Scale: 5" / 100'
Measured Depth Log

Well Name	BELL 17-2 MUDLOG		
State	IDAHO	**County**	BONNEVILLE
Country	U.S.A.	**Rig Number**	CAPSTAR 316
API Number	11-019-20015	**Field**	GRAY LAKE
Geographic Region	ROCKY MOUNTAINS	**Drilling Completed**	TBD
Spud Date	11/5/2018		
Surface Coordinates	2088'FNL, 245' FWL, SEC. 17, T3S, R43E		
Bottom Hole Coordinates	2215 FNL, 734' FWL, SEC. 17, T3S, R43E		
Ground Elevation	6,375'	**K.B. Elevation**	6,388'
Logged Interval	340' **To** TBD	**Total Depth**	TBD
Formation	WAYAN, CRETACEOUS GANNET, LOWER GANNETT GROUP		
Type of Drilling Fluid	WBM		

Operator

Company BHI/CPC Minerals, LLC

Address 826 SOUTH 1500 EAST
VERNAL, UT 84078

Geologist

Name ADAM K. JOHNSON, JAKE FALKENSTEIN

Company FIELD GEO SERVICES, INC.

Address 533 BOGART LANE, UNIT A
GRAND JUNCTION, CO 81505
(970) 424-5162 OFFICE

Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

FieldGeo SERVICES

Rock Types

- UNKNOWN
- ANHYDRITE
- GYPSUM
- SALT
- SIDERITE or LIMONITE
- LIMESTONE
- DOLOMITE
- CHERT
- COAL
- MARLSTONE
- CLAYSTONE
- SHALE
- SHALE GRAY
- SHALE COLORED
- SILTSTONE
- SANDSTONE
- CONGLOMERATE
- BRECCIA
- TILL
- BENTONITE
- TUFF
- IGNEOUS
- METAMORPHIC
- CEMENT
- Chalk

Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHOIPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA
- FOSSIL
- GASTROPOD
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

- ANHYDRITIC
- ARGILLACEOUS
- ARGILLITE GRAIN
- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CALCAREOUS
- CARBONACEOUS FLAKES
- CHTDK
- CHTLT
- COAL - THIN BEDS
- DOLOMITIC
- FELDSPAR
- FERRUGINOUS PELLET
- FERRUGINOUS
- GLAUCONITE
- GYPSIFEROUS
- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY
- TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (CALC) STRG
- MARLSTONE (DOL) STRG
- SANDSTONE STRINGER
- SHALE STRINGER
- SILTSTONE STRINGER

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- EARTHY
- FENESTRAL
- FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

Engineering

- BIT
- CASING
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL
- FAULT
- FORMATION TOP
- GAS SHOW
- MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS
- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT

Rounding

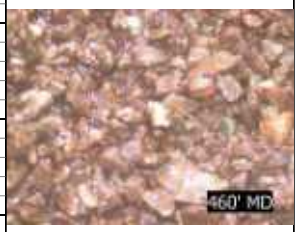
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL

DEPTH	ROP / WOB / GAMMA	SLIDE / ROTATE	REMARKS	TOTAL GAS / C1 / C4 / C7 / He / CO2	IMAGES	LITHOLOGY DESCRIPTIO...	% LITHOLOGY	SHOW VALUES	DEPTH
310	0 ROP (ft/hr) 300 0 WOB (klbs) 25 0 GAMMA (API) 200		**FGS On Location and Rigged Up on 11/05/18.** **Conductor Set @ 60'**	TOTAL GAS (Units) 0.01 0.1 1 10 100 1,000 C1 (PPM) 1 10 100 1,000 1E4 1E5 1E6 C4 (PPM) 1 10 100 1,000 1E4 1E5 1E6 C7 (PPM) 1 10 100 1,000 1E4 1E5 1E6 He (PPM) 0.001 0.01 0.1 1 10 100 1000 CO2 (ppm) 1 10 100 1,000 1E4 1E5 1E6					
320									
330			**Bit Data** **Bit #: 1** **Mfg: ULTERRA** **Type: U616M** **Size: 12.25"** **S/N: 3623...** **Depth In: 79'**						
340				**Started logging with DQMS #1011 @ 07:54 on 11/06/2018**					
350									350
360			**MD: 365'** **INC: 0°** **AZM: 295°** **TVD: 365'** **VS: -2'**			340' - 400' MD: SLTST: modRdBn, fri to scat sft, v/f grn, w srtd, calc cmt, scat imbd CAL, free CAL, tt por. Tr SS: medltGy - ltBn, w cons med grn, sb ang grns, w srtd, calc cmt, tt por. Nfsoc.		
370									
380									
390									
400	0 ROP (ft/hr) 300 0 WOB (klbs) 25 0 GAMMA (API) 200		**WOB: 8** **RPM: 75** **SPM: 108/101** **PP: 1,676** **GPM: 768**	TOTAL GAS (Units) 0.01 0.1 1 10 100 1,000 C1 (PPM) 1 10 100 1,000 1E4 1E5 1E6 C4 (PPM) 1 10 100 1,000 1E4 1E5 1E6 C7 (PPM) 1 10 100 1,000 1E4 1E5 1E6 He (PPM) 0.001 0.01 0.1 1 10 100 1000 CO2 (ppm) 1 10 100 1,000 1E4 1E5 1E6					400
410									
420						400' - 460' MD: SLTST: modRdBn - dull rd, predy fri, v/f grn, v w srtd, calc cmt, occly f imbd CAL frags, scat free CAL, tt por. SS: medltGy ltBn, mod w cons, med - med f grn sb ang grns, w srtd, calc cmt, tt por. Nfsoc.		
430				**Test Gas**					
440									
450			**MD: 457'** **INC: 0°** **AZM: 297°** **TVD: 457'** **VS: -3'**						450
460									
470									
480						460' - 520' MD: SLTST: Med dk rd - modRdBn, fri, v/f - f grn, v w srtd, calc cmt, occly f imbd CAL frags,			
490									

Gas Lag
Depth: 500'
Strokes: 602
Minutes: 3.01

MD: 547'
INC: 1°
AZM: 40°
TVD: 547'
VS: -3'

WOB: 15
RPM: 80
SPM: 100/103
PP: 1,938
GPM: 745

MD: 640'
INC: 1°
AZM: 57°
TVD: 640'
VS: -2'

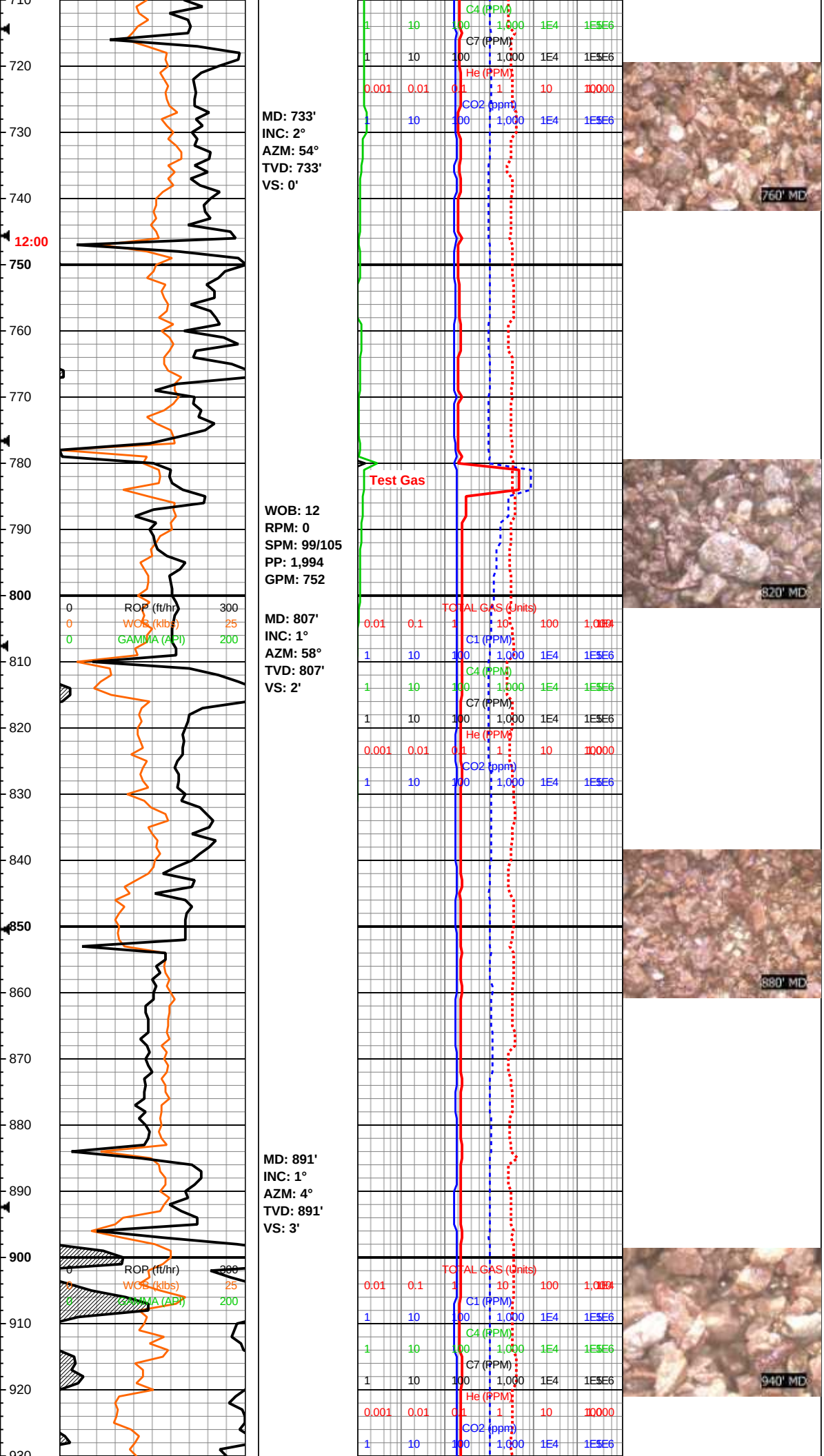
Test Gas

scat free CAL, tt por. SS: medltGy, ltBn, mod w cons, med - med f grn, sb ang grns, w srtd, calc cmt, tt por. Nfsoc.

520' - 580' MD: SLTST: Med dk rd - modRdBn, fri - sl sft ip, v f grn, w srtd, calc cmt, scat f imbd CAL frags, occ free CAL, predy tt por. SS: medltGy - ltBn, mod w cons, med - med f grn, sb ang grns, w srtd, calc cmt, tt por. Nfsoc.

580' - 640' MD: SLTST: Mod rd brn to Med dk rd, fri - sl sft ip, v f grn, w srtd, calc cmt, scat f imbd CAL frags, occ free CAL, predy tt por. SS: medltGy - ltBn, mod w cons, med - med f grn, sb ang grns, w srtd, calc cmt, tt por. Nfsoc.

640' - 700' MD: SLTST: Mod rd brn to Med dk rd, fri, sft ip, occly sl frm, v f grn, w srtd, calc cmt, rr f imbd CAL frag, free cal, predy tt por. Nfsoc. AA.



700' - 760' MD: SLTST: Predy Med dk rd, fri - sl sft, tr sl frm ip, v f grn, w srtd, calc cmt, tr f imbd CAL frag, free cal. Nfsoc. Tr SS: lt brn, v f gn.

760' - 820' MD: SLTST: Mauve to l purp rd, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, free cal. Nfsoc.SS: lt brn/tan to lt gy, v f gn.

820' - 880' MD: SLTST: Mod red brn to sl Mauve ip, calc cmt, tr f imbd CAL frag, free cal. Nfsoc. SS lt brn/tan to lt gy, med f - v f gn.

880' - 940' MD: SLTST: Predy brn rd, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, free cal. Nfsoc.SS: lt brn/tan to lt gy, v f gn.

940
950
960
970
980
990
1,000
1,010
1,020
1,030
1,040
1,050
1,060
1,070
1,080
1,090
1,100
1,110
1,120
1,130
1,140
1,150

MD: 978'
INC: 0°
AZM: 140°
TVD: 978'
VS: 3'

WOB: 14
RPM: 77
SPM: 98/106
PP: 2,035
GPM: 753

Gas Lag Depth: 1,000'
Strokes: 1,243
Minutes: 6,022

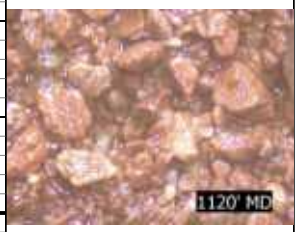
0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

940' - 1000' MD: SLTST: ModrdBn to occly Mauve, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, occly free cal. Nfsoc. SS: lt brn/tan to lt gy, v f gn.

1000' - 1060' MD: SLTST: Predy rdBn, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, free cal. Nfsoc. SS: lt brn/tan to scat pnk, med f to v f gn, mod w srt, sb ang to sb rnd grns.

MD: 1,064'
INC: 0°
AZM: 120°
TVD: 1,064'
VS: 3'



1060' - 1120' MD: SLTST: Predy ModrdBn, calc cmt, occ imbd rock frags ip, imbd CAL frag, free cal. Nfsoc. SS: V lt brn/tan to v lt rd/pnk, med f to f gn, mod w srt, sb ang to sb rnd grns.

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

MD: 1,151'
INC: 1°

1120' - 1180' MD: SLTST: Predy ModrdBn, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, free cal. Nfsoc. SS: lt brn/tan to scat

AZM: 96°
TVD: 1,151'
VS: 4'

WOB: 17
RPM: 74
SPM: 108/99
PP: 2,061
GPM: 762

MD: 1,235'
INC: 0°
AZM: 356°
TVD: 1,235'
VS: 5'

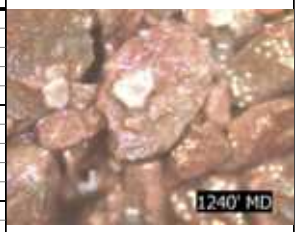
MD: 1,321'
INC: 0°
AZM: 335°
TVD: 1,321'
VS: 4'

18:00

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

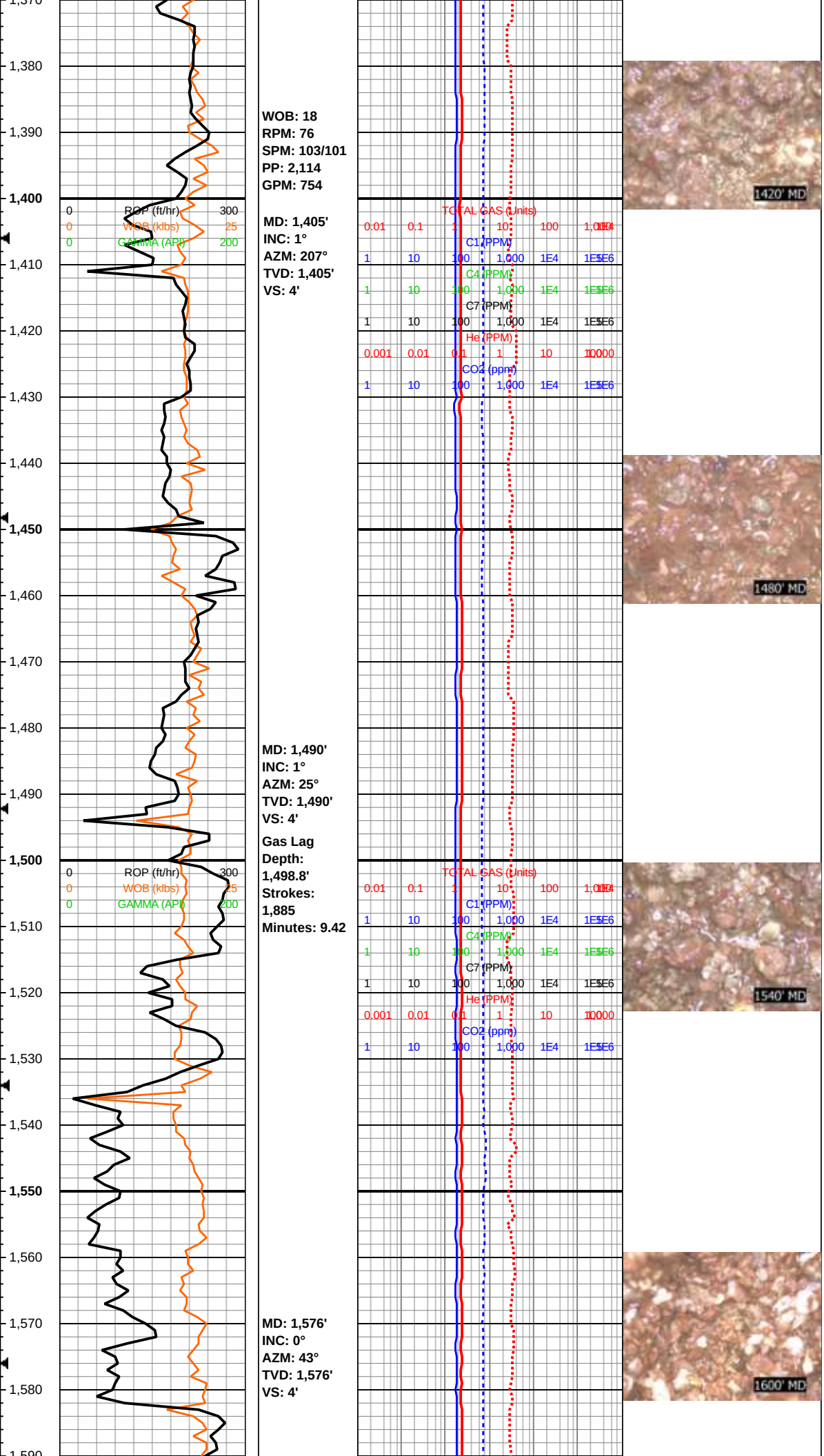
cal. Nfsoc. SS: lt brn/tan to scat pnk, med f to v f gn, mod w srt, sb ang to sb rnd grns.



1180' - 1240' MD: SLTST: Dk - ModrdBn, calc cmt, occ imbd rock frags ip, scat f imbd CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to sca pnk, med f to v f gn, mod w srt, sb ang to sb rnd grns.

1240' - 1300' MD: SLTST: Mod - mod lt rd Brn, calc cmt, scat f imbd CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to scat pnk, med f to v f gr mod w srt, sb ang to sb rnd grns.

1300' - 1360' MD: SLTST: Mod - lt rd Brn, calc cmt, scat f imbd CAL frag, tr free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk, med to v f gn, mod w srt, sb rnd to sb ang grns.



WOB: 18
RPM: 76
SPM: 103/101
PP: 2,114
GPM: 754

MD: 1,405'
INC: 1°
AZM: 207°
TVD: 1,405'
VS: 4'

MD: 1,490'
INC: 1°
AZM: 25°
TVD: 1,490'
VS: 4'

Gas Lag Depth: 1,498.8'
Strokes: 1,885
Minutes: 9.42

MD: 1,576'
INC: 0°
AZM: 43°
TVD: 1,576'
VS: 4'

1360' - 1420' MD: SLTST: Med gy - Mod - lt rd Brn, calc cmt, scat f imbd CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk, v f gn, mod w srt, sb rnd to sb ang grns.

1420' - 1480' MD: SLTST: Predy brn rd, calc cmt, occ imbd rock frags ip,, free cal. Nfsoc. SS: lt brn/tan to lt gy, v f gn, sb rnd to sb ang grns.

1480' - 1540' MD: SLTST: Mod - lt rd Brn - med gy, calc cmt, scat f imbd CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk, v f gn - f gn, mod w srt, sb rnd to sb ang.

1560' - 1600' MD: SLTST: Mod - lt red Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy, v f gn - f gn, mod w srt, sb rnd to sb ang.

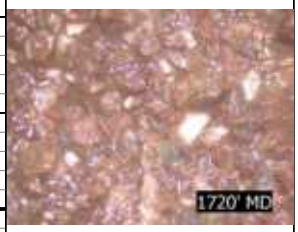
WOB: 22
RPM: 74
SPM: 105/102
PP: 2,180
GPM: 762

MD: 1,662'
INC: 1°
AZM: 50°
TVD: 1,662'
VS: 5'

MD: 1,747'
INC: 1°
AZM: 58°
TVD: 1,747'
VS: 5'

WOB: 13
RPM: 0
SPM: 104/104
PP: 2,114
GPM: 768

1600' - 1660' MD: SLTST: Med gy - red/Brn, calc cmt, scat f imbd CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk, v f gn - f gn, mod w srt, sb rnd to sb ang.



1660' - 1720' MD: SLTST: Predy rdBn, calc cmt, occ imbd rock frags ip, tr f imbd CAL frag, free cal. Nfsoc. SS: lt brn/tan to scat pnk, med f to v f gn, mod w srt, sb ang to sb rnd grns.

1720' - 1780' MD: SLTST: Mod red/Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn, v f gn - f gn, mod w srt, sb rnd to sb ang.

1780' - 1840' MD: SLTST: Med gy - red/Brn, calc cmt, scat f imbd

11/7/18

MD: 1,832'
INC: 1°
AZM: 121°
TVD: 1,832'
VS: 6'

MD: 1,917'
INC: 1°
AZM: 151°
TVD: 1,917'
VS: 7'

MD: 1,995'
INC: 2°
AZM: 136°
TVD: 1,995'
VS: 9'

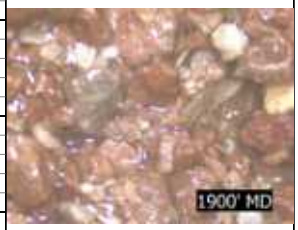
WOB: 19
RPM: 73
SPM: 103/105
PP: 2,239
GPM: 769

Gas Lag Depth: 2,000'
Strokes: 2,526
Minutes: 12.63

Surface casing TD of 2,038' MD reached @ 02:57 on 11/07/2018.

Bit Data
Bit #: 2

CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy, v f gn - f gn, mod w srt, sb ang to sb rnd.



1840' - 1900' MD: SLTST: Mod red/Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to occ lt gn, v f gn - f gn, mod w srt, sb ang to sb rnd.

1900' - 1960' MD: SLTST: Mod red/Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to occ lt yel, v f gn - f gn, mod w srt, sb ang to sb rnd.

1960' - 2020' MD: SLTST: Pred rd Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to yel/gn, v f gn - gn, mod w srt, sb rnd to sb ang.

30' Samples

2038' BTMS UP: MD: SLTST: Pred rd Brn - med gy, calc cmt, scat f CAL frag, tr free cal. Nfsoc. SS: Med lt gy /tan to med gy to yel/gn, v f gn, mod w srt, sb rnd to

11/8/18

MN DEPTH

Bit #: 2
Mfg: ULTERRA
Type: 616
Size: 8.75"
S/N: 345934
Depth In: 2,038'

Surface casing set at 2,036' MD.

Resumed Drilling @ 22:14 MST on 11/08/2018

MD: 2,087'
INC: 2°
AZM: 128°
TVD: 2,087'
VS: 11'

MW: 8.45 ppg
VIS: 30 sec/L

MD: 2,172'
INC: 2°
AZM: 97°
TVD: 2,172'
VS: 14'

WOB: 11
RPM: 77
SPM: 122
PP: 927
GPM: 451

205u

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000

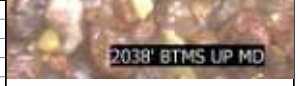
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6

C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6

C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6

He (PPM)
0.001 0.01 0.1 1 10 100

CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6



sb ang.

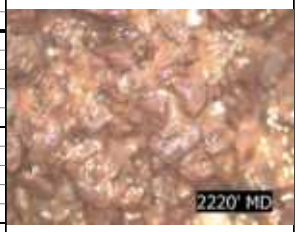
2038' - 2070' MD: SLTST: Brn - lt red - med gy, calc cmt, scat f CAL frag, tr imbd cal, tr free cal. Nfsoc. SS: Med lt gy /tan to med gy to yel/gn, v f gn, mod w srt, sb rnd to sb ang.

2070' - 2100' MD: SLTST: Brn - rd - med gy, calc cmt, tr imbd cal, tr free cal. Nfsoc. SS: Med gy /tan to med gy to wh, v f - f gn, mod w srt, sb rnd to sb ang.

2100' - 2130' MD: SLTST: Brn - rd - med gy, calc cmt, tr imbd cal, tr free cal. Nfsoc. SS: Med gy /tan to med gy to off wh to occ lt gn, v f - f gn, mod w srt, sb rnd to sb ang.

2130' - 2160' MD: SLTST: Brn - rd - dk/med gy, calc cmt, tr imbd cal, tr free cal. Nfsoc. SS: Med gy /tan to med gy to off wh to occ lt gn, v f f gn, mod w srt, sb rnd to sb ang.

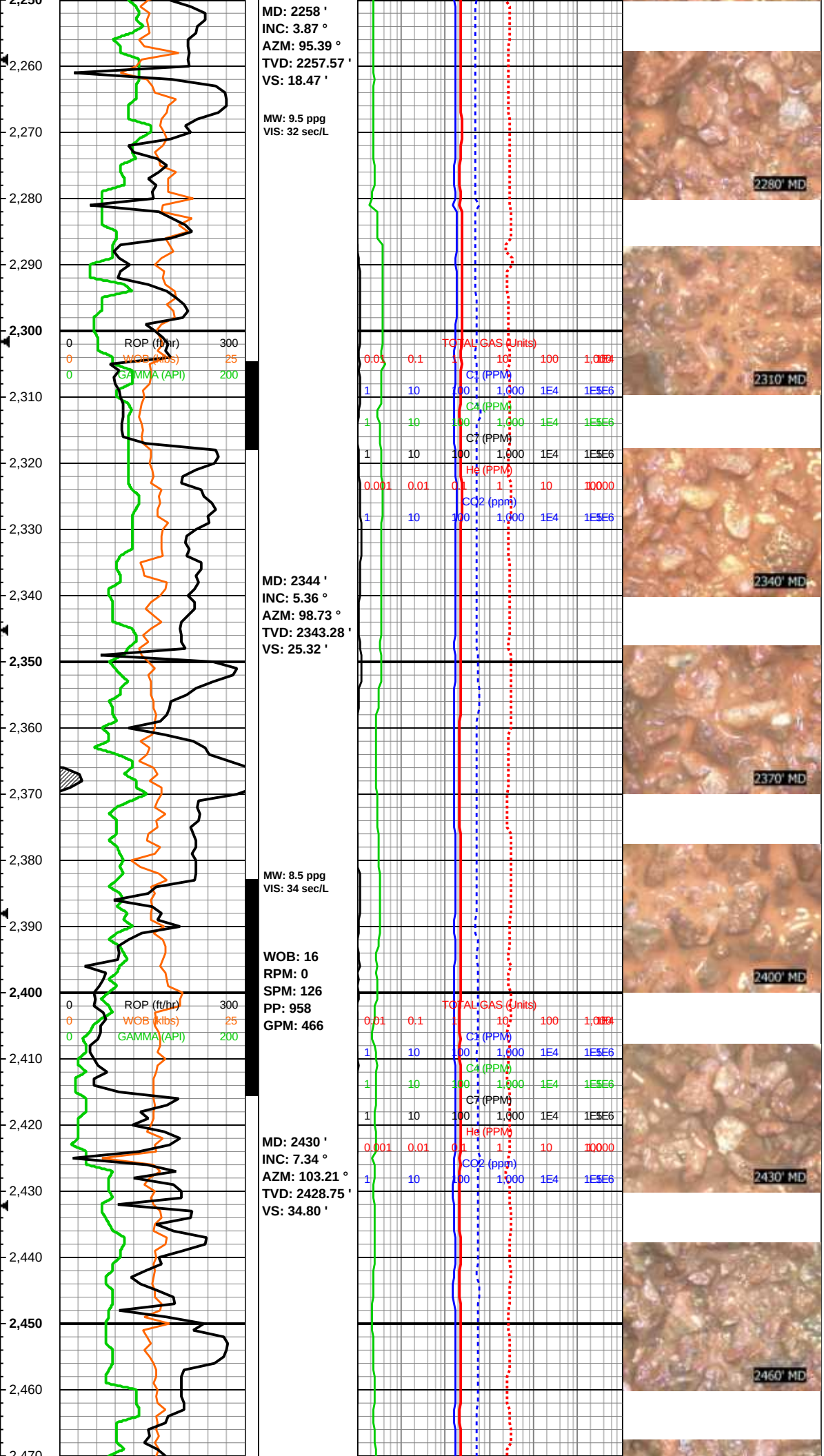
2160' - 2190' MD: SLTST: Dk/med gy - Brn - rd, calc cmt, tr imbd cal, tr free cal. Nfsoc. SS: Med gy /tan to med gy to off wh to occ lt gn, v f f gn, mod w srt, sb rnd to sb ang.



2190' - 2220' MD: SLTST: Dk/med gy - Brn - rd, calc cmt, tr free cal. Nfsoc. SS: Med gy /tan to med gy to off wh to occ lt gn, v f - f gn, mod w srt, sb rnd to sb ang.

2220' - 2250' MD: SLTST: Dk/med gy - Brn - rd, calc cmt, tr imbd cal, tr free cal. Nfsoc. SS: Med gy /tan med/dk gy - occ lt gn, v f gn, w - mod w srt, sb rnd to sb ang.

11/9/18



2250' - 2280' MD: SLTST: Brn - Dk/med gy - rd, calc cmt, tr free cal flks. Nfsoc. SS: Med gy /tan - med/dk gy - occ lt gn, v f gn, w - mod w srt, sb rnd to sb ang.

2280' - 2310' MD: SLTST: Predy ModrdBn - med/dk gy, calc cmt, occ imbd rock frags ip, imbd CAL frag, free cal. Nfsoc. SS: V lt brn/tan to med gy, med f to f gn, mod w srt, sb ang to sb rnd grns.

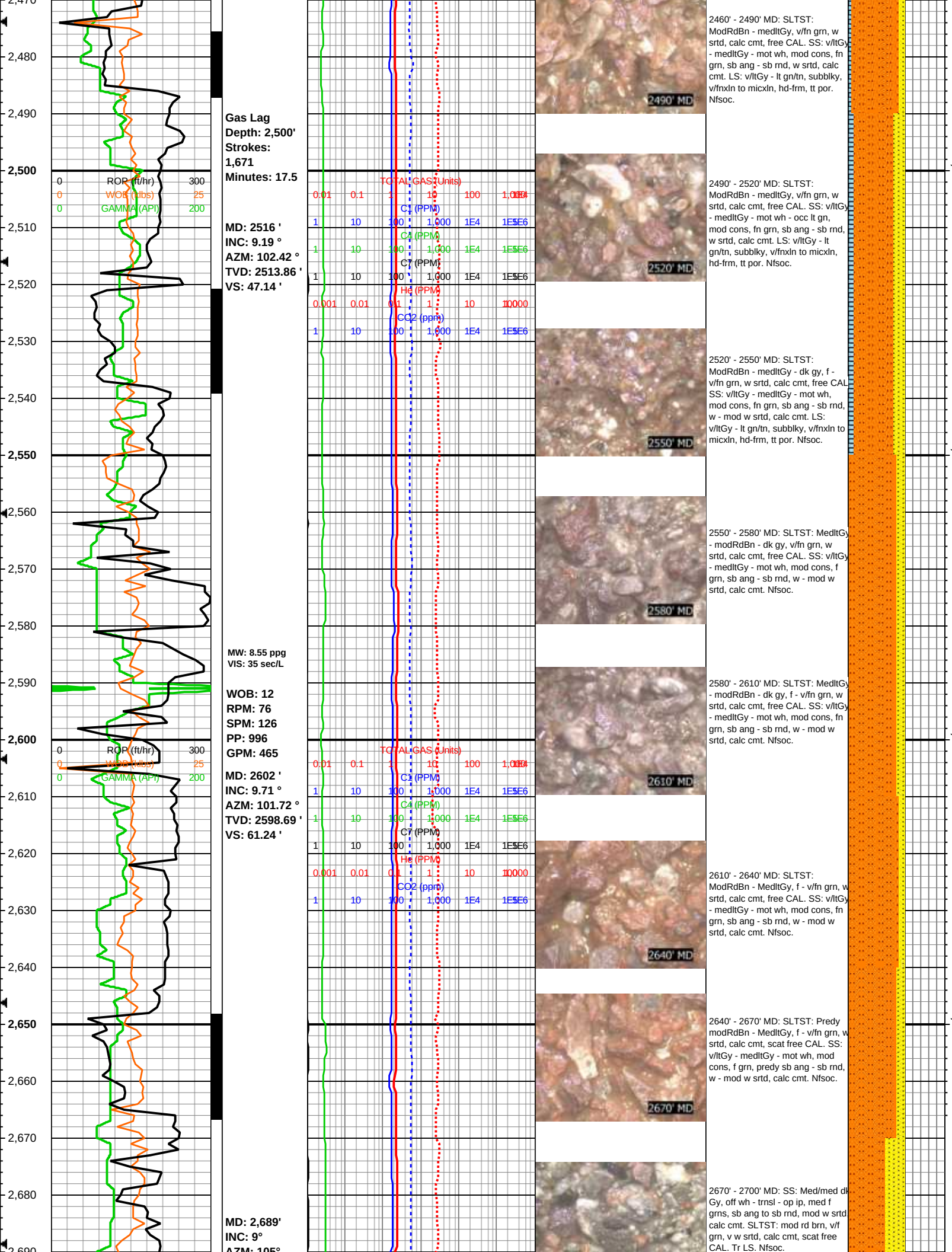
2310' - 2340' MD: SLTST: Predy ModrdBn - med/dk gy, calc cmt, imbd CAL frag, free cal. Nfsoc. SS: V lt brn/tan to med gy to mot wh, v - f - occ med gn, mod w srt, sb ang to sb rnd grns.

2340' - 2370' MD: SLTST: Predy ModrdBn - med/dk gy, calc cmt, free cal. Nfsoc. SS: V lt brn/tan to med gy to mot wh, v/f - f - occ med gn, mod w srt, sb ang to sb rnd grns.

2370' - 2400' MD: SLTST: Predy ModrdBn - med/dk gy, calc cmt, occ imbd rock frags ip, imbd CAL frag, free cal. Nfsoc. SS: V lt brn/tan to med gy to mot wh, f - v/f gn, mod w srt, sb ang to sb rnd grns.

2400' - 2430' MD: SLTST: Predy ModrdBn - med/dk gy, calc cmt, occ imbd rock frags ip, imbd CAL frag, free cal. Nfsoc. SS: V lt brn/tan to med gy to mot wh, f - v/f gn, mod w srt, sb rd - sb ang.

2430' - 2460' MD: SLTST: Pred modRdBn - medltGy, v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy, mod cons, fn grn, sb ang - sb rnd, w srtd, calc cmt. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Nfsoc.


2,470
2,480
2,490
2,500
2,510
2,520
2,530
2,540
2,550
2,560
2,570
2,580
2,590
2,600
2,610
2,620
2,630
2,640
2,650
2,660
2,670
2,680
2,690
0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200
Gas Lag
Depth: 2,500'
Strokes:
1,671
Minutes: 17.5
MD: 2516 '
INC: 9.19 °
AZM: 102.42 °
TVD: 2513.86 '
VS: 47.14 '
TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100 1,000
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6
MW: 8.55 ppg
VIS: 35 sec/L
WOB: 12
RPM: 76
SPM: 126
PP: 996
GPM: 465
MD: 2602 '
INC: 9.71 °
AZM: 101.72 °
TVD: 2598.69 '
VS: 61.24 '
MD: 2,689'
INC: 9°
AZM: 105°
2490' MD
2520' MD
2550' MD
2580' MD
2610' MD
2640' MD
2670' MD
2460' - 2490' MD: SLTST: ModRdBn - medltGy, v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, fn grn, sb ang - sb rnd, w srtd, calc cmt. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Nfsoc.
2490' - 2520' MD: SLTST: ModRdBn - medltGy, v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh - occ lt gn, mod cons, fn grn, sb ang - sb rnd, w srtd, calc cmt. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Nfsoc.
2520' - 2550' MD: SLTST: ModRdBn - medltGy - dk gy, f - v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, fn grn, sb ang - sb rnd, w - mod w srtd, calc cmt. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Nfsoc.
2550' - 2580' MD: SLTST: MedltGy - modRdBn - dk gy, v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, f grn, sb ang - sb rnd, w - mod w srtd, calc cmt. Nfsoc.
2580' - 2610' MD: SLTST: MedltGy - modRdBn - dk gy, f - v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, fn grn, sb ang - sb rnd, w - mod w srtd, calc cmt. Nfsoc.
2610' - 2640' MD: SLTST: ModRdBn - MedltGy, f - v/fn grn, w srtd, calc cmt, free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, fn grn, sb ang - sb rnd, w - mod w srtd, calc cmt. Nfsoc.
2640' - 2670' MD: SLTST: Predy modRdBn - MedltGy, f - v/fn grn, w srtd, calc cmt, scat free CAL. SS: v/ltGy - medltGy - mot wh, mod cons, f grn, predy sb ang - sb rnd, w - mod w srtd, calc cmt. Nfsoc.
2670' - 2700' MD: SS: Med/med dk Gy, off wh - trnsl - op ip, med f grns, sb ang to sb rnd, mod w srtd calc cmt. SLTST: mod rd brn, v/f grn, v w srtd, calc cmt, scat free CAL. Tr LS. Nfsoc.

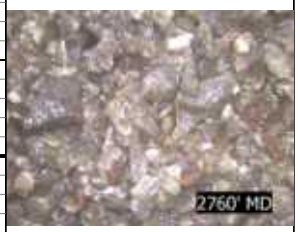
AZM: 105
TVD: 2,685'
VS: 75'

06:00

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100 1,000
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

2700' - 2730' MD: SS: Med/med dk Gy, off wh - trnsl - op ip, med f grns, sb ang to sb rnd, mod w srtd calc cmt. SLTST: mod rd brn, v/f grn, v w srtd, calc cmt, scat free CAL. Tr LS. Nfsoc.



2730' - 2760' MD: SLTST: med to dk gy, f - v f grn, v w srtd, calc cmt tr free CAL. SS: Med/med dk Gy, off wh - trnsl - op ip, f grns, sb ang to sb rnd, mod srtd - w srtd ip, calc cmt. SLTST: mod rd brn, v/f grn, v w srtd, calc cmt, scat free CAL. Tr LS: Wh, flky. Nfsoc.

MD: 2,773'
INC: 9°
AZM: 103°
TVD: 2,768'
VS: 88'

2760' - 2790' MD: SLTST: med lt t med dk gy, f - v f grn, predy v w srtd, calc cmt, occ imbd cal, tr free CAL. SS: lt - v lt Gy, off wh - trnsl - op ip, med f to f grns, sb ang to sb rnd, mod srtd - w srtd ip, calc cmt, tr sil cmt ip. Tr LS: Wh, flky. Nfsoc.

WOB: 13
RPM: 74
SPM: 128/0
PP: 1,006
GPM: 473

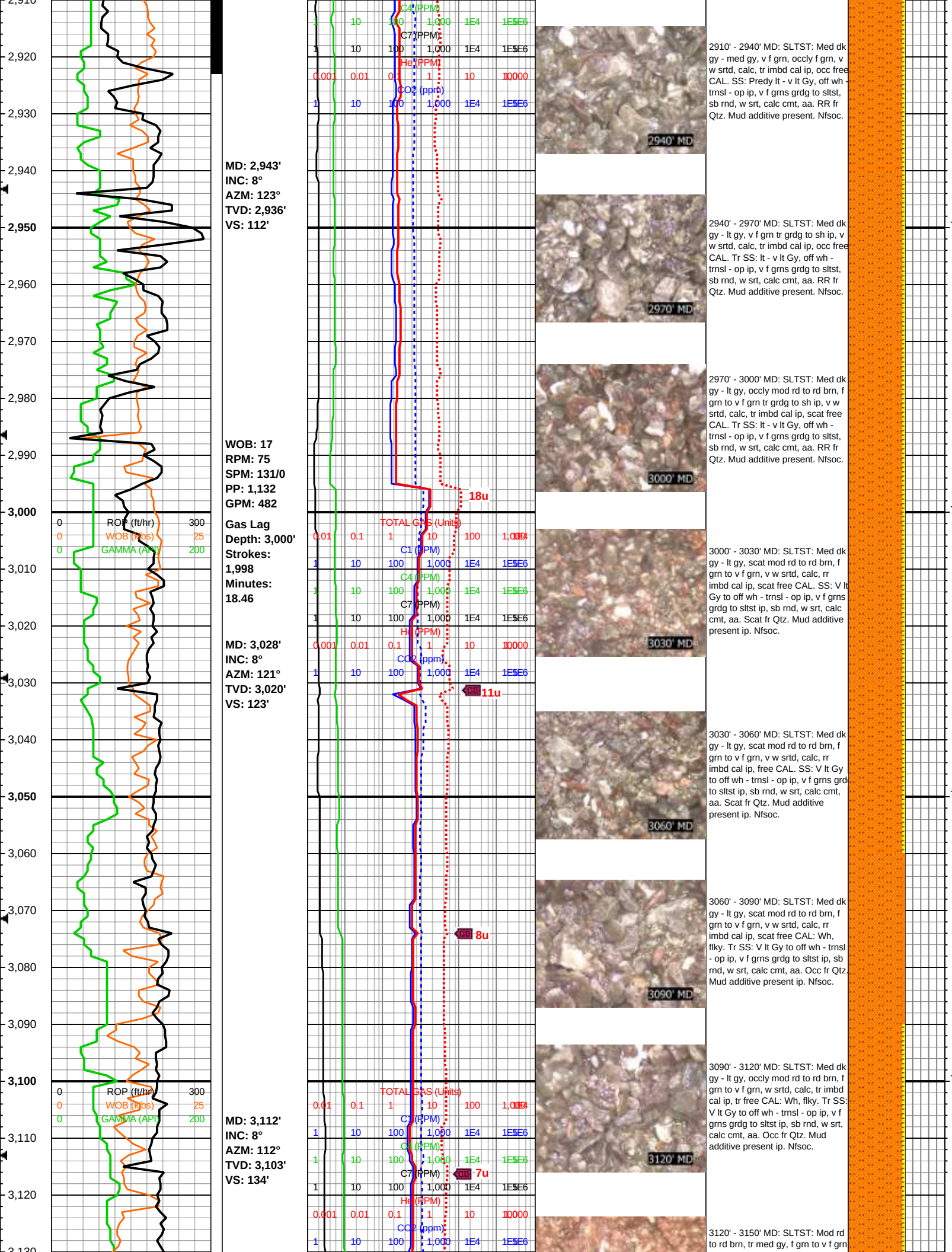
2790' - 2820' MD: SLTST: med lt t med dk gy, predy v f grn, w srtd, calc cmt, occ imbd cal, tr free CAL. SS: lt - v lt Gy, off wh - trnsl - op ip f grns, sb ang to sb rnd, mod srtd - w srtd ip, calc cmt, tr sil cmt ip. RR fr Qtz. Tr LS: Wh, flky. Nfsoc.

2820' - 2850' MD: SLTST: Med dk to med gy, f - v f grn, w srtd, calc cmt, tr imbd cal ip, tr free CAL. SS: lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb ang to sb rnd mod w srt, calc cmt. RR fr Qtz. Tr LS: Wh, flky. Nfsoc.

MD: 2,858'
INC: 8°
AZM: 107°
TVD: 2,852'
VS: 100'

2850' - 2880' MD: SLTST: Med dk to med gy, f - v f grn, w srtd, calc cmt, tr imbd cal ip, tr free CAL. SS: lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb ang to sb rnd mod w srt, calc cmt. RR fr Qtz. Mud additive present. Tr LS: Wh, flky. Nfsoc.

2880' - 2910' MD: SLTST: Gy to med dk gy, predy v f grn, v w srtd, predy calc cmt, tr imbd cal ip, scat free CAL. SS: Predy lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb rnd, w srt, calc cmt, aa. RR fr Qtz. Mud additive present. Nfsoc.



2910' - 2940' MD: SLTST: Med dk gy - med gy, v f grn, occly f grn, v w srtd, calc, tr imbd cal ip, occ free CAL. SS: Predy lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb rnd, w srt, calc cmt, aa. RR fr Qtz. Mud additive present. Nfsoc.

2940' - 2970' MD: SLTST: Med dk gy - lt gy, v f grn tr grdg to sh ip, v w srtd, calc, tr imbd cal ip, occ free CAL. Tr SS: lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb rnd, w srt, calc cmt, aa. RR fr Qtz. Mud additive present. Nfsoc.

2970' - 3000' MD: SLTST: Med dk gy - lt gy, occly mod rd to rd brn, f grn to v f grn tr grdg to sh ip, v w srtd, calc, tr imbd cal ip, scat free CAL. Tr SS: lt - v lt Gy, off wh - trnsl - op ip, v f grns grdg to sltst, sb rnd, w srt, calc cmt, aa. RR fr Qtz. Mud additive present. Nfsoc.

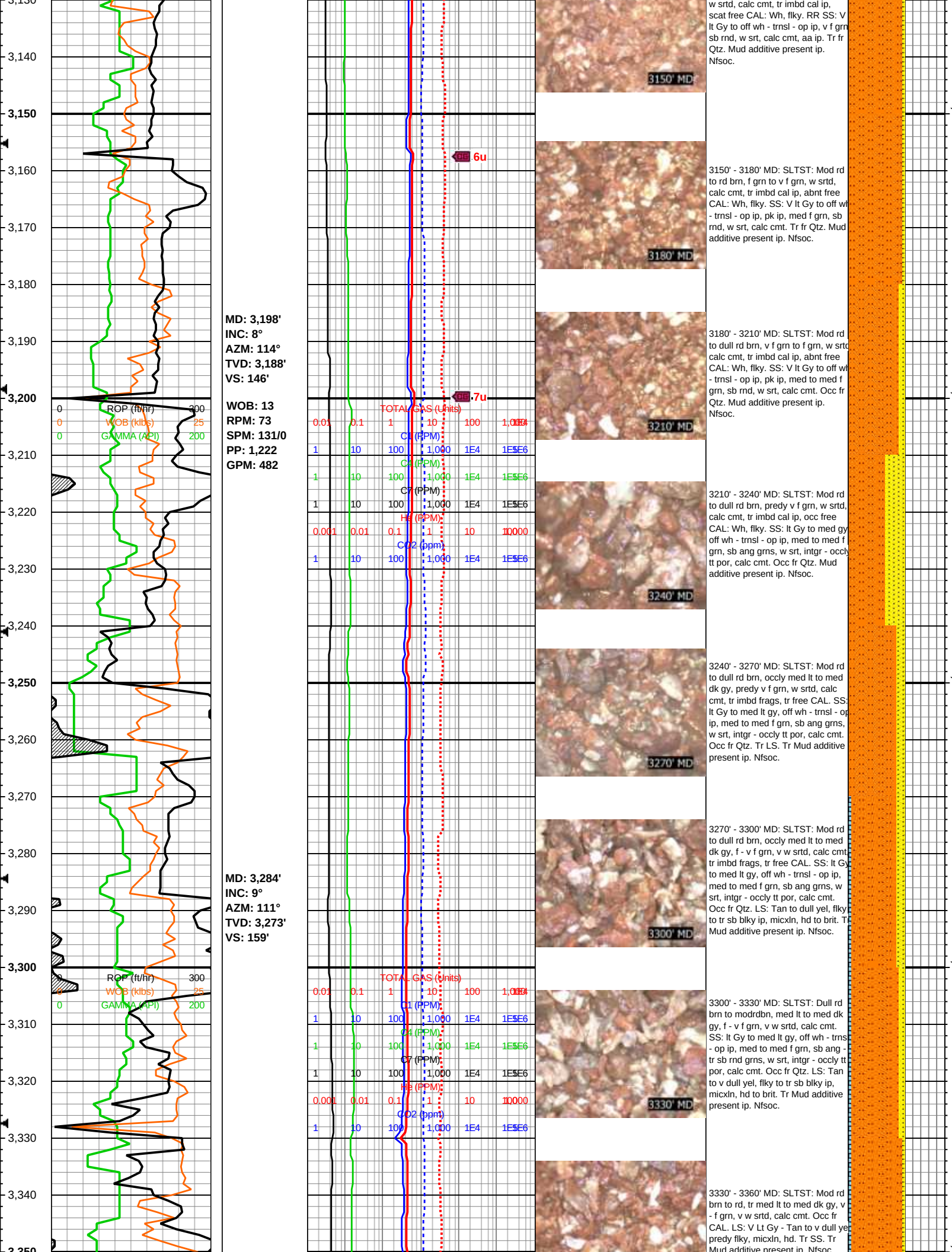
3000' - 3030' MD: SLTST: Med dk gy - lt gy, scat mod rd to rd brn, f grn to v f grn, v w srtd, calc, rr imbd cal ip, scat free CAL. SS: V lt Gy to off wh - trnsl - op ip, v f grns grdg to sltst ip, sb rnd, w srt, calc cmt, aa. Scat fr Qtz. Mud additive present ip. Nfsoc.

3030' - 3060' MD: SLTST: Med dk gy - lt gy, scat mod rd to rd brn, f grn to v f grn, v w srtd, calc, rr imbd cal ip, free CAL. SS: V lt Gy to off wh - trnsl - op ip, v f grns grdg to sltst ip, sb rnd, w srt, calc cmt, aa. Scat fr Qtz. Mud additive present ip. Nfsoc.

3060' - 3090' MD: SLTST: Med dk gy - lt gy, scat mod rd to rd brn, f grn to v f grn, v w srtd, calc, rr imbd cal ip, scat free CAL: Wh, flky. Tr SS: V lt Gy to off wh - trnsl - op ip, v f grns grdg to sltst ip, sb rnd, w srt, calc cmt, aa. Occ fr Qtz. Mud additive present ip. Nfsoc.

3090' - 3120' MD: SLTST: Med dk gy - lt gy, occly mod rd to rd brn, f grn to v f grn, w srtd, calc, tr imbd cal ip, tr free CAL: Wh, flky. Tr SS: V lt Gy to off wh - trnsl - op ip, v f grns grdg to sltst ip, sb rnd, w srt, calc cmt, aa. Occ fr Qtz. Mud additive present ip. Nfsoc.

3120' - 3150' MD: SLTST: Mod rd to rd brn, tr med gy, f grn to v f grn



w srtd, calc cmt, tr imbd cal ip, scat free CAL: Wh, flky. RR SS: V lt Gy to off wh - trnsl - op ip, v f grn sb rnd, w srt, calc cmt, aa ip. Tr fr Qtz. Mud additive present ip. Nfsoc.

3150' - 3180' MD: SLTST: Mod rd to rd brn, f grn to v f grn, w srtd, calc cmt, tr imbd cal ip, abnt free CAL: Wh, flky. SS: V lt Gy to off wh - trnsl - op ip, pk ip, med f grn, sb rnd, w srt, calc cmt. Tr fr Qtz. Mud additive present ip. Nfsoc.

3180' - 3210' MD: SLTST: Mod rd to dull rd brn, v f grn to f grn, w srtd, calc cmt, tr imbd cal ip, abnt free CAL: Wh, flky. SS: V lt Gy to off wh - trnsl - op ip, pk ip, med to med f grn, sb rnd, w srt, calc cmt. Occ fr Qtz. Mud additive present ip. Nfsoc.

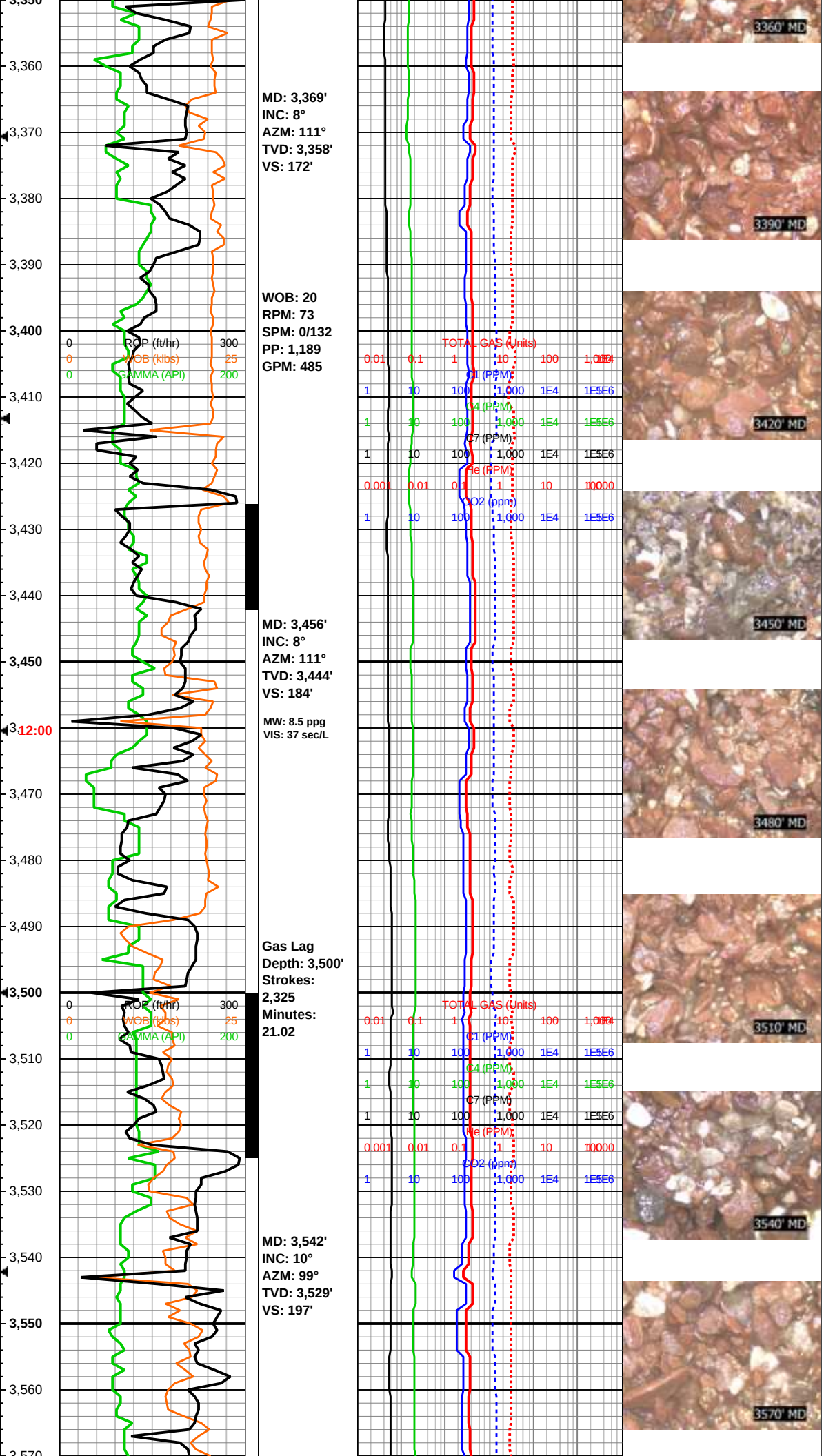
3210' - 3240' MD: SLTST: Mod rd to dull rd brn, predy v f grn, w srtd, calc cmt, tr imbd cal ip, occ free CAL: Wh, flky. SS: lt Gy to med gy off wh - trnsl - op ip, med to med f grn, sb ang grns, w srt, intgr - occly tt por, calc cmt. Occ fr Qtz. Mud additive present ip. Nfsoc.

3240' - 3270' MD: SLTST: Mod rd to dull rd brn, occly med lt to med dk gy, predy v f grn, w srtd, calc cmt, tr imbd frags, tr free CAL. SS: lt Gy to med lt gy, off wh - trnsl - op ip, med to med f grn, sb ang grns, w srt, intgr - occly tt por, calc cmt. Occ fr Qtz. Tr LS. Tr Mud additive present ip. Nfsoc.

3270' - 3300' MD: SLTST: Mod rd to dull rd brn, occly med lt to med dk gy, f - v f grn, v w srtd, calc cmt, tr imbd frags, tr free CAL. SS: lt Gy to med lt gy, off wh - trnsl - op ip, med to med f grn, sb ang grns, w srt, intgr - occly tt por, calc cmt. Occ fr Qtz. LS: Tan to dull yel, flky to tr sb blky ip, micxln, hd to brit. Tr Mud additive present ip. Nfsoc.

3300' - 3330' MD: SLTST: Dull rd brn to modrdbn, med lt to med dk gy, f - v f grn, v w srtd, calc cmt. SS: lt Gy to med lt gy, off wh - trnsl - op ip, med to med f grn, sb ang - tr sb rnd grns, w srt, intgr - occly tt por, calc cmt. Occ fr Qtz. LS: Tan to v dull yel, flky to tr sb blky ip, micxln, hd to brit. Tr Mud additive present ip. Nfsoc.

3330' - 3360' MD: SLTST: Mod rd brn to rd, tr med lt to med dk gy, v - f grn, v w srtd, calc cmt. Occ fr CAL. LS: V Lt Gy - Tan to v dull yel predy flky, micxln, hd. Tr SS. Tr Mud additive present ip. Nfsoc



3360' - 3390' MD: SLTST: Modrdbn to rd, rr med gy, v f - f grn, v w srtd, calc cmt. Scat fr CAL. Tr LS: V Lt Gy, sb splt, micxln, hd. Tr SS. Tr Mud additive present ip. Nfsoc.

3390' - 3420' MD: SLTST: Modrdbn to rd, tr med - med lt gy, v f - f grn, v w srtd, calc cmt. Scat fr CAL. Tr LS: V Lt Gy, sb splt, micxln, hd. Rr free qtz. Tr Mud additive present ip. Nfsoc.

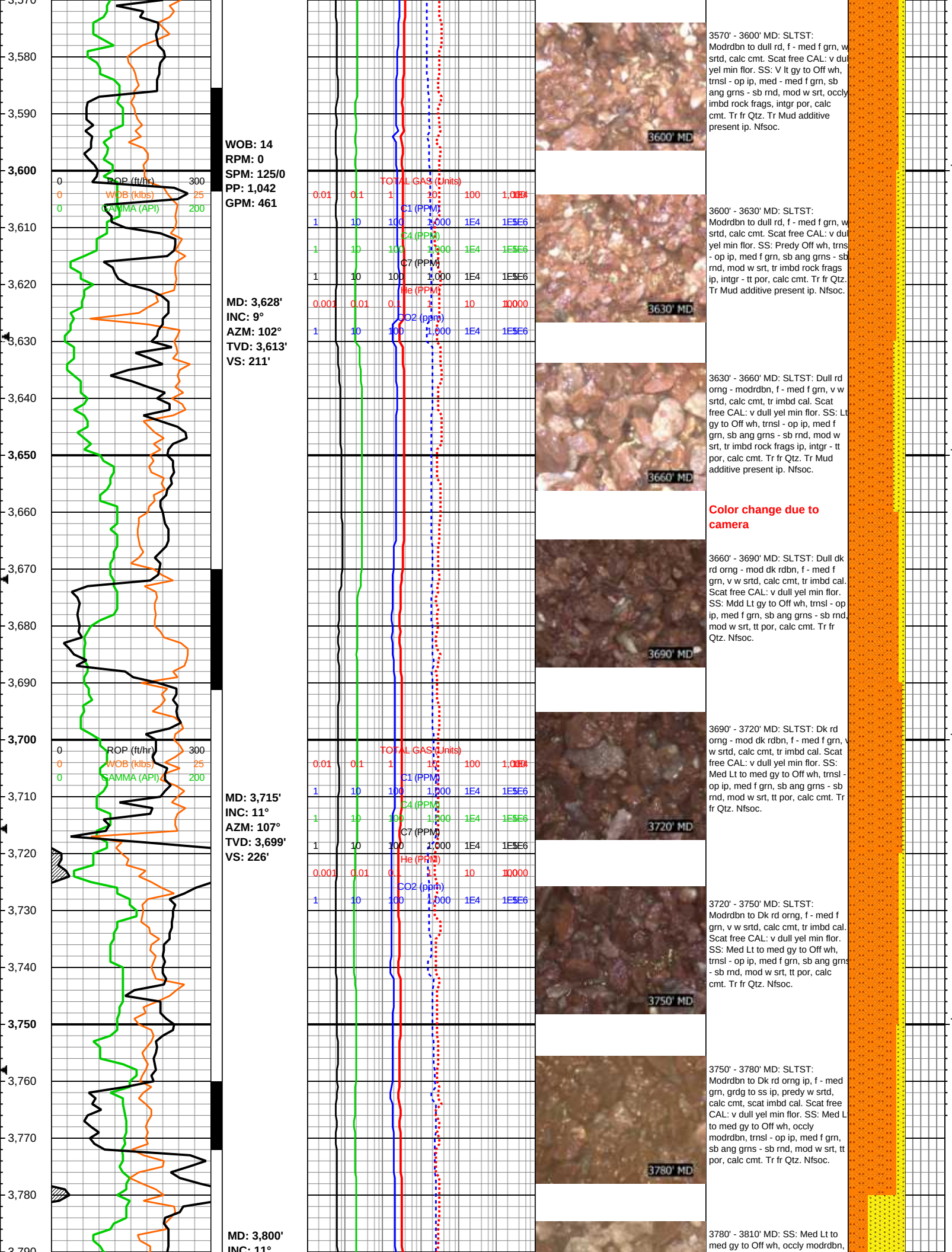
3420' - 3450' MD: SS: Med Gy to med lt gy, off wh - trnsl - op ip, med f grn, sb ang grns - occly sb rnd, mod srt, intgr - occly tt por, calc cmt. Occ fr Qtz. SLTST: Modrdbn to rd, tr med - med lt gy, v f - f grn, v w srtd, calc cmt. Scat fr CAL. Tr Mud additive present ip. Nfsoc.

3450' - 3480' MD: SLTST: Predy Modrdbn to dull rd, tr med - med lt gy, v f - f grn, v w srtd, calc cmt. Tr fr CAL. SS: Med Gy to med lt gy, off wh - trnsl - op ip, med f grn, sb ang grns - occly sb rnd, mod srt, intgr - occly tt por, calc cmt. Occ fr Qtz. Tr Mud additive present ip. Nfsoc.

3480' - 3510' MD: SLTST: Modrdbn to rd, scat med - med lt gy, v f - f grn, v w srtd, calc cmt. Scat fr CAL. SS: Med lt gy, off wh trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, intgr por, calc cmt. Occ fr Qtz. Scat free qtz. Tr Mud additive present ip. Nfsoc.

3510' - 3540' MD: SLTST: Modrdbn to rd, scat med - med lt gy, v f - med f grn, w srtd, calc cmt. Scat fr CAL: v dull yel min flor. SS: Med lt gy, off wh - trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, intgr por, calc cmt. Occ fr Qtz. Tr Mud additive present ip. Nfsoc.

3540' - 3570' MD: SLTST: Modrdbn to rd, f - med f grn, w srtd, calc cmt. Scat fr CAL: v dull yel min flor. SS: V lt gy to Off wh, trnsl - op ip, med - med f grn, sb ang grns - sb rnd, mod w srt, intgr por, calc cmt. Tr fr Qtz. Tr Mud additive present ip. Nfsoc.



3570' - 3600' MD: SLTST: Modrdbn to dull rd, f - med f grn, w srtd, calc cmt. Scat free CAL: v dull yel min flor. SS: V lt gy to Off wh, trnsl - op ip, med - med f grn, sb ang grns - sb rnd, mod w srt, occly imbd rock frags, intgr por, calc cmt. Tr fr Qtz. Tr Mud additive present ip. Nfsoc.

3600' - 3630' MD: SLTST: Modrdbn to dull rd, f - med f grn, w srtd, calc cmt. Scat free CAL: v dull yel min flor. SS: Predy Off wh, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tr imbd rock frags ip, intgr - tt por, calc cmt. Tr fr Qtz. Tr Mud additive present ip. Nfsoc.

3630' - 3660' MD: SLTST: Dull rd orng - modrdbn, f - med f grn, v w srtd, calc cmt, tr imbd cal. Scat free CAL: v dull yel min flor. SS: Lt gy to Off wh, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tr imbd rock frags ip, intgr - tt por, calc cmt. Tr fr Qtz. Tr Mud additive present ip. Nfsoc.

Color change due to camera

3660' - 3690' MD: SLTST: Dull dk rd orng - mod dk rdbn, f - med f grn, v w srtd, calc cmt, tr imbd cal. Scat free CAL: v dull yel min flor. SS: Mdd Lt gy to Off wh, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tt por, calc cmt. Tr fr Qtz. Nfsoc.

3690' - 3720' MD: SLTST: Dk rd orng - mod dk rdbn, f - med f grn, v w srtd, calc cmt, tr imbd cal. Scat free CAL: v dull yel min flor. SS: Med Lt to med gy to Off wh, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tt por, calc cmt. Tr fr Qtz. Nfsoc.

3720' - 3750' MD: SLTST: Modrdbn to Dk rd orng, f - med f grn, v w srtd, calc cmt, tr imbd cal. Scat free CAL: v dull yel min flor. SS: Med Lt to med gy to Off wh, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tt por, calc cmt. Tr fr Qtz. Nfsoc.

3750' - 3780' MD: SLTST: Modrdbn to Dk rd orng ip, f - med grn, grdg to ss ip, predy w srtd, calc cmt, scat imbd cal. Scat free CAL: v dull yel min flor. SS: Med L to med gy to Off wh, occly modrdbn, trnsl - op ip, med f grn, sb ang grns - sb rnd, mod w srt, tt por, calc cmt. Tr fr Qtz. Nfsoc.

3780' - 3810' MD: SS: Med Lt to med gy to Off wh, occly modrdbn,

INC: 11°
AZM: 112°
TVD: 3,783'
VS: 242'

WOB: 5
RPM: 74
SPM: 0/133
PP: 1,049
GPM: 491

MD: 3887 '
INC: 10.33 °
AZM: 106.46 °
TVD: 3868.26 '
VS: 257.49 '

MD: 3972 '
INC: 9.14 °
AZM: 107.17 °
TVD: 3952.03 '
VS: 271.86 '

WOB: 18
RPM: 78
SPM: 125
PP: 1,191
GPM: 459

Gas Lag Depth: 4,000'
Strokes: 2,653

3810' MD

3810' - 3840' MD: SS: Med Lt gy to med gy to off wh to modrdbn, trnsl - op ip, med f grn, sb ang grns - sb rnd ip, mod w srt, tt por, calc cmt. Scat fr Qtz. SLTST: Modrdbn to Dk rd orng to brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. Scat free CAL. V dull yel min flor. Nfsoc.

3840' MD

3840' - 3870' MD: SS: Med Lt to med gy to Off wh, occly modrdbn, trnsl - op ip, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. Scat fr Qtz. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. Scat free CAL. V dull yel min flor. Nfsoc.

3870' MD

3870' - 3900' MD: SS: Med dk Gy to Med Lt to med gy to Off wh, occly modrdbn, trnsl - op ip, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. Scat fr Qtz. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. Free PYR. V dull yel min flor. Nfsoc.

3900' MD

3900' - 3930' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op ip, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. Free PYR. V dull yel min flor. Nfsoc.

3930' MD

3930' - 3960' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op ip, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. Free QTZ. Free PYR. V dull yel min flor. Nfsoc.

3960' MD

3960' - 3990' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. Free PYR. V dull yel min flor. Nfsoc.

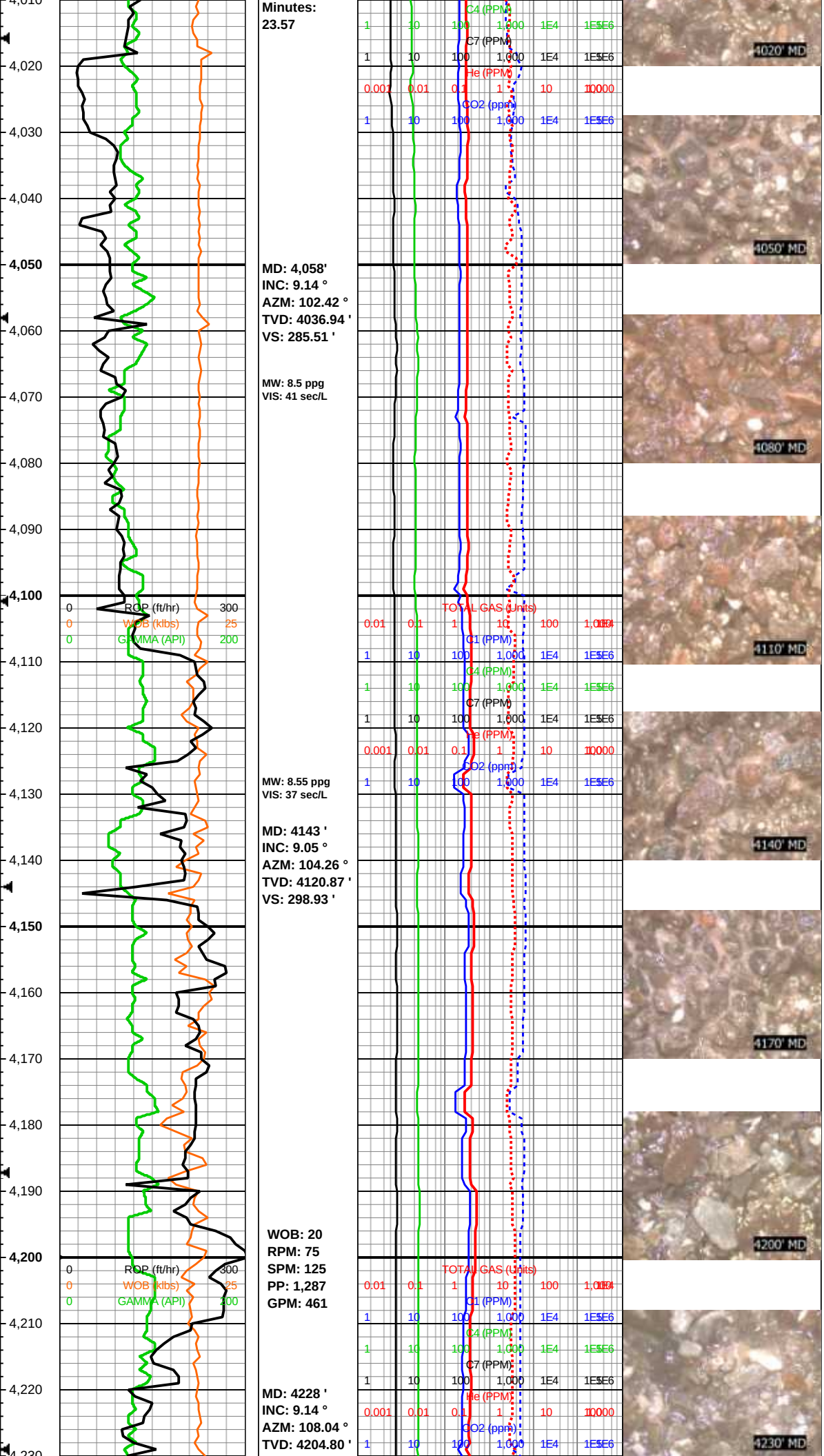
3990' MD

3990' - 4020' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f -

ROP (ft/hr) 0–300
WOB (klbs) 0–25
GAMMA (API) 0–200
TOTAL GAS (Units) 0.01–100,000
C1 (PPM) 1–1E5E6
C4 (PPM) 1–1E5E6
C7 (PPM) 1–1E5E6
He (PPM) 0.001–10,000
CO2 (ppm) 1–1E5E6

3,790 3,800 3,810 3,820 3,830 3,840 3,850 3,860 3,870 3,880 3,890 3,900 3,910 3,920 3,930 3,940 3,950 3,960 3,970 3,980 3,990 4,000 4,010

18:00



4020' - 4050' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn - off wh, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V dull yel min flor. Nfsoc.

4050' - 4080' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, w srtd, calc cmt, scat imbd cal. Tr LS. Scat free CAL. V dull yel min flor. Nfsoc.

4080' - 4110' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy mod -w srtd, calc cmt, scat imbd cal. Tr LS. Scat free CAL. V dull yel min flor. Nfsoc.

4110' - 4140' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, w - mod srtd, calc cmt, scat imbd cal. Tr LS. Scat free CAL. V dull yel min flor. Nfsoc.

4140' - 4170' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, v w srtd, calc cmt, scat imbd cal. Scat free CAL. V dull yel min flor. Nfsoc.

4170' - 4200' MD: SS: Med dk gy to med Lt to med gy to Off wh, occly modrdbn, trnsl - op, med f grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to Dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V dull yel min flor. Nfsoc.

4200' - 4230' MD: SS: Med dk gy to med Lt/med gy to Off wh, occly modrdbn, trnsl - op, med - f - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. SLTST: Modrdbn to dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. LS: lt gn/tn - v/ltGy, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V dull yel min flor. Nfsoc.

VS: 312.36 '

MD: 4315 '
INC: 9.41 °
AZM: 104.00 °
TVD: 4290.67 '
VS: 326.37 '

MW: 8.55 ppg
VIS: 36 sec/L

WOB: 19
RPM: 73
SPM: 126
PP: 1,216
GPM: 467

MD: 4402 '
INC: 10.11 °
AZM: 103.30 °
TVD: 4376.41 '
VS: 341.11 '

MNDEPTH

11/10/18

4230' - 4260' MD: SLTST: Modrdbn to dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. SS: Med dk gy to med Lt/med gy to Off wh, occly modrdbn, trnsl - op, med - f - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. Tr LS. Scat free CAL. V dull yel min flor. Nfsoc.

4260' - 4290' MD: SLTST: Modrdbn to dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt, scat imbd cal. SS: Med dk gy to med Lt/med gy to Off wh, occly modrdbn, trnsl - op, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. Tr LS. Scat free CAL. V dull yel min flor. Nfsoc.

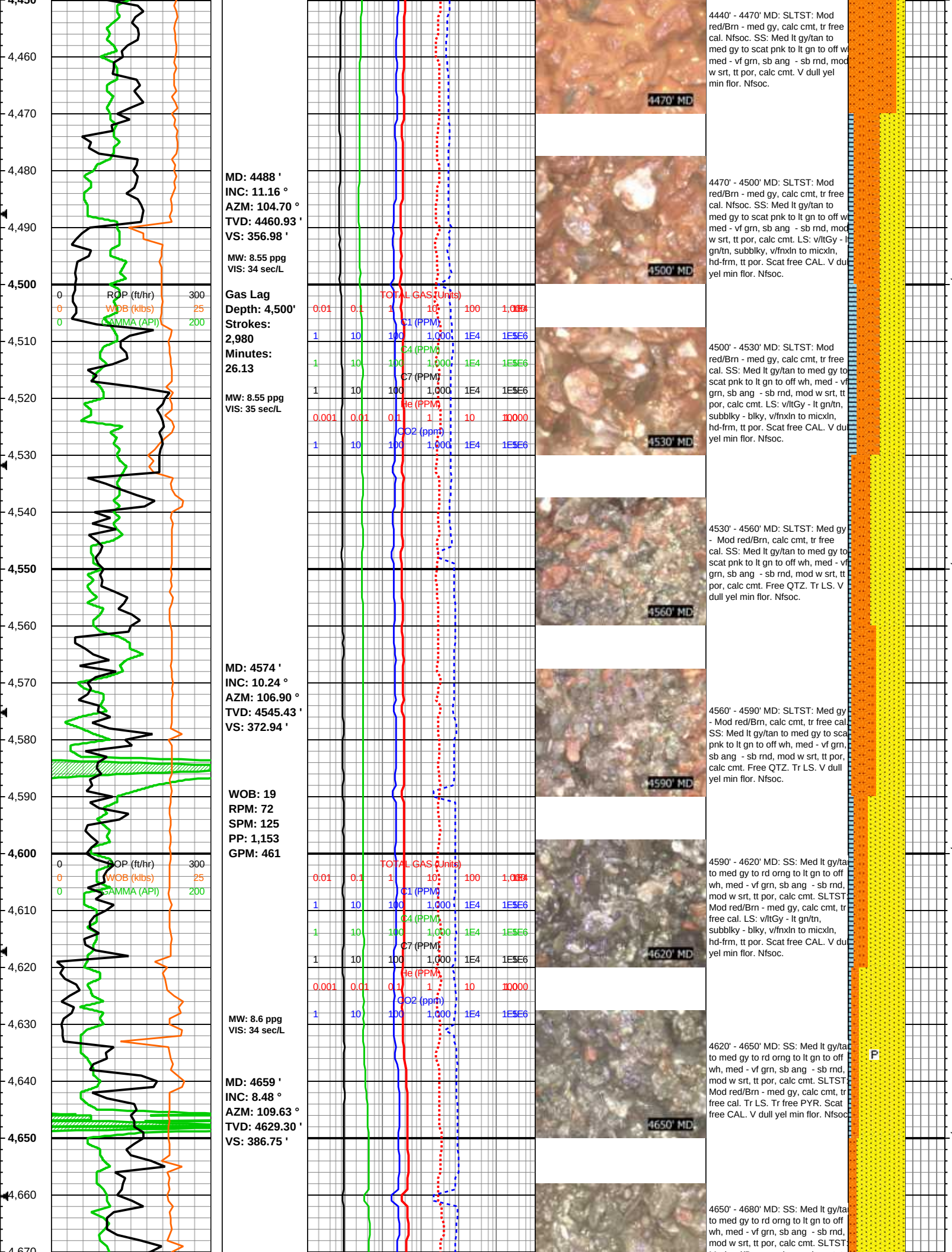
4290' - 4320' MD: SLTST: Modrdbn to dk rd orng to med/dk brn, f - med grn, predy w srtd, calc cmt. SS: Med dk gy to med Lt/med gy to Off wh, occly modrdbn, trnsl - op, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. Scat free CAL. V dull yel min flor. Nfsoc.

4320' - 4350' MD: SLTST: Modrdbn to dk rd orng to med/dk brn, f - med grn, w srtd, calc cmt. SS: Med dk gy to med lt gy to off wh, occly modrdbn, trnsl - op, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt, tr free QTZ. Scat free CAL. V dull yel min flor. Nfsoc.

4350' - 4380' MD: SLTST: Mod red/Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn, v f gn - f gn, mod w srt, sb rnd to sb ang. V dull yel min flor. Nfsoc

4380' - 4410' MD: SLTST: Mod red/Brn - med gy, calc cmt, scat f CAL frag, free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off wh, v f gn - f gn, mod w sr sb rnd to sb ang. V dull yel min flor Nfsoc.

4410' - 4440' MD: SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off w v f gn - f gn, mod w srt, sb rnd to s ang. V dull yel min flor. Nfsoc.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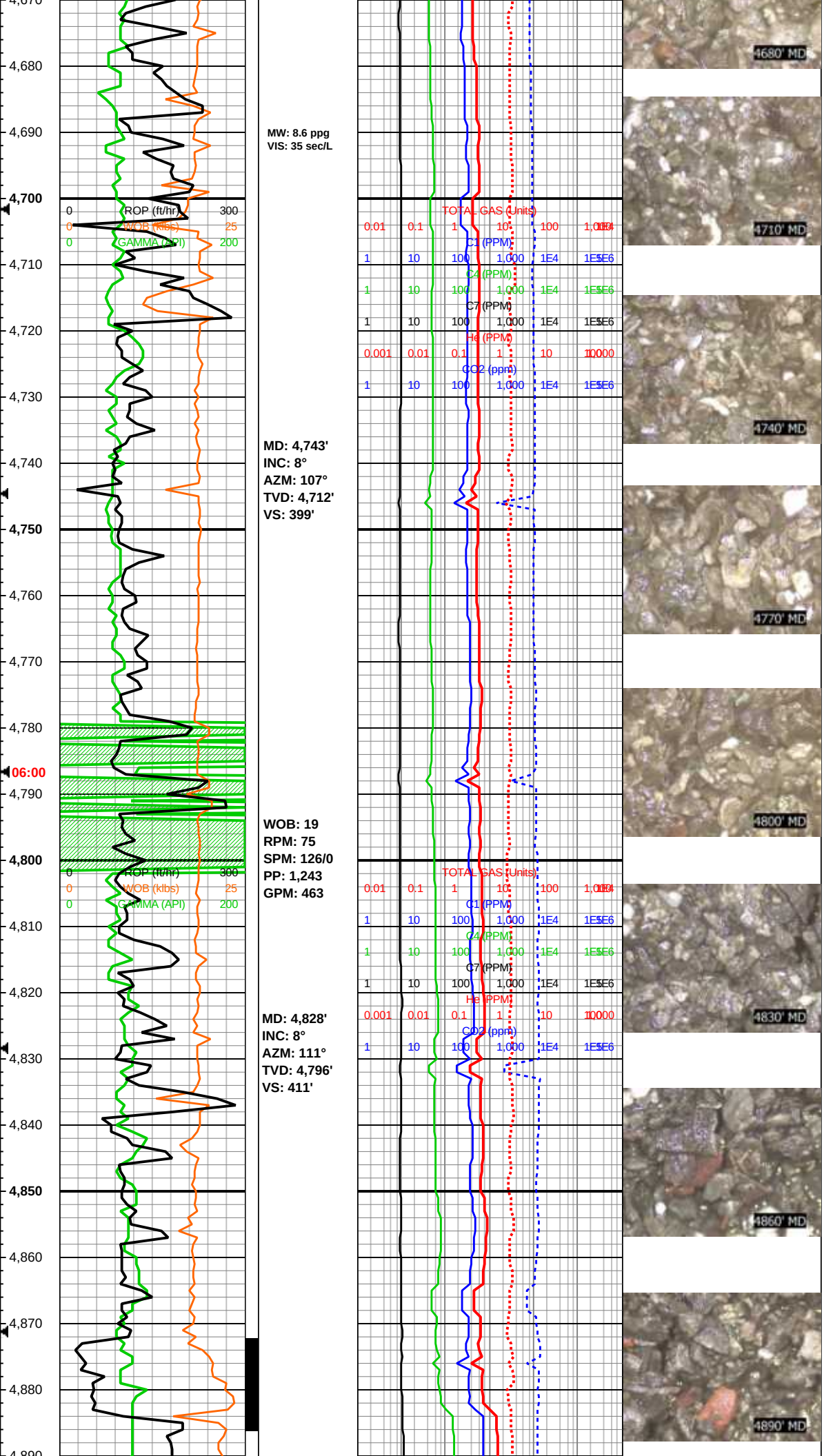
4,570
4,580
4,590
4,600
4,610
4,620
4,630
4,640
4,650
4,660
4,670
0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200
MD: 4488 '
INC: 11.16 °
AZM: 104.70 °
TVD: 4460.93 '
VS: 356.98 '
MW: 8.55 ppg
VIS: 34 sec/L
Gas Lag
Depth: 4,500'
Strokes:
2,980
Minutes:
26.13
TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000
C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6
C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6
He (PPM)
0.001 0.01 0.1 1 10 100 1000
CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6
MW: 8.55 ppg
VIS: 35 sec/L
MD: 4574 '
INC: 10.24 °
AZM: 106.90 °
TVD: 4545.43 '
VS: 372.94 '
WOB: 19
RPM: 72
SPM: 125
PP: 1,153
GPM: 461
MW: 8.6 ppg
VIS: 34 sec/L
MD: 4659 '
INC: 8.48 °
AZM: 109.63 °
TVD: 4629.30 '
VS: 386.75 '
4470' MD
4500' MD
4530' MD
4560' MD
4590' MD
4620' MD
4650' MD
4440' - 4470' MD: SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off w med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. V dull yel min flor. Nfsoc.
4470' - 4500' MD: SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. Nfsoc. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off w med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. LS: v/ltGy - lt gn/tn, subblky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V du yel min flor. Nfsoc.
4500' - 4530' MD: SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. LS: v/ltGy - lt gn/tn, subblky - blky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V du yel min flor. Nfsoc.
4530' - 4560' MD: SLTST: Med gy - Mod red/Brn, calc cmt, tr free cal. SS: Med lt gy/tan to med gy to scat pnk to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. Free QTZ. Tr LS. V dull yel min flor. Nfsoc.
4560' - 4590' MD: SLTST: Med gy - Mod red/Brn, calc cmt, tr free cal SS: Med lt gy/tan to med gy to sca pnk to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. Free QTZ. Tr LS. V dull yel min flor. Nfsoc.
4590' - 4620' MD: SS: Med lt gy/ta to med gy to rd orng to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. LS: v/ltGy - lt gn/tn, subblky - blky, v/fnxln to micxln, hd-frm, tt por. Scat free CAL. V du yel min flor. Nfsoc.
4620' - 4650' MD: SS: Med lt gy/ta to med gy to rd orng to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. Tr LS. Tr free PYR. Scat free CAL. V dull yel min flor. Nfsoc
4650' - 4680' MD: SS: Med lt gy/ta to med gy to rd orng to lt gn to off wh, med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST
P
4,500
4,550
4,600
4,650



Mod red/Brn - med gy, calc cmt, tr free cal. Scat free CAL. V dull yel min flor. Nfsoc.

4680' - 4710' MD: SS: Med lt gy to med gy to rd orng to lt gn to off wh med - vf grn, sb ang - sb rnd, mod w srt, tt por, calc cmt. SLTST: Mod red/Brn - med gy, calc cmt, tr free cal. Scat free CAL. V dull yel min flor. Nfsoc.

4710' - 4740' MD: SS: Med lt gy to med dk gy to rd orng to lt gn to off wh ip, med - vf grn, sb ang - sb rnd, mod w srt, v tt por, calc cmt. SLTST: Mod rd/Brn - med gy, calc cmt, tr free cal. Scat free CAL. V dull yel min flor. Tr PYR. Nfsoc.

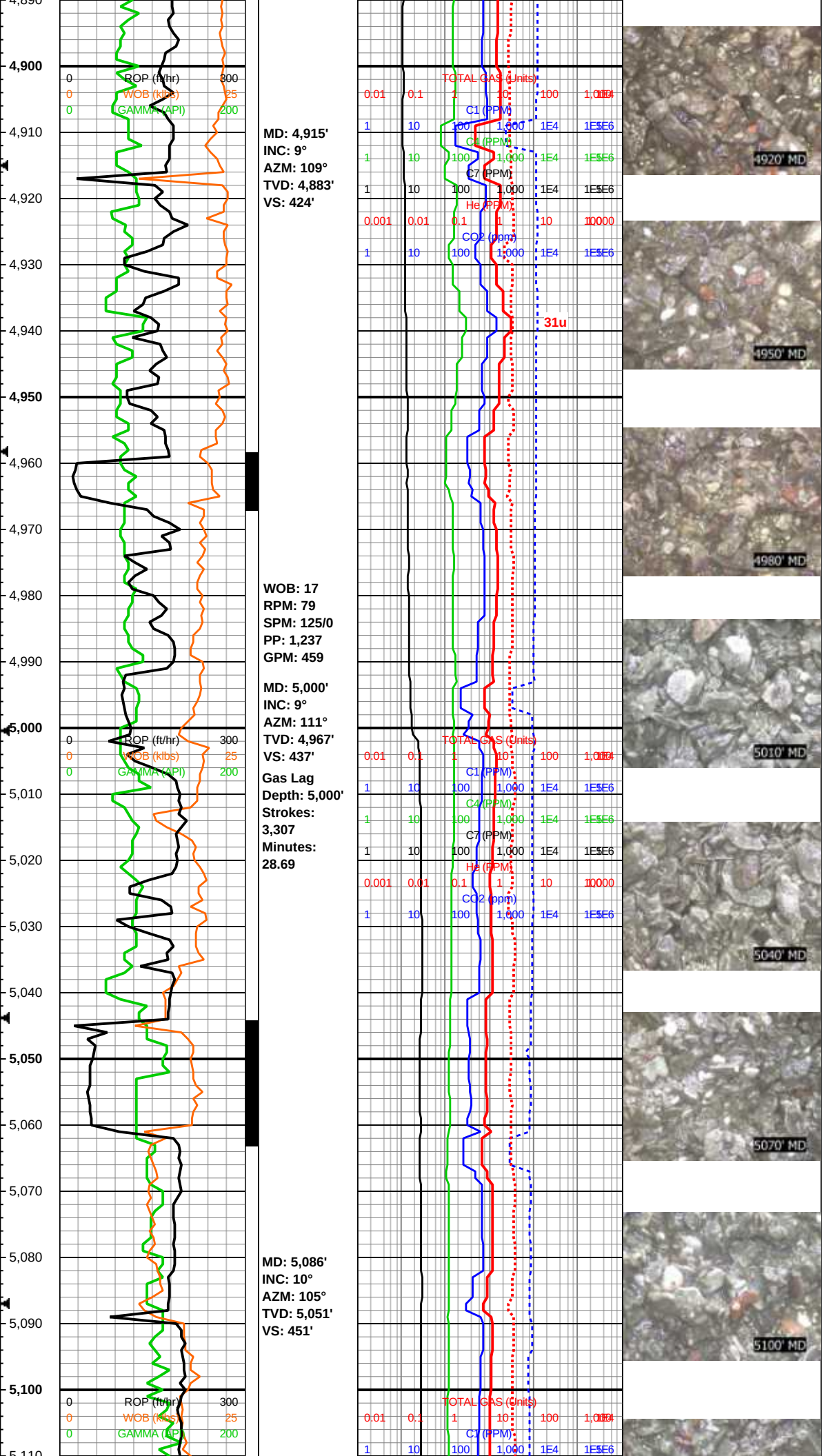
4740' - 4770' MD: SS: Med gy to med dk gy, occly lt gy, med f - v f grn grdg to sltst ip, sb rnd - scat sb ang ip, mod w srt, v tt por to no por, calc cmt. SLTST: Mod rd/Brn - med gy, calc cmt, tr free cal. Scat free CAL. V dull yel min flor. Tr PYR. Nfsoc.

4770' - 4800' MD: SS: Med gy to med dk gy, occly med lt gy, f - v f grn grdg to sltst ip, occly med ip, predy sb rnd, mod w srt, v tt por to no por, calc cmt. SLTST: Med gy, calc cmt, tr free cal. V dull yel min flor. Tr PYR. Nfsoc.

4800' - 4830' MD: SS: Med gy to med dk gy, occly med lt gy, f - v f grn grdg to sltst ip, occly med ip, predy sb rnd, mod w srt, v tt por to no por, calc cmt. SLTST: Med gy, calc cmt, tr free cal. V dull yel min flor. Tr PYR. Nfsoc.

4830' - 4860' MD: SS: Med gy to med dk gy, occly med lt gy, tr off wh - trnsl - op ip, f - v f grn grdg to sltst ip, tr med grn ip, predy sb rnd mod w srt, tt por, calc cmt. SLTST: Med - med lt gy, tr modrdbn, calc cmt, tr free cal. V dull yel min flor. Tr PYR. Nfsoc.

4860' - 4890' MD: SS: Med dk gy t med gy, occly med lt gy, tr off wh - trnsl - op ip, f - v f grn grdg to sltst ip, tr med grn ip, predy sb rnd, mod w srt, tt por, calc cmt. SLTST: Med - med lt gy, scat modrdbn, calc cmt, scat free cal. V dull yel min flor. Nfsoc.



MD: 4,915'
INC: 9°
AZM: 109°
TVD: 4,883'
VS: 424'

WOB: 17
RPM: 79
SPM: 125/0
PP: 1,237
GPM: 459

MD: 5,000'
INC: 9°
AZM: 111°
TVD: 4,967'
VS: 437'

Gas Lag Depth: 5,000'
Strokes: 3,307
Minutes: 28.69

MD: 5,086'
INC: 10°
AZM: 105°
TVD: 5,051'
VS: 451'

4890' - 4920' MD: SS: Med gy - med lt gy, occly med dk gy, tr off wh - trnsl - op ip, med f - v f grn, predy sb rnd, mod - w srt, intgr to t por, calc cmt, scat imbd glau. SLTST: Med - med lt gy, scat modrdbn, calc cmt, scat free cal. V dull yel min flor. Nfsoc.

4920' - 4950' MD: SS: Med dk gy - med lt gy, tr off wh - trnsl - op ip, med f - v f grn, predy sb rnd, mod - w srt, intgr to tt por, calc cmt, tr imbd glau. SLTST: Med - med lt gy, scat modrdbn, calc cmt, scat free cal. V dull yel min flor. Nfsoc.

4950' - 4980' MD: SS: Med dk gy - med lt gy, tr off wh - trnsl - op ip, med f - v f grn, predy sb rnd, mod - w srt, intgr to tt por, calc cmt, tr imbd glau. SLTST: Med - med lt gy, scat modrdbn, calc cmt, scat free cal, grdg to MUDST. V dull ye min flor. Nfsoc.

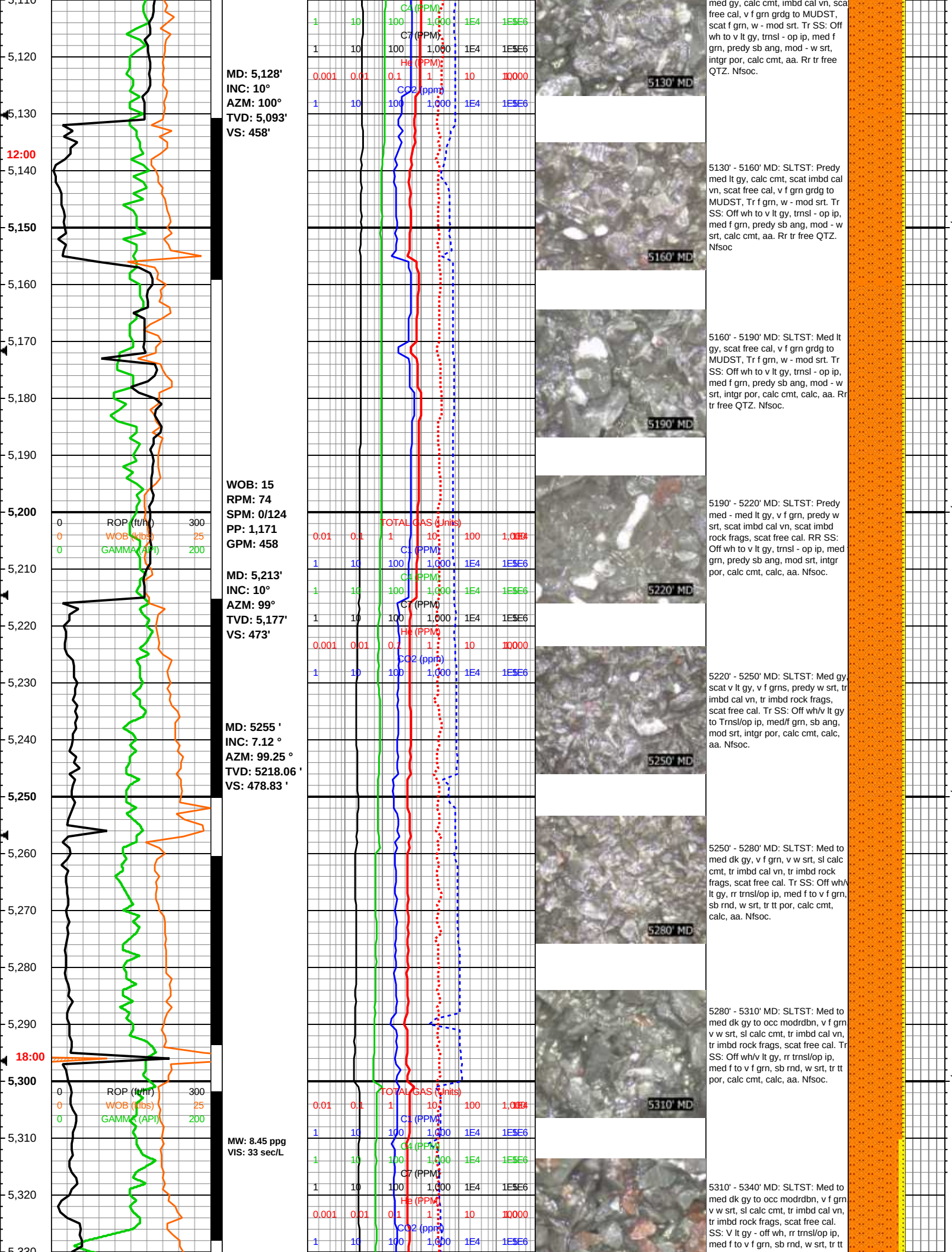
4980' - 5010' MD: SLTST: Med - med lt gy, calc cmt, tr free cal, V f grn grdg to MUDST. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, sl ang, mod - w srt, intgr por, calc cmt. Nfsoc.

5010' - 5040' MD: SLTST: Predy Med lt gy, calc cmt, tr free cal, V f grn grdg to MUDST, tr dissm pyr ip. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mo - w srt, intgr por, calc cmt. Nfsoc.

5040' - 5070' MD: SLTST: Predy Med lt - med gy, calc cmt, scat free cal, Predy v f grn grdg to MUDST, scat f grn. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mod - w srt, intgr por, calc cmt, aa. Nfsoc.

5070' - 5100' MD: SLTST: Predy Med lt - med gy, calc cmt, imbd cal vn, scat free cal, v f grn grdg to MUDST, scat f grn. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mod - w srt, intgr por, calc cmt, aa. Rr tr free QTZ. Nfsoc.

5100' - 5130' MD: SLTST: Med lt -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5,240
5,250
5,260
5,270
5,280
5,290
18:00
5,300
5,310
5,320
5,330
MD: 5,128'
INC: 10°
AZM: 100°
TVD: 5,093'
VS: 458'
WOB: 15
RPM: 74
SPM: 0/124
PP: 1,171
GPM: 458
MD: 5,213'
INC: 10°
AZM: 99°
TVD: 5,177'
VS: 473'
MD: 5255 '
INC: 7.12 °
AZM: 99.25 °
TVD: 5218.06 '
VS: 478.83 '
MW: 8.45 ppg
VIS: 33 sec/L
0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200
C1 (PPM)
C4 (PPM)
C7 (PPM)
He (PPM)
CO2 (ppm)
TOTAL GAS (Units)
1 10 100 1,000 1E4 1E5 1E6
0.001 0.01 0.1 1 10 100 1,000
5130' MD
5160' MD
5190' MD
5220' MD
5250' MD
5280' MD
5310' MD
med gy, calc cmt, imbd cal vn, scat free cal, v f grn grdg to MUDST, scat f grn, w - mod srt. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mod - w srt, intgr por, calc cmt, aa. Rr tr free QTZ. Nfsoc.
5130' - 5160' MD: SLTST: Predy med lt gy, calc cmt, scat imbd cal vn, scat free cal, v f grn grdg to MUDST, Tr f grn, w - mod srt. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mod - w srt, calc cmt, aa. Rr tr free QTZ. Nfsoc
5160' - 5190' MD: SLTST: Med lt gy, scat free cal, v f grn grdg to MUDST, Tr f grn, w - mod srt. Tr SS: Off wh to v lt gy, trnsl - op ip, med f grn, predy sb ang, mod - w srt, intgr por, calc cmt, calc, aa. Rr tr free QTZ. Nfsoc.
5190' - 5220' MD: SLTST: Predy med - med lt gy, v f grn, predy w srt, scat imbd cal vn, scat imbd rock frags, scat free cal. RR SS: Off wh to v lt gy, trnsl - op ip, med grn, predy sb ang, mod srt, intgr por, calc cmt, calc, aa. Nfsoc.
5220' - 5250' MD: SLTST: Med gy, scat v lt gy, v f grns, predy w srt, tr imbd cal vn, tr imbd rock frags, scat free cal. Tr SS: Off wh/v lt gy to Trnsl/op ip, med/f grn, sb ang, mod srt, intgr por, calc cmt, calc, aa. Nfsoc.
5250' - 5280' MD: SLTST: Med to med dk gy, v f grn, v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. Tr SS: Off wh/v lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc, aa. Nfsoc.
5280' - 5310' MD: SLTST: Med to med dk gy to occ modrdbn, v f grn v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. Tr SS: Off wh/v lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc, aa. Nfsoc.
5310' - 5340' MD: SLTST: Med to med dk gy to occ modrdbn, v f grn v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. SS: V lt gy - off wh, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt

MD: 5341 '
INC: 5.05 °
AZM: 51.09 °
TVD: 5303.68 '
VS: 485.86 '

MW: 8.5 ppg
VIS: 36 sec/L

MD: 5383 '
INC: 3.96 °
AZM: 39.23 °
TVD: 5345.55 '
VS: 487.52 '

WOB: 16
RPM: 0
SPM: 126
PP: 1,112
GPM: 465

MW: 8.5 ppg
VIS: 36 sec/L

MD: 5427 '
INC: 1.10 °
AZM: 14.09 °
TVD: 5389.50 '
VS: 488.12 '

MW: 8.5 ppg
VIS: 36 sec/L

MD: 5470 '
INC: 1.67 °
AZM: 214.22 °
TVD: 5432.50 '
VS: 487.91 '

MW: 8.5 ppg
VIS: 37 sec/L

Gas Lag Depth: 5,500'
Strokes: 3,634
Minutes: 32.4

MD: 5511 '
INC: 2.86 °
AZM: 206.92 °
TVD: 5473.47 '
VS: 487.52 '

MW: 8.55 ppg
VIS: 37 sec/L

MD: 5553 '

MN DEPTH
11/11/18

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000

C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6

C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6

C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6

H2 (PPM)
0.001 0.01 0.1 1 10 100

CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

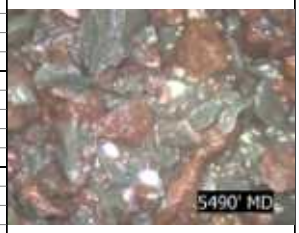
por, calc cmt, calc. Nfsoc.

5340' - 5370' MD: SLTST: Med to med dk gy to occ modrdbn, v f grn v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. SS: V lt gy - off wh - mott lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.

5370' - 5400' MD: SLTST: Med to med dk gy, v f grn, v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. SS: V lt gy - off wh - mott lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.

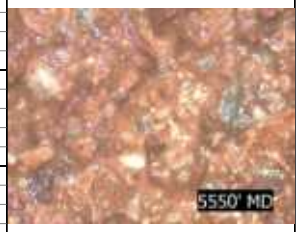
5400' - 5430' MD: SLTST: Med to med dk gy, v f grn, v w srt, sl calc cmt, tr imbd cal vn, scat free cal. SS: V lt gy - off wh - mott lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.

5430' - 5460' MD: SLTST: Med to med dk gy to occ modrdbn, v f grn v w srt, sl calc cmt, tr imbd cal vn, scat free cal. SS: V lt gy - off wh - mott lt gy, rr trnsl/op ip, f to v f grn, sb ang - sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.



5460' - 5490' MD: SLTST: Med to med dk gy to modrdbn, v f grn, v w srt, sl calc cmt, tr imbd cal vn, tr imbd rock frags, scat free cal. SS: V lt gy - off wh - mott lt gy, rr trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.

5490'- 5520' MD: SLTST: Modrdbn to med dk gy to med dk brn, v/f - f grn, v w srt, sl calc cmt, scat free cal. SS: V lt gy - off wh - trnsl/op ip, med f to v f grn, sb rnd, w srt, tr tt por, calc cmt, calc. Nfsoc.



5520' - 5550' MD: SLTST: Modrdbn to med dk gy, v/f - f grn, v srt, sl calc cmt, scat free cal. SS: V lt gy - off wh - trnsl/op ip, med f to f grn, sb rnd, w srt,tt por, calc cmt, calc. Nfsoc.

INC: 3.16 °
AZM: 211.93 °
TVD: 5515.41 '
VS: 486.98 '

MW: 8.6 ppg
VIS: 37 sec/L

WOB: 19
RPM: 0
SPM: 0/125
PP: 1,094
GPM: 459

MD: 5596 '
INC: 1.89 °
AZM: 210.17 °
TVD: 5558.36 '
VS: 486.47 '

MW: 8.55 ppg
VIS: 37 sec/L

MD: 5,640'
INC: 0°
AZM: 301°
TVD: 5,602'
VS: 486'

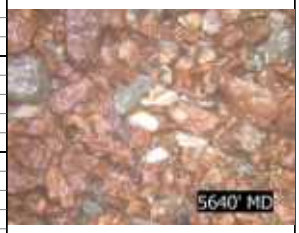
MD: 5,684'
INC: 1°
AZM: 345°
TVD: 5,646'
VS: 486'

MD: 5,726'
INC: 1°
AZM: 346°
TVD: 5,688'
VS: 486'

MD: 5,768'
INC: 2°
AZM: 339°

5550' - 5580' MD: SLTST: Modrdbn to med dk gy, v/f - f grn, v srt, sl calc cmt, scat free cal. SS: V lt gy - off wh - trnsl/op ip, med f to v f grn, sb rnd - sb ang, w srt, tt por, calc cmt, calc. Nfsoc.

5580' - 5610' MD: SLTST: Med dk gy to Modrdbn, v/f - f grn, w srt, sb rnd - sb ang, sl calc cmt, scat free cal. SS: V lt gy - off wh - trnsl/op ip, med f to v f grn, sb rnd - sb ang, w srt, tt por, calc cmt, calc. Nfsoc.



5610' - 5640' MD: SLTST: Predy modrdbn, scat med - med dk gy ip, v/f - f grn, w srt, sb rnd, sl calc cmt, scat free cal. SS: V lt gy - med lt gy, med f to v f grn, sb rnd, v w srt, tt por, calc cmt, calc. Nfsoc.

5640' - 5670' MD: SLTST: Predy modrdbn, tr med dk - med lt gy ip, - v f grn, w srt, sb rnd, sl calc cmt, scat free cal, aa. SS: V lt gy - off wh, occly lt pk, trnsl to op ip, med f to v f grn, sb rnd - sp ang w srt, tt - occ intgr por, calc cmt, calc. LS: Lt bn to tan, flky, micxln, hd - brit. Nfsoc.

5670' - 5700' MD: LS: Lt gy to lt bn to tan, flky, micxln, hd - brit, imbd sltst ip. SLTST: Med dk - med lt gy ip, f - v f grn, w srt, sb rnd, sl calc cmt, aa. Abnt free cal. Scat SS: V lt gy - off wh, occly lt pk, trnsl to op ip, med f to v f grn, sb rnd - sp ang w srt, tt - occ intgr por, calc cmt, calc. Nfsoc.

5700' - 5730' MD: LS: Lt - v lt gy to lt bn to tan, flky - sb splt - occly sb blky, micxln, rr sl grnl ip, hd - brit, sccat imbd sltst ip. SLTST: Med dk - med lt gy ip, f - v f grn, w srt, sl calc cmt, aa. Scat free cal. Tr SS: Aa. Nfsoc.

5730' - 5760' MD: LS: Lt - v lt gy to lt bn to tan, flky - sb splt - sb blky, predy micxln, tr sl grnl ip, hd - brit, imbd sltst ip. SLTST: Med dk - med lt gy ip, f - v f grn, w srt, sl calc cmt, imbd ls ip. Scat free cal. Rr Tr SS: Aa. Nfsoc.

5760' - 5790' MD: LS: Predy Lt - v

TVD: 5,730'
VS: 485'

WOB: 19
RPM: 57
SPM: 127/0
PP: 1,214
GPM: 467

MD: 5,854'
INC: 1°
AZM: 290°
TVD: 5,816'
VS: 484'

TEST GAS 72u

MD: 5,940'
INC: 2°
AZM: 309°
TVD: 5,902'
VS: 482'

MD: 5,981'
INC: 2°
AZM: 311°
TVD: 5,943'
VS: 481'

Gas Lag
Depth: 6,000'

12:00

0 ROP (ft/hr) 300
0 WOB (klbs) 25
0 GAMMA (API) 200

TOTAL GAS (Units)
0.01 0.1 1 10 100 1,000

C1 (PPM)
1 10 100 1,000 1E4 1E5 1E6

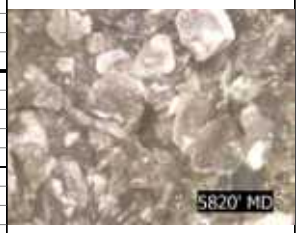
C4 (PPM)
1 10 100 1,000 1E4 1E5 1E6

C7 (PPM)
1 10 100 1,000 1E4 1E5 1E6

He (PPM)
0.001 0.01 0.1 1 10 100

CO2 (ppm)
1 10 100 1,000 1E4 1E5 1E6

lt gy, scat lt brn to tan, flky - sb splt sb blky, micxln, tr sl grnl ip, brit - hd, imbd sltst ip. SLTST: Med dk - med lt gy ip, rr tr modrdbn, v f grn, w srt, sl - mod calc cmt, occ imbd ls ip. Scat free cal. Nfsoc.



5790' - 5820' MD: LS: Lt - v lt gy - off wh, scat lt bn ip, flky - sb splt - sb blky, micxln, brit - hd, occ imbd sltst ip. SLTST: Med dk - med gy ip, v f - f grn, w srt, sl - mod calc cmt, occ imbd ls ip, tr imbd cal vn. Tr free cal. Nfsoc.

5820' - 5850' MD: LS: Lt - v lt gy - off wh ip, flky - sb splt, micxln, brit - hd, rr imbd sltst ip. Scat free cal. SLTST: Dk rd/brn to modrdbn, v f grn, w srt, sl - mod calc cmt, tr imbd ls ip, occ imbd cal. Nfsoc.

5850' - 5880' MD: SLTST: Dull rd org, Dk rd/brn to modrdbn, f grn occly grdg to med f grn, w srt, tr imbd, scat imbd cal. LS: Lt - v lt gy - off wh ip, flky - sb splt, micxln, brit - hd, rr imbd sltst ip. Scat free cal. SS: V lt gy - off wh, pnk/org, trnsl to op ip, med f to f grn, sb rnd sp ang, w srt, tt - intgr por, calc cmt, calc. Nfsoc.

5880' - 5910' MD: SLTST: Dull rd org - mauv, rd/brn to modrdbn, med to med dk gy, f grn scat grdg to med f grn ip, w srt, tr imbd cal. SS: Med - lt gy - off wh, tr pnk/org, trnsl to op ip, med f to f grn, sb rnd sp ang, w srt, tt - intgr por, calc cmt, calc. LS: Lt - v lt gy - off wh ip flky - sb splt, micxln, brit - hd, rr imbd sltst ip. Scat free cal. Nfsoc.

5910' - 5940' MD: SLTST: Rd/brn to modrdbn, med to med dk gy, f grn scat grdg to med f grn ip, w srt, tr imbd cal. SS: Med - lt gy - off wh org/pnk, trnsl to op ip, med f to f grn, sb rnd - sp ang, w srt, tt - intgr por, calc cmt, calc. Tr LS: Lt - v lt gy - off wh ip, flky - sb splt, micxln, brit - hd, rr imbd sltst ip. Scat free cal. Nfsoc.

5940' - 5970' MD: SLTST: Predy Rd/brn to modrdbn, f grn, w srt, rr imbd cal. SS: Med - lt gy to org/pnk, trnsl to op ip, med f to f grn, sb rnd - sp ang, mod - w srt, tt por, calc cmt. Tr LS: Lt - v lt gy, flky, micxln, brit. Scat free cal. Nfsoc.

5970' - 6000' MD: SLTST: Predy Rd/brn to modrdbn, f - med grn occly grdg to f grn ss, w srt, rr imbd cal. SS: Mod rd to Med - lt gy to org/pnk ip, tr trnsl to op ip, med to f grn, sb rnd - sp ang, mod - w srt, tt por, calc cmt. Rr LS: Lt - v lt

Strokes: 3,962
Minutes: 35.06

WOB: 18
RPM: 55
SPM: 0/126
PP: 1,425
GPM: 465

MD: 6,067'
INC: 1°
AZM: 246°
TVD: 6,029'
VS: 479'

MD: 6153 '
INC: 1.71 °
AZM: 177.21 °
TVD: 6115.24 '
VS: 478.86 '

WOB: 19
RPM: 71
SPM: 0
PP: 1,228
GPM: 461

10' Samples/ Lithology %, 20' Descriptions/Images

6000' - 6020' MD: SLTST: Predy rd/brn to modrdbn, f - med grn occly grdg to f grn ss, w srt, rr imbd cal. SS: Mod rd/org to med - lt gy, tr trnsl to op ip, med f to f grn sb rnd - sp ang, mod - w srt, tt por, calc cmt, tr free qtz Rr LS: Lt - v lt gy, flky, micxln, brit. Scat free cal. Nfsoc.

6020' - 6040' MD: SLTST: Predy rd/brn to modrdbn, occly med gy, f - v f grn, tr grdg to f grn ss, predy w srt, rr imbd cal. SS: Mod rd/org to med - lt gy - v lt gy, med f to f grn, sb rnd - sp ang gns, mod - w srt, tt por, calc cmt, tr free qtz. Rr LS (6030): Lt - v lt gy, flky, micxln, brit. Scat free cal. Nfsoc.

6040' - 6060' MD: SLTST: Predy rd/brn to modrdbn, occly med gy, f - v f grn, tr grdg to f grn ss, predy w srt, rr imbd cal. SS: Mod rd/org to med - lt gy - v lt gy, med f to f grn, sb rnd - sp ang gns, mod - w srt, tt por, calc cmt, tr free qtz. Rr LS (6030): Lt - v lt gy, flky, micxln, brit. Scat free cal. Nfsoc.

6060' - 6080' MD: SS: Mod rd/org to med - lt gy - v lt gy, off wh to trnsl/op ip, med/f to med grn, sb ang - sp rnd gns, mod - w srt, intgr por, calc cmt, abnt free qtz. SLTST Modrdbn - gy - tr blk, v f - med f grn, w srt, rr imbd cal. Nfsoc.

6080' - 6100' MD: SLTST: Modrdbn to dk rd brn, v f - med f grn, w srt, scat imbd cal. SS: Mod rd/org to med - lt gy - v lt gy, off wh to trnsl/op ip, med to med/f grn, sb ang - sp rnd gns, mod - w srt, intgr - tr tt por, calc cmt, abnt free qtz. Nfsoc.

6100' - 6120' MD: SLTST: Modrdbn to dk rd brn, med dk gy (6110), v f - med f grn, w srt, scat imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy, off wh to trnsl/op ip, med/f grn, sb ang - sp rnd gns, mod - w srt, intgr - tr tt por, calc cmt, abnt free qtz. Tr lt yel min flor, Nfsoc.

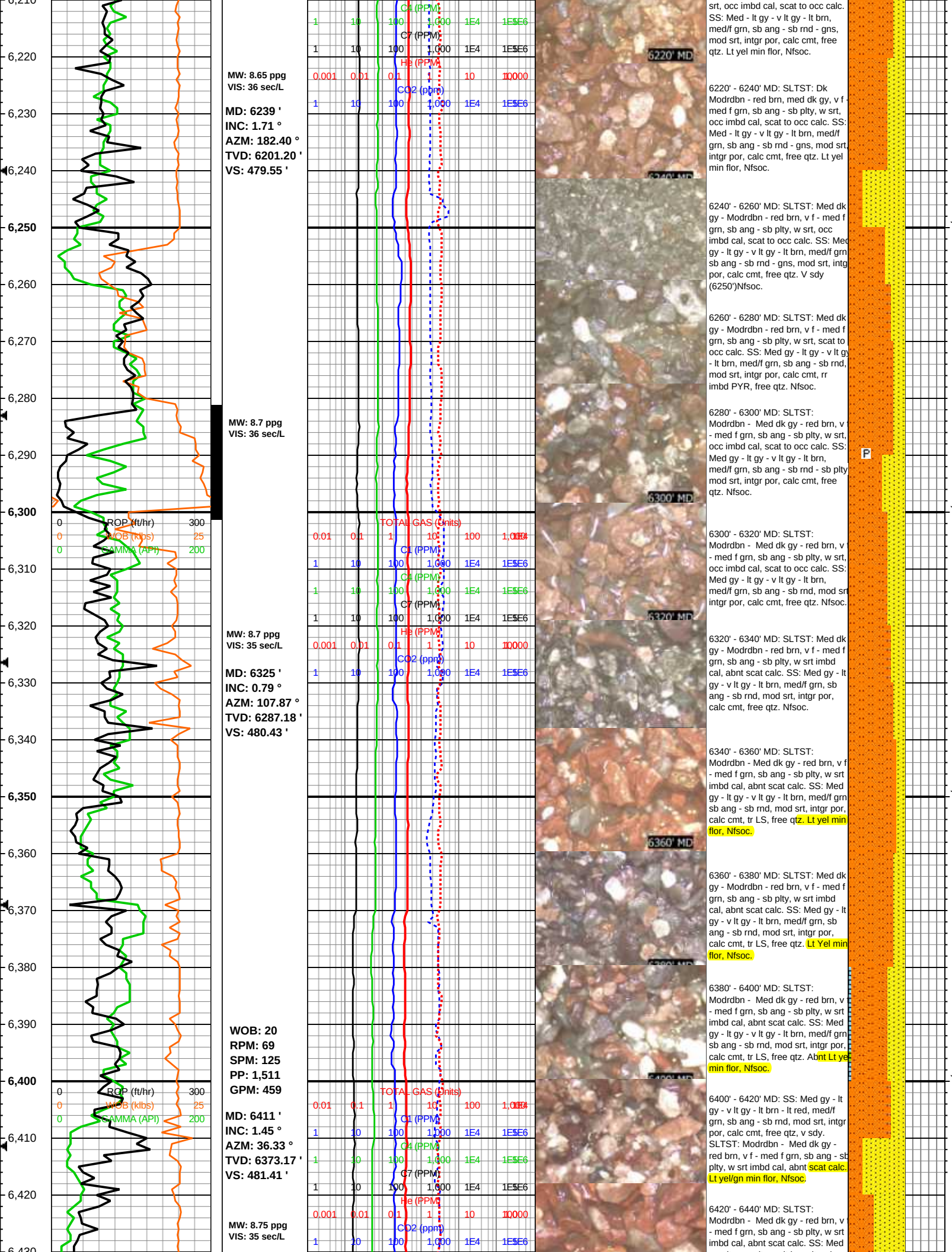
6120' - 6140' MD: SLTST: Modrdbn to dk rd brn, med dk gy, v f - med f grn, w srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy, med/f grn, sb ang - sp rnd gns, mod srt, intgr por, calc cmt, abnt free qtz. Nfsoc.

6140' - 6160' MD: SLTST: Dk rd brn - Modrdbn, med dk gy, v f - med f grn, w srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy, med/f grn, sb ang - sp rnd gns, mod srt, intgr por, calc cmt, abnt free qtz. Lt yel min flor, Nfsoc.

6160' - 6180' MD: SLTST: Dk red brn - Modrdbn, med dk gy, v f - med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy, med/f grn, sb ang - sb rnd - gns, mod srt, intgr por, calc cmt, abnt free qtz. Nfsoc.

6180' - 6200' MD: SLTST: Modrdbn - Dk red brn, med dk gy, v f - med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd - gns, mod srt, intgr por, calc cmt, free qtz. Nfsoc.

6200' - 6220' MD: SLTST: Modrdbn - Dk red brn, med dk gy, v f - med f grn, sb ang - sb plty, w



srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd - gns, mod srt, intgr por, calc cmt, free qtz. Lt yel min flor, Nfsoc.

6220' - 6240' MD: SLTST: Dk Modrdbn - red brn, med dk gy, v f med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd - gns, mod srt, intgr por, calc cmt, free qtz. Lt yel min flor, Nfsoc.

6240' - 6260' MD: SLTST: Med dk gy - Modrdbn - red brn, v f - med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn sb ang - sb rnd - gns, mod srt, intgr por, calc cmt, free qtz. V sdy (6250')Nfsoc.

6260' - 6280' MD: SLTST: Med dk gy - Modrdbn - red brn, v f - med f grn, sb ang - sb plty, w srt, scat to occ calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, rr imbd PYR, free qtz. Nfsoc.

6280' - 6300' MD: SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd - sb plty mod srt, intgr por, calc cmt, free qtz. Nfsoc.

6300' - 6320' MD: SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt, occ imbd cal, scat to occ calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd, mod srt intgr por, calc cmt, free qtz. Nfsoc.

6320' - 6340' MD: SLTST: Med dk gy - Modrdbn - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz. Nfsoc.

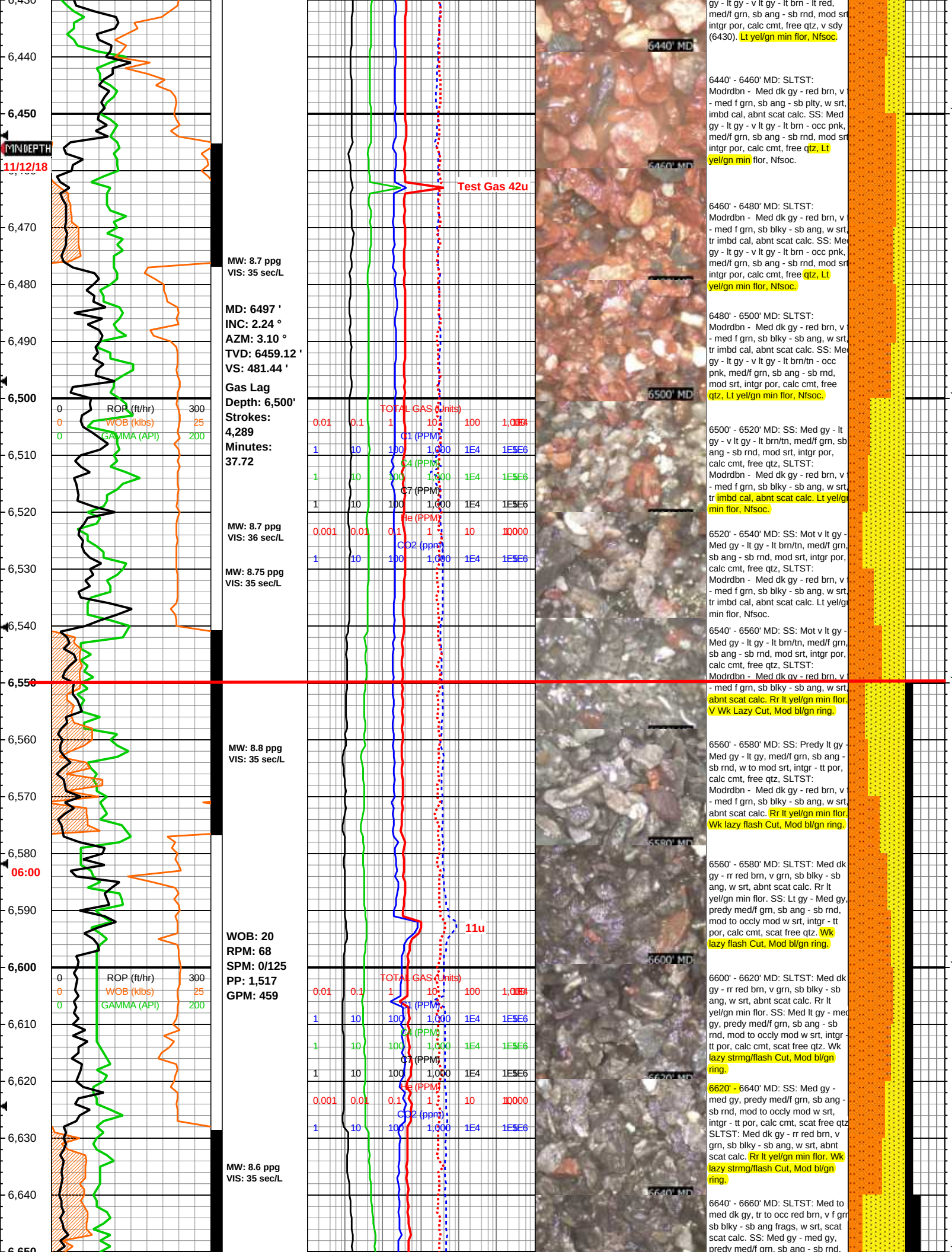
6340' - 6360' MD: SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn sb ang - sb rnd, mod srt, intgr por, calc cmt, tr LS, free qtz. Lt yel min flor, Nfsoc.

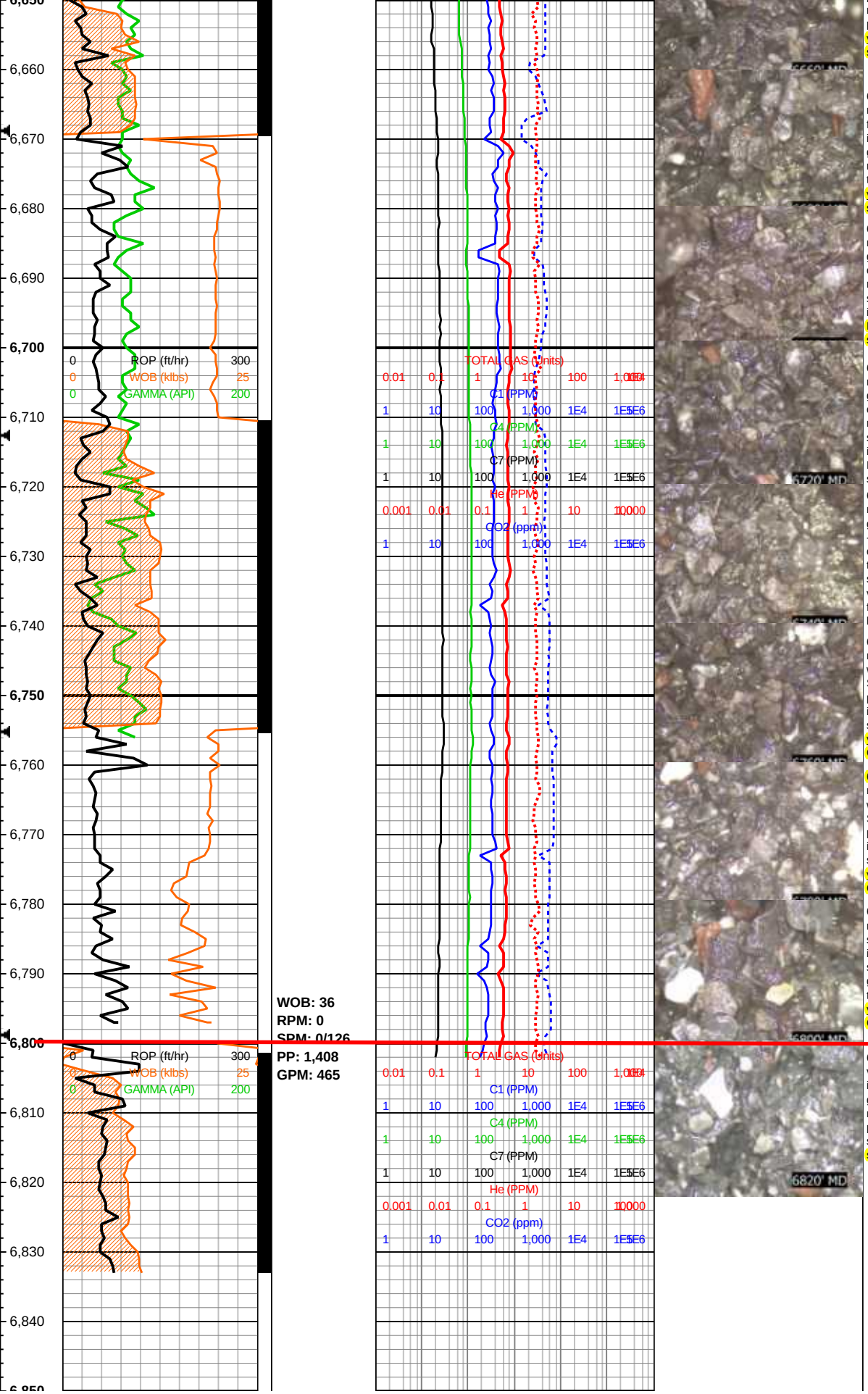
6360' - 6380' MD: SLTST: Med dk gy - Modrdbn - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, tr LS, free qtz. Lt Yel min flor, Nfsoc.

6380' - 6400' MD: SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn, med/f grn sb ang - sb rnd, mod srt, intgr por, calc cmt, tr LS, free qtz. Abnt Lt yel min flor, Nfsoc.

6400' - 6420' MD: SS: Med gy - lt gy - v lt gy - lt brn - lt red, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz, v sdy. SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. Lt yel/gn min flor, Nfsoc.

6420' - 6440' MD: SLTST: Modrdbn - Med dk gy - red brn, v f - med f grn, sb ang - sb plty, w srt imbd cal, abnt scat calc. SS: Med


MN DEPTH
11/12/18
06:00
6,440
6,450
6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
6,620
6,630
6,640
6,650
ROP (ft/hr)
WOB (klbs)
GAMMA (API)
0
300
25
200
MW: 8.7 ppg
VIS: 35 sec/L
MD: 6497 '
INC: 2.24 °
AZM: 3.10 °
TVD: 6459.12 '
VS: 481.44 '
Gas Lag
Depth: 6,500'
Strokes:
4,289
Minutes:
37.72
MW: 8.7 ppg
VIS: 36 sec/L
MW: 8.75 ppg
VIS: 35 sec/L
MW: 8.8 ppg
VIS: 35 sec/L
WOB: 20
RPM: 68
SPM: 0/125
PP: 1,517
GPM: 459
MW: 8.6 ppg
VIS: 35 sec/L
Test Gas 42u
11u
TOTAL GAS (Units)
C1 (PPM)
C4 (PPM)
C7 (PPM)
He (PPM)
CO2 (ppm)
6440' MD
6460' MD
6500' MD
6580' MD
6600' MD
6620' MD
6640' MD
6440' - 6460' MD: SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb ang - sb plty, w srt, imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn - occ pnk, med/f grn, sb ang - sb rnd, mod srt intgr por, calc cmt, free qtz, Lt yel/gn min flor, Nfsoc.
6460' - 6480' MD: SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, tr imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn - occ pnk, med/f grn, sb ang - sb rnd, mod srt intgr por, calc cmt, free qtz, Lt yel/gn min flor, Nfsoc.
6480' - 6500' MD: SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, tr imbd cal, abnt scat calc. SS: Med gy - lt gy - v lt gy - lt brn/tn - occ pnk, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz, Lt yel/gn min flor, Nfsoc.
6500' - 6520' MD: SS: Med gy - lt gy - v lt gy - lt brn/tn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz, SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, tr imbd cal, abnt scat calc. Lt yel/gn min flor, Nfsoc.
6520' - 6540' MD: SS: Mot v lt gy - Med gy - lt gy - lt brn/tn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz, SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, tr imbd cal, abnt scat calc. Lt yel/gn min flor, Nfsoc.
6540' - 6560' MD: SS: Mot v lt gy - Med gy - lt gy - lt brn/tn, med/f grn, sb ang - sb rnd, mod srt, intgr por, calc cmt, free qtz, SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, abnt scat calc. Rr lt yel/gn min flor, V Wk Lazy Cut, Mod bl/gn ring.
6560' - 6580' MD: SS: Predy lt gy - Med gy - lt gy, med/f grn, sb ang - sb rnd, w to mod srt, intgr - tt por, calc cmt, free qtz, SLTST: Modrdbn - Med dk gy - red brn, v - med f grn, sb blky - sb ang, w srt, abnt scat calc. Rr lt yel/gn min flor, Wk lazy flash Cut, Mod bl/gn ring.
6560' - 6580' MD: SLTST: Med dk gy - rr red brn, v grn, sb blky - sb ang, w srt, abnt scat calc. Rr lt yel/gn min flor. SS: Lt gy - Med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Wk lazy flash Cut, Mod bl/gn ring.
6600' - 6620' MD: SLTST: Med dk gy - rr red brn, v grn, sb blky - sb ang, w srt, abnt scat calc. Rr lt yel/gn min flor. SS: Med lt gy - med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Wk lazy strmg/flash Cut, Mod bl/gn ring.
6620' - 6640' MD: SS: Med gy - med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz, SLTST: Med dk gy - rr red brn, v grn, sb blky - sb ang, w srt, abnt scat calc. Rr lt yel/gn min flor. Wk lazy strmg/flash Cut, Mod bl/gn ring.
6640' - 6660' MD: SLTST: Med to med dk gy, tr to occ red brn, v f grn, sb blky - sb ang frags, w srt, scat scat calc. SS: Med gy - med gy, predy med/f grn, sb ang - sb rnd,



mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Rr lt yel/gn min flor. Wk lazy strmg/flash Cut, Mod bl/gn ring.

6660' - 6680' MD: SLTST: Med to med dk gy, scat to occ red brn, v f f grn, sb blky - sb ang, w srt, scat imbd calc vn. SS: Med gy - med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Rr lt yel/gn min flor. Wk lazy strmg/flash Cut, Mod bl/gn ring.

6680' - 6700' MD: SLTST: Med to med dk gy, tr occ red brn, v f - f grn, sb blky - sb ang, w srt, tr imbd calc vn, scat free cal. SS: Med gy - med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Rr lt yel/gn min flor. Wk lazy strmg/flash Cut, Mod bl/gn ring.

6700' - 6720' MD: SLTST: Med to med dk gy, tr occ red brn, v f - f grn, sb blky - sb ang, w srt, tr imbd calc vn, scat free cal. SS: Med gy - med gy, predy med/f grn, sb ang - sb rnd, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz. Rr lt yel/gn min flor. Wk lazy strmg/flash Cut, Mod bl/gn ring.

6720' - 6740' MD: SS: Med lt gy - med gy, med/f grn, sb ang - sb rnd grns, mod to occly mod w srt, intgr - tt por, calc cmt, scat free qtz, sca cal vn with tr pyr vn. SLTST: Med to med dk gy, tr occ red brn, v f grn sb blky - sb ang, w srt, tr imbd calc vn, scat free cal. Rr lt yel/gn min flor. Lazy strmg/flash Cut, Mod bl/gn ring.

6740' - 6760' MD: SLTST: Med to med dk gy, v f grn, sb blky - sb ang w srt, tr imbd calc vn, tr free cal. SS: Med lt gy - med gy, med/f grn, predy sb rnd grns, mod to w srt, intgr - tt por, calc cmt, scat free qtz, scat cal vn with tr pyr vn. Rr lt yel/gn min flor. Lazy strmg/flash Cut, bl/gn ring.

6760' - 6780' MD: SLTST: Med to med dk gy, v f grn, sb blky - sb ang w srt, tr imbd calc vn, tr free cal. SS: Med lt gy - med gy, med/f grn, predy sb rnd grns, mod to w srt, intgr - tt por, calc cmt, scat free qtz, scat cal vn with tr pyr vn. Rr lt yel/gn min flor. Lazy strmg/flash Cut, bl/gn ring.

6780' - 6800' MD: SS: Med lt gy - med gy - dk, trnsl op ip, med/f grn, sb rnd - ang grns, mod to w srt, intgr - tt por, calc cmt, abnt free qtz, scat cal vn. SLTST: Med to med dk gy, v f grn, sb blky - sb ang, w srt, tr imbd calc vn, tr free cal. Rr lt yel/gn min flor. Lazy strmg/flash Cut, bl/gn ring.

6800' - 6830' MD: SLTST: Med gy, v f grn, sb blky - sb ang, w srt, tr imbd calc vn, tr free cal. SS: Med gy - dk, trnsl op ip, med/f grn, sb rnd - ang grns, mod w to w srt, predy tt por, calc cmt, abnt free qtz, scat cal vn. lt yel/gn min flor. Lazy strmg/flash Cut, bl/gn ring.

CO2 ------

RIPTIO...

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