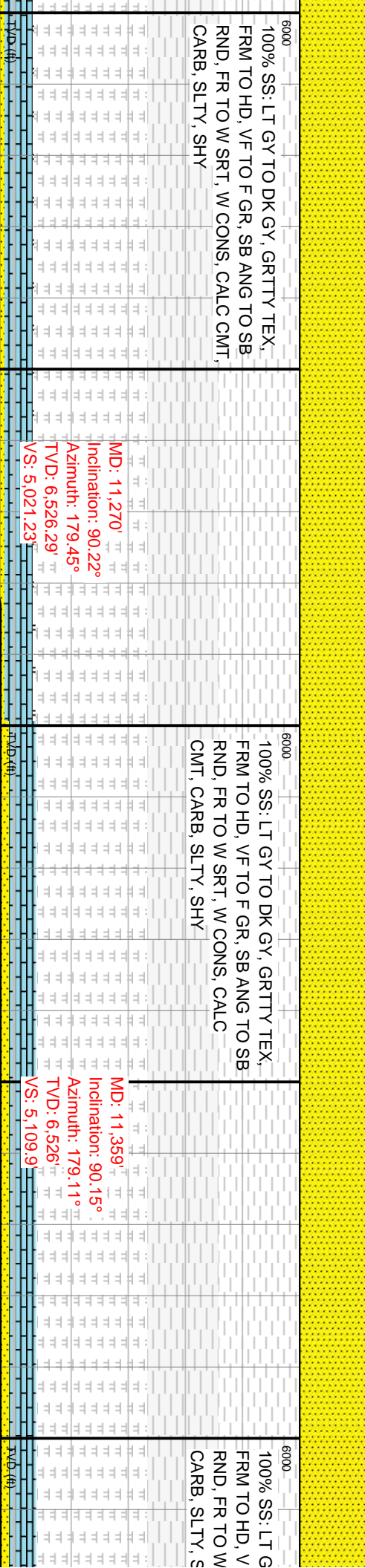
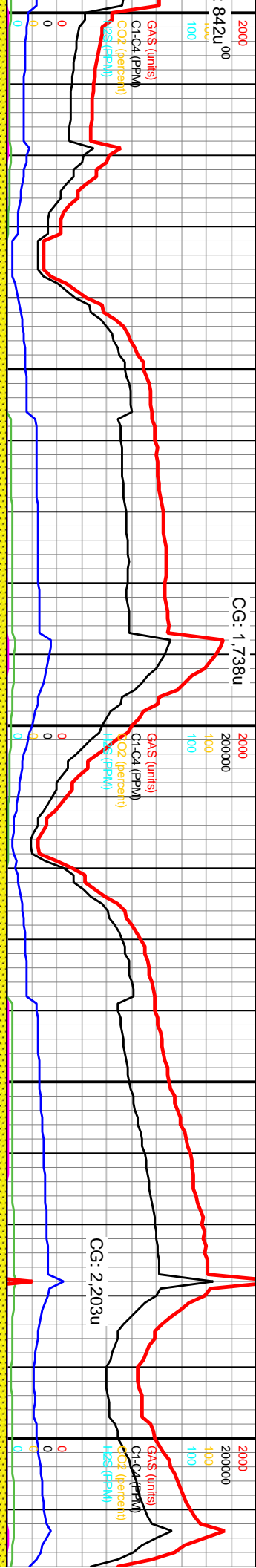
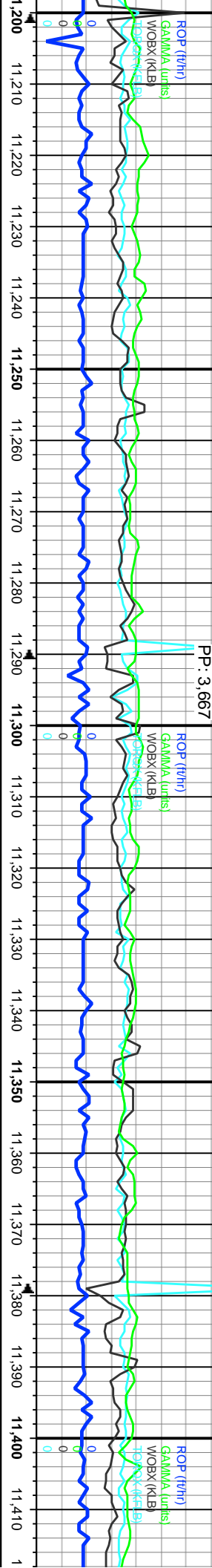
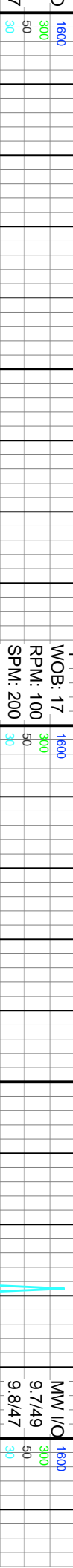
MD: 11,002'  
Inclination: 89.94°  
Azimuth: 181.89°  
TVD: 6,526.37'  
VS: 4,754.79'

MD: 11,091'  
Inclination: 90°  
Azimuth: 180.93°  
TVD: 6,526.41'  
VS: 4,843.11'

MD: 11,180'  
Inclination: 89.97°  
Azimuth: 179.87°  
TVD: 6,526.44'  
VS: 4,931.61'

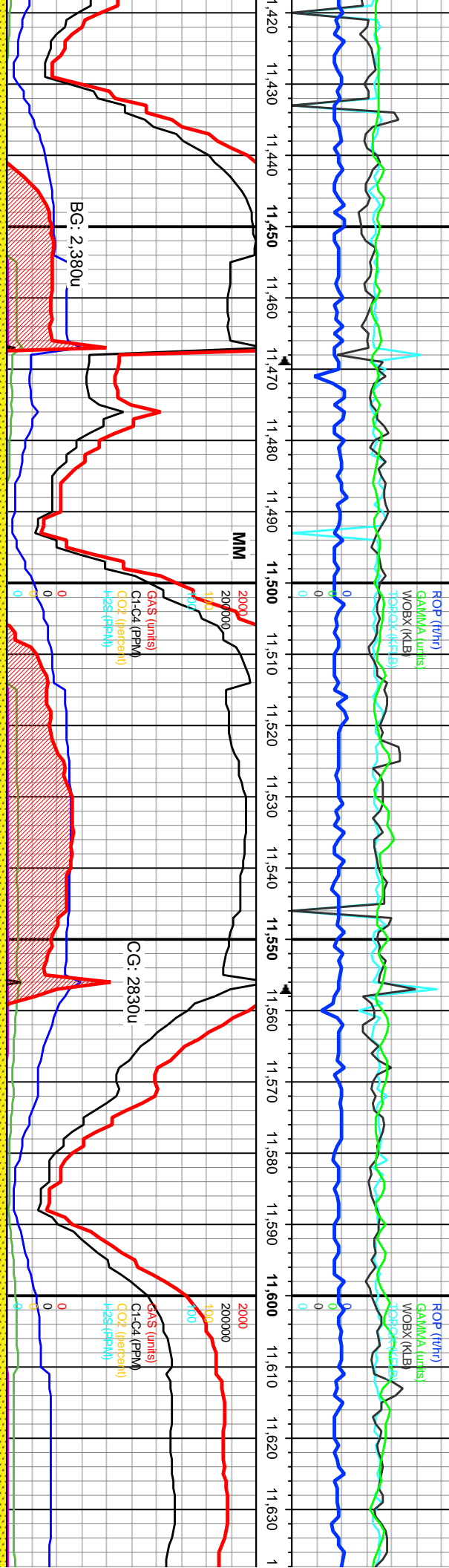






WOB: 14  
RPM: 100  
SPM: 200  
PP: 3.711

NW I/O  
9.7/50  
9.7+/47



Y TO DK GY, GRITTY TEX,  
F TO F GR, SB ANG TO SB  
SRT, W CONS, CALC CMT,  
HHY

100% SS: LT GY TO DK GY, GRITTY TEX,  
FRM TO HD, VF TO F GR, SB ANG TO SB  
RND, FR TO W SRT, W CONS, CALC CMT,  
CARB, SLTY, SHY

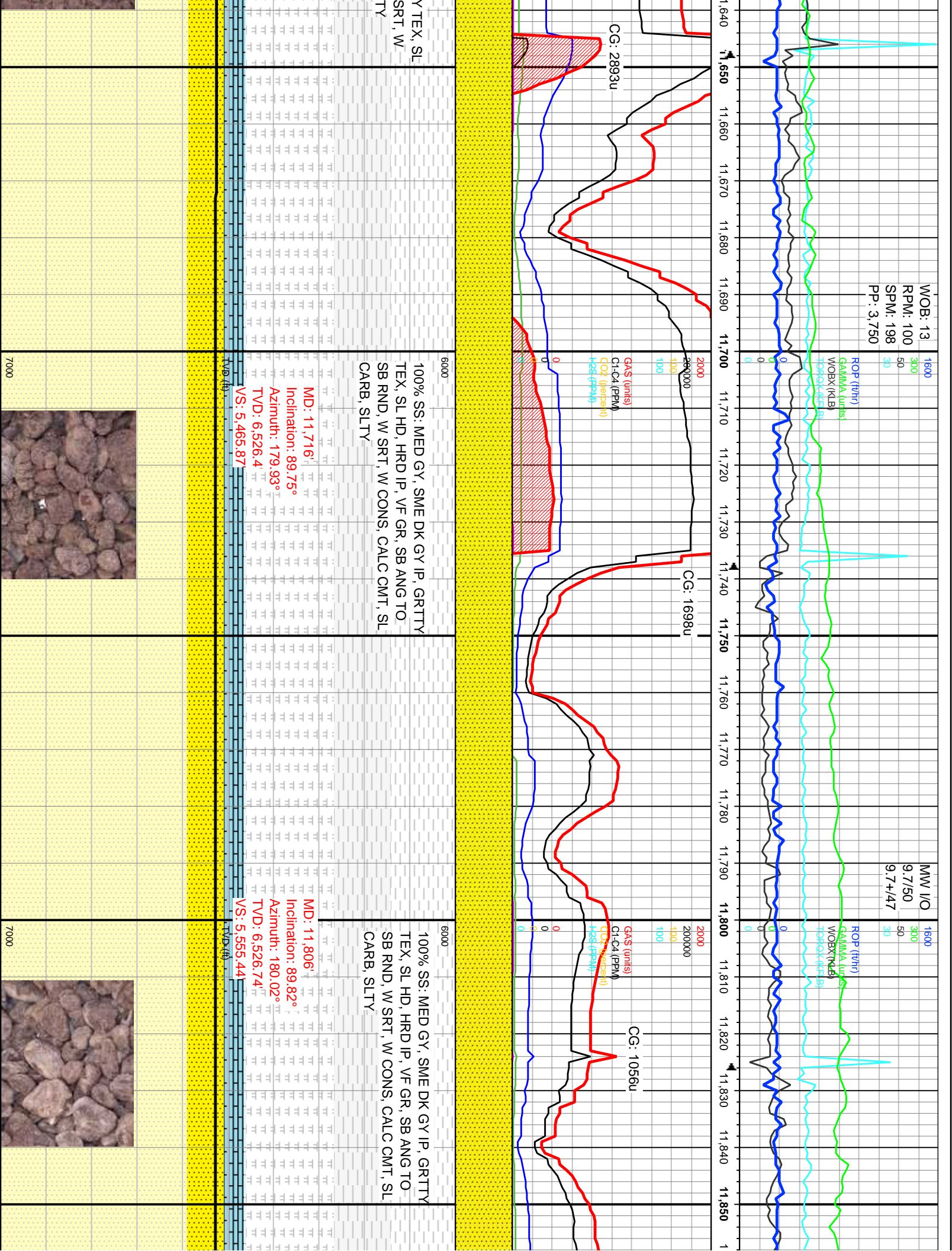
100% SS: LT TO MED GY, GRITTY  
HD, VF, SB ANG TO SB RND, W  
CONS, CALC CMT, SL CARB, SL

MD: 11,448'  
Inclination: 90.12°  
Azimuth: 177.62°  
TVD: 6,526.79'  
VS: 5,198.67'

MD: 11,538'  
Inclination: 89.82°  
Azimuth: 177.91°  
TVD: 6,526.84'  
VS: 5,288.51'

MD: 11,627'  
Inclination: 89.85°  
Azimuth: 179.4°  
TVD: 6,526.09'  
VS: 5,377.26'

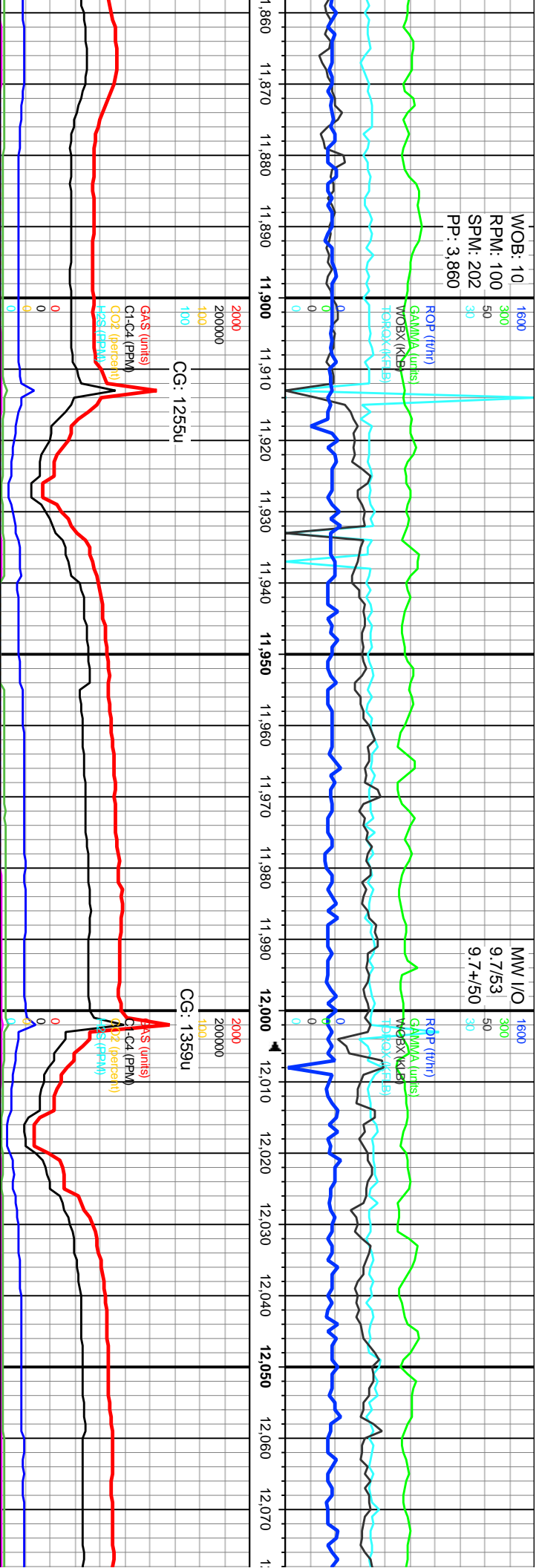






WOB: 10  
RPM: 100  
SPM: 202  
PP: 3.860

NW I/O  
9.7/53  
9.7+/50



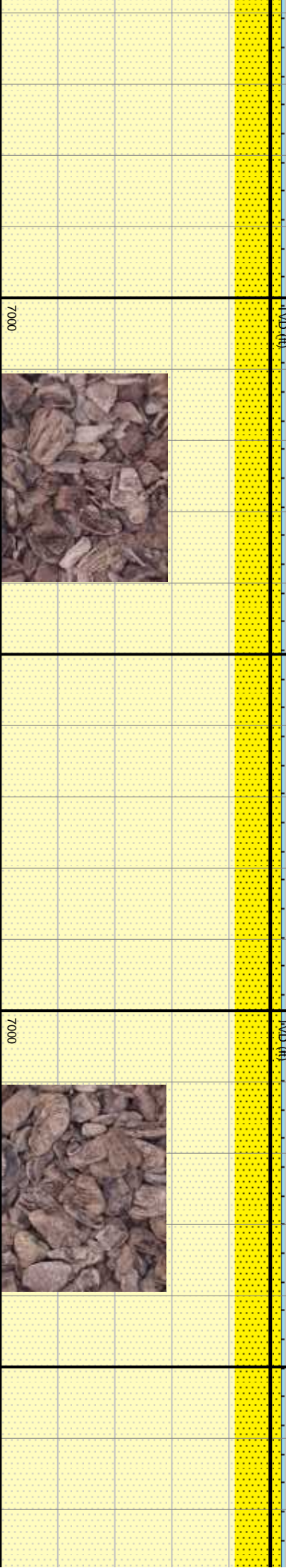
100% SS: MED TO DK GY, GRITTY TEX,  
FRM TO SL HD, HRD IP, VF GR, SB ANG  
TO SB RND, W SRT, W CONS, SL CALC  
CMT, SL CARB, SLTY, SHY

100% SS: MED TO DK GY, SME BLK IP,  
GRITTY TEX, FRM TO SL HD, HRD IP, VF  
GR, SB ANG TO SB RND, W SRT, W  
CONS, SL CALC CMT, SL CARB, V SLTY,  
SHY

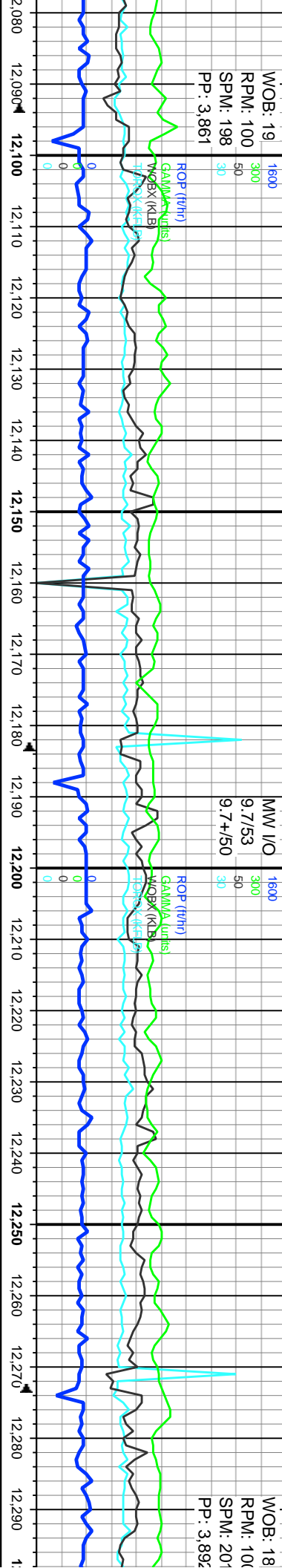
MD: 11.895'  
Inclination: 90.12°  
Azimuth: 180.4°  
TVD: 6.526.79'  
VS: 5.643.97'

MD: 11.984'  
Inclination: 90.03°  
Azimuth: 180.71°  
TVD: 6.526.67'  
VS: 5.732.45'

MD: 12.074'  
Inclination: 90.03°  
Azimuth: 180.71°  
TVD: 6.526.67'  
VS: 5.821.85'



WOB: 19  
RPM: 100  
SPM: 198  
PP: 3.861



CG: 1234u

CG: 1256u

CG: 1236u

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

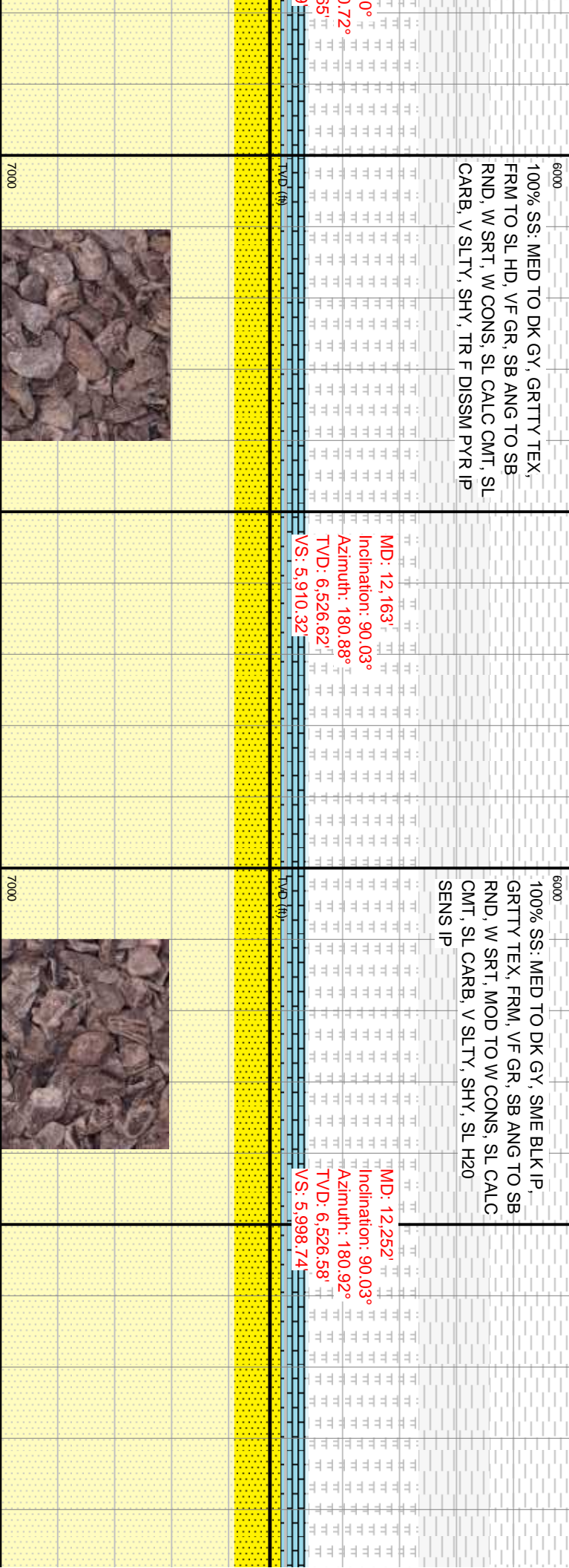
GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

100% SS: MED TO DK GY, GRITTY TEX,  
FRM TO SL HD, VF GR, SB ANG TO SB  
RND, W SRT, W CONS, SL CALC CMT, SL  
CARB, V SLTY, SHY, TR F DISSM PYR IP

100% SS: MED TO DK GY, SME BLK IP,  
GRITTY TEX, FRM, VF GR, SB ANG TO SB  
RND, W SRT, MOD TO W CONS, SL CALC  
CMT, SL CARB, V SLTY, SHY, SL H2O  
SENS IP

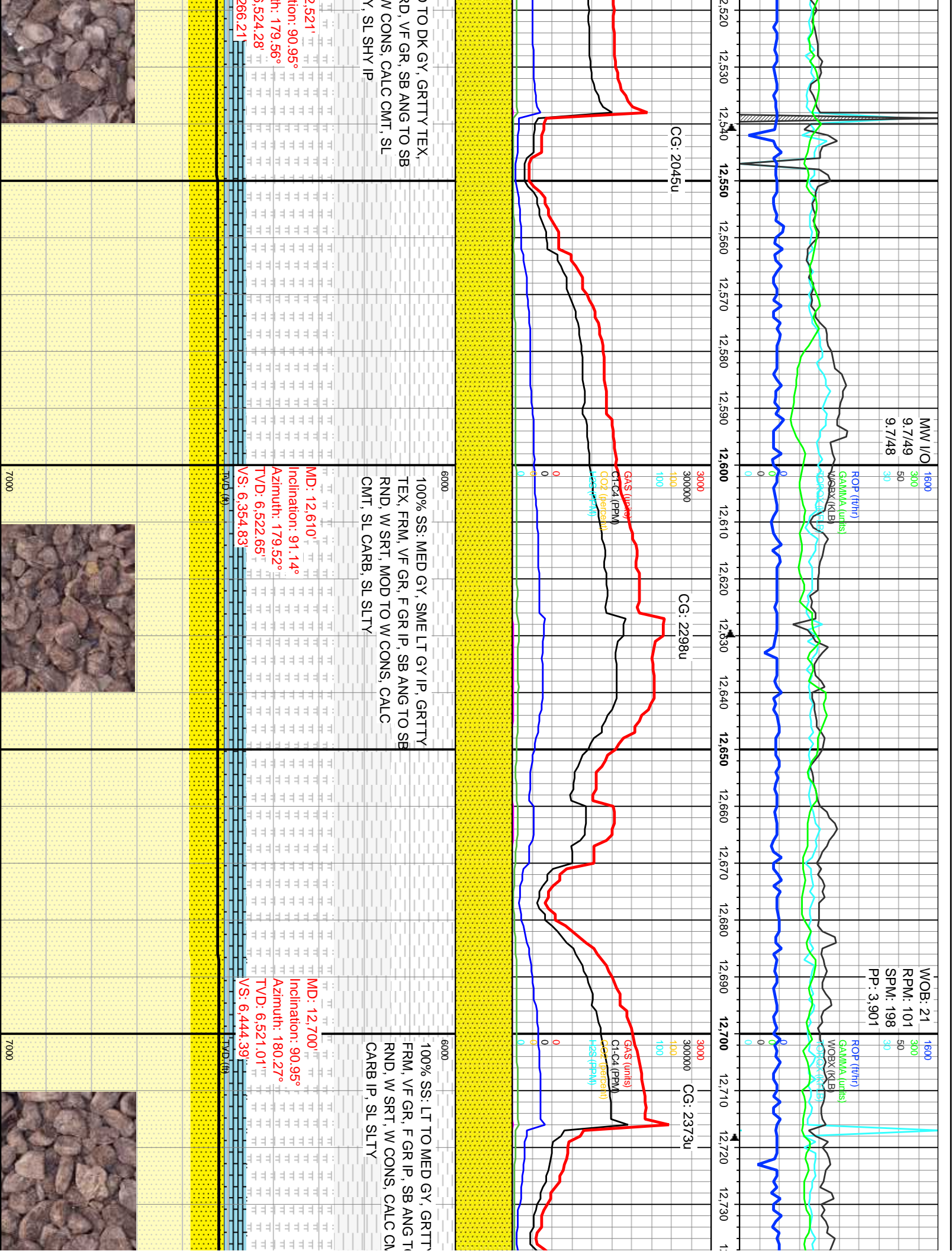
MD: 12.163'  
Inclination: 90.03°  
Azimuth: 180.88°  
TVD: 6,526.62'  
VS: 5.910.32'

MD: 12.252'  
Inclination: 90.03°  
Azimuth: 180.92°  
TVD: 6,526.58'  
VS: 5.998.74'









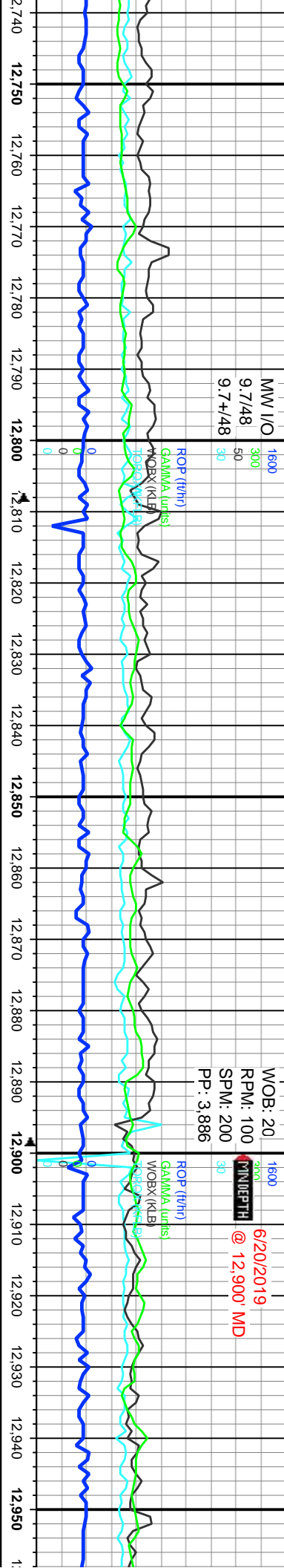
MW I/O  
9.7/48  
9.7+/48

ROP (ft/h)  
GAMMA (units)  
MOBX (K/B)

WOB: 20  
RPM: 100  
SPM: 200  
PP: 3.886

ROP (ft/h)  
GAMMA (units)  
MOBX (K/B)

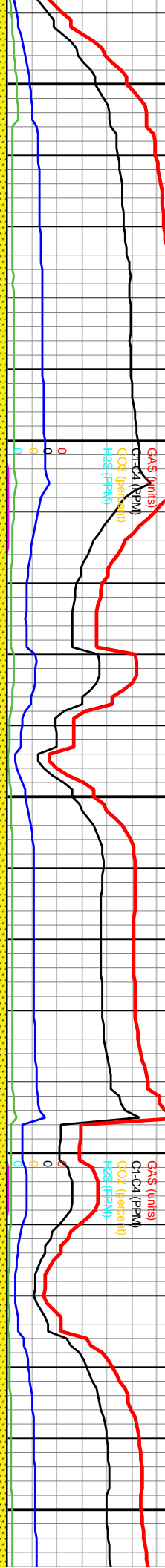
6/20/2019  
@ 12,900' MD



CG: 2374u

CG: 2184u

GAS (units)  
C1-C4 (PPM)  
CO2 (lb-per-bbl)  
H2S (PPM)

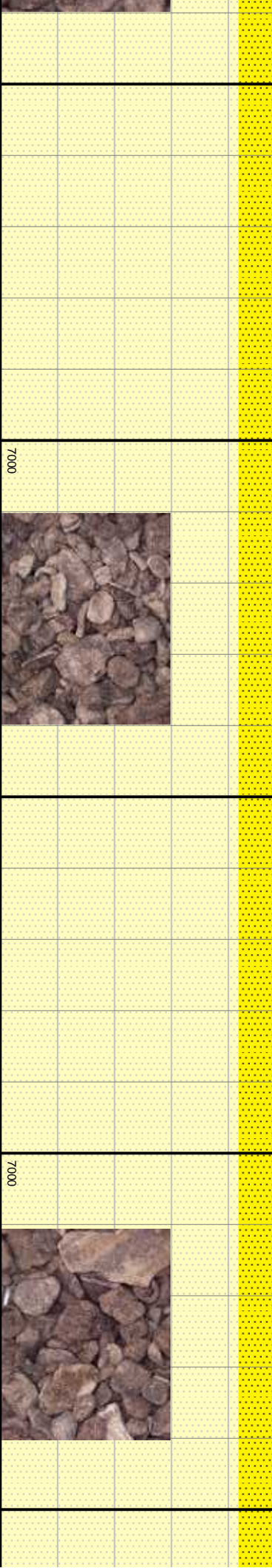
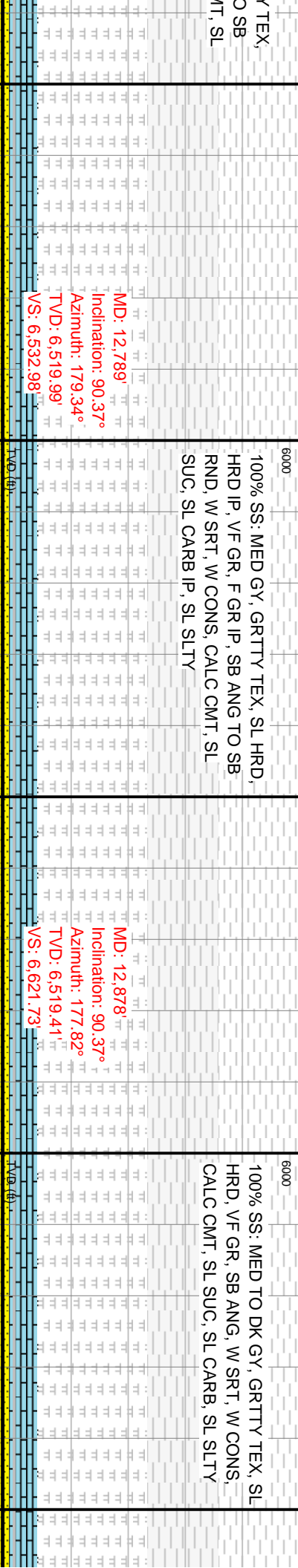


100% SS: MED GY, GRITTY TEX, SL HRD,  
HRD IP, VF GR, F GR IP, SB ANG TO SB  
RND, W SRT, W CONS, CALC CMT, SL  
SUC, SL CARB IP, SL SLTY

100% SS: MED TO DK GY, GRITTY TEX, SL  
HRD, VF GR, SB ANG, W SRT, W CONS,  
CALC CMT, SL SUC, SL CARB, SL SLTY

MD: 12,789'  
Inclination: 90.37°  
Azimuth: 179.34°  
TVD: 6,519.99'  
VS: 6,532.98'

MD: 12,878'  
Inclination: 90.37°  
Azimuth: 177.82°  
TVD: 6,519.41'  
VS: 6,621.73'



MW I/O  
9.7+/48  
9.8/48

ROP (ft/hr)  
300  
50  
30

GAMMA (units)  
WOBX (K/B)  
H2S (PPM)  
C1-C4 (PPM)  
CO2 (percent)

WOB: 21  
RPM: 100  
SPM: 199  
PP: 3.923

ROP (ft/hr)  
300  
50  
30

GAMMA (units)  
WOBX (K/B)  
H2S (PPM)  
C1-C4 (PPM)  
CO2 (percent)

CG: 2222u

CG: 2052u

CG: 2234u

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

100% SS: DK GY, GRITTY TEX, SL HRD,  
VF GR, SB ANG TO SB RND, W SRT, MOD  
TO W CONS, CALC CMT, SL SUC, SL  
CARB, SL SLTY, SL SHY IP

100% SS: MED TO DK GY, GRITTY TEX,  
FRM TO SL HRD, VF GR, SME F GR IP, SB  
ANG TO SB RND, W SRT, W CONS, CALC  
CMT, SL SUC, SL CARB, SL SLTY

MD: 12.968'  
Inclination: 90.22°  
Azimuth: 176.84°  
TVD: 6,518.95'  
VS: 6,711.61'

MD: 13.057'  
Inclination: 90.25°  
Azimuth: 177.55°  
TVD: 6,518.58'  
VS: 6,800.5'

MD: 13.146'  
Inclination: 90.06°  
Azimuth: 178.29°  
TVD: 6,518.34'  
VS: 6,889.32'

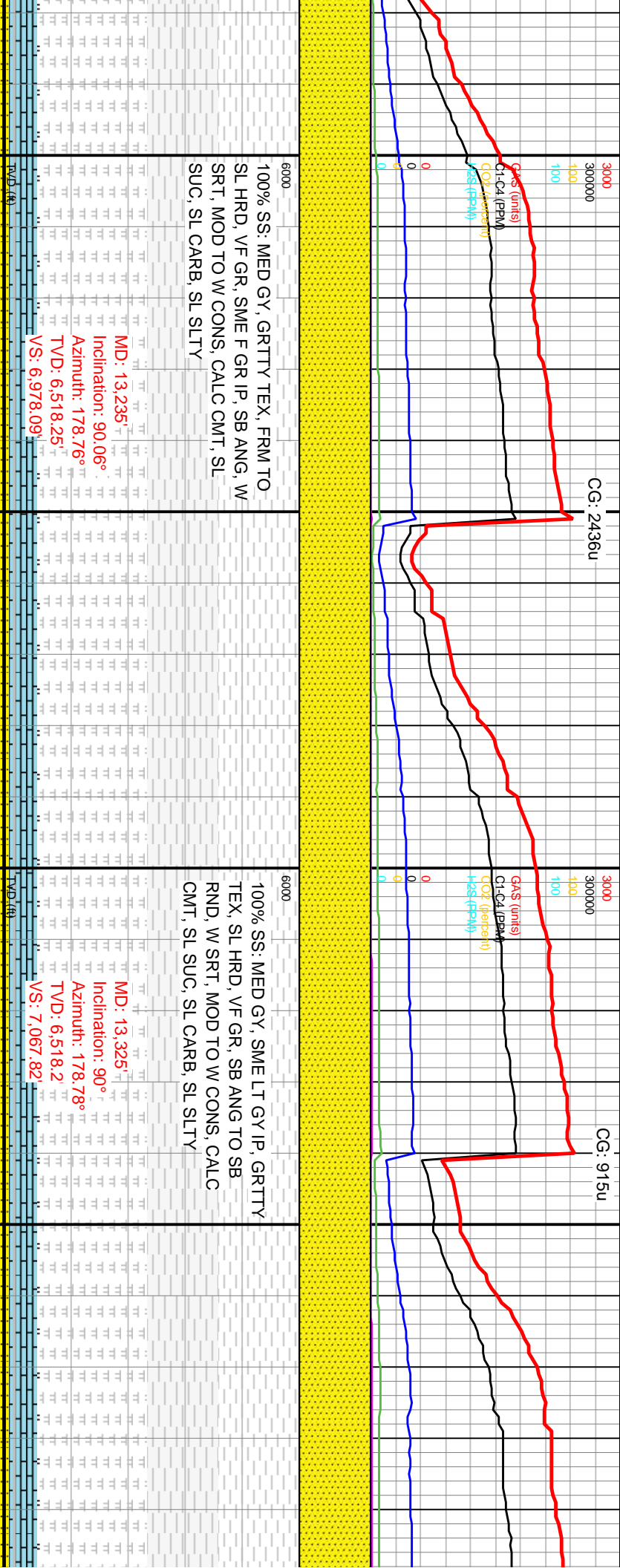
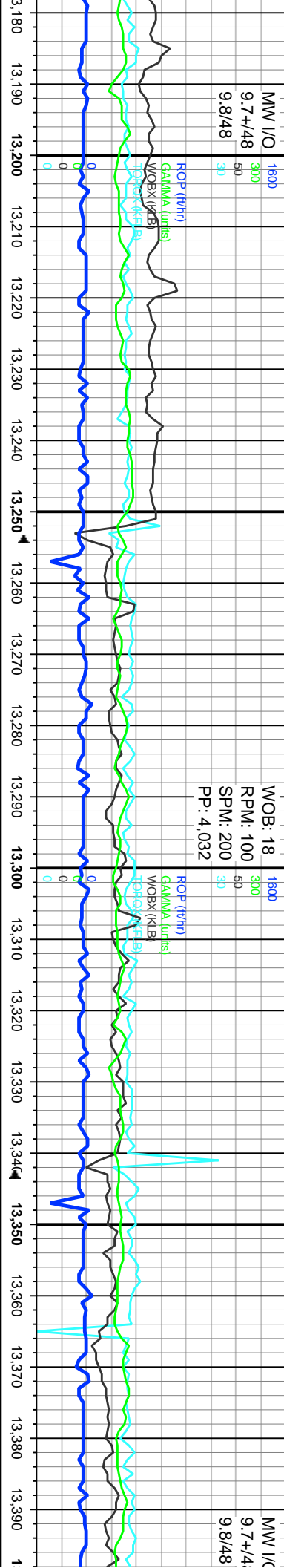




NW I/O  
9.7+/48  
9.8/48

NW I/O  
9.7+/48  
9.8/48

WOB: 18  
RPM: 100  
SPM: 200  
PP: 4.032

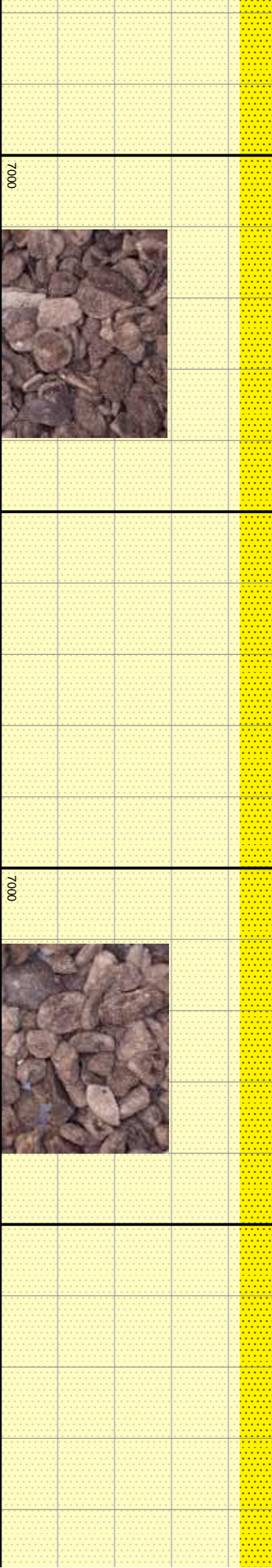


100% SS: MED GY, GRITTY TEX, FRM TO  
SL HRD, VF GR, SME F GR IP, SB ANG, W  
SRT, MOD TO W CONS, CALC CMT, SL  
SUC, SL CARB, SL SLTY

100% SS: MED GY, SMLT GY IP, GRITTY  
TEX, SL HRD, VF GR, SB ANG TO SB  
RND, W SRT, MOD TO W CONS, CALC  
CMT, SL SUC, SL CARB, SL SLTY

MD: 13.235  
Inclination: 90.06°  
Azimuth: 178.76°  
TVD: 6,518.25  
VS: 6,978.09

MD: 13.325  
Inclination: 90°  
Azimuth: 178.78°  
TVD: 6,518.2  
VS: 7,067.82



1600

300

50

30

8

ROP (ft/hr)

GAMMA (units)

WOBX (klb)

TOPDRY (klb)

WOB: 16

RPM: 100

SPM: 205

PP: 4.211

1600

300

50

30

1

ROP (ft/hr)

GAMMA (units)

WOBX (klb)

TOPDRY (klb)

NW I/O

9.7+/50

9.8+/49

1600

300

50

30

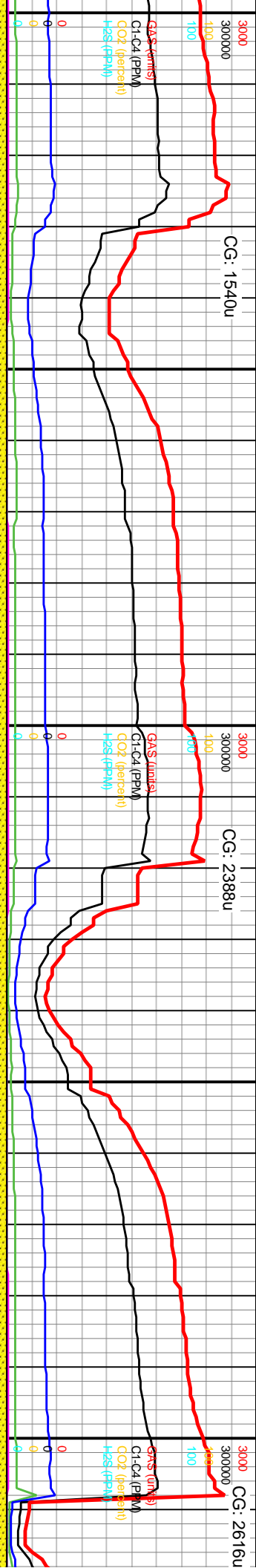
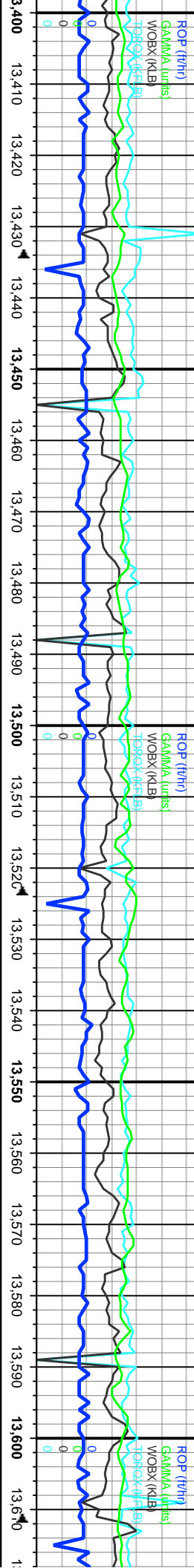
1

ROP (ft/hr)

GAMMA (units)

WOBX (klb)

TOPDRY (klb)



6000

100% SS: MED GY, SME LT GY IP, MOT IP, GRITTY TEX, FRM TO SL HRD, VF GR, SB ANG TO SB RND, W SRT, MOD TO W CONS, CALC CMT, SL SUC, SL CARB IP, SL SLTY

6000

100% SS: MED TO DK GY, GRITTY TEX, SL HRD, VF GR, SME F GR IP, SB ANG TO SB RND, W SRT, W CONS, CALC CMT, SL SUC, SL CARB IP, SL SLTY

6000

100% SS: MED

FRM, VF TO F

SRT, UNCONS

SL SLTY

MD: 13,414'

Inclination: 90.06°

Azimuth: 178.94°

TVD: 6,518.16'

VS: 7,156.54'

MD: 13,503'

Inclination: 90.09°

Azimuth: 179.71°

TVD: 6,518.04'

VS: 7,246.2'

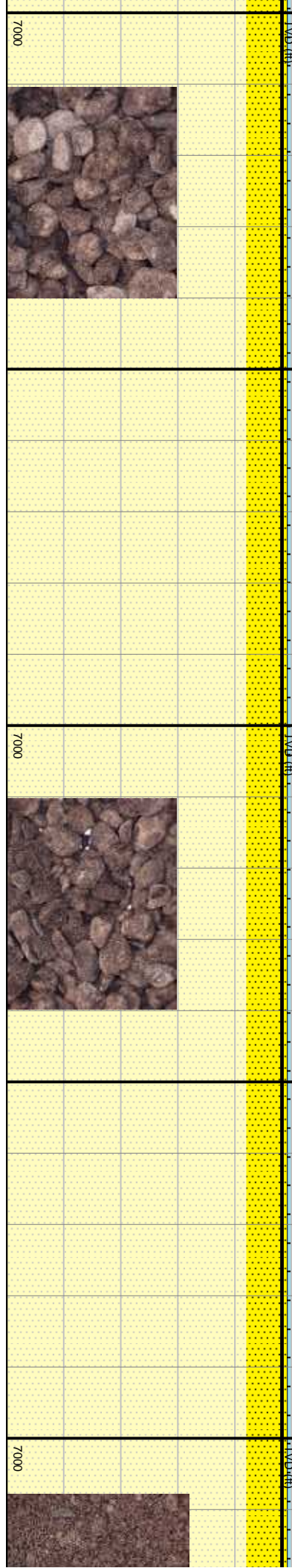
MD: 13,593'

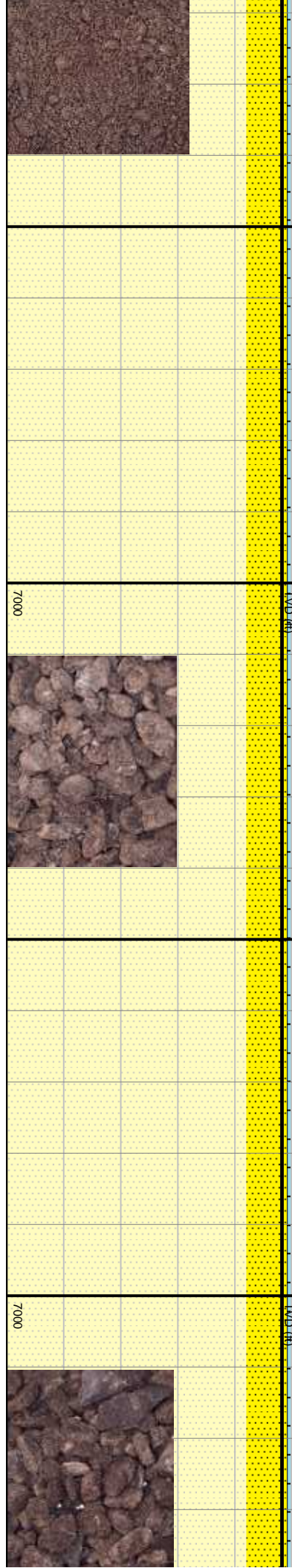
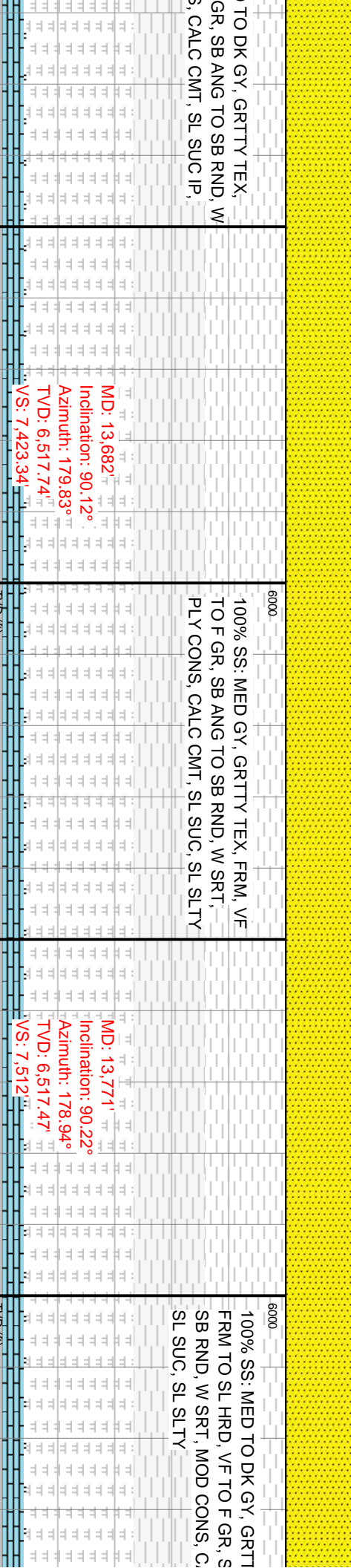
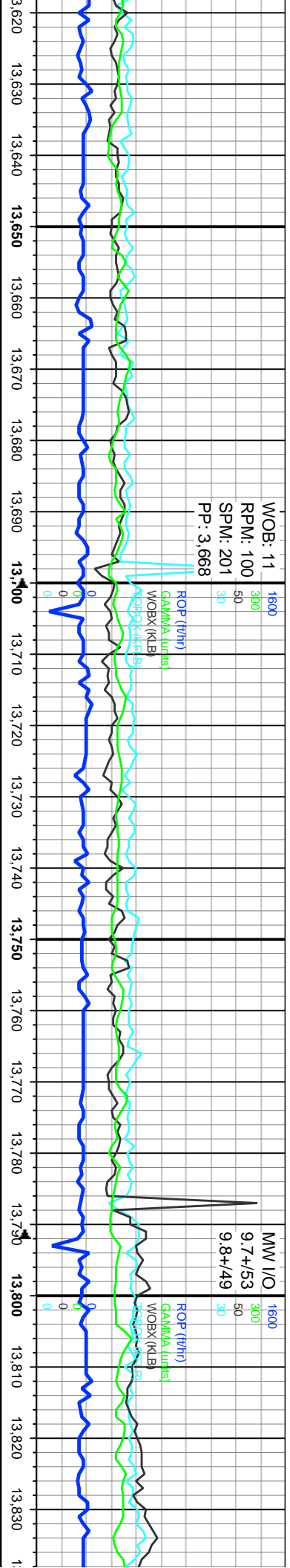
Inclination: 90.09°

Azimuth: 180.13°

TVD: 6,517.9'

VS: 7,334.78'

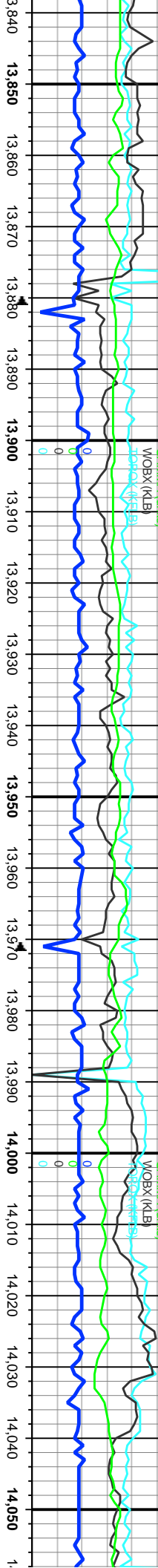






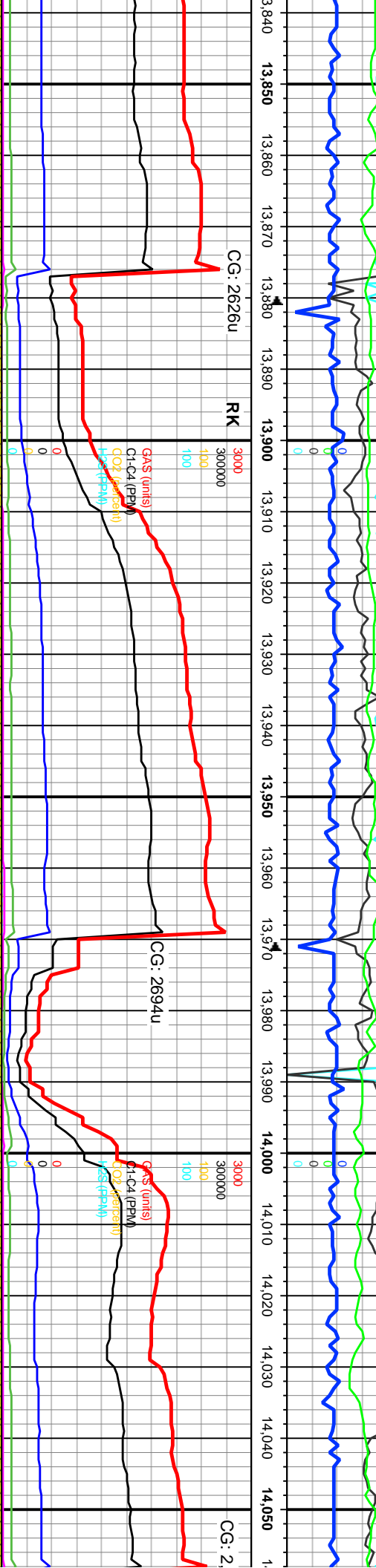
WOB: 16  
RPM: 100  
SPM: 198  
PP: 4,101

ROP (ft/h)  
GAMMA (units)  
WOBX (KLB)  
TPOX (KLB)



MW I/O  
9.7+/50  
9.9/49

ROP (ft/h)  
GAMMA (units)  
WOBX (KLB)  
TPOX (KLB)



CG: 2626u

RK

CG: 2694u

CG: 2

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

Y TEX,  
B ANG TO  
ALC CMT,

100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, VF TO F GR, SB  
ANG TO SB RND, W SRT, P TO FR CONS,  
CALC CMT, SUC, SLTY, MOD SHY IP

100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF TO F GR,  
SB ANG TO SB RND, W SRT, P TO FR  
CONS, CALC CMT, SUC, SLTY, MOD SHY  
IP

MD: 13,861'  
Inclination: 90.22°  
Azimuth: 177.5°  
TVD: 6,517.13'  
VS: 7,601.79'

MD: 13,950'  
Inclination: 89.82°  
Azimuth: 177.93°  
TVD: 6,517.1'  
VS: 7,690.63'

MD: 14,039'  
Inclination: 89.82°  
Azimuth: 176.63°  
TVD: 6,517.37'  
VS: 7,779.51'

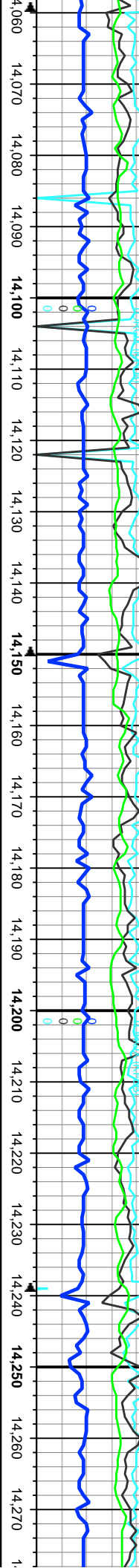
TVD (ft)

TVD (ft)



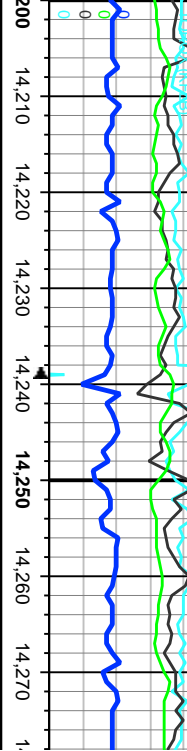
WOB: 21  
RPM: 100  
SPM: 199  
PP: 4.191

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TDRX (klb)



NW I/O  
9.7+/50  
9.9/49

ROP (ft/h)  
GAMMA (units)  
WOBX (klb)  
TDRX (klb)



465u

3000  
300000  
100  
100

BG: 2,447u

3000  
300000  
100  
100

BG: 2,748u

CG: 2,957u

GAS (units)  
C1-C4 (PPM)  
CO2 (lbperbbl)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (lbperbbl)  
H2S (PPM)

6000  
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF TO F GR,  
SB ANG TO SB RND, W SRT, W CONS,  
CALC CMT, SUC, SLTY, MOD SHY IP

6000  
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF TO F GR,  
SB ANG TO SB RND, W SRT, FR TO W  
CONS, CALC CMT, SUC, SLTY, SHY IP

MD: 14,129'  
Inclination: 89.78°  
Azimuth: 177.38°  
TVD: 6,517.69'  
VS: 7,869.42'

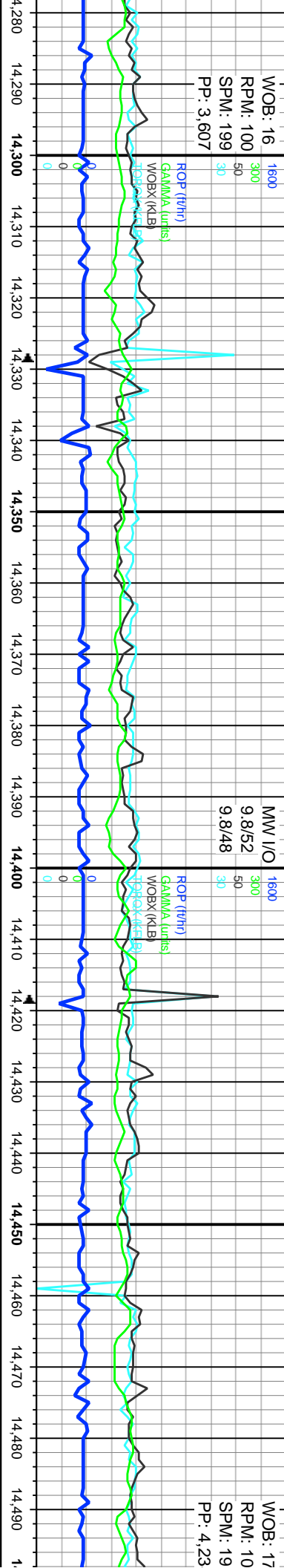
MD: 14,218'  
Inclination: 89.82°  
Azimuth: 180.23°  
TVD: 6,518'  
VS: 7,958.14'

TVD (ft)

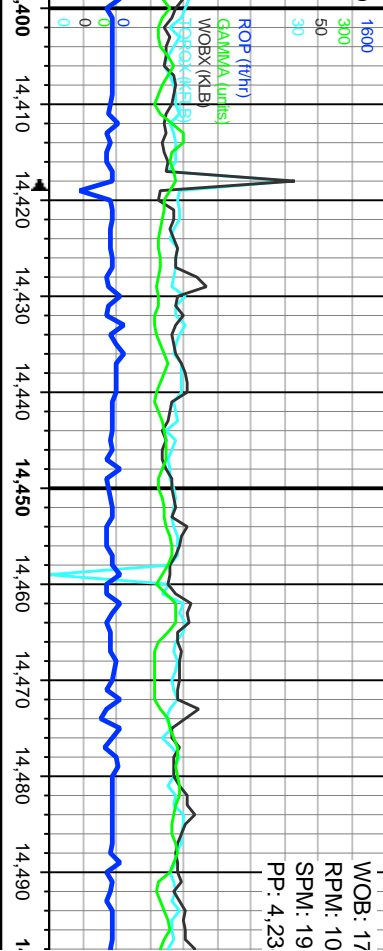
TVD (ft)



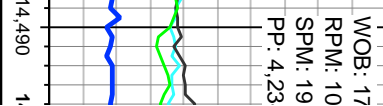
WOB: 16  
RPM: 100  
SPM: 199  
PP: 3.607



MW I/O  
9.8/52  
9.8/48



WOB: 17  
RPM: 10  
SPM: 19  
PP: 4.23



CG: 1,293u

CG: 2,441u

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

BG: 2,631u

BG: 2,690u

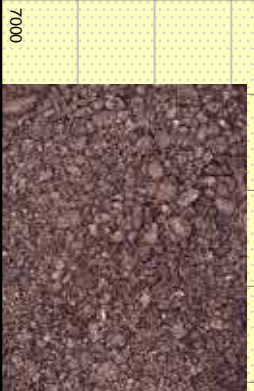
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF TO F GR,  
SB ANG TO SB RND, W SRT, FR TO W  
CONS, CALC CMT, SUC, SLTY, SHY IP

100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF TO F GR,  
SB ANG TO SB RND, W SRT, FR TO W  
CONS, CALC CMT, SUC, SLTY, SHY IP

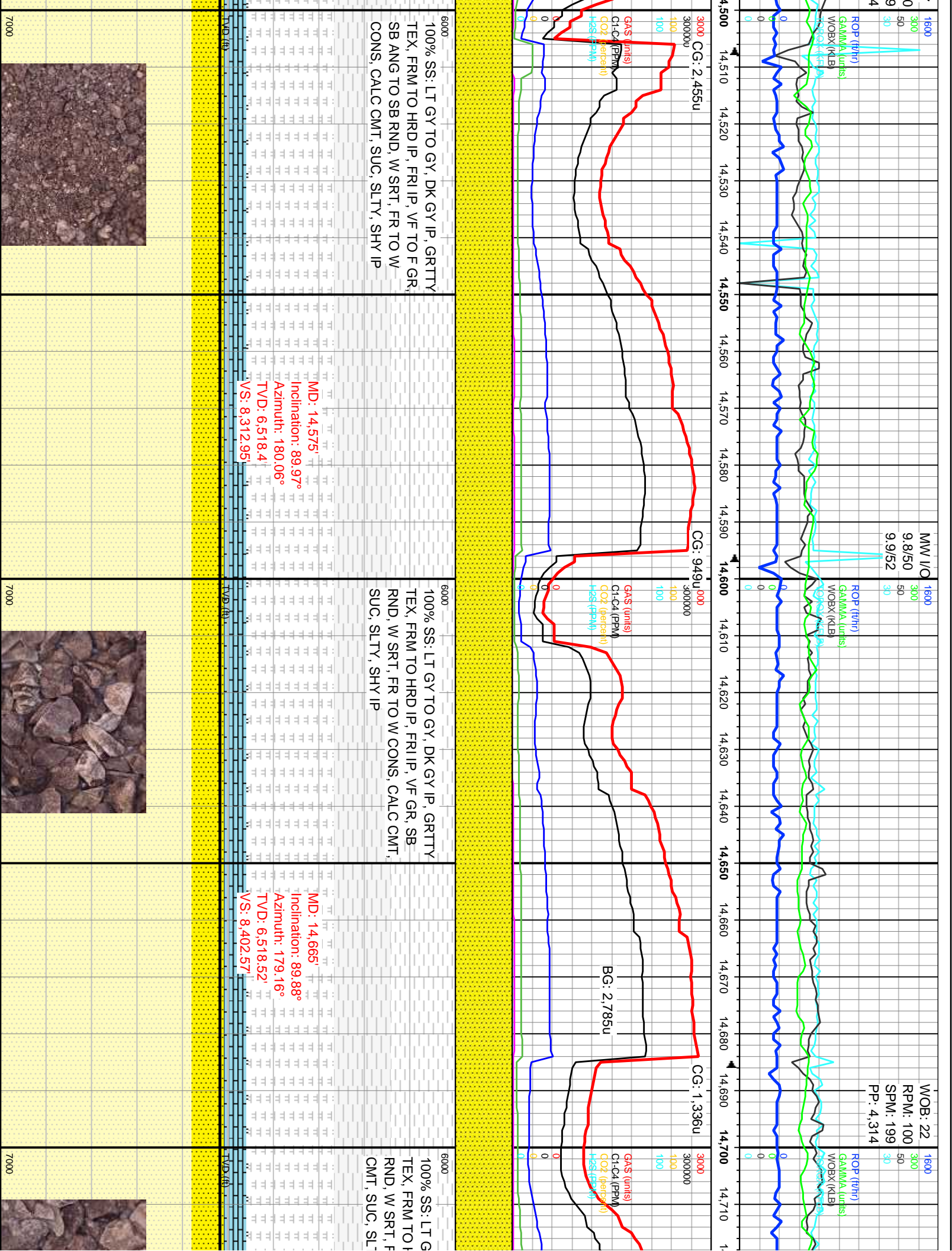
MD: 14,308'  
Inclination: 89.88°  
Azimuth: 180.91°  
TVD: 6,518.24'  
VS: 8,047.6'

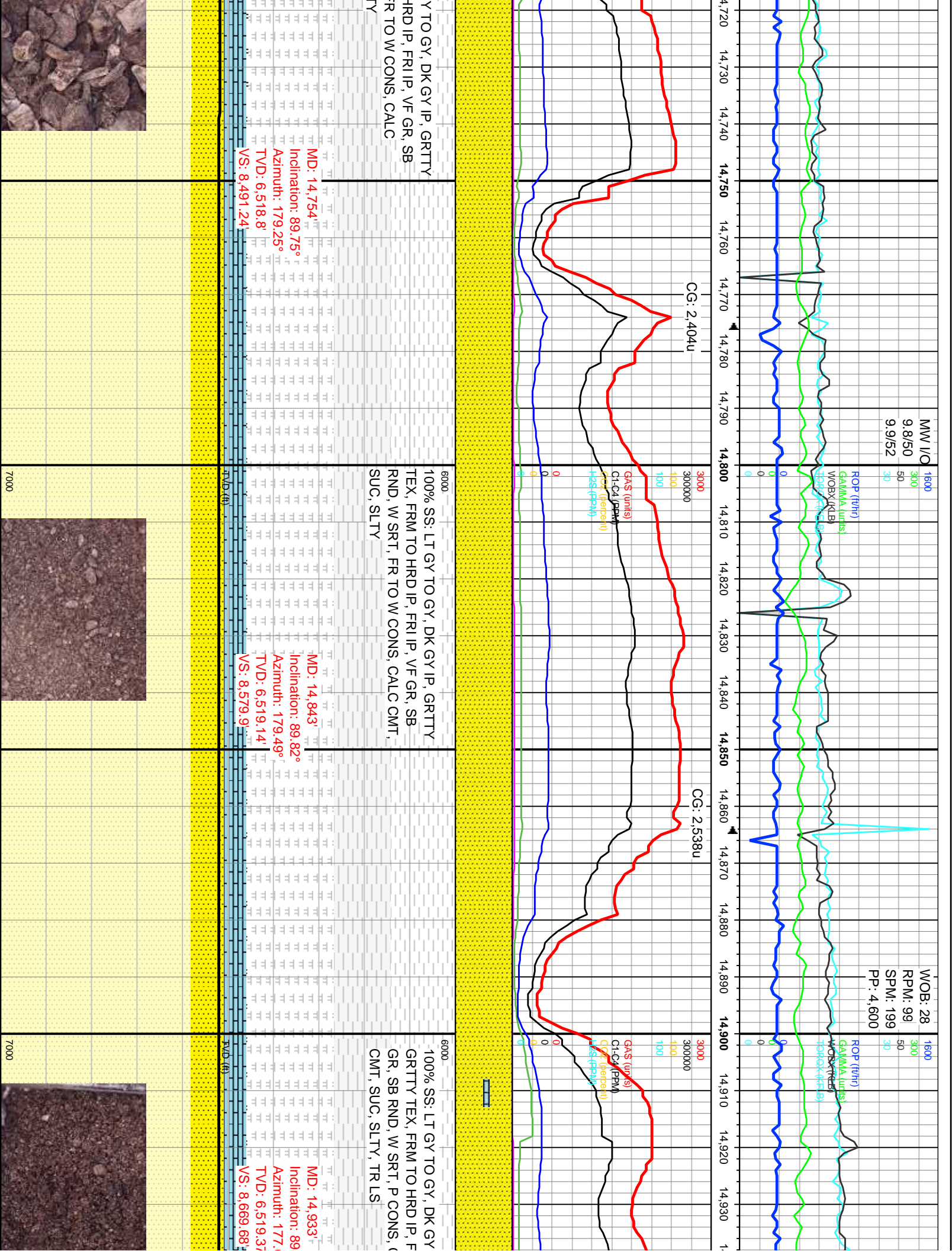
MD: 14,397'  
Inclination: 90°  
Azimuth: 180.92°  
TVD: 6,518.33'  
VS: 8,136.02'

MD: 14,486'  
Inclination: 89.97°  
Azimuth: 180.76°  
TVD: 6,518.35'  
VS: 8,224.45'



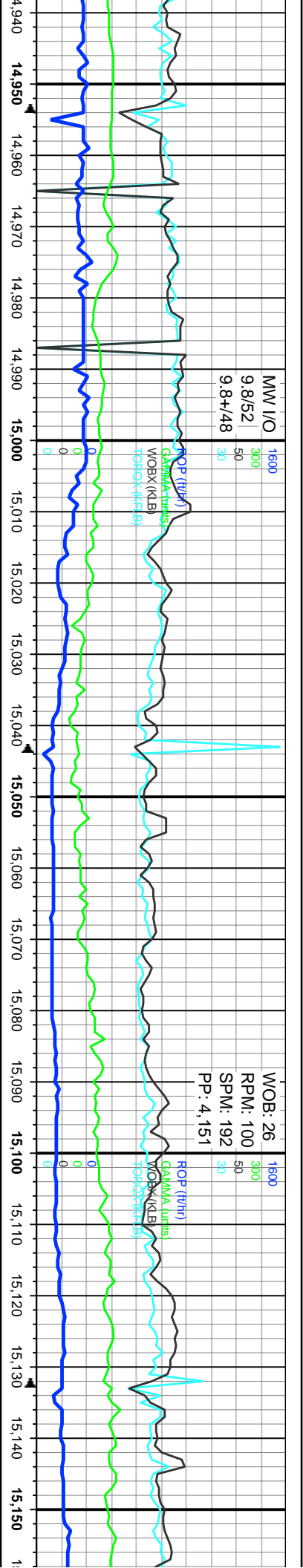






NW I/O  
9.8/52  
9.8 +/- 48

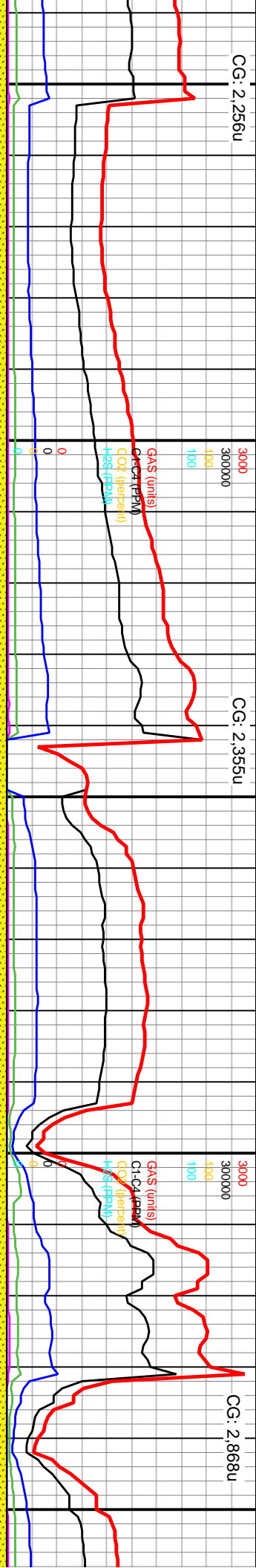
WOB: 26  
RPM: 100  
SPM: 192  
PP: 4.151



CG: 2.256u

CG: 2.355u

CG: 2.868u



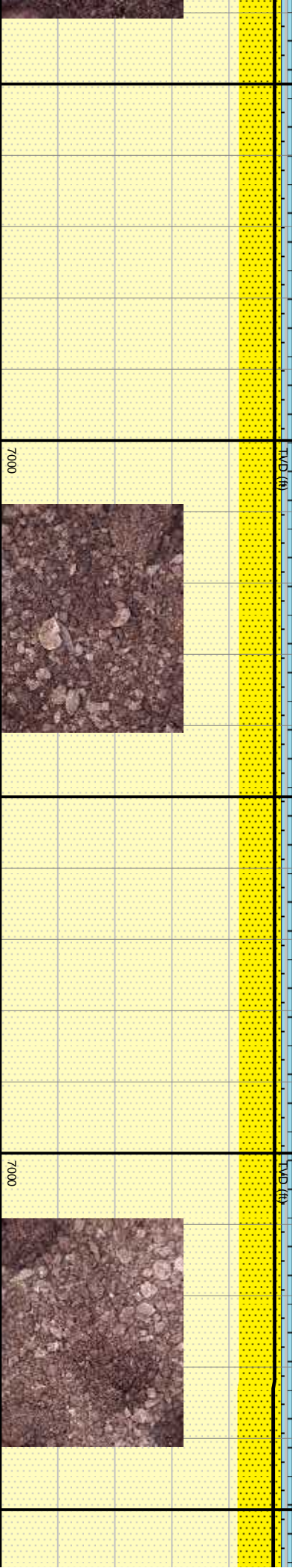
IP,  
RIIP, VF  
CALC

100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF GR, SB  
RND, W SRT, P CONS, CALC CMT, SUC,  
SLTY, SHY, TRLS

100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF GR, SB  
RND, W SRT, P CONS, CALC CMT, SUC,  
SLTY, SHY

MD: 15.022  
Inclination: 89.91°  
Azimuth: 178.55°  
TVD: 6,519.54  
VS: 8,758.52

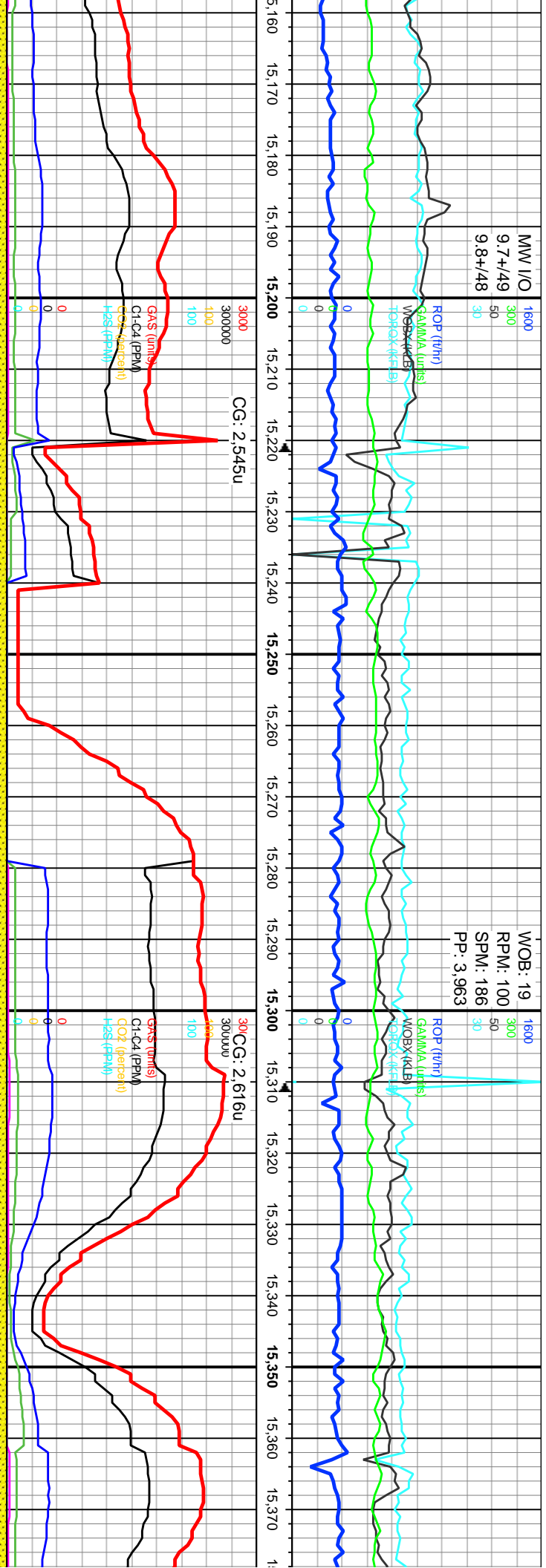
MD: 15.112  
Inclination: 88.58°  
Azimuth: 181.46°  
TVD: 6,520.72  
VS: 8,848.06





NW I/O  
9.7+/49  
9.8+/48

WOB: 19  
RPM: 100  
SPM: 186  
PP: 3.963



CG: 2.545u

CG: 2.616u

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

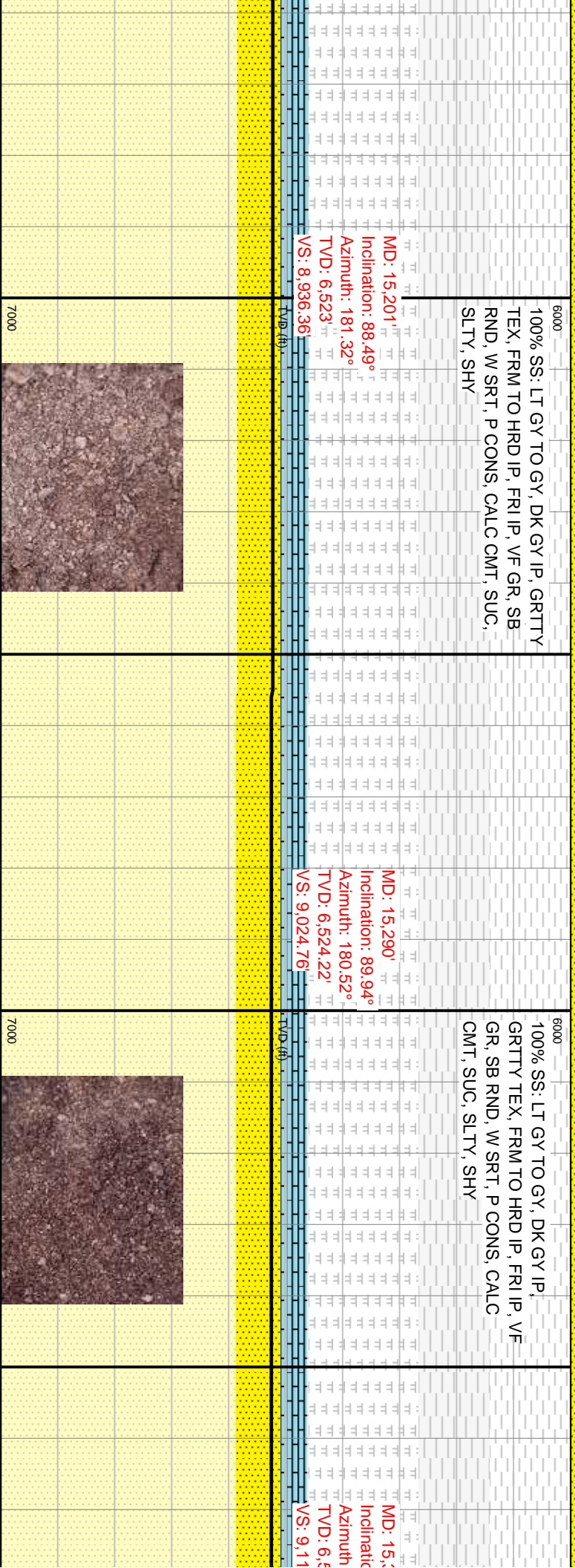
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX. FRM TO HRD IP, FRI IP, VF GR, SB  
RND, W SRT, P CONS, CALC CMT, SUC,  
SLTY, SHY

100% SS: LT GY TO GY, DK GY IP,  
GRITTY TEX. FRM TO HRD IP, FRI IP, VF  
GR, SB RND, W SRT, P CONS, CALC  
CMT, SUC, SLTY, SHY

MD: 15,201'  
Inclination: 88.49°  
Azimuth: 181.32°  
TVD: 6,523  
VS: 8,936.36

MD: 15,290'  
Inclination: 89.94°  
Azimuth: 180.52°  
TVD: 6,524.22  
VS: 9,024.76

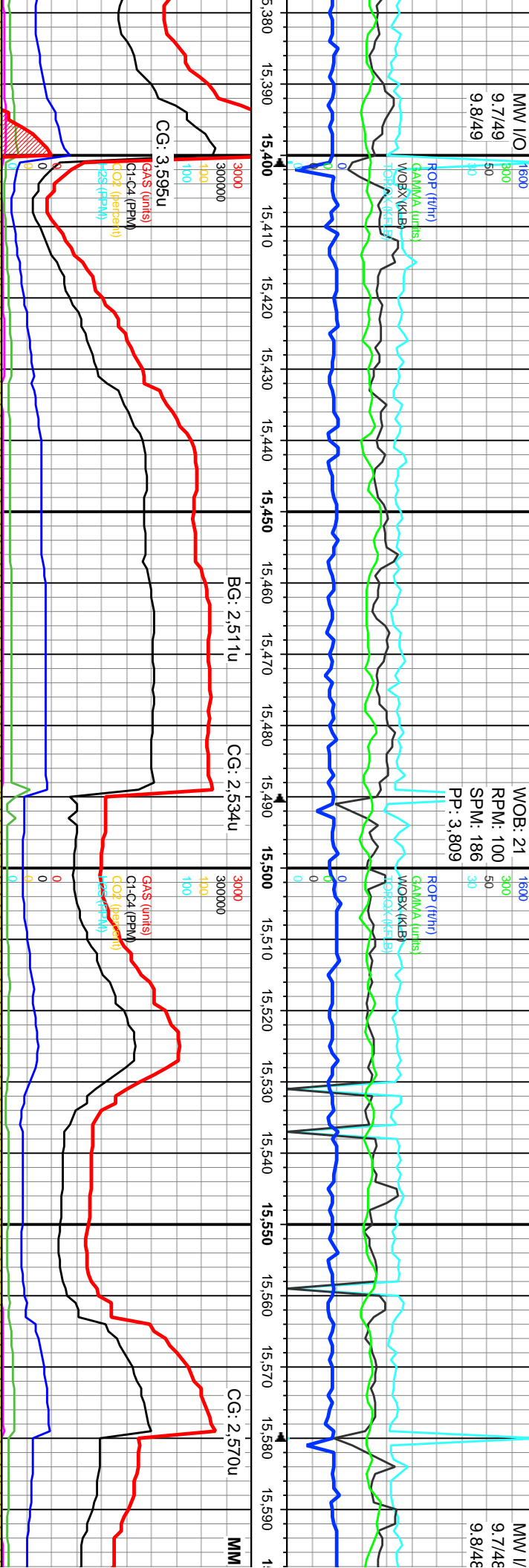
MD: 15,3  
Inclination  
Azimuth  
TVD: 6,5  
VS: 9,11



MW I/O  
9.7/49  
9.8/49

WOB: 21  
RPM: 100  
SPM: 186  
PP: 3.809

MW I/  
9.7/48  
9.8/48



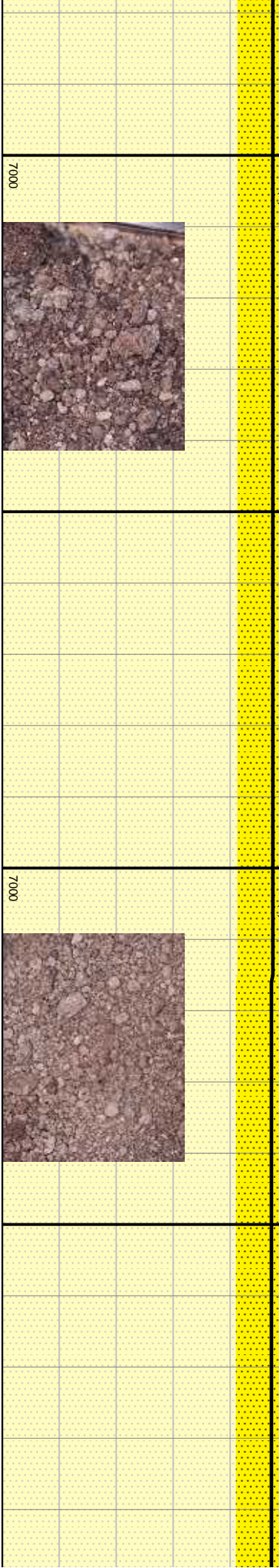
6000  
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF GR, SB  
RND, W SRT, P CONS, CALC CMT, SUC,  
SLTY, SHY

6000  
100% SS: LT GY TO GY, DK GY IP, GRITTY  
TEX, FRM TO HRD IP, FRI IP, VF GR, SB  
RND, W SRT, P CONS, CALC CMT, SUC,  
SLTY

MD: 89.32°  
Inclination: 89.32°  
Azimuth: 181.22°  
TVD: 6.525.79'  
VS: 9.202.32'

MD: 15.469°  
Inclination: 89.38°  
Azimuth: 183.21°  
TVD: 6.525.81'  
VS: 9.202.32'

MD: 15.558°  
Inclination: 89.54°  
Azimuth: 183.04°  
TVD: 6.526.65'  
VS: 9.290.27'



1600

300

50

30

WOB: 25  
RPM: 100  
SPM: 184  
PP: 4.032

1600

300

50

30

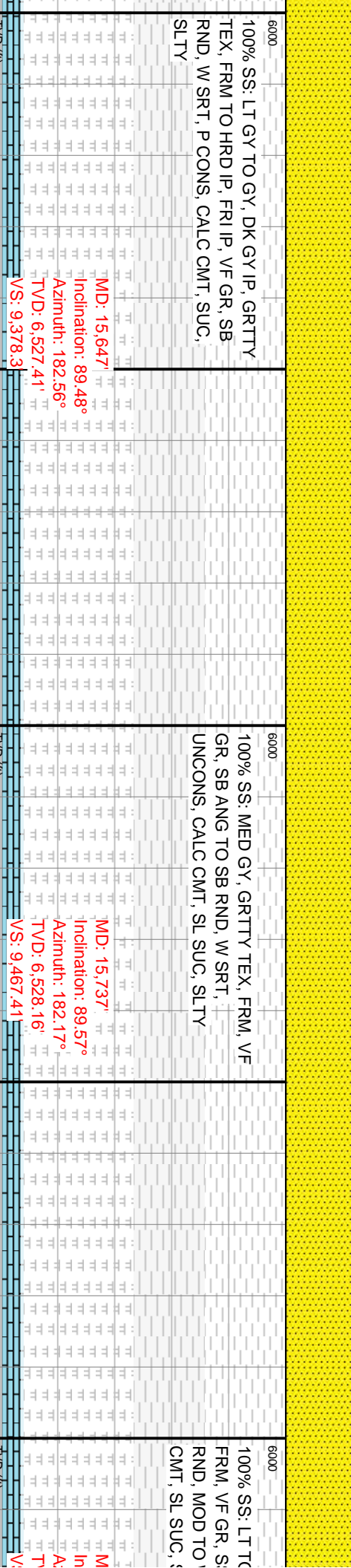
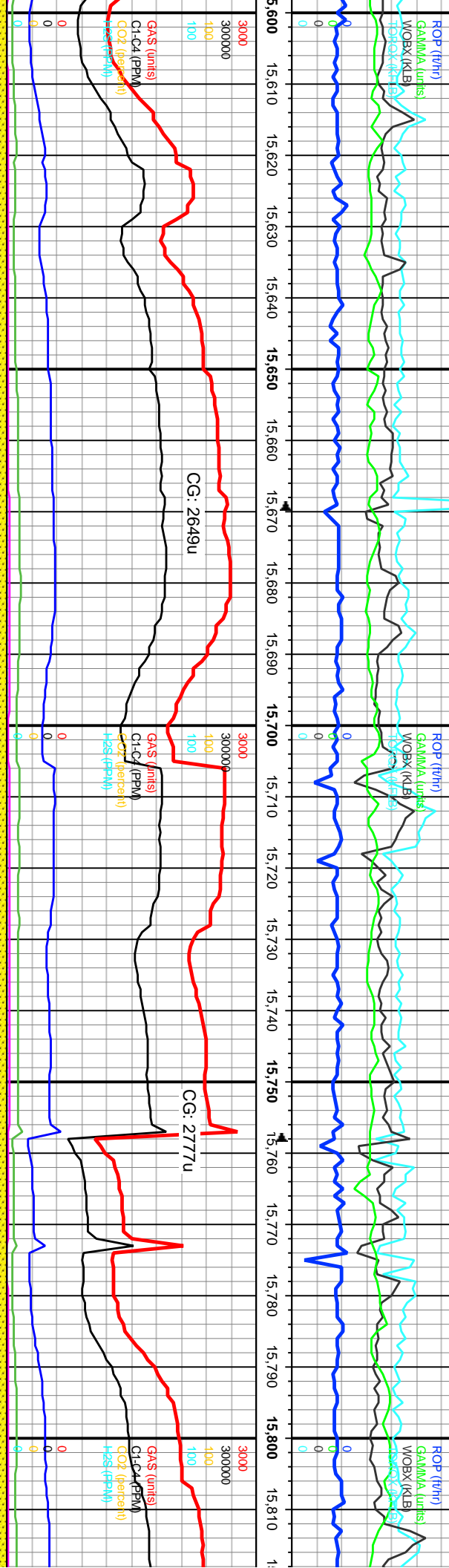
MW I/O  
9.8/48  
9.8/47

1600

300

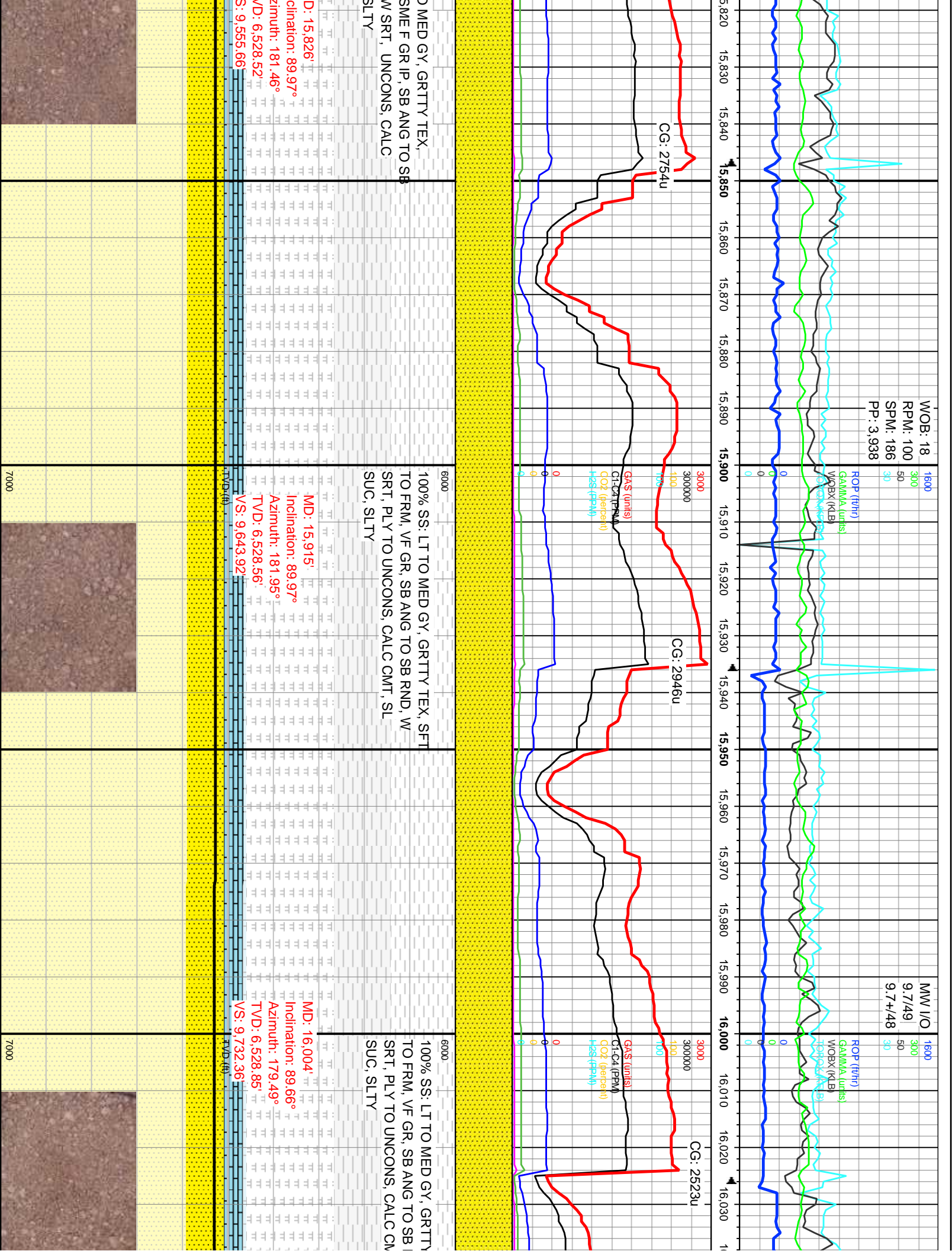
50

30

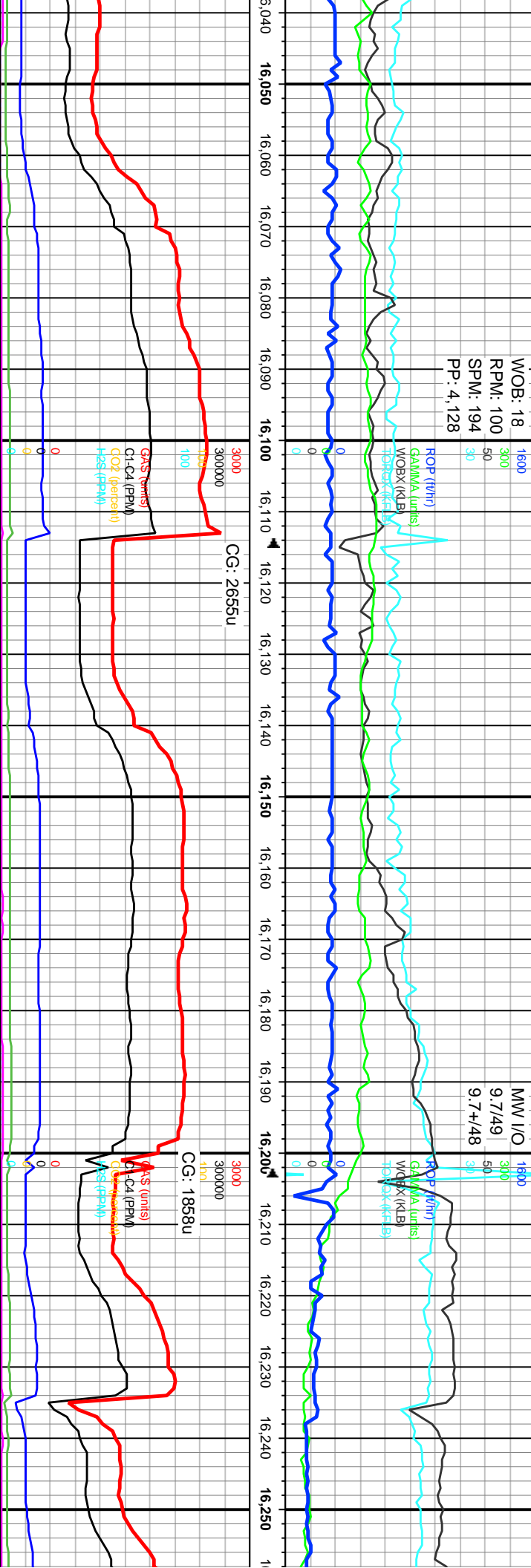


6000	100% SS: LT GY TO GY, DK GY IP, GR TTY TEX, FRM TO HRD IP, FRI IP, VF GR, SB RND, W SRT, P CONS, CALC CMT, SUC, SLTY	MD: 15.647 Inclination: 89.48° Azimuth: 182.56° TVD: 6.527.41' VS: 9.378.3	6000	100% SS: MED GY, GR TTY TEX, FRM, VF GR, SB ANG TO SB RND, W SRT, UNCONS, CALC CMT, SL SUC, SLTY	MD: 15.737 Inclination: 89.57° Azimuth: 182.17° TVD: 6.528.16' VS: 9.467.41	6000	100% SS: LT TO FRM, VF GR, S RND, MOD TO CMT, SL SUC, SLTY	MD: 15.810 Inclination: 89.57° Azimuth: 182.17° TVD: 6.528.16' VS: 9.467.41
7000			7000			7000		7000





WOB: 18  
RPM: 100  
SPM: 194  
PP: 4.128



NW I/O  
9.7/49  
9.7 +/- 48

ROP (ft/h)  
GAMA (units)  
WOB (KB)  
TDS (PPM)

CG: 1858u

GAS (units)  
C1-C4 (PPM)  
CO2 (percent)  
H2S (PPM)

100% SS: LT GY, GRITTY TEX, SFT TO FRM  
VF GR, SB RND, MOD SRT, PLY TO  
UNCONS, CALC CMT, SL SUC, SLTY

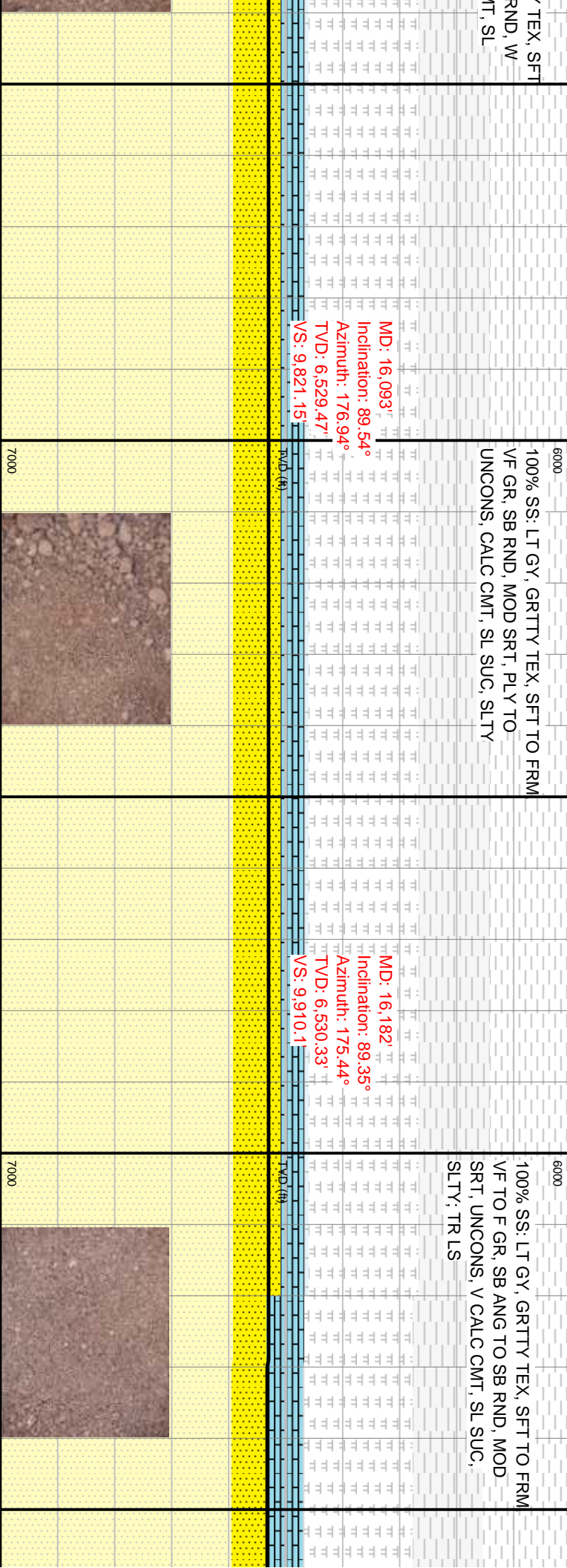
MD: 16,093'  
Inclination: 89.54°  
Azimuth: 176.94°  
TVD: 6,529.47'  
VS: 9,821.15'

TVD (ft)

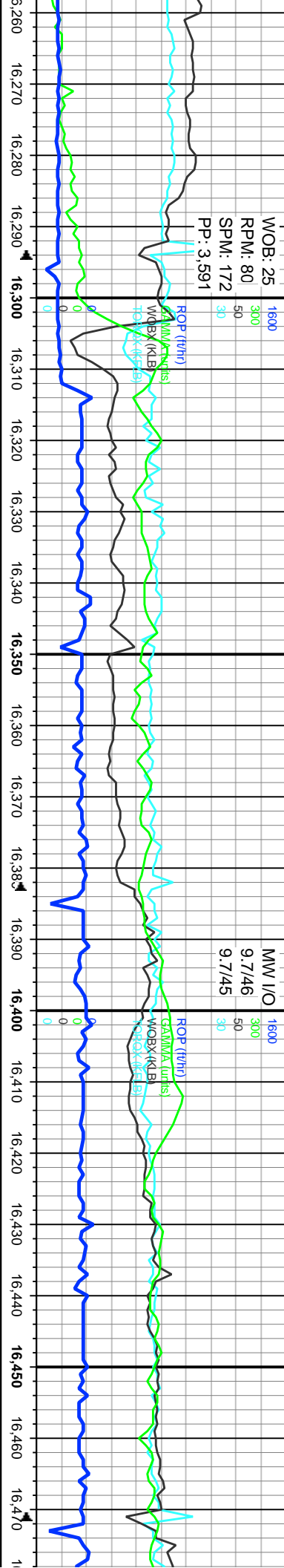
100% SS: LT GY, GRITTY TEX, SFT TO FRM  
VF TO F GR, SB ANG TO SB RND, MOD  
SRT, UNCONS, V CALC CMT, SL SUC,  
SLTY, TRLS

MD: 16,182'  
Inclination: 89.35°  
Azimuth: 175.44°  
TVD: 6,530.33'  
VS: 9,910.1'

TVD (ft)



WOB: 25  
RPM: 80  
SPM: 172  
PP: 3.591



CG: 2351u

CG: 2127u

CG: 1938u

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)  
H2O (PPM)

GAS (units)  
C1-C4 (PPM)  
H2S (PPM)  
H2O (PPM)



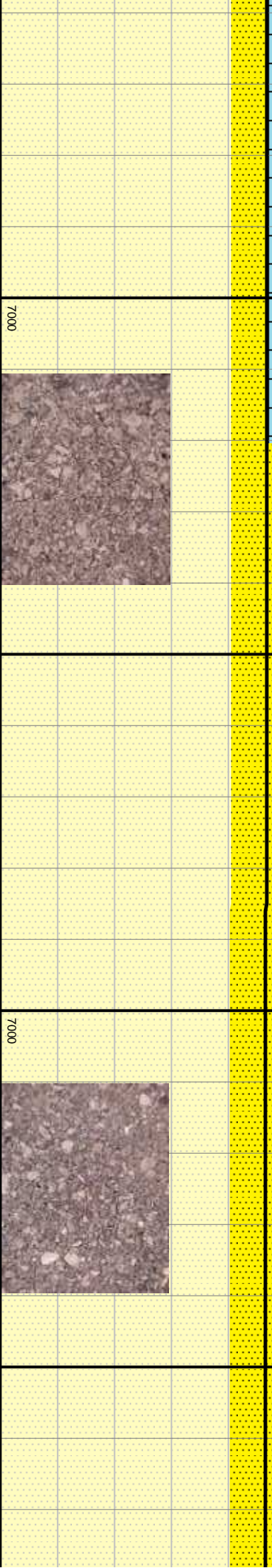
80% LS: WHT, LT GY TO GY, DULL LSTR,  
ARG, MASS, DNS, SB BLKY, MIC SUC IP,  
MIC XLN, SLTY, CALC: 20% SS, LT GY,  
GRITTY TEX, FRM, VF TO F GR, SB ANG,  
MOD SRT, PLY TO UNCONS, V CALC  
CMT, SL SUC, SLTY

90% SS, MED GY, GRITTY TEX, FRM, VF TO  
F GR, SB ANG, MOD SRT, PLY TO  
UNCONS, V CALC CMT, SL SUC, SLTY, TR  
F PYR NOD IP; 10% LS: LT GY, DULL LSTR,  
ARG, MASS, DNS, SB BLKY, MIC XLN, SLTY,  
CALC

MD: 16,272'  
Inclination: 88.43°  
Azimuth: 176.9°  
TVD: 6,532.08'  
VS: 10,000.03'

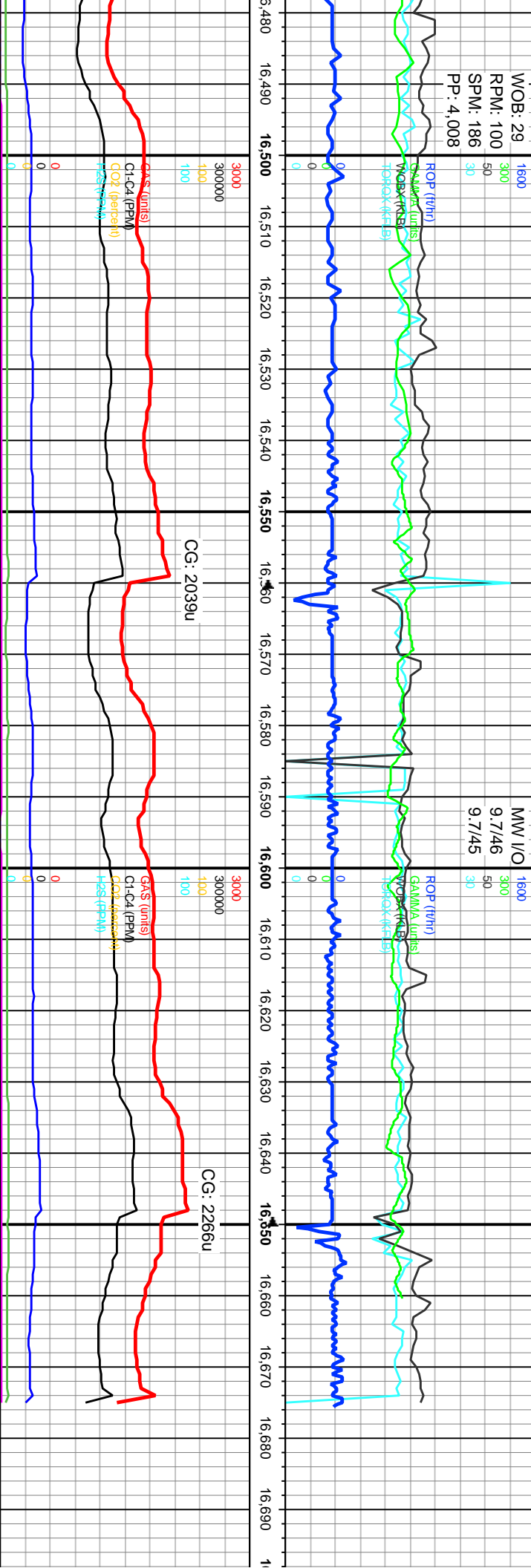
MD: 16,361'  
Inclination: 89.57°  
Azimuth: 179.25°  
TVD: 6,533.63'  
VS: 10,088.82'

MD: 16,450'  
Inclination: 89.88°  
Azimuth: 179.93°  
TVD: 6,534.06'  
VS: 10,177.45'





WOB: 29  
RPM: 100  
SPM: 186  
PP: 4.008



MW I/O  
9.7/46  
9.7/45

CG: 2039u

CG: 2266u

100% SS: LT TO MED GY, GRITTY TEX,  
FRM, VF TO F GR, SB ANG TO SB RND,  
MOD SRT, PLY TO UNCONS, V CALC CMT,  
SL SUC, SLTY: TR LS, TR SH

MD: 16,540'  
Inclination: 89.97°  
Azimuth: 179.63°  
TVD: 6,534.18'  
VS: 10,267.04'

100% SS: MED GY, GRITTY TEX, FRM, VF  
GR, SM F GR IP, SB ANG, MOD SRT, PLY  
TO UNCONS, V CALC CMT, SL SUC, SLTY:  
TR SH IP

MD: 16,629'  
Inclination: 89.97°  
Azimuth: 179.33°  
TVD: 6,534.22'  
VS: 10,355.68'

TD WELL AT 16,676' MD  
ON 6/20/2019

